INTEL® PRODUCT QUICK REFERENCE MATRIX

Intel® Product Quick Reference Matrix

Q4 2018

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Q4 2018

YOUR SOLUTIONS.
OUR TECHNOLOGY.
SMARTER
TOGETHER.

INTEL® TECHNOLOGY PROVIDER

Intel® Product Quick Reference Matrix
Q4 2018

INTEL® TECHNOLOGY PROVIDER

Intel® Technology Provider provides support to keep your business running smoothly, knowledge and expertise to provide an edge and rewards to grow your business.

ONLINE RESOURCES

Access a number of online resources designed to help provide the right solutions for your customers and grow your business.

ONLINE TRAINING

Access a wide range of online courses that include in-depth technical, business and technology specific training. Earn credits as you learn more.

INTEL® TECHNOLOGY PROVIDER

Your Solutions. Our Technology. Smarter Together.

Whether selling to businesses or consumers, Intel® Technology Providers get the competitive advantage. Access your many benefits as you progress through the program, receiving the support, expertise, and recognition you need to succeed in a fast-moving global marketplace.

SUPPORT	EXPERTISE	RECOGNITION
Grow your bottom line with sales and marketing tools dedicated to Intel Technology Providers.	Become a trusted advisor to your customers with training, events, newsletters, and online guides.	Be recognized for the business you do with Intel. Earn points on purchases to spend on rewards and access promotions and membership materials.

Helping You Succeed, with These Partner Benefits:

ACCOUNT MANAGEMENT	POINTS	TRAINING	EVENTS	SALES & MARKETING TOOLS	PRIORITY TECHNICAL SUPPORT
Platinum tier members may be eligible to work with an account manager to help you drive sales and solutions, stay ahead of industry trends and alert you to the latest opportunities.	Greater performance brings greater rewards. All partners can earn points while Gold and Platinum partners can spend points on Intel® technology, events and more.	Access to the latest online and face-to-face training courses.	Invitations to annual partner-only events offering the latest product information and the opportunity to network with other top ecosystem partners as well as Intel executives.	Targeted sales and marketing solutions to boost sales and grow your business.	Priority support for Platinum partners via chat, email, or phone, and advanced warranty service. NEW - Intel Support App. Submit support tickets from your mobile device.

For more information, visit **www.intel.com/technologyprovider**

CLOUD DATA CENTER SPECIALTY BENEFITS

Earn specialty benefits and gain exclusive, partner-only resources to help you plan, build, and deploy your cloud data center solutions.

The Cloud Data Center Specialty aims to reward Partners who have the deepest expertise in designing and deploying cloud solutions. Intel has exclusive resources available to you, through Cloud Data Center Specialty Benefits, to help you plan, implement and deliver your data center solution, opening the door to another level of engagement with Intel on cloud.

ADDITIONAL POINTS FOR SPECIALISTS

We will offer our Cloud Specialists the opportunity to participate in offers and earn additional points for purchases of Intel Data Center Portfolio products through authorized distributors that are available only to Specialty Partners.

CUSTOMER MATCHMAKING

As a Cloud Specialist, you'll have priority access to Intel sales teams as they help match-make between your cloud expertise and our customer base. Intel also hosts special invitation-only matchmaking events at industry conferences.

POTENTIAL FOR MDF

Marketing development funds may be available for projects proposed by Cloud Specialists and accepted by Intel. Contact ITP-Cloud@intel.com for limitations and guidelines.

ACCESS TO INTEL CLOUD RESOURCES

Trainings, white papers, success stories and other collateral are just a few examples of the available resources that will help you stay up to date with cloud technologies and stay ahead of the competition. Our research and world-class resources will assist you in planning and architecting cloud solutions.

ACCELERATOR INITIATIVES

Exclusive accelerator efforts designed to support and drive transitions to the latest Intel® technologies and enable your company to have a competitive edge on the latest industry products.

PRIORITY INVITATION TO INDUSTRY EVENTS AND TECHNICAL TRAINING

Imagine being in the same room at key events with Intel experts and learning about cutting-edge technologies. As a Cloud Specialist, you can look forward to receiving special invitations to leading industry events or Intel events such as Intel's Server Product Leader Conference.

ACCESS TO CLOUD EXPERTS FOR PRESALES TECHNICAL SUPPORT

As a Cloud Specialist, you'll receive priority access to our Cloud Experts, who can help you confidently offer end-to-end solutions to grow your business and cement your role as a trusted advisor. Reach out to us at ITP-Cloud@intel.com, and we will get you in touch with the right person to help you achieve your business goals.

CLOUD SPECIALIST PROMOTION & SPECIALIST DESIGNATION

Intel will promote Cloud Specialists as the experts to the market. Our "Partner with an Intel Cloud Data Center Specialist" web page will give you invaluable exposure, making it easier for potential customers to find and connect with you. Display your specialty badge to show your official affiliation with Intel and your specific expertise.

OPPORTUNITY TO EARN STRATEGIC OEM (SOEM) STATUS

As part of the Data Center Specialty you may have the opportunity to be eligible for Strategic OEM status based on annual revenue level. As an SOEM you would be eligible for matching annual Market Development Funds and if qualified year on year bonus based on total Intel revenue growth. This initiative is invite-based and intended to accelerate technology solutions, encourage innovation, and improve long term strategic planning with our key OEM's.

For more information, visit **www.intel.com/technologyprovider/cloud**

HIGH-PERFORMANCE COMPUTING (HPC) DATA CENTER SPECIALTY BENEFITS

Earn specialty benefits and gain exclusive, partner-only resources to help you plan, implement, and deliver your data center solutions.

Intel has preferred resources available to you through HPC Data Center Specialty Benefits to help you plan, implement and deliver your data center solution. This includes access to special members-only training and events. These resources will open the door to another level of engagement with Intel on HPC.

ACCELERATOR INITIATIVES

Exclusive accelerator efforts designed to support and drive transitions to the latest Intel® technologies and enable your company to have a competitive edge on the latest industry products.

CUSTOMER MATCHMAKING

As an HPC Specialist, you'll have priority access to Intel sales teams as they help match-make between your HPC expertise and our customer base. Intel also hosts special invitation-only matchmaking events at industry conferences.

POTENTIAL FOR MDF

Marketing development funds may be available for projects proposed by HPC Specialists and accepted by Intel. Contact ITPHPC@intel.com for limitations and guidelines.

ADDITIONAL POINTS OFFERS FOR HPC SPECIALISTS

Participate in offers and earn additional points available only to Specialty partners. Use points to build your business and attract more data center customers.

SPECIAL OMNI-PATH PRICING

HPC Specialists receive special pricing on purchase of Omni-path products.

PRIORITY INVITATION TO INDUSTRY EVENTS & TECHNICAL TRAININGS

Imagine being in the same room at key events with Intel experts and learning about cutting-edge technologies. As an HPC Specialist, you can look forward to receiving special invitations to leading industry events or Intel events such as Intel's Server Product Leader Conference.

ACCESS TO HPC EXPERTS FOR PRESALES TECHNICAL SUPPORT

Closing deals can be a complicated process that requires all the help you can get. With access to our experts, we can help you confidently offer end-to-end solutions to grow your business and cement your role as a trasted advisor. Reach out to us at ITPHPC@intel.com, and we will get you in touch with the right person to help you achieve your business goals.

HPC DATA CENTER SPECIALIST PROMOTIONS AND SPECIALTY DESIGNATION

Intel will promote the HPC Specialists as experts to the market. Our "Partner with an Intel HPC Data Center Specialist" web page will give you exposure, making it easier for potential customers to find and connect with you as an expert in HPC design and deployment. Display your specialty badge to show your official affiliation with Intel and your specific expertise in providing Intel® technology and solutions to end customers.

OPPORTUNITY TO EARN STRATEGICOEM (SOEM) STATUS

As part of the Data Center Specialty you may have the opportunity to be eligible for Strategic OEM status based on annual revenue level. As an SOEM you would be eligible for matching annual Market Development Funds and if qualified year on year bonus based on total Intel revenue growth. This initiative is invite-based and intended to accelerate technology solutions, encourage innovation, and improve long term strategic planning with our key OEM's.

For more information, visit **www.intel.com/technologyprovider/hpc**

ARTIFICIAL INTELLIGENCE (AI) SPECIALTY BENEFITS

Earn specialty benefits and gain exclusive, partner-only resources to help you plan, implement, and deliver your AI solutions.

Intel has preferred resources available to you through AI Specialty Benefits to help you plan, implement and deliver your data center solution. This includes access to special members-only training and events. These resources will open the door to another level of engagement with Intel and AI.

PROMOTION OF YOUR COMPANY BY INTEL

Intel will promote AI Specialists as the experts to the market. Our "Partner with an Intel AI Specialist" web page will give you invaluable exposure, making it easier for potential customers to find and connect with you as an AI service provider they can trust.

PUBLIC RELATIONS SUPPORT

Intel will provide quotes and other supporting comments from our recognized AI experts to support your technical, sales and marketing collateral .

POTENTIAL FOR MDF

Marketing development funds may be available for projects proposed by HPC Specialists and accepted by Intel. Contact ITP-AI@intel.com for limitations and guidelines.

ADDITIONAL POINTS OFFERS FOR AI SPECIALISTS

Participate in offers and earn additional points available only to Specialty partners. Use points to build your business and attract more data center customers.

PRIORITY INVITATION TO INDUSTRY EVENTS & TECHNICAL TRAININGS

Imagine being in the same room at key events with Intel experts and learning about cutting-edge technologies. As an AI Specialist, you can look forward to receiving special invitations to leading industry events or Intel events such as Intel's Server Product Leader Conference.

ACCESS TO HPC EXPERTS FOR PRESALES TECHNICAL SUPPORT

Closing deals can be a complicated process that requires all the help you can get. With access to our experts, we can help you confidently offer end-to-end solutions to grow your business and cement your role as a trusted advisor. Reach out to us at ITP-AI@intel.com, and we will get you in touch with the right person to help you achieve your business goals.

HPC DATA CENTER SPECIALIST PROMOTIONS AND SPECIALTY DESIGNATION

Intel will promote the HPC Specialists as experts to the market. Our "Partner with an Intel AI Specialist" web page will give you exposure, making it easier for potential customers to find and connect with you as an expert in AI design and deployment. Display your specialty badge to show your official affiliation with Intel and your specific expertise in providing Intel® technology and solutions to end customers.

ACCESS TO ONLINE TRAINING AND COLLATERAL

Product trainings, white papers, success stories and other collateral are just a few examples of the available resources that will help you stay up to date with AI technologies and stay ahead of the competition. Our research and world class resources will assist you in planning and architecting AI solutions.

For more information, visit **www.intel.com/technologyprovider/AI**

ENTHUSIAST PC SPECIALTY BENEFITS

Get Assets, Promotion and Unique Benefits to Help You Differentiate and Succeed

Enthusiast PC specialty benefits give you exclusive, partner-only resources to help you excel, differentiate and accelerate in the enthusiast market segment. Get access to valuable benefits designed and tailored for channel partners selling and promoting finished systems based on Intel® Core™ X, K, H series.

ENTHUSIAST POINTS PROMOTIONS: X, K, H SKU

Earn additional points when you participate in offers only for Enthusiast PC Specialty partners. Use your points for partner events, marketing resources and more.

ENTHUSIAST PC SPECIALTY DESIGNATION & PROMOTION

Receive an "Enthusiast PC Specialist" designation to communicate your specific enthusiast/gaming segment expertise. Be included in promotional listings of qualified Enthusiast PC Specialists on the Intel® Technology Provider web page.

ACCESS TO ONLINE TECHNICAL WEBINARS

Join exclusive technical sessions led by Intel experts on topical and technical enthusiast and gaming topics in your geography.

ACCESS TO BEST-IN-CLASS GAMING & SOFTWARE PACKS

Throughout the year receive no charge entertainment packs with Intel® Core™ processor-based systems. Latest titles are sourced from top gaming and software partners.

PASSES TO YOUR LOCAL E-SPORTS EVENTS

Qualify for at least 10 passes to your local e-sports OR Intel® Extreme Masters event. Use passes for giveaways or promotions.

For more information, visit **www.intel.com/enthusiastpc**

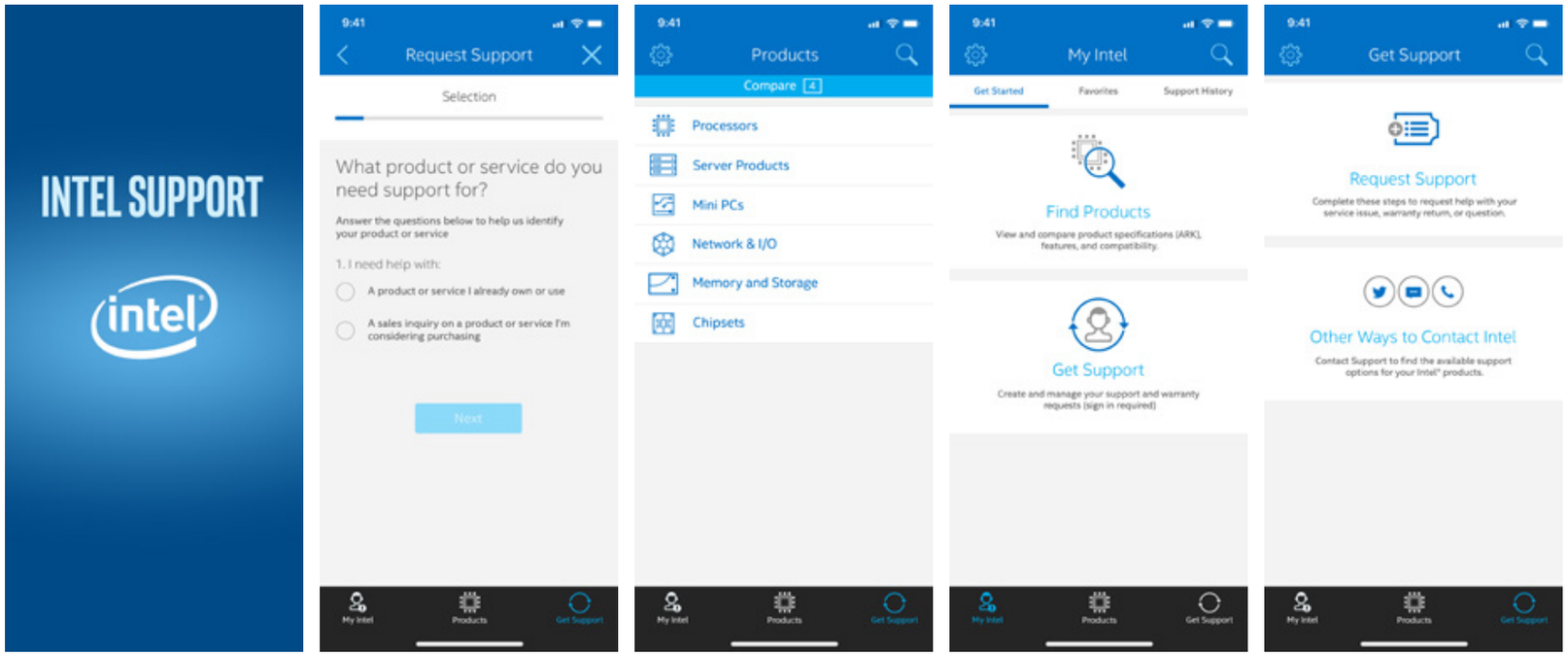
INTEL® SUPPORT APP

Intel® Support App

The Intel® Support smartphone app allows customers to submit support requests through their mobile device and access product specifications.

- An easy and simple smartphone application that allows customers to submit new support requests, check the status of active requests, or view their support history.
- Product specification tool replaces the former ARK mobile app.
- Gives customers a more personalized experience, and provides more control over where, when, and how they engage with Intel Customer Support.
- Future enhancements will include the ability to submit warranty claims, bar code scanning, and chat directly with a support agent from your mobile device.
- Available on iPhone*, iPad*, and Android* mobile devices.

AVAILABLE FOR DOWNLOAD ON THE APPLE APP STORE & GOOGLE PLAY



THE FOUNDATION FOR BUSINESS COMPUTING

INTEL® VPRO™ TECHNOLOGY SOLUTION

Intel® Product Quick Reference Matrix

Q4 2018

THE INTEL® VPRO™ PLATFORM

The Intel® vPro™ platform[1] meets the needs of the user and the business by combining a premium computing experience with hardware-enhanced security, flexible management, and improved stability—all made possible by 8th Generation Intel® Core™ vPro™ processors.

[1] Intel® technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at http://www.intel.com.

THE ADVANTAGES OF INTEL® VPRO PLATFORMS FOR BUSINESS OF ALL SIZES

Refresh your desktop fleet with the latest 8th Gen Intel® vPro™ processors to unlock performance and productivity, enhanced security and improved capabilities. The new 8th Gen Intel® vPro™ processors with up to 6 Cores provide exceptional performance and responsiveness leveraging Intel® Optane™ Memory technology. This is the first 6-core Intel® vPro™ processor for Mainstream computing with enhanced hardware security and advanced remote manageability. The new 8th Gen Intel® vPro™ platform is Intel's Best-In-Class business platform.

31%

Up to 31% Better Productivity Performance vs 7th Gen [1,2,4]

Premium performance enables things like - robust content creation, analyze data using Microsoft* Office products up to 31% faster than a 7th Gen PC

41%

Up to 41% Faster Multi-Tasking vs 7th Gen [2,5,6,7,8,9]

Collaborate with teammates while also working on multiple Microsoft Office applications faster than a 7th Gen PC

10HRS

Up to 10 Hours Battery Life [3]

Enjoy up to 10 hours battery life to analyze data and create content while conducting research on the web

Processor

Intel® Core™ i7 and
Intel® Core™ i5 vPro™ Processors

+

Desktop Chipset OR **Mobile Chipset**

Intel® Q Series Chipset

Intel® QM Series Chipset

+

Network

Intel® LAN Controller

Sales Opportunities

Nearly half (46%) of small businesses are in a managed environment, and drive 62% of small business IT spending.**	Devices powered by Intel® Core™ vPro™ processors deliver proven value with reduced repair times and improved system availability.	Intel vPro technology is supported by a broad set of ISV management consoles and a wide variety of devices.

** Source: AMI-Partners (http://www.ami-partners.com) 2013. For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

8th Generation Intel® Core™ vPro™ Processors

BUSINESS-CLASS PERFORMANCE YOU CAN COUNT ON

Streamline productivity with performance for serious business compute, multitasking for maximum efficiency, and unprecedented battery life that lasts up to 10 hours.

Lighten your heaviest workloads

When finance crunches complex calculations, developers compile precise code, and designers manipulate sophisticated graphics, the premium performance of new 8th Intel® Core™ vPro™ processors give uptime a whole new meaning.

From Excel macros to CAD animations, Intel® Hyper-Threading Technology handles demanding applications by running multiple threads on each core to deliver cutting-edge responsiveness for serious business compute.

Take the task out of multitasking

Trying to do more than one thing at a time on old technology is a productivity drain, not a driver.

Keep business running smoothly with new 8th Generation Intel® Core™ vPro™ processor-based devices that have Intel® Speedshift™ Technology for steady load balancing across highly demanding workloads.

Performance automatically adjusts to focus frequencies where they're needed most, while applications running in the background reserve power.

Unleash real mobile productivity

From improving interactions with patients to delighting customers on the sales floor, modern business is all about mobility and long battery life is central to this transformation.

Make your workforce more productive from anywhere, anytime with the endurance of new 8th Generation Intel® Core™ vPro™ processor-based devices, which provide up to 10 hours of untethered power to last the entire work day.

For more information, visit **www.intel.com/go/vpro**

Refresh Configurations

Intel® Core™ i5-8350U (Intel Reference Platform), 15W, 4C8T, Turbo up to 3.6GHz, Memory: 2x4GB DDR4-2400, Storage: Intel® 6000p SSD, Graphics: Intel® UHD Graphics 620, OS: Windows* 10

Intel® Core™ i5-3427U, 15W, 2C4T, Turbo up to 2.8GHz, Memory: 2x4GB DDR3-1600, Storage: 80GB SSD, Graphics: Intel(R) HD Graphics 4000, OS: Windows* 10

Gen-on-Gen Configurations

Intel® Core™ i7-8650U (Intel Reference Platform), 15W, 4C8T, Turbo up to 4.2GHz, Memory: 2x4GB DDR4-2400, Storage: Intel® 6000p SSD, Graphics: Intel® UHD Graphics 620, OS: Windows* 10

Intel® Core™ i7-7600U (Intel Reference Platform), 15W, 2C4T, Turbo up to 3.9GHz, Memory: 2x4GB DDR4-2400, Storage: Intel® 6000p SSD, Graphics: Intel® UHD Graphics 620, OS: Windows* 10

Battery Life Configuration

Intel® Core™ i7-8650U Processor (Intel Reference Platform), 15W, 4C8T, Turbo up to 4.2GHz, Memory: 2x4GB DDR4-2133, Storage: Intel 540s m.2 SSD, Graphics: Intel UHD Graphics 620, OS: Windows* 10, Battery Size: 42WHr, Screen: 25x14 12.5", Windows 10 Power Slider – Better Performance

Workloads

1 SYSmark* 2014 SE: SYSmark* 2014 SE is a benchmark from the BAPCo* consortium that measures the performance of Windows* platforms. SYSmark 2014 SE tests four usage scenarios: Office Productivity, Media Creation, Data/Financial Analysis, and Responsiveness. SYSmark contains real applications from Independent Software Vendors such as Microsoft* and Adobe*.

2 Office Productivity and Multitasking Workload: Slack is open in the background while a 2.28 MB, Microsoft PowerPoint .ppt presentation is exported as a 1920x1080 H.264 .mp4 video presentation. While the video presentation is being created 1) a 6.49 MB, 844 page, Microsoft Word .docx document is converted to a 7.98 MB, PDF file and 2) a 70.4 MB, .Microsoft Excel .xlsm macro-enabled worksheet that is recalculated.

3 EMBC Browsing Bench Component Average Power (projected on Intel Reference Platform using a 42WHr battery and 25x14 Panel): Disconnect all USB devices, connect to a local WiFi access point and set the screen brightness to 200 nits (disable DPST, set brightness to 200 nits on a white background and enable DPST). Wait for 10 mins for the OS to completely idle and then launch EEMBC Browsing Bench using Microsoft® Edge Browser. Set the web pages to idle for 20s in between page loads. Measure power for the duration of all page loads and report 3 run median.

4 Large numerical calculation workload: uses the Black-Scholes model to execute approximately 300,000 iterations of the Monte Carlo simulation in Microsoft* Excel* 2016. It also uses Excel lookup functions to compare the Black-Scholes model's put price with the historical market price for 50,000 rows to understand the convergence, creating a spreadsheet file larger than 70 MB.

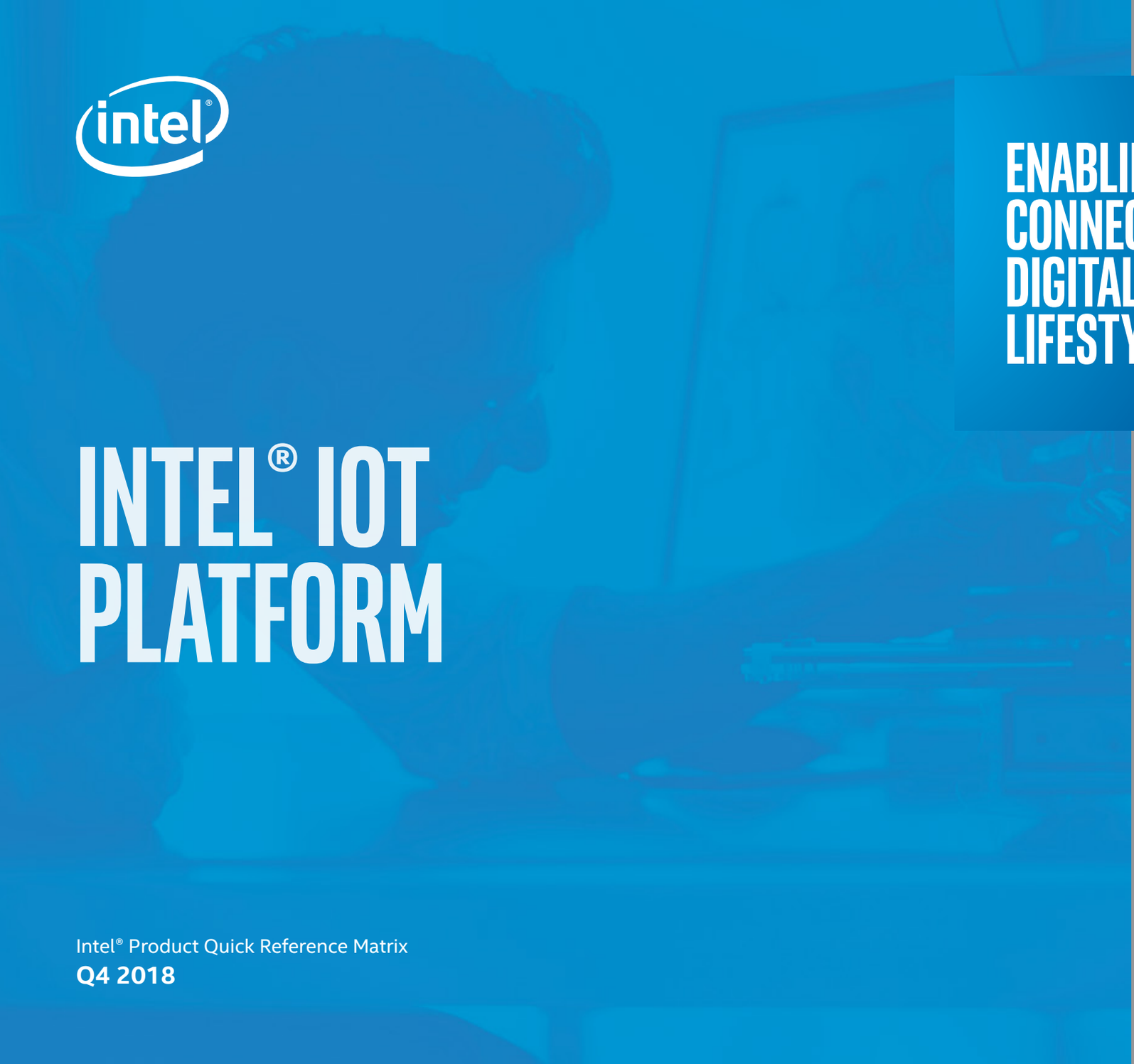
5,6 WebXPRT* 2015 ([5] Stock Option Pricing Subscore, [6] DNA Sequencing Subscore: benchmark from Principled Technologies* that measures the performance of web applications using six usage scenarios: Photo Enhancements, Organize Album, Local Notes, Stock Option Pricing, Sales Graphs, and Explore DNA Sequencing. WebXPRT tests modern browser technologies such as HTML5 Canvas 2D, HTML5 Table, HTML5 Local Storage, as well as JavaScript*. Reported metrics: elapsed time in seconds (lower is better) for each scenario, plus an overall score (higher is better). Scaling efficiencies: CPU dominant (newer browsers are GPU accelerated), sensitive to frequency. WebXPRT is very sensitive to browser type and version. OS support: Any OS that supports an HTML5 browser.

7 Microsoft* PowerBI Data Source Change Workload: Measures the time to load, query, calculate statistics, and draw 6 charts from a different local data source containing 2.2 million sales records

8 Dataset JOIN query workload: Measures the time to perform a multi-table SQL JOIN query in Microsoft* Access 2016 on a sample dataset containing 2.2 million sales records to create a quarterly sales summary.

9 File Compression (Zipping) workload: Measures the time to compress 50 files totaling 118MB using WinZip* v22.

* Other names and brands may be claimed as the property of others.



INTEL® IOT PLATFORM

ENABLING A CONNECTED DIGITAL LIFESTYLE

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® IOT PLATFORM

The Intel® IoT Platform is a reference architecture implemented using products and technologies from Intel, along with developers and the ecosystem that seamlessly and securely connect and manage devices, deliver trusted data to the cloud, and deliver value through analytics.

INTEL® IOT PLATFORM

Enabling a connected digital lifestyle through devices that are able to connect to the internet securely.

The Intel® IoT Platform is a reference architecture implemented using products and technologies from Intel, along with developers and the ecosystem that seamlessly and securely connect and manage devices, deliver trusted data to the cloud, and deliver value through analytics.

INTEL® IOT PLATFORM INFOGRAPHIC

The Internet of Things (IoT) is at the heart of a powerful technology revolution. The act of connecting devices and systems to each other so that they can share data is the seed of new products, services, and experiences. Today, there are many IoT solutions based on Intel® technology in operation worldwide and the impact has been significant for businesses and consumers.

IOT PRODUCT PORTFOLIO

Intel technology is the backbone of proven IoT solutions in smart home, industrial, and mobile applications, as well as for vertical markets, including transportation, healthcare, and retail. It is helping billions of devices talk to each other and share valuable information, protecting sensitive data, and providing critical analytics and API offerings.

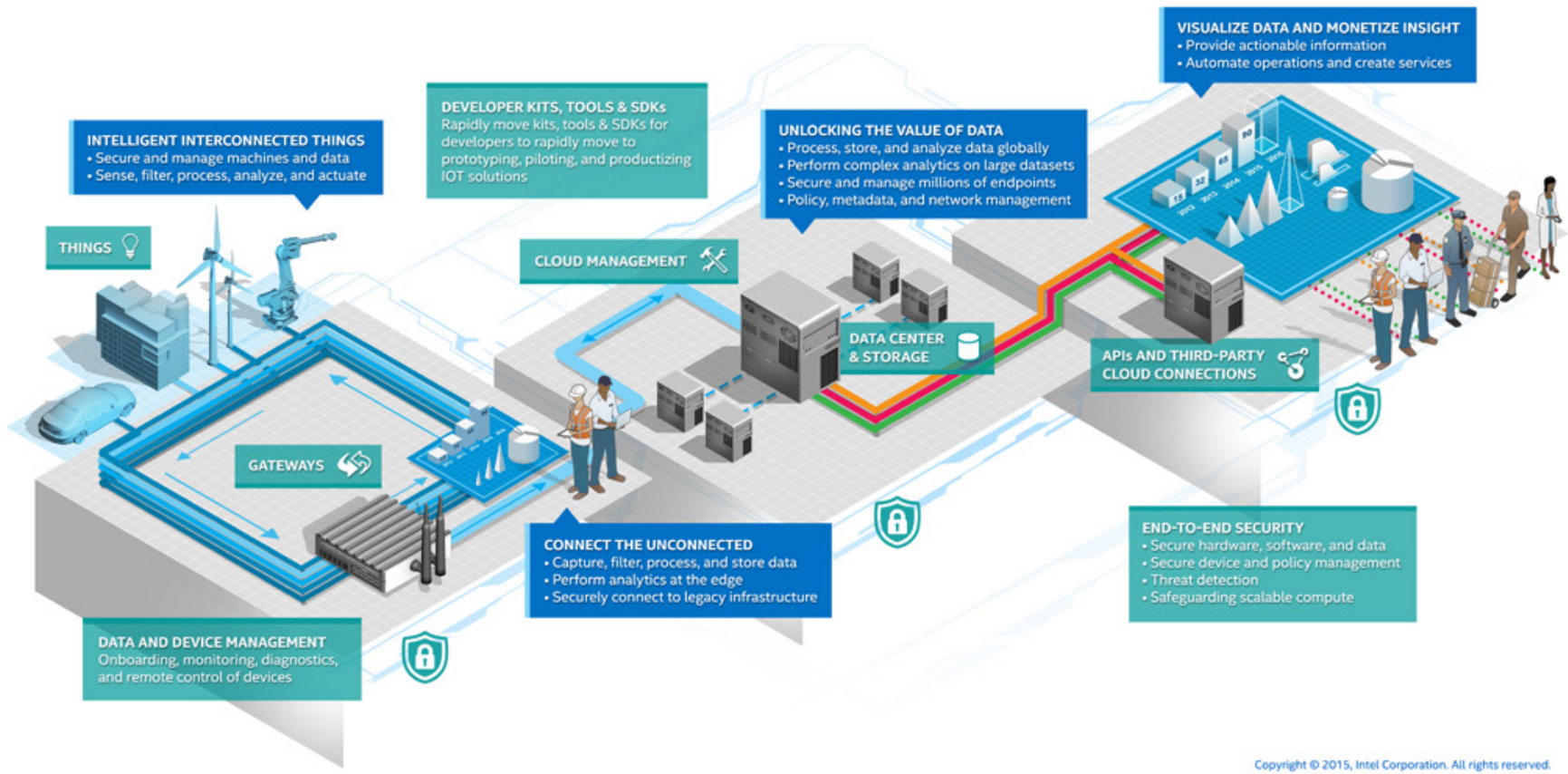
IOT SECURITY PORTFOLIO

Intel supports tightly integrated hardware and software security from the edge to the cloud, along with data protection and policy management, delivering trusted data resulting in valuable insights.

INTEL® IOT PLATFORM

Secure. Scalable. Interoperable.

The Intel® IoT Platform is an end-to-end reference architecture and family of products from Intel, that works with third-party solutions, to provide a foundation for seamlessly and securely connecting devices, delivering trusted data to the cloud, and delivering value through analytics.

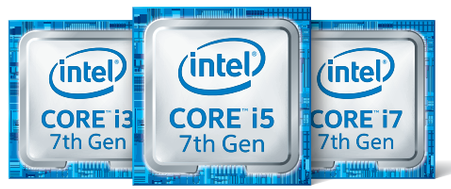


For more information, visit **www.intel.com/content/www/us/en/internet-of-things/overview.html**

INTEL® PROCESSORS FOR IOT

Hyperreal Visuals Drive Greater IOT Possibilities

Build your most innovative solutions with 7th Gen Intel® Core™ processors, featuring enhanced graphics, performance, and responsiveness.



- 14nm silicon technology
- Reduced electrical and power consumption
- Latest hardware- and software-enhanced security
- Long-term availability (up to seven years)

BETTER PERFORMANCE

- Up to 17%[1] better CPU performance
- Power-optimized for mobility
- Intel® Optane™ memory ensures media responsiveness
- Intel® Speed Shift Technology optimizes task performance

STRONGER GRAPHICS

- Up to 4K Ultra HD
- New HEVC 10-bit and VP9 decode
- Integrated HDCP 2.2
- Support for additional formats, such as AVC/H.264, MPEG-2, and VC-1

Intel® Processors for IoT

INTEL® QUARK™ PROCESSORS

Intel® Quark™ processors are microcontrollers for intelligent things. They provide flexible, low-power computing for a variety of small form factor applications to offer low-cost connectivity, integration, and compatibility for the IoT.

INTEL® ATOM™ PROCESSORS

Intel® Atom™ processors pack an entire system-on-a-chip for the ultimate in power and portability. Get performance/watt leadership, security and manageability, rich graphics, and I/O integration, with stunning graphics performance for edge devices.

7TH GENERATION INTEL® CORE™ PROCESSORS

The 7th generation Intel® Core™ processors offer unprecedented power and responsiveness of Intel® Turbo Boost Technology.[2] Work with superior CPU and graphics performance, powerful security, and a range of power options to boost edge-to-cloud IoT designs.

INTEL® XEON® PROCESSORS

The Intel® Xeon® processors power any workload and lift date center productivity. They combine multi-core performance and compute density with hardware-based manageability, security, virtualization, and power management for scalability and reliability at the edge.

Learn more at **intel.com/iot**

[1] Measured by Intel on a system with 7th Gen Intel® Core™ processor i7-7700 versus a system with 6th Gen Intel® Core™ processor i7-6700 using SPECfp2006 (8 copy).

[2] Requires a system with Intel® Turbo Boost Technology. Intel® Turbo Boost Technology and Intel® Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your system manufacturer. Performance varies depending on hardware, software, and system configuration. For more information, visit intel.com/turboboost.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. For more complete information about performance and benchmark results, visit intel.com/benchmarks.

INTEL® UNITE

SMARTER ROOMS. SMARTER COLLABORATION.

INTEL® UNITE

Start meetings fast and be more productive with easy wireless content sharing to room displays and other devices connected to the network.

Intel® Product Quick Reference Matrix

Q4 2018

SMARTER ROOMS. SMARTER COLLABORATION.

Start meetings fast and be more productive with easy wireless content sharing to room displays and other devices connected to the network.

intel UNITE®

ENTERPRISE INSTALLATION

This easily scalable solution is ideal for enhancing collaboration in *managed* IT environments with more than a few rooms, including medium to large businesses and schools. It features a centralized administrative web portal, broad OS support, and the ability to integrate optional plugin extensions.

SMALL BUSINESS INSTALLATION – NEW!*

For unmanaged small business environments with only a few rooms, this easy-to-install option requires no IT expertise or server components, and enables basic collaboration capabilities for users with PCs and Macs. Connection reliability is now on par with the enterprise installation, and multiple subnets are now supported.

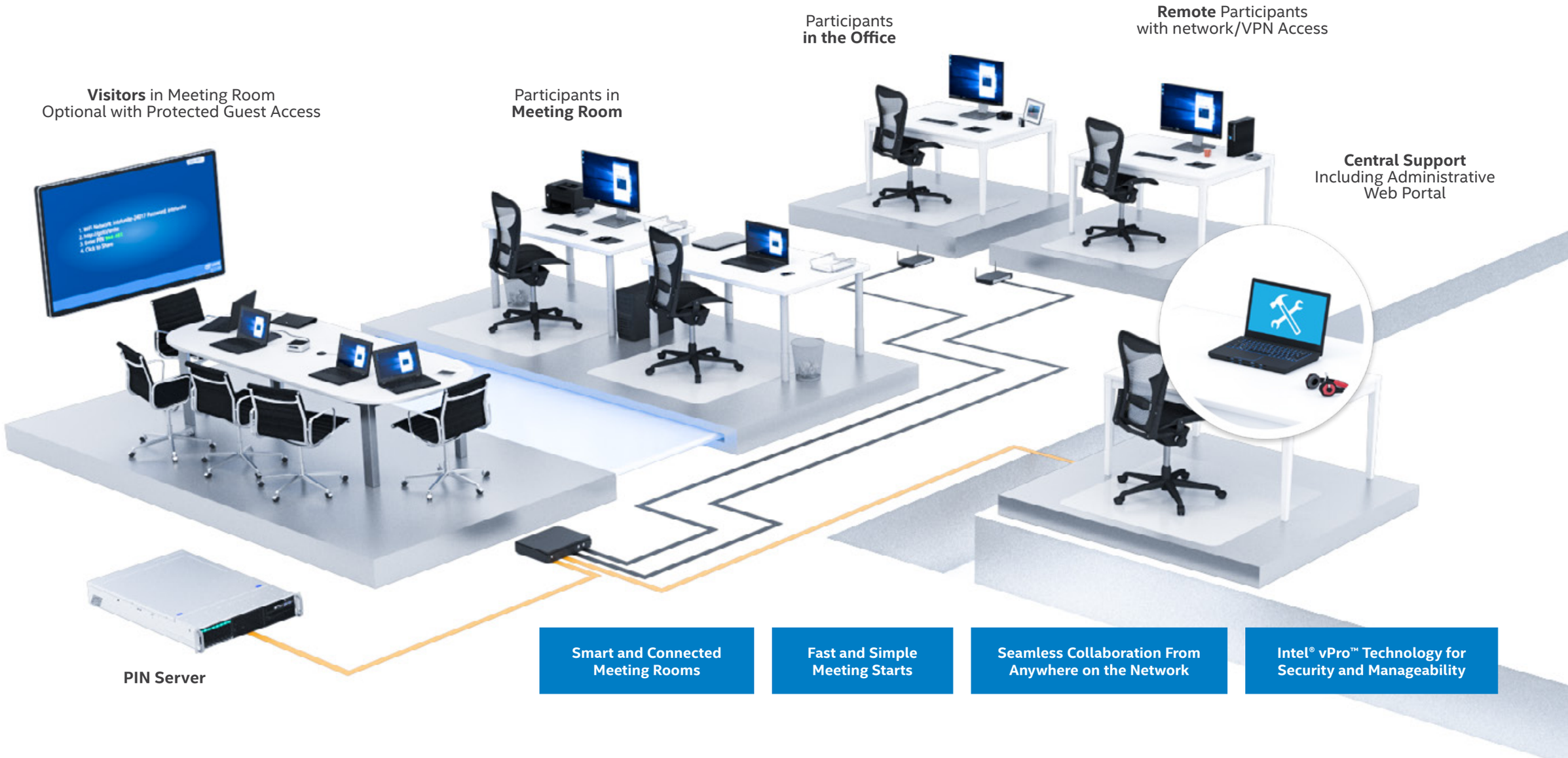
* Now available with Intel Unite® software version 3.2

INTEL UNITE® SOFTWARE

COLLABORATION MADE EASY

Just launch the app on your device, enter the short PIN shown on the room's display, and begin wirelessly sharing or viewing content with a click.

INTEL UNITE® - ENTERPRISE SOFTWARE INSTALLATION FOR MANAGED ENVIRONMENTS



Smart and Connected Meeting Rooms

Fast and Simple Meeting Starts

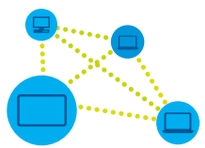
Seamless Collaboration From Anywhere on the Network

Intel® vPro™ Technology for Security and Manageability

THE INTEL UNITE® SOLUTION

Simplify IT Management

With Intel® vPro™ technology on every room-based PC running Windows and Intel Unite® software, you can easily integrate these PCs into your existing IT infrastructure and leverage the management tools, systems and policies you already have in place. And by simplifying the infrastructure technologies needed in your conference rooms, you can help reduce costs and improve manageability.



Ditch the Dongle

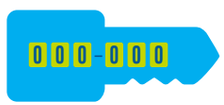
Technology connects attendees to new or existing displays, projectors, and interactive whiteboards. There's no need to waste time searching for the right adapter or dongle.

Collaborate in Real Time

Attendees from any location can view, annotate, and share documents—in real time, every time. Share files easily using the built-in file transfer feature.

Host From Your PC

No room monitor? An Intel® Core™ vPro™ processor-based client device with the Intel Unite® app installed can host a session, allowing workers to share screens wirelessly between their devices.[1]

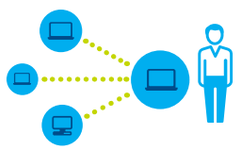


Safer Meetings

To improve security, attendees must enter the appropriate rotating PIN code to join the meeting. Guests outside of your network can temporarily join and participate in configured rooms using the optional software plugin[3] for protected guest access.

Protected Data

Enterprise-grade security ensures that data is 256-bit Secure Sockets Layer (SSL) encrypted and stays within your corporate network. Data always stays within the virtual walls of your business and isn't dependent on any additional vendor solutions.[1]



Remote Manageability

With the remote management tools of Intel® vPro™ technology, you can manage all conference room PCs from any location to complete basic tasks, apply patching, or make repairs. Use the Administrative Web Portal[3] to track analytics and centrally manage or configure your deployed Intel Unite® solutions.

RESELLER OPPORTUNITIES

Reseller Conferencing Dilemma

Conferencing solutions in SMB are quickly becoming the new battle ground.
Resellers have numerous solutions from several vendors to offer their customers.

Resellers will gravitate towards solutions that:

- Have the features their customer demand
- Are easy to deploy and manage
- Offer them incremental opportunities for margin
- Keep the lines of communications open with their customer
- Offer the best support from the OEM for the entire solution

Reseller Opportunities with Conferencing

Resell

- NUCs and branded systems
- Network infrastructure
- Third Party Peripherals

Plan

- Communication workshops
- Network assessments
- System integration

Enhance

- Customization
- Vertical LOB integration
- Vertical applications

Advantages of adopting Intel Unite® software for the Reseller

Added margin opportunities

Resell

- Intel® Core™ vPro™ PC with Intel Unite® software
- Third Party Peripherals

Plan

- Conference Consulting Services
- Network Assessment Services

Enhance

- Customization Services
- Service Level Agreements
- Configure room hubs with modular plug-ins for added functionality or integrated control of other enabled solutions (enterprise installation only)

DEPLOY & CONFIGURE

Deploy & Configure the Intel Unite® solution with Confidence

Follow these tips to help your customers jumpstart a more collaborative experience in every meeting, whether for a single shared space or throughout their organizations.

Unmanaged Small Business Installation

For basic screen sharing in small, unmanaged business environments, a small business installation – formerly 'standalone' – is now available. In addition to adequate memory and storage, hubs will need Intel® vPro™ technology and Windows* 10 with Microsoft* .NET Framework 4 or newer. Clients require Windows* 7 or newer or Mac OS* X 10.9 or newer, plus the Intel Unite® app. For a cost-effective approach, configure the mini PC to work as both a collaboration solution and a personal or shared PC work station.

Enterprise Installation

Add a new server or use a compatible existing server to manage connections for enterprise deployment. The server should have Microsoft* IIS and Microsoft SQL Server* 2008 or newer. Chromebook, Linux client, iPad and Android tablet support are also now available for enterprise installations via their respective app stores.

Customize for Manageability

IT can configure rooms in enterprise installations differently with plugins and, add the organization's theme with hub customizations. Use the server's Administrative Web Portal to create and manage rooms, generate solution telemetry data reports, and control optional moderator account permissions.

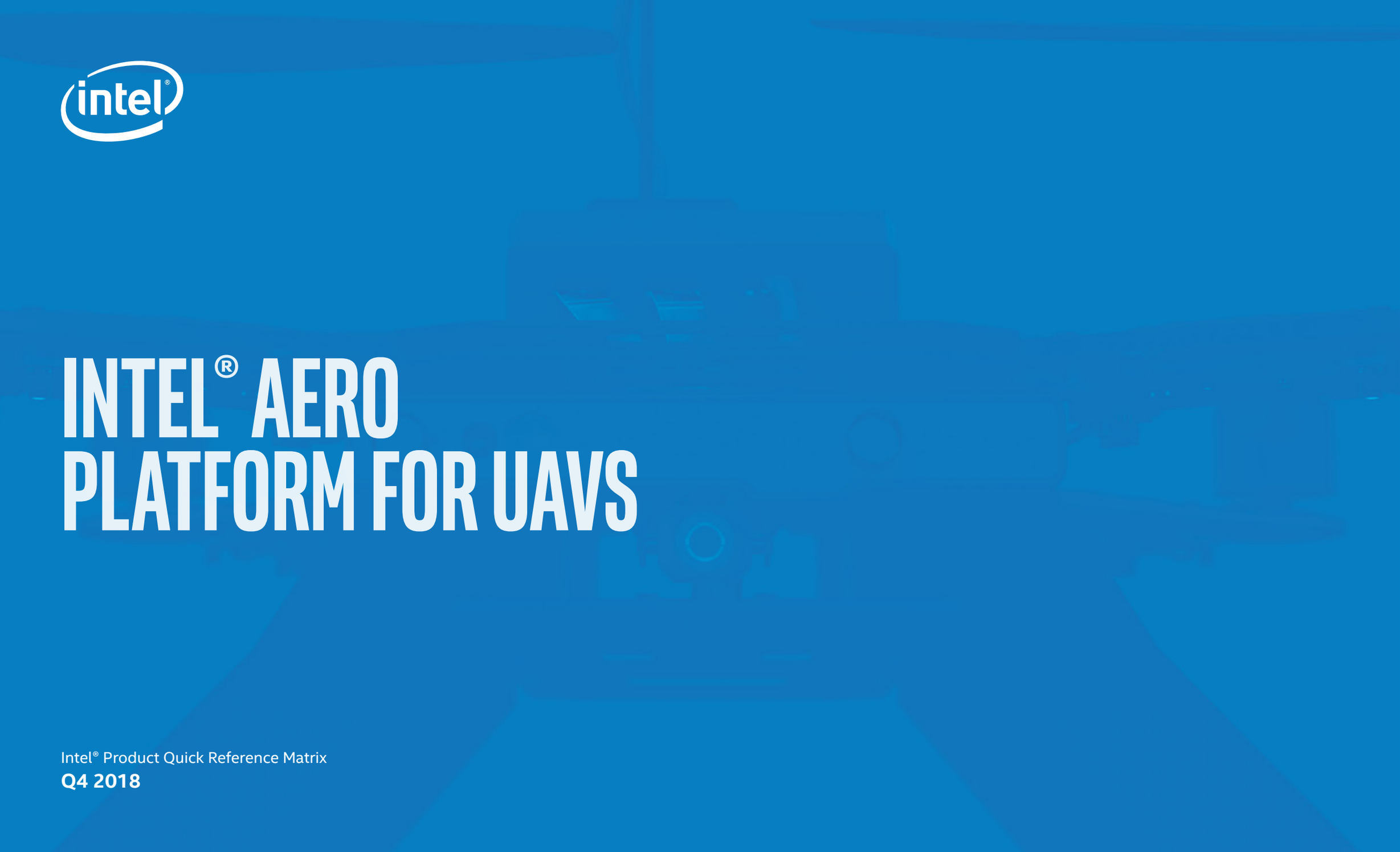
For an exclusive ITP opportunity to download the Intel Unite® software today and to learn more, visit:
https://www-ssl.intel.com/content/www/us/en/secure/technology-provider/products/software/unite-enables-real-time-collaboration.html

1 Intel technologies may require enabled hardware, specific software, or services activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at intel.com.

2 Skype* for Business sold separately.

3 Available with enterprise installation only.

* Other names and brands may be claimed as the property of others.



INTEL® AERO PLATFORM FOR UAVS

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® AERO PLATFORM FOR UAVS

Unmanned aerial vehicle (UAV) applications often require customized hardware, a variety of sensors, and significant compute horsepower. This developer platform is purposely built for UAV applications, with direct support for Intel® RealSense™ technology and the strength of a quad-core Intel® Atom™ processor. Use it to develop autonomous flight navigation capabilities with headroom to do even more.

INTEL® AERO READY TO FLY DRONE

The Intel® Aero Ready to Fly Drone combines tremendous capabilities and design flexibility intended to accelerate development of sophisticated drone applications.

INTEL® AERO COMPUTE BOARD, INTEL® AERO VISION ACCESSORY KIT, AND INTEL® AERO ENCLOSURE KIT

Connect the Intel® Aero Vision Accessory Kit to the Intel® Aero Compute Board, install into the Aero Enclosure Kit and attach to your drone, for accelerated application development and rapid prototyping.

THE INTEL® AERO READY TO FLY DRONE

Get Drone Applications Airborne Quickly

The Intel® Aero Ready to Fly Drone combines tremendous capabilities and design flexibility intended to accelerate development of sophisticated drone applications.

Powerful Compute

This drone development platform is built around the Intel® Aero Compute Board running a quad-core Intel® Atom™ processor, offering performance in a low power envelope.

Ample memory and expandable storage enable development of demanding in-flight applications.

Open Source

Running embedded Linux built with Yocto Project, developers can customize with confidence.

The platform also integrates ROS, MAVROS, MAVlink, and OpenCV libraries, for broader development support.

Flexible and Extendable

This drone is fully assembled, flight tested and ready to fly. Yet it is designed to be modified and is intended to support rapid drone application development from inception to deployment on a production drone.

Enhanced Computer Vision

The integrated Intel® RealSense™ R200 camera with stereo vision 3D imaging and depth sensing offers developers a tool for developing advanced algorithms for collision avoidance, localization, and more.

Dronecode* PX4* Autopilot

PX4 autopilot is an open-source, fully-featured flight stack, providing all the ingredients necessary for flight. It is pre-loaded on the Intel® Aero Flight Controller and communicates with the Intel® Aero Compute Board using the MAVLink* protocol.

Compute and vision components can be purchased separately. For more information, ask an Intel sales representative, or visit intel.com/aero.

Technical Specifications

COMPUTE BOARD

Processor	Intel® Atom™ x7-Z8750 (2.56 GHz burst, quad core, 2M cache, 64 bit)
RAM	4 GB LPDDR3-1600
Storage	32 GB eMMC, MicroSD* memory card slot, M.2 connector 1 lane PCIe for SSD
Display	1 micro HDMI 1.4b
Communication	Intel® Dual Band Wireless-AC 8260, 802.11ac, 2x2 MIMO
I/O Expansion	USB 3.0 OTG, HSUART, I2C, CAN, 6 processor GPIOs, 28 FPGA GPIOs, 5 FPGA Analog Sense, (accessed via the Altera® Max® 10 FPGA)

VISION

Cameras	Intel® RealSense™ Camera (R200), 8 MP RGB camera (front-facing), VGA camera, global shutter, monochrome (down-facing)

FLIGHT CONTROL HARDWARE

Intel® Aero Flight Controller	STM32 microcontroller, 6 DoF IMU, magnetometer and altitude sensors

REMOTE CONTROL

Transmitter	Spektrum* DXe (2.4 GHz DSMX)
Receiver	Spektrum* SPM4648 DSMX with Diversity

SOFTWARE

Operating System	Yocto Project* 2.1 (Krogoth), Linux* 4.4.3-yocto-standard
BIOS	Insyde Software InsydeH2O* UEFI BIOS
Flight Controller	Dronecode* PX4* autopilot
Communication Protocol	Dronecode* MAVLink*

DRONE

Drone Dimensions	360 mm - hub-to-hub (diagonal)
Drone Height	222 mm - from base to top of GPS antenna
Propeller	230 mm – length
Weight of Drone	865 g – basic configuration without battery
Gross Weight	1900g [3] (maximum) – takeoff weight
Flight Time	20 min [3] (maximum) with 4S, 4000mAh battery [2], hovering, no added payload
Sustained Wind	15 knots [3] (maximum)
Control Distance	300 m [3] (maximum) with supplied remote control
Airspeed	15 m/s [3] (maximum)
Altitude of Operation	5000 m [3] (maximum) – height above sea level
Outside Air Temp.	-0 C / +40 C (minimum / maximum)
ESC and Motor	Designed and manufactured by Yuneec for Intel® Aero Ready to Fly Drone
• **Input control interface**	UART
• **ESC Input Voltage**	11.1 – 14.8 V

[1] The Intel Aero Ready to Fly Drone is a kit for developers and is intended to be modified by developers according to their professional judgment. Intel has not established operating limitations for the kit nor tested any configurations other than the base configuration. Developers are responsible for testing and ensuring the safety of their own configurations, and establishing the operating limits of those configurations.

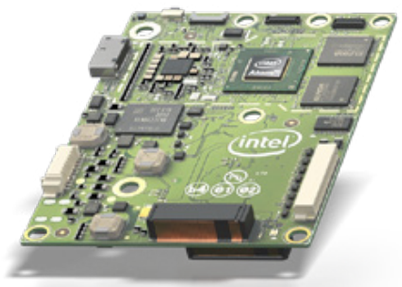
[2] Recommended battery: Li-Po, 4S, 4000+ mAh, with XT60 connector. Max dimensions (mm): 150 x 50 x 32

[3] Estimated

* Other names and brands may be claimed as the property of others.

INTEL® AERO COMPUTE BOARD, INTEL® AERO VISION ACCESSORY KIT, & INTEL® AERO ENCLOSURE KIT

Connect the Intel® Aero Vision Accessory Kit to the Intel® Aero Compute Board, install into the Aero Enclosure Kit and attach to your drone, for accelerated application development and rapid prototyping.



Intel® Aero Compute Board

The Intel® Aero Compute Board is a purpose-built, UAV developer kit powered by a quad-core Intel® Atom™ processor and geared toward UAV developers, educators, and researchers.

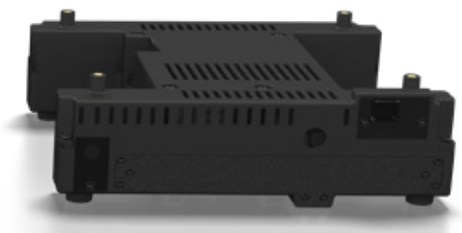
While only the size of a standard playing card, it features abundant storage capabilities, 802.11ac Wi-Fi*, support for multiple cameras including the Intel® RealSense™ R200 camera, (part of the optional Vision Accessory Kit), industry standard interfaces, and reconfigurable I/O to facilitate connecting to a broad variety of drone hardware subsystems.

The Compute Board ships with open-source embedded Linux* and offers sample applications and APIs for flight and vision interfaces, reducing hurdles for developers of sophisticated drone applications.

Intel® Aero Vision Accessory Kit

This three-camera kit includes the Intel® RealSense™ camera R200 with stereo 3D imaging and depth sensing for development of obstacle sense and avoid algorithms, an 8 MP RGB camera for high-resolution photo and video capture, and a monochrome VGA camera with global shutter for development of optical flow algorithms.

These cameras connect directly to the Intel® Aero Compute Board through dedicated low-profile connectors using the supplied cables. All cameras are supported with Linux drivers.



Intel® Aero Enclosure Kit

This mechanical enclosure is designed specifically to hold the Intel® Aero Compute Board and the three camera modules included in the Intel® Aero Vision Accessory Kit.

The enclosure is a two-piece plastic assembly with mounting features to allow relatively easy attachment to most UAV airframes.

When fully assembled, the enclosure holds both the Intel® RealSense R200 camera and the 8MP RGB camera along the front panel. The VGA camera is held in a compartment facing downward. A clear lens cover protects both the 8MP and VGA cameras.

Technical Specifications

INTEL® AERO COMPUTE BOARD

Operating System	Embedded Linux* 4.4.3-yocto-standard, Yocto Project* 2.1 (Krogoth)
BIOS	Insyde Software InsydeH2O* UEFI BIOS optimized for the Intel® Aero Platform for UAVs
Processor	Intel® Atom™ x7-Z8750 processor
Display	1 micro HDMI 1.4b
USB	1 USB 3.0 On-the-Go (OTG) connector
Wi-Fi*	Intel® Dual Band Wireless-AC 8260; 802.11ac, 2x2 MIMO
Memory	4 GB LPDDR3-1600
Storage Embedded	32 GB eMMC
Storage Expansion	microSD* memory card slot M.2 connector 1 lane PCIe for SSD
Camera Interfaces	MIPI* CSI-2 (4 lanes + 1 lane), Dedicated USB 3.0 port for Intel® RealSense™ camera R200
I/O Expansion	28 FPGA GPIOs (3.3V) and 5 FPGA analog inputs (0 to 3 V) accessed via the Altera® MAX® 10 FPGA, 6 processor GPIOs, 1 HSUART, 1 CAN bus
Dimensions	88 mm × 63 mm × 20 mm (includes heatsink)
Weight	30 g board only; less than 60 g board with heatsink

INTEL® AERO VISION ACCESSORY KIT

Depth Sensing and Vision Camera	Intel® RealSense™ camera R200 with extension cable
8 MP RGB Camera	Omnivision* OV8858 with FPC extension cable
VGA Camera	Omnivision* OV7251 with FPC extension cable

INTEL® AERO ENCLOSURE KIT

Outer Dimensions	X: 144.8 mm Y: 125.7 mm Z: 47.7 mm
Mass	158 grams
4 Mounting Holes	Separation: 94 x 105.4 mm Size: M3 x 0.5

For more information, visit **www.intel.com/aero**

[1] The Intel Aero Ready to Fly Drone is a kit for developers and is intended to be modified by developers according to their professional judgment. Intel has not established operating limitations for the kit nor tested any configurations other than the base configuration. Developers are responsible for testing and ensuring the safety of their own configurations, and establishing the operating limits of those configurations.

[2] Recommended battery: Li-Po, 4S, 4000+ mAh, with XT60 connector. Max dimensions (mm): 150 x 50 x 32

[3] Estimated

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INTEL® AERO PRODUCT SELECTION GUIDE

	INTEL PART	MIN/MULT	MM#	AVAILABILITY	WARRANTY	UPC CODE
INTEL® AERO READY TO FLY DRONE	82634CRAPRTFC	1 unit	958536	52 countries: (USA, Canada, Japan, Australia, New Zealand, 46 EU countries, PRC)	30 day limited warranty	735858345835
INTEL® AERO COMPUTE BOARD	82634CRAPDVKC	1 unit	958164	52 countries: (USA, Canada, Japan, Australia, New Zealand, 46 EU countries, PRC)	90 day limited warranty	735858344982
INTEL® AERO VISION ACCESSORY KIT	82634DSARPLTVAK	1 unit	953184	52 countries: (USA, Canada, Japan, Australia, New Zealand, 46 EU countries, PRC)	90 day limited warranty	735858325554
INTEL® AERO ENCLOSURE KIT	82634DSARPLTVIK	1 unit	953065	52 countries: (USA, Canada, Japan, Australia, New Zealand, 46 EU countries, PRC)	90 day limited warranty	735858325714

THUNDERBOLT™ 3

THE USB-C THAT DOES IT ALL

WHAT IS THUNDERBOLT™ 3?

At 40 Gb/s, it's the fastest port available on a computer today.

- 8x faster than USB 3.0 and 4x more video bandwidth than HDMI 1.4
- Transfer a 4K movie in less than 30 seconds
- Back up a year's worth of continuous MP3s in five minutes
- Plus, connect to any display, Thunderbolt, or USB device

Intel® Product Quick Reference Matrix

Q4 2018

THUNDERBOLT™ 3

Thunderbolt™ 3 brings Thunderbolt to USB-C at speeds up to 40 Gigabits per second (Gbps), creating one compact port that does it all – delivering the fastest*, most versatile connection to any dock, display, or data device.

THE SPEED YOU NEED

Thunderbolt™ 3 technology is 8x faster than USB 3.0 and provides 4x more video bandwidth than HDMI 1.4, helping users work and play more efficiently. Incredible data transfer rates for high-powered external graphics cards - deliver exciting potential for multi-streaming HD and 4K UHD video and also allow you to enjoy the latest games as they were intended. Orchestrate desktop-level performance from a lightweight laptop, experience higher frame rates and improve visual quality with an unprecedented speed of 40Gbps.

ALL-IN-ONE SIMPLICITY

Expand your capabilities while reducing cables with the simplicity of a single Thunderbolt™ 3 port paired with the latest 8th Generation Intel® Core™ processor. Now, just one compact port can enable lightning-fast data transfer, support two 4K UHD 60 Hz displays, and even charge a laptop. It's the most advanced, efficient, and versatile single-docking solution available.

* As compared to other PC I/O connection technologies including eSATA, USB, and IEEE 1394 Firewire. Performance will vary depending on the specific hardware and software used. Must use a Thunderbolt-enabled device.

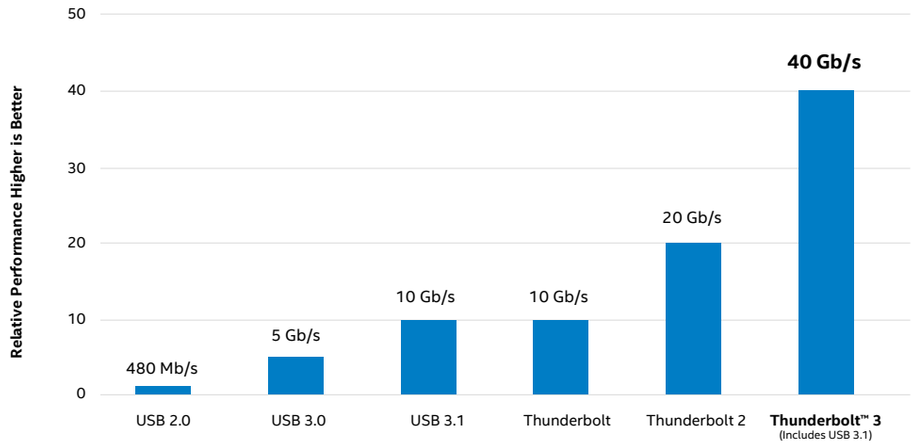
THUNDERBOLT™ 3

Thunderbolt™ 3 Brings Thunderbolt to USB-C

THE USB-C THAT DOES IT ALL

Thunderbolt™ 3 technology offers a fast and simple level of connection and consistency for work or home, bringing the speed and versatility of Thunderbolt™ to USB-C. Increase productivity by linking multiple devices through a single, compact port or add a little more power to your gaming with lightning-fast transfers.

- 40Gb/s Thunderbolt™ 3
- Bi-directional, PCI Express and DisplayPort
- Four lanes of PCI Express Gen 3
- Eight lanes of DisplayPort 1.2
- Native USB 3.1 (10Gb/s)
- Native DisplayPort 1.2



More Protocols

Simplify with one port to connect Thunderbolt devices, every display, and billions of USB devices.

More Speed

Speed your creation of multi-stream HD or 4K video and archive it with superfast storage.

More Power

Data, video, and power on the same cable. Up to 100W notebook charging, 15W to bus-powered devices.

More Pixels

Access the fastest storage, two 4K displays and simultaneously charge with a single cable.

For more information, visit **thunderbolttechnology.net** or **www.intel.com/thunderbolt**

PC HOST SECTION

THUNDERBOLT™

Thunderbolt™ 3 is available within a variety of form factors, including mini-PCs, 2 in 1s, notebooks, gaming systems, and workstations.






BRAND	**Acer**	**Acer**	**Acer**	**Acer**	**Acer**	**Acer**
PRODUCT	Aspire R 13	Aspire Switch 12 S	Aspire V 15 Nitro	Aspire V 17 Nitro	Predator 15	Predator 17
WEBSITE	https://goo.gl/NmThh3	https://goo.gl/DgA84p	https://goo.gl/bukQp5	https://goo.gl/bukQp5	https://goo.gl/xU6j5t	https://goo.gl/G4RQBr






BRAND	**Acer**	**Apple**	**Apple**	**Apple**	**Apple**	**ASUS**
PRODUCT	Predator 17 X	13-Inch MacBook Pro	13-Inch MacBook Pro with Touch Bar	15-Inch MacBook Pro with Touch Bar	iMac Pro	ROG G501VW
WEBSITE	https://goo.gl/G4RQBr	https://goo.gl/mgJqh0	https://goo.gl/mgJqh0	https://goo.gl/zPbvfo	https://goo.gl/iJ6dMU	https://goo.gl/ekmdNp






BRAND	**ASUS**	**ASUS**	**ASUS**	**ASUS**	**ASUS**	**ASUS**
PRODUCT	ROG G701 VO	ROG G752VL	ROG G752VT	ROG G752VY	ROG GL702VT	ROG GX700VO
WEBSITE	https://goo.gl/nTs6uS	https://goo.gl/DkfmNY	https://goo.gl/DkfmNY	https://goo.gl/DkfmNY	https://goo.gl/qgYDNs	https://goo.gl/PQhzky






BRAND	**ASUS**	**ASUS**	**ASUS**	**Clevo**	**Clevo**	**Clevo**
PRODUCT	Transformer 3 Pro T303UA	ZenBook Pro UX501VW	ZenBook 3 Deluxe UX490UA	P750DM	P770DM	P870DM
WEBSITE	https://goo.gl/0q4XCh	https://goo.gl/EsjLGR	https://goo.gl/nVUytk	https://goo.gl/aaK2z2	https://goo.gl/aaK2z2	https://goo.gl/aaK2z2






BRAND	**Clevo**	**Clevo**	**Clevo**	**Dell**	**Dell**	**Dell**
PRODUCT	N130WU	N140WU	P870TM1	Alienware 13	Alienware 15	Alienware 13 (2015)
WEBSITE	https://goo.gl/p1QNQY	https://goo.gl/p1QNQY	https://goo.gl/LLsr6M	https://goo.gl/NKFC1v	https://goo.gl/bmVkKb	https://goo.gl/qEn61s






BRAND	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**
PRODUCT	Alienware 15 (2015)	Alienware 17 (2015)	Latitude E5570	Latitude 5480	Latitude 5580	Latitude 7280
WEBSITE	https://goo.gl/f2hngj	https://goo.gl/jS8u69	https://goo.gl/J7edp7	https://goo.gl/sXUXMR	https://goo.gl/ii6F54	https://goo.gl/n12HgB






BRAND	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**
PRODUCT	Latitude 7480	Precision 7520	Precision 7720	Latitude 12 2-in-1 7275	Latitude 13 7370	Latitude 12 5290 2-in-1
WEBSITE	https://goo.gl/NEivWT	https://goo.gl/9wqfQd	https://goo.gl/UahZhW	https://goo.gl/dhsGei	https://goo.gl/ZWpTXY	https://goo.gl/2zb6Wr

						
BRAND	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**
PRODUCT	Latitude 12 7285 2-in-1	Latitude 7290	Latitude 7380	Latitude 7390 2-in-1	Latitude 7390	Dell - Latitude 7490
WEBSITE	https://goo.gl/oWf8NK	https://goo.gl/sgKKXe	https://goo.gl/6bUPkC	https://goo.gl/Qrg5Qg	https://goo.gl/GRbXsM	https://goo.gl/ukmCR2
						
BRAND	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**
PRODUCT	Precision 15 3000 Series (3510)	Precision 3520	Precision 15 5000 Series (5510)	Precision 5520	Precision 15 7000 Series (7510)	Precision 17 7000 Series (7710)
WEBSITE	https://goo.gl/1X3gNR	https://goo.gl/G8Lq1H	https://goo.gl/1X3gNR	https://goo.gl/UWAAyH	https://goo.gl/1X3gNR	https://goo.gl/1X3gNR
						
BRAND	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**	**Dell**
PRODUCT	XPS 12 2-in-1	XPS 13	XPS 13 2-in-1	XPS 15	XPS 13 9370	XPS 15 9575 2-in-1
WEBSITE	https://goo.gl/f4dbhR	https://goo.gl/DNoN3G	https://goo.gl/A2n42K	https://goo.gl/MBXixA	https://goo.gl/pj6oKD	https://goo.gl/USRZtV
						
BRAND	**EVGA**	**EVGA**	**FUJITSU**	**GIGABYTE**	**GIGABYTE**	**GIGABYTE**
PRODUCT	SC15 Geforce GTX 1060 Gaming Laptop	SC17 Geforce GTX 1080 Gaming Laptop	Workstation CELSIUS H760	AORUS X5v7	AORUS X7v7	AORUS X7 DT v7
WEBSITE	https://goo.gl/orZ6Sc	https://goo.gl/N9yBZU	https://goo.gl/aVZBIH	https://goo.gl/PkwfXd	https://goo.gl/t9kA6b	https://goo.gl/w2xJ9A






BRAND	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE
PRODUCT	AORUS X9	P56XT	AERO14K	AERO15	GB-GZ1DTi7	GB-BKi5HT2-7200
WEBSITE	https://goo.gl/yPE33Y	https://goo.gl/MEjvJV	https://goo.gl/EBE74h	https://goo.gl/rE96SH	https://goo.gl/Lx25jv	https://goo.gl/RRpX1J






BRAND	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE
PRODUCT	GB-BKi5T2-7200	GB-BKi7HT2-7500	GB-BKi7T2-7500	GB- BSi5T-6200	GB- BSi5HT-6200	GB- BSi7T-6500
WEBSITE	https://goo.gl/gkHJTe	https://goo.gl/sFyJ7o	https://goo.gl/dJqP1X	https://goo.gl/nJxmKD	https://goo.gl/TIFZki	https://goo.gl/Rk7CIq



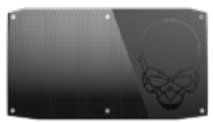


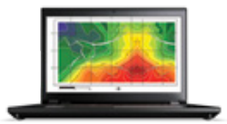

BRAND	GIGABYTE	HUAWEI	HP	HP	HP	HP
PRODUCT	GB- BSi7HT-6500	MateBook X Pro	EliteBook Folio	Elite x2 1012 G2	EliteBook x360 1020 G2	EliteBook x360 G2
WEBSITE	https://goo.gl/jtr2kU	https://goo.gl/M3Sr2s	https://goo.gl/VLWQkf	https://goo.gl/RQFaVQ	https://goo.gl/7AfYks	https://goo.gl/jjfUYE






BRAND	HP	HP	HP	HP	HP	HP
PRODUCT	Elite X2 1012 G1	Spectre x360	Spectre x360 Convertible PC 13	Spectre x360 Convertible PC 15	Spectre 13	Spectre 13T
WEBSITE	https://goo.gl/HRmqty	https://goo.gl/F6bb5z	https://goo.gl/mtKJQK	https://goo.gl/QfdQqi	https://goo.gl/zhe1gT	https://goo.gl/Tiw3zt

						
BRAND	**HP**	**HP**	**HP**	**HP**	**HP**	**HP**
PRODUCT	Envy 27 All-in-One PC	Envy Curved 34 All-in-One PC	ZBook 15 G4 Mobile Workstation	ZBook 17 G4 Mobile Workstation	Z1 G3 Workstation	Z2 Mini G4 Workstation
WEBSITE	https://goo.gl/CU6nSr	https://goo.gl/DuaoUw	https://goo.gl/RPpfKD	https://goo.gl/ePKi9K	https://goo.gl/xUhBUf	https://goo.gl/gTVEsy
						
BRAND	**HP**	**HP**	**HP**	**HP**	**HP**	**HP**
PRODUCT	Z4 G4 Workstation	Z6 G4 Workstation	Z8 G4 Workstation	ZBook 15G3	ZBook Studio G4 Mobile Workstation	OMEN 15 Laptop
WEBSITE	https://goo.gl/zYxe1Y	https://goo.gl/oFnPQn	https://goo.gl/ai61ic	https://goo.gl/8Fnh1E	https://goo.gl/Tx3WNA	https://goo.gl/zXWFGk
						
BRAND	**HP**	**Intel**	**Intel**	**Intel**	Intel	Intel
PRODUCT	OMEN X Laptop 17	NUC NUC6i7KYK	NUC Kit NUC7i5BNH	NUC Kit NUC7i7BNH	NUC Kit NUC7i5BNK	NUC Kit NUC8i7HVK
WEBSITE	https://goo.gl/TzPkxb	https://goo.gl/Yb6CmG	https://goo.gl/Fv8JxS	https://goo.gl/FhtCbx	https://goo.gl/9mtA39	https://goo.gl/2efbkd
						
BRAND	Intel	Intel	**Lenovo**	**Lenovo**	**Lenovo**	**Lenovo**
PRODUCT	NUC Kit NUC8i7BEH	NUC: NUC8i3BEH	Legion Y720 Laptop	Miix 720	ThinkPad P50	ThinkPad P51
WEBSITE	https://goo.gl/PkPjvL	https://goo.gl/Gufvwi	https://goo.gl/lGyY9A	https://goo.gl/RzGmpb	https://goo.gl/EoVqAX	https://goo.gl/oB2wEn



BRAND	Lenovo	Lenovo	Lenovo	Lenovo	Lenovo	Lenovo
PRODUCT	ThinkPad P51s	ThinkPad P70	ThinkPad P71	ThinkPad T470	ThinkPad T470s	ThinkPad T570
WEBSITE	https://goo.gl/HkAdUa	https://goo.gl/e2xmDB	https://goo.gl/vr9pMD	https://goo.gl/PjJLqp	https://goo.gl/216ZJv	https://goo.gl/ui1xiL






BRAND	Lenovo	Lenovo	Lenovo	MSI	MSI	MSI
PRODUCT	ThinkPad X1 Carbon	ThinkPad X1 Yoga	ThinkPad Yoga 370	GS40 Gaming Notebook	GS60 Gaming Notebook	GS63 Gaming Notebook
WEBSITE	https://goo.gl/KRG62C	https://goo.gl/9GK3iC	https://goo.gl/YGjT3s	https://goo.gl/uqsT8T	https://goo.gl/Ja2a79	https://goo.gl/Gvo3S7






BRAND	MSI	MSI	MSI	MSI	MSI	Panasonic
PRODUCT	GT72 Gaming Notebook	GT80 Gaming Notebook	Vortex G65 Gaming PC	WS60 Workstation Notebook	WT72 Workstation Notebook	Let's note CF-LV7
WEBSITE	https://goo.gl/aG29DC	https://goo.gl/zFNOSa	https://goo.gl/TsWxeD	https://goo.gl/43iMyd	https://goo.gl/pJG37K	https://goo.gl/8bDq5d






BRAND	Panasonic	Razer	Razer	Razer	Razer	Samsung
PRODUCT	Let's note CF-SV7	The New Razer Blade	Razer Blade Pro	Blade Stealth	Blade Stealth 13"	NoteBook9 Always 2018
WEBSITE	https://goo.gl/UZXH7h	https://goo.gl/wvS0Ho	https://goo.gl/lr5puI	https://goo.gl/pLFsOG	https://goo.gl/S53PsR	https://goo.gl/4cppPf






BRAND	Smartron	Toshiba	Toshiba	Toshiba	Toshiba	Toshiba
PRODUCT	t.book Flex	Portege X20W Convertible Notebook Series	Portege X20W-E Convertible Notebook Series	Portege X30 Laptop Series	Portege X30-E Laptop Series	Tecra X40 Laptop Series
WEBSITE	https://goo.gl/Nz4LW8	https://goo.gl/nq49tG	https://goo.gl/jxR4zv	https://goo.gl/raLP3C	https://goo.gl/raLP3C	https://goo.gl/9mhB7q






BRAND	Toshiba	VAIO	ZOTAC	ZOTAC	ZOTAC	ZOTAC
PRODUCT	Tecra X40-E Laptop Series	S11	ZBOX-MI549NANO	ZBOX-CI549NANO	ZBOX-MI552	ZBOX-MI572
WEBSITE	https://goo.gl/KQKbfy	https://goo.gl/XtRD1E	https://goo.gl/2SLRzN	https://goo.gl/8FWm9h	https://goo.gl/XEc6TM	https://goo.gl/LYsjDw

BRAND	ZOTAC
PRODUCT	ZBOX-MI553
WEBSITE	https://goo.gl/NLsU4k

MOTHERBOARDS AND AIC

THUNDERBOLT™

An easy way to add Thunderbolt™ 3 to desktop computers is by using one of the motherboards below with Thunderbolt™ 3 ports.






BRAND	ASRock	ASUS	ASUS	ASUS	GIGABYTE	GIGABYTE
PRODUCT	X299 Designer+	MAXIMUS-VIII-EXTREME	X99-DELUXE II	Z170- PREMIUM	GA-H170-Designare	GA-X99-Designare EX
WEBSITE	https://goo.gl/Ffwt94	https://goo.gl/XqiyWw	https://goo.gl/jCs5Iw	https://goo.gl/Wrk3WC	https://goo.gl/45dxB4	https://goo.gl/4LvQA7






BRAND	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE
PRODUCT	GA-X99P-SLI	GA-X170-Extreme-ECC	GA-Z170X-Gaming G1	GA-Z170X-Gaming 7	GA-Z170X Gaming 7-EU	GA-Z170X-Gaming GT
WEBSITE	https://goo.gl/NWKcQ5	https://goo.gl/MJLe4o	https://goo.gl/5zq2yP	https://goo.gl/ckFFOS	https://goo.gl/5yiFy9	https://goo.gl/DZhvsk






BRAND	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE	GIGABYTE
PRODUCT	GA-Z170X-UD5 TH	GA-Z170X-Ultra Gaming	GA-Z270X-Gaming 7	GA-Z270X-Gaming 8	GA-Z270X-Gaming 9	GA-Z270X-UD5
WEBSITE	https://goo.gl/syEEFw	https://goo.gl/LG6G6i	https://goo.gl/A6LdHc	https://goo.gl/tFD9Cj	https://goo.gl/Rd3HdR	https://goo.gl/mjZgDi

				
BRAND	**GIGABYTE**	**GIGABYTE**	**GIGABYTE**	**GIGABYTE**
PRODUCT	X170X-WS ECC	GA-Z170X-Designare	Z170X-UD3 Ultra	X299 UD4 EX + GC-ALPINE RIDGE AIC
WEBSITE	https://goo.gl/0Cvy90	https://goo.gl/nOg0BJ	https://goo.gl/1K5y6l	https://goo.gl/1c9jkX

Visit **ThunderboltTechnology.net** for latest news and product updates.

ADD-IN CARDS

						
BRAND	**ASRock**	**ASUS**	**GIGABYTE**	**MSI**	**QSAN**	**Sonnet**
PRODUCT	Thunderbolt™ 3 AIC	ThunderboltEX 3	GC-ALPINE RIDGE	THUNDERBOLT M3	XN-TB302	Thunderbolt 3 Upgrade Cards
WEBSITE	https://goo.gl/ofwKR8	https://goo.gl/4ZcdND	https://goo.gl/xcRGhf	https://goo.gl/4SKAd4	https://goo.gl/gMyVPn	https://goo.gl/hXMxmW

CABLES AND ADAPTERS

A selection of Thunderbolt™ 3 cables and adapters provide connectivity for different protocols. The Thunderbolt™ 3 to Thunderbolt™ adapter allows new computers with Thunderbolt™ 3 ports to connect to hundreds of Thunderbolt™ and Thunderbolt™ 2 devices.






BRAND	Ableconn	Ableconn	Accusys	AKiTiO	AKiTiO	AKiTiO
PRODUCT	TBT3-DPX2 Thunderbolt 3 to Dual DisplayPort Adapter	TBT3-HDX2 Thunderbolt 3 to Dual HDMI Adapter	Thunderbolt 3 Cable 2M 40Gbps	T3T Thunderbolt™ 3 to Thunderbolt™ Adapter	40Gbps Thunderbolt™ 3 cable (0.5m)	Node Lite
WEBSITE	https://goo.gl/vQki4L	https://goo.gl/YhFVBG	https://goo.gl/CbmMGU	https://goo.gl/ykg3eV	https://goo.gl/XUuRgX	https://goo.gl/kRdOS8






BRAND	AKiTiO	AKiTiO	AKiTiO	Alogic	Alogic	Apple
PRODUCT	Node Pro	Thunder3 10G Network Adapter	Thunder3 PCIe Box	Thunderbolt 3 (USB-C) to Dual Display-Port Adapter - 4K 60 Hz	Thunderbolt 3 (USB-C) to Dual HDMI Adapter - 4K 60 Hz	Thunderbolt 3 (USB-C) Cable (0.8m)
WEBSITE	https://goo.gl/bTreyX	https://goo.gl/FCpTS5	https://goo.gl/c4rCwi	https://goo.gl/gSpfZB	https://goo.gl/XkmBdD	https://goo.gl/HFKvhz





BRAND	Apple	Areca	Areca	ATTO	ATTO	ATTO
PRODUCT	Thunderbolt™ 3 (USB-C) to Thunderbolt™ 2 Adapter	ARC-4108T3	ARC-4607T3	ThunderLink® FC 3162 (SFP+)	ThunderLink® FC 3322 (SFP+)	Thunderlink® NQ 3401 (QSFP+)
WEBSITE	https://goo.gl/7QToJX	https://goo.gl/1Ld2wY	https://goo.gl/BMC5mn	https://goo.gl/3MQkbC	https://goo.gl/LLZEKo	https://goo.gl/Jpy1ip

						
BRAND	**ATTO**	**ATTO**	**ATTO**	**Atech Flash Technology**	**Belkin**	**Cable Matters**
PRODUCT	Thunderlink® NQ 3402 (QSFP+)	Thunderlink® NS 3101 (SFP+)	Thunderlink® NS 3102 (SFP+)	Blackjet 40Gbps Thunderbolt™ 3 Cable (0.5m)	Thunderbolt 3 Cable (40Gbps) (0.5m)	20 Gbps Thunderbolt™ 3 Cable in Black 3.3 Feet / 1m
WEBSITE	https://goo.gl/fDCho9	https://goo.gl/3zJep4	https://goo.gl/DzHwhX	https://goo.gl/kqyCTo	https://goo.gl/1gVeHJ	https://goo.gl/kWjiwo
						
BRAND	**Cable Matters**	**Cable Matters**	**Cable Matters**	**Cable Matters**	**Cable Matters**	**Cable Matters**
PRODUCT	20 Gbps Thunderbolt™ 3 Cable in Black 6.6 Feet / 2m	40 Gbps Thunderbolt™ 3 Cable in Black 1.6 Feet / 0.5m	40 Gbps Thunderbolt™ 3 Cable in Black 3.3 Feet / 1m	40 Gbps Thunderbolt™ 3 Cable in Black 6.6 Feet / 2m	Thunderbolt 3 to Thunderbolt Adapter for Windows & Mac	Dual 4K@60Hz DP Thunderbolt 3 Multi-port Adapter with USB 3.0 & GbE
WEBSITE	https://goo.gl/kWjiwo	https://goo.gl/KfzkWd	https://goo.gl/7nyrx5	https://goo.gl/xCqkoD	https://goo.gl/uHvrdb	https://goo.gl/BnfYoX
						
BRAND	**Cable Matters**	**Cable Matters**	**Cable Matters**	**CE-LINK**	**Delock**	**Delock**
PRODUCT	Dual 4K@60Hz HDMI Thunderbolt 3 Multiport Adapter with USB 3.0 & GbE	Thunderbolt 3 to Dual 4K HDMI Adapter for Mac & Windows	Thunderbolt 3 to Dual 4K or Single 5K DisplayPort Adapter for Mac & Windows	Thunderbolt™ 3 to Dual DisplayPort Adapter	Adapter 62708 Thunderbolt 3 Dual DisplayPort	62709 Adapter Thunderbolt™ 3
WEBSITE	https://goo.gl/2QoN6v	https://goo.gl/fMHuZz	https://goo.gl/us1c3f	https://goo.gl/YZJxGq	https://goo.gl/tqNjEV	https://goo.gl/gpfQSk
						
BRAND	**Fullink**	**IOGear**	**CalDigit**	**CalDigit**	**CalDigit**	**Delock**
PRODUCT	Thunderbolt 3 to Dual DisplayPort Adapter	Thunderbolt 3 to eSATA and USB Adapter	Thunderbolt™ 3 Cable, 40Gbps / 100W Charging / 5A/20V, 6.6 Feet / 2m	Thunderbolt™ 3 Cable, 40Gbps / 100W Charging / 5A/20V, 3.3 Feet / 1m	Thunderbolt™ 3 Cable, 40Gbps / 100W Charging / 5A/20V, 0.5m	Thunderbolt™ 3 (20 Gb/s) cable 1.0M 1.5M 2.0M
WEBSITE	https://goo.gl/CJTWE9	https://goo.gl/3E9mN1	https://goo.gl/4DseR8	https://goo.gl/4DseR8	https://goo.gl/4DseR8	https://goo.gl/9mgBXH

						
BRAND	**Delock**	**HighPoint**	**HighPoint**	**HighPoint**	**HighPoint**	**IOGear**
PRODUCT	Thunderbolt™ 3 (40 Gb/s) cable 0.5M	TB3-040G-505	TB3-040G-510	TB3-040G-520	RocketStor 6661A Thunderbolt 3 to PCIe Expansion Chassis	Thunderbolt 3 USB-C 0.5m 40Gbps Cable
WEBSITE	https://goo.gl/xAwxd4	https://goo.gl/G53XVm	https://goo.gl/G53XVm	https://goo.gl/G53XVm	https://goo.gl/cBrZrM	https://goo.gl/n5PXXh
						
BRAND	**IOGear**	**IOGear**	**IOGear**	**Linkup**	**Linkup**	**LINTES**
PRODUCT	Thunderbolt 3 USB-C 1m 20Gbps Cable	Thunderbolt 3 USB-C 2m 20Gbps Cable	Thunderbolt 3 to Dual 4K DisplayPort Adapter	Thunderbolt 3 Dual 4K 60Hz HDMI Adapter	Thunderbolt 3 Dual 4K / 5K 60Hz DisplayPort Adapter	Thunderbolt 3 eSATA+USB3.1 Dongle
WEBSITE	https://goo.gl/5MFXai	https://goo.gl/egKsnZ	https://goo.gl/d1T7qq	https://goo.gl/dN2pp3	https://goo.gl/orCFFA	https://goo.gl/mEcjbZ
						
BRAND	**LINTES**	**Micro Solution**	**Micro Solution**	**Monoprice**	**Monoprice**	**National Instruments**
PRODUCT	Thunderbolt 3 Travel Dock	Thunderbolt 3 DP Dual Display Adapter TB3DDA02-MSJ	Thunderbolt 3 HDMI 2.0 Dual Display Adapter TB3DHA02-MSJ	Thunderbolt 3 Dual DisplayPort Output Adapter, 4K @ 60Hz	Thunderbolt 3 Dual HDMI 2.0 Output Adapter, 4K@60Hz	PXIe-8301
WEBSITE	https://goo.gl/PXzFcw	https://goo.gl/bB3pxw	https://goo.gl/usRxFE	https://goo.gl/2E6ky9	https://goo.gl/x5JaHb	https://goo.gl/8kKtrZ
						
BRAND	**Nekteck**	**Nekteck**	**Netstor**	**One Stop Systems**	**OWC**	**OWC**
PRODUCT	Thunderbolt 3 to Dual 4K DP DisplayPort Adapter	Thunderbolt 3 to Dual 4K HDMI Adapter	NA211TB3	ExpressBox 3T-V3	Mercury Helios 3	Thunderbolt 3 Dual DisplayPort Adapter
WEBSITE	https://goo.gl/U1b2hM	https://goo.gl/FufMXC	https://goo.gl/3fXAcA	https://goo.gl/nvugGn	https://goo.gl/pXFvno	https://goo.gl/55gLVV

						
BRAND	**OWC**	**Promise**	**Promise**	**Promise**	**Raidon**	**Raidsonic**
PRODUCT	Thunderbolt 3 Dual HDMI Adapter	SANLink3 F2	SANLink3 T1	SANLink3 N1	STARDOM SA2TB3	IB-SPL1025-TB3
WEBSITE	https://goo.gl/mKQnBx	https://goo.gl/66HXiA	https://goo.gl/CvfXkj	https://goo.gl/Qo7fj3	https://goo.gl/Fu7GK1	https://goo.gl/4msSWF
						
BRAND	**Raidsonic**	**SAPPHIRE**	**SAPPHIRE**	**CHOETECH**	**CHOETECH**	**SIIG**
PRODUCT	IB-SPL1026-TB3	Thunderbolt™ 3 to Dual DisplayPort Dongle	Thunderbolt™ 3 to Dual HDMI Dongle	Thunderbolt 3 to Dual DisplayPort Adapter	Thunderbolt 3 to Dual HDMI 2.0 Output Adapter	Thunderbolt 3 (USB-C) to Dual DisplayPort Adapter - DP, 1.2 4K@60Hz
WEBSITE	https://goo.gl/eM7vRT	https://goo.gl/SL8H29	https://goo.gl/nKKRrV	https://goo.gl/gVqgmS	https://goo.gl/CHi82P	https://goo.gl/8BrEe8
						
BRAND	**SIIG**	**Sonnet**	**Sonnet**	**Sonnet**	**Sonnet**	**KaiJet**
PRODUCT	USB-C Thunderbolt V3 (USB Type C, male) to Dual HDMI Adapter - HDMI 2.0	Echo™ Express III-D – Thunderbolt™ 3 Edition	Echo™ Express III-R – Thunderbolt 3 Edition	Echo Express SE I - Thunderbolt 3 Edition	Echo Express SEL – Thunderbolt™ 3 Edition	j5create 40Gbps Thunderbolt™ 3 Cable (1m)
WEBSITE	https://goo.gl/9V1ZtJ	https://goo.gl/XKjAcM	https://goo.gl/kB6S8T	https://goo.gl/UbpEB6	https://goo.gl/gjuaTh	https://goo.gl/zFTcUf
						
BRAND	**KaiJet**	**KaiJet**	**Lintes**	**Lintes**	**Lintes**	**Lintes**
PRODUCT	j5create 20Gbps Thunderbolt™ 3 Cable (1m)	j5create 40Gbps Thunderbolt™ 3 Cable (0.5m)	Thunderbolt 3 0.7M 40Gbps Passive Cable	Thunderbolt™ 3 2M 40Gbps Active Cable	Thunderbolt™ 3 Baby Adapter	Thunderbolt™ 3 Legacy Adapter
WEBSITE	https://goo.gl/huaCc6	https://goo.gl/xvhabG	https://goo.gl/vUgF63	https://goo.gl/9HX6n2	https://goo.gl/1wFi4w	https://goo.gl/Yk86ad

						
BRAND	**Lintes**	**Monoprice**	**Nekteck**	**Nekteck**	**Nekteck**	**Nekteck**
PRODUCT	Thunderbolt™ 3 40Gbps Cable - 0.5-meter	Thunderbolt 3 (40 Gbps) USB-C Cable, 100W	20 Gbps Thunderbolt™ 3 Cable in Black (1m)	20 Gbps Thunderbolt™ 3 Cable in Black (2m)	40 Gbps Thunderbolt™ 3 Cable in Black (0.5m)	Thunderbolt 3 40Gbps Active Cable – (2m)
WEBSITE	https://goo.gl/7dtu3V	https://goo.gl/CtMoQW	https://goo.gl/MG5UUt	https://goo.gl/MG5UUt	https://goo.gl/MG5UUt	https://goo.gl/TUjW2K
						
BRAND	**OWC**	**OWC**	**Plugable**	**Plugable**	**Plugable**	**CHOETECH**
PRODUCT	Thunderbolt 3 Cable 20Gbps (1.0M, 2.0M)	Thunderbolt 3 Cables 40Gbps (0.5M, 1.0M, 2.0M)	Thunderbolt™ 3 20 Gbps USB-C Cable (3.3ft/1m)	Thunderbolt™ 3 20 Gbps USB-C Cable (6.6ft/2m)	Thunderbolt™ 3 40 Gbps USB-C Cable (1.65ft/.5m)	Thunderbolt 3 Cable (0.5M/1.6FT)–40Gbps/ 100W (Model:A3004)
WEBSITE	https://goo.gl/9eKriS	https://goo.gl/9eKriS	https://goo.gl/hKzLqk	https://goo.gl/KxsFiY	https://goo.gl/97a5dh	https://goo.gl/24iKT7
						
BRAND	**CHOETECH**	**CHOETECH**	**Sonnet**	**Sonnet**	**Sonnet**	**Sonnet**
PRODUCT	Thunderbolt 3 Cable (2M/6.5FT) - 40Gbps/ 100W (Model:A3006)	Thunderbolt 3 Cable (2M/6.5FT)–20Gbps/ 60W (Model:A3005)	0.5m Thunderbolt™ 3 (40 Gbps) Cable	1m Thunderbolt™ 3 (40 Gbps) Cable	Echo™ Express SE III	SF3™ Series - SxS™ Pro Card Reader
WEBSITE	https://goo.gl/uNXyZh	https://goo.gl/FFWPJu	https://goo.gl/T9aWGd	https://goo.gl/bFsLNj	https://goo.gl/TX3o4g	https://goo.gl/G5kKoU
						
BRAND	**Sonnet**	**Sonnet**	**Sonnet**	**Sonnet**	**Sonnet**	**Sonnet**
PRODUCT	SF3™ Series – CFast™ 2.0 Pro Card Reader	Solo10G Thunderbolt 3 Edition	Thunderbolt 3 to Dual DisplayPort Adapter	Thunderbolt 3 to Dual HDMI 2.0 Adapter	Twin10G SFP+ Thunderbolt™ 3 Edition	Twin 10G Thunderbolt™ 3 Edition
WEBSITE	https://goo.gl/POhhqL	https://goo.gl/hhxKN4	https://goo.gl/64tXMU	https://goo.gl/M4yTRJ	https://goo.gl/p5AEwt	https://goo.gl/2RJSbq

						
BRAND	**StarTech.com**	**StarTech**	**StarTech.com**	**StarTech**	**StarTech.com**	**StarTech.com**
PRODUCT	Thunderbolt 3 PCIe Expansion Chassis with DisplayPort - PCIe x16	Thunderbolt 3 to USB 3.1 Controller Adapter - 1x USB-C, 3x USB-A	Thunderbolt™ 3 to Thunderbolt Adapter - Windows Only	Thunderbolt 3 to eSATA Adapter + USB 3.1 (10Gbps) Port - Mac / Windows	Thunderbolt™ 3 (20 Gbps) USB-C Cable- 1m/2m	Thunderbolt™ 3 (40 Gbps) USB-C Cable- 0.5m
WEBSITE	https://goo.gl/LPDsjH	https://goo.gl/XQC4Gu	https://goo.gl/nq7efZ	https://goo.gl/E3gXMu	https://goo.gl/Hlrsb6	https://goo.gl/X2sDzw

		
BRAND	**TEKQ**	**Zikko**
PRODUCT	Thunderbolt 3 Cable (0.5 m)	Thunderbolt™ 3 Cable 0.5M 40Gbps
WEBSITE	https://goo.gl/xSS5L3	https://goo.gl/3bUJb9

AUDIO/VIDEO

Thunderbolt™ 3 enables several categories of compelling devices, such as docks, displays, storage, external graphics, and media. Thunderbolt™ 3 delivers unrivaled single-cable docking to connect to everything you need, while also charging your notebook.






BRAND	**AJA Video Systems**	**AJA Video Systems**	**Avid**	**Avid**	**Avid**	**BlackMagic Design**
PRODUCT	Io IP	IO-4K Plus	Artist DNxID	Artist DNxIP	Artist DNxIV	UltraStudio 4K Extreme
WEBSITE	https://goo.gl/4aKotU	https://goo.gl/YcPDxL	https://goo.gl/JE3RjA	https://goo.gl/wo8AK3	https://goo.gl/JE3RjA	https://goo.gl/4daAB5






BRAND	**BlackMagic Design**	**IOGear**	**Plugable**	**Plugable**	**Plugable**	**Plugable**
PRODUCT	UltraStudio HD Mini	Thunderbolt 3 to Dual 4K HDMI Adapter	Thunderbolt 3 Dual DisplayPort Adapter - TBT3-DP2X	Thunderbolt™ 3 Dual DisplayPort Adapter	Thunderbolt 3 Dual HDMI Adapter - TBT3-HDMI2X	Thunderbolt™ 3 Dual HDMI Adapter
WEBSITE	https://goo.gl/4daAB5	https://goo.gl/oZrP5T	https://goo.gl/JkZN2o	https://goo.gl/dfs4wj	https://goo.gl/dD2W1L	https://goo.gl/CLPjAp






BRAND	**Sabrent**	**Sabrent**	**Sabrent**	**Sonnet**	**StarTech.com**	**StarTech.com**
PRODUCT	DS-TH3C	TH-3DP2	TH-3HD2	Echo™ 11 Thunderbolt 3 Dock	Dual DisplayPort Adapter	Dual HDMI Adapter
WEBSITE	https://goo.gl/Wd6u1Y	https://goo.gl/nLX3Vm	https://goo.gl/urjBTT	https://goo.gl/ttLkaK	https://goo.gl/nQhL2j	https://goo.gl/sqRMFe

				
BRAND	**Vantec**	**Vantec**	**Winstars**	**Winstars**
PRODUCT	Thunderbolt™ 3 to Dual DisplayPort 4K (60Hz) Adapter	Thunderbolt™ 3 To Dual HDMI 2.0 4K (60Hz) Adapter	Thunderbolt™ 3 USB-C to dual 4K DisplayPort Adapter	Thunderbolt 3 USB-C to dual 4K HDMI Adapter
WEBSITE	https://goo.gl/UcCaQe	https://goo.gl/va2wjs	https://goo.gl/7ZFpBB	https://goo.gl/u7jNsk

DISPLAY

Thunderbolt™ 3 enables several categories of compelling devices, such as docks, displays, storage, external graphics, and media. Thunderbolt™ 3 delivers unrivaled single-cable docking to connect to everything you need, while also charging your notebook.





BRAND	ASUS	ASUS	Lenovo	Lenovo	LG
PRODUCT	ProArt PA27AC Professional Monitor	ProArt PA32UC Professional Monitor	ThinkVision P32u-10	ThinkVision X1 (2nd Gen)	UltraFine 5K Display
WEBSITE	https://goo.gl/5U42Dh	https://goo.gl/gLGCyQ	https://goo.gl/nfT3Jf	https://goo.gl/WeLr9G	https://goo.gl/HehoVl

DOCK

Thunderbolt™ 3 enables several categories of compelling devices, such as docks, displays, storage, external graphics, and media. Thunderbolt™ 3 delivers unrivaled single-cable docking to connect to everything you need, while also charging your notebook.






BRAND	AKiTiO	AKiTiO	Alogic	Atech Flash Technology	Aten	Belkin
PRODUCT	Thunder3 Dock Pro	Thunder3 RAID STATION	Thunderbolt 3 Docking Station with Dual 4K Display & Power Delivery	Blackjet UX-1 Cinema Dock	UH7230 Thunderbolt™ 3 Multiport Dock with Power Charging	Thunderbolt™ 3 Express Dock HD
WEBSITE	https://goo.gl/pKGmEe	https://goo.gl/MTfG4a	https://goo.gl/v6gs2A	https://goo.gl/Y8khxF	https://goo.gl/MRGbrU	https://goo.gl/fxAbfp






BRAND	Bizlink	Blackmagic	Cable Matters	Cable Matters	CalDigit	CalDigit
PRODUCT	Thunderbolt 3 Docking Station (Alpine Ridge)	eGPU	Thunderbolt 3 Dock	Thunderbolt 3 Docking Station	Thunderbolt 3 mini Dock - Dual DisplayPort	Thunderbolt 3 mini Dock - Dual HDMI
WEBSITE	https://goo.gl/4hzHDw	https://goo.gl/uLYbnM	https://goo.gl/u6srTX	https://goo.gl/hY4A9o	https://goo.gl/4zv5vL	https://goo.gl/4zv5vL






BRAND	CalDigit	CalDigit	CalDigit	Elgato	HP	IOGear
PRODUCT	Thunderbolt™ Station 3	Thunderbolt™ Station 3 Lite	Thunderbolt™ Station 3 Plus	Thunderbolt™ 3 Dock	ZBook Dock with Thunderbolt™ 3	Thunderbolt 3 Quantum Docking Station
WEBSITE	https://goo.gl/1S1AZj	https://goo.gl/3JdwJh	https://goo.gl/XzFLo8	https://goo.gl/Y3NVLb	https://goo.gl/vbLqaQ	https://goo.gl/fcoSXk

						
BRAND	**IOGear**	**Kensington**	**Kensington**	**LaCie**	**Lenovo**	**Linkup**
PRODUCT	Quantum Thunderbolt 3 Docking Station Pro 85	SD5000T Docking Station	SD5200T Thunderbolt 3 Docking Station	2big Dock	ThinkPad Thunderbolt™ 3 Dock	Thunderbolt 3 Docking Station
WEBSITE	https://goo.gl/9W1ZVV	https://goo.gl/hai83g	https://goo.gl/oK31Vm	https://goo.gl/LYnZFV	https://goo.gl/MFAAEa	https://goo.gl/gqLLyB
						
BRAND	**Mantiz**	**Micro Solution**	**Nektech**	**OWC**	**Plugable**	**Plugable**
PRODUCT	Titan	Thunderbolt 3 PD Docking Station TB3DS1230-MSJ	Thunderbolt 3 PD Docking Station	Thunderbolt™ 3 Dock	TBT3-UDV Thunderbolt 3™ Docking Station with Power Delivery	Thunderbolt™ 3 Docking Station
WEBSITE	https://goo.gl/gDhLvB	https://goo.gl/uXqEos	https://goo.gl/EGJDtq	https://goo.gl/BC1puu	https://goo.gl/FYQpHF	https://goo.gl/Vcqj2M
						
BRAND	**Promise**	**RaidSonic**	**StarTech.com**	**StarTech.com**	**StarTech.com**	**StarTech.com**
PRODUCT	Dock TD-300	IB-DK2501-TB3	Mini Thunderbolt 3 Dock for Laptops	Thunderbolt 3 Dock with SD Card Reader	Thunderbolt 3 Dual-4K Docking Station for Laptops - Mac and Windows	Thunderbolt™ 3 Dual-4K Docking Station for Laptops - 5K Support - Windows Only
WEBSITE	https://goo.gl/PCY4Ce	https://goo.gl/UmGijC	https://goo.gl/o773iY	https://goo.gl/6K5ieJ	https://goo.gl/vmozFE	https://goo.gl/MpyDIB
						
BRAND	**Targus**	**Toshiba**	**TUL**			
PRODUCT	Thunderbolt™ 3 DV4K Docking Station with Power	Thunderbolt™ 3 Dock	TDX-120B			
WEBSITE	https://goo.gl/DqpkrX	https://goo.gl/jBs33U	https://goo.gl/9r5Noi			

EGFX

Thunderbolt™ 3 enables several categories of compelling devices, such as docks, displays, storage, external graphics, and media. Thunderbolt™ 3 delivers unrivaled single-cable docking to connect to everything you need, while also charging your notebook.

						
BRAND	**AKiTiO**	**ASUS**	**ASUS**	**GALAX**	**GIGABYTE**	**GIGABYTE**
PRODUCT	Node	XG-STATION-PRO	ROG XG Station 2	SNPR External Graphics Enclosure	AORUS GTX 1070 Gaming Box	AORUS GTX 1080 Gaming Box
WEBSITE	https://goo.gl/HcEXTk	https://goo.gl/vt2ohc	https://goo.gl/KAESvJ	https://goo.gl/HYcNof	https://goo.gl/Utnra6	https://goo.gl/J4XdPq
						
BRAND	**GIGABYTE**	**HP**	**Mantiz**	**Netstor**	**OWC**	**Razer**
PRODUCT	RX 580 Gaming Box	OMEN by HP Accelerator	Venus eGFX (MZ-02)	HL23T	Mercury Helios FX	Core
WEBSITE	https://goo.gl/2kZwcs	https://goo.gl/nHqjx1	https://goo.gl/QupaFX	https://goo.gl/gqXvhU	https://goo.gl/nkJJtj	https://goo.gl/jGv8Rc
						
BRAND	**Razer**	**Razer**	**SAPPHIRE**	**Sonnet**	**Sonnet**	**Sonnet**
PRODUCT	Core V2	Core X	GearBox Thunderbolt 3 eGFX Solution	eGFX Breakaway Box 550	eGFX Breakaway Box 650	eGFX Breakaway™ Box
WEBSITE	https://goo.gl/LVK7E3	https://goo.gl/siyhb6	https://goo.gl/9NHvEc	https://goo.gl/YqbXR9	https://goo.gl/tAzdrP	https://goo.gl/V5cRbn






BRAND	Sonnet	Sonnet	PowerColor (TUL Corporation)	PowerColor (TUL Corporation)	Visiontek	ZOTAC
PRODUCT	eGFX Breakaway Puck Radeon RX 560	eGFX Breakaway Puck Radeon RX 570	POWERCOLOR GAMING STATION	Devil Box	VT-TB3-eGPU100	AMP BOX
WEBSITE	https://goo.gl/6GAE2t	https://goo.gl/NyB64J	https://goo.gl/CF64kd	https://goo.gl/H6g8ZP	https://goo.gl/rDpAMr	https://goo.gl/H8VBAw

BRAND	ZOTAC
PRODUCT	AMP BOX MINI
WEBSITE	https://goo.gl/QpwrCp

STORAGE

THUNDERBOLT™

Thunderbolt™ 3 enables several categories of compelling devices, such as docks, displays, storage, external graphics, and media. Thunderbolt™ 3 delivers unrivaled single-cable docking to connect to everything you need, while also charging your notebook.






BRAND	Accusys	Accusys	Action Star	AKiTiO	AKiTiO	AKiTiO
PRODUCT	A12T3-Share	Gamma 8	Thunderbolt 3 6-Slot SD Card Reader	Node Lite with Intel Optane 905P SSD	Thunder3 Duo Pro	Thunder3 PCIe SSD
WEBSITE	https://goo.gl/cMy7p4	https://goo.gl/hsCPiA	NEW	https://goo.gl/ffeMyr	https://goo.gl/F8ZLbC	https://goo.gl/GLw87b






BRAND	AKiTiO	AKiTiO	AKiTiO	Areca	Areca	Areca
PRODUCT	Thunder3 Quad	Thunder3 Quad Mini	Thunder3 Quad X	ARC-8050T3-12	ARC-8050T3-12R	ARC-8050T3-24R
WEBSITE	https://goo.gl/gCAXk6	https://goo.gl/9aqjaV	https://goo.gl/neDXUG	https://goo.gl/1UU87h	https://goo.gl/xS8Lbe	https://goo.gl/xS8Lbe






BRAND	Areca	Areca	Areca	Areca	ATTO	BIOS
PRODUCT	ARC-8050T3-4	ARC-8050T3-6	ARC-8050T3-6M	ARC-8050T3-8	ThunderLink SH 3128	EP106TB3
WEBSITE	https://goo.gl/1UU87h	https://goo.gl/1UU87h	https://goo.gl/1UU87h	https://goo.gl/1UU87h	https://goo.gl/XZ5kLJ	https://goo.gl/k57a6H

						
BRAND	**CalDigit**	**Dell**	**Dell**	**Delock**	**Delock**	**Drobo**
PRODUCT	T4 Thunderbolt™ 3 RAID	Portable Thunderbolt 3 SSD (1TB)	Portable Thunderbolt 3 SSD (500GB)	54000 Thunderbolt 3 External Portable SSD (240GB)	54007 Thunderbolt 3 External Portable SSD (480GB)	5D3 Direct Attached Storage
WEBSITE	https://goo.gl/AWxNrf	https://goo.gl/L39zkL	https://goo.gl/3bFa9E	https://goo.gl/XVRS8S	https://goo.gl/V4GSFZ	https://goo.gl/rsGT95
						
BRAND	**G-Technology**	**G-Technology**	**G-Technology**	**G-Technology**	**HighPoint**	**HighPoint**
PRODUCT	G-DRIVE with Thunderbolt™ 3	G-RAID Thunderbolt 3 USB 3.1	G-SPEED Shuttle XL Thunderbolt 3 (with ev Series Bay Adapters)	G-SPEED Shuttle XL with Thunderbolt™ 3	RocketStor 6618A	RocketStor 6618T
WEBSITE	https://goo.gl/1fDAR5	https://goo.gl/oUA8LU	https://goo.gl/f7anF5	https://goo.gl/BbWPTY	https://goo.gl/oFkCeV	https://goo.gl/B9wDsy
						
BRAND	**HighPoint**	**HighPoint**	**HighPoint**	**LaCie**	**LaCie**	**LaCie**
PRODUCT	RocketStor 6628A	RocketStor 6628T	RocketStor 6674T	12big Thunderbolt™ 3	6big	Bolt 3
WEBSITE	https://goo.gl/zwcGRZ	https://goo.gl/puZJJn	https://goo.gl/cQqgvh	https://goo.gl/jnbPqs	https://goo.gl/jnbPqs	https://goo.gl/BAuBE2
						
BRAND	**LaCie**	**Magstor**	**Nekteck**	**Netstor**	**Netstor**	**Netstor**
PRODUCT	d2 Thunderbolt™ 3	TRB3-HL8 Desktop LTO8 Tape Drive with Thunderbolt 3	480GB Thunderbolt 3 SSD NVME SSD Hard Drive	NA333TB3	NA338TB3	NA341TB3
WEBSITE	https://goo.gl/YmDcrn	https://goo.gl/qja8NX	https://goo.gl/nwtCiR	https://goo.gl/0pYHZl	https://goo.gl/SDux9u	https://goo.gl/c1DGAA

						
BRAND	**Netstor**	**Netstor**	**Netstor**	**Netstor**	**Noon Technology**	**Noon Technology**
PRODUCT	NA381TB3	NA611TB3	NA762TB3	NS370TB3	TerraMaster D5 Thunderbolt 3	TerraMaster D4 Thunderbolt 3
WEBSITE	https://goo.gl/KCiSGH	https://goo.gl/xy3MrK	https://goo.gl/LWj1AT	https://goo.gl/G5b6Fk	https://goo.gl/1FzY4g	https://goo.gl/hd4cRC
						
BRAND	**Noon Technology**	**OWC**	**OWC**	**OWC**	**OWC**	**OWC**
PRODUCT	TerraMaster D8 Thunderbolt 3	ThunderBay 6	Envoy Pro EX	Envoy Pro EX (VE) Thunderbolt 3	ThunderBay 4 - Thunderbolt 3	ThunderBlade
WEBSITE	https://goo.gl/EztH2h	https://goo.gl/KvwK8y	https://goo.gl/ds8LGy	https://goo.gl/95tkT5	https://goo.gl/YdqgpN	https://goo.gl/BdrMH2
						
BRAND	**Panasonic**	**Phision**	**Plugable**	**Promise**	**QNAP**	**QNAP**
PRODUCT	Memory Card Drive "expressP2 drive" AU-XPD3	Thunderbolt 3 Portable SSD	TBT3-NVME480 Thunderbolt 3 480GB NVMe SSD	Pegasus3 RAID (R4/R6/R8)	TS-453BT3	TVS-1282T3
WEBSITE	https://goo.gl/DNwdkn	https://goo.gl/qEVPHn	https://goo.gl/Jjow9B	https://goo.gl/BRnbN8	https://goo.gl/xr7BP2	https://goo.gl/uXpuLi
						
BRAND	**QNAP**	**QNAP**	**QNAP**	**Raidon**	**Raidon**	**Raidon**
PRODUCT	TVS-1582TU	TVS-882BRT3	TVS-882ST3	GR3660-TB3	GR4670-TB3	GR8670-TB3
WEBSITE	https://goo.gl/Y7p8jR	https://goo.gl/hcd8h3	https://goo.gl/ErGghu	https://goo.gl/35P9mc	https://goo.gl/okr81h	https://goo.gl/kYfx1m






BRAND	**Raidon**	**Raidon**	**Raidon**	**Raidon**	**Raidon**	**Raidon**
PRODUCT	GR8680-TB3	GT4670-TB3	GT8670-TB3	STARDOM DR2-TB3	STARDOM DR3-TB3	STARDOM DR8-TB3
WEBSITE	https://goo.gl/NaV9Es	https://goo.gl/g7EfpQ	https://goo.gl/SGVnDJ	https://goo.gl/bHkE9H	https://goo.gl/EzVVgY	https://goo.gl/hnfwG3






BRAND	**Raidon**	**Raidon**	**Raidon**	**Raidon**	**Raidon**	**Raidon**
PRODUCT	STARDOM DR8M-TB3	STARDOM PD01-TB3	STARDOM SR4-TB3	STARDOM SR8-TB3	STARDOM ST2-TB3	STARDOM ST4-TB3
WEBSITE	https://goo.gl/j2xPg7	https://goo.gl/oouVrc	https://goo.gl/vFukRn	https://goo.gl/aeF3Jg	https://goo.gl/hdkbiA	https://goo.gl/eciBdy



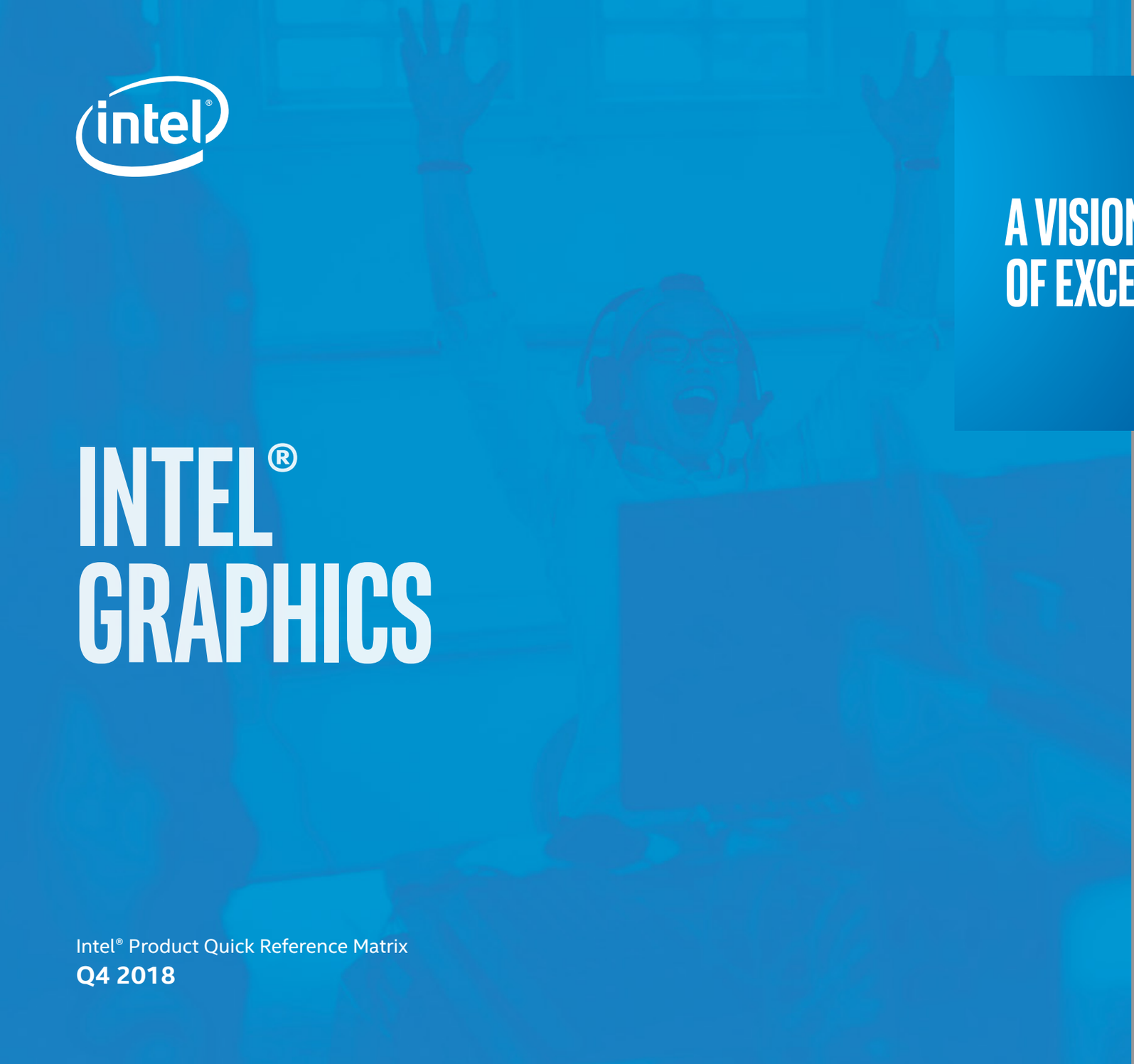



BRAND	**Raidon**	**Rocstor**	**Rocstor**	**Rocstor**	**Samsung**	**Sonnet**
PRODUCT	STARDOM ST8-TB3	Rocpro RT38 Thunderbolt 3	Rocpro T34 Thunderbolt 3	Rocpro T38 Thunderbolt 3	Portable SSD X5	Fusion Thunderbolt 3 PCIe Flash Drive
WEBSITE	https://goo.gl/nW6kDc	https://goo.gl/FLC6ri	https://goo.gl/AT7kkj	https://goo.gl/t9x7De	https://goo.gl/zX3MF6	https://goo.gl/KKnaCS




BRAND	**TEKQ**	**VisionTek**	**VisionTek**	**Winstars**
PRODUCT	Rapide Thunderbolt 3 SSD	Portable 1TB Thunderbolt 3 SSD	Portable 512GB Thunderbolt 3 SSD	Thunderbolt 3 USB-C to NVMe SSD Adapter
WEBSITE	https://goo.gl/j8UuB3	https://goo.gl/NY35hR	https://goo.gl/6GukPX	https://goo.gl/xv6Gjv

Visit **ThunderboltTechnology.net** for more information.



INTEL® GRAPHICS

A VISION OF EXCELLENCE

INTEL® GRAPHICS TECHNOLOGY

Work and play in high resolution with Intel® UHD Graphics and Iris® Plus Graphics. Watch captivating 4K Ultra HD (UHD) video on up to three screens, edit photos and videos like a pro, and immerse yourself in vividly rendered, seamless 3D gameplay - all with the added power boost of an Intel® Core™ processor. Intel® Graphics Technology brings stunning visuals to thinner and lighter portable devices, like laptops, 2 in 1s, and desktop computers.

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® GRAPHICS

Immerse yourself in rich, vivid visuals enabled by integrated Intel® UHD Graphics and Iris™ Plus Graphics, delivering built-in 4K Ultra HD for new home theater, gaming, and conferencing experiences.

INTEL® GRAPHICS

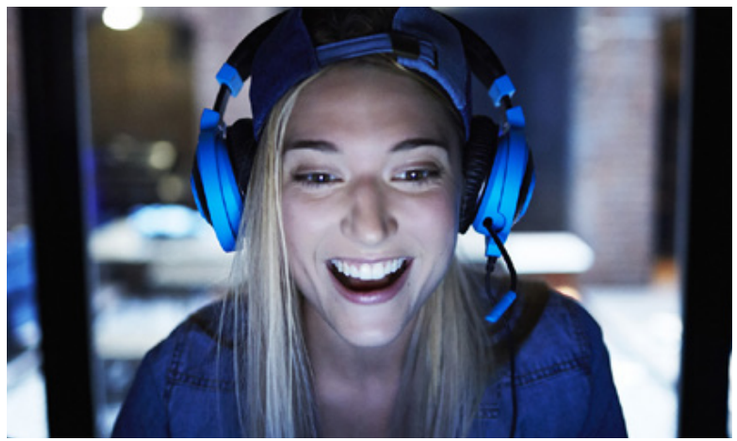
Experience visual perfection with Intel® UHD graphics and Iris™ Plus graphics. Watch captivating 4k video on up to three screens, edit photos and videos like a professional, and desktop computers. Immerse yourself in vividly rendered, seamless 3D gameplay. Intel UHD graphics, and Iris™ Plus graphics are built right in to the processor, bringing stunning visuals to thinner and lighter portable devices, like Notebook 2 in 1s, and portable All-in-Ones.

8TH AND 9TH GEN INTEL® CORE™ PROCESSOR GRAPHICS DELIVER EXCITING EXPERIENCES

Watch

View stunning 4K UHD video and immerse yourself completely in up to three angles of the same experience with multi-screen capability.

- 4K/UHD Premium Content Playback with Netflix* HDR
- 360 degree playback
- Multiple video streams



Game

Enjoy the latest games delivered to you in high definition, complete with complex shading, and fast frame rates.

- HD Gaming on Intel® UHD Graphics
- Up to 1080p Gaming on Intel® Iris® Plus Graphics
- Accelerated game streaming

Visit Gameplay.intel.com – to discover in-game settings optimized for your Intel® Graphics Technology.

Create

Uninhibited expression through enhanced media conversion and rendering, delivering picture perfect performance, every time. Uses fixed function hardware for fast, low-power video encode and transcode.

- 4K photo and video editing
- 360 degree stitching/VR content creation[1]

[1] May not be available on all SKUs

[2] Requires 7th Generation Intel® Core™ i5 Processors with Intel® UHD 620 Graphics or higher

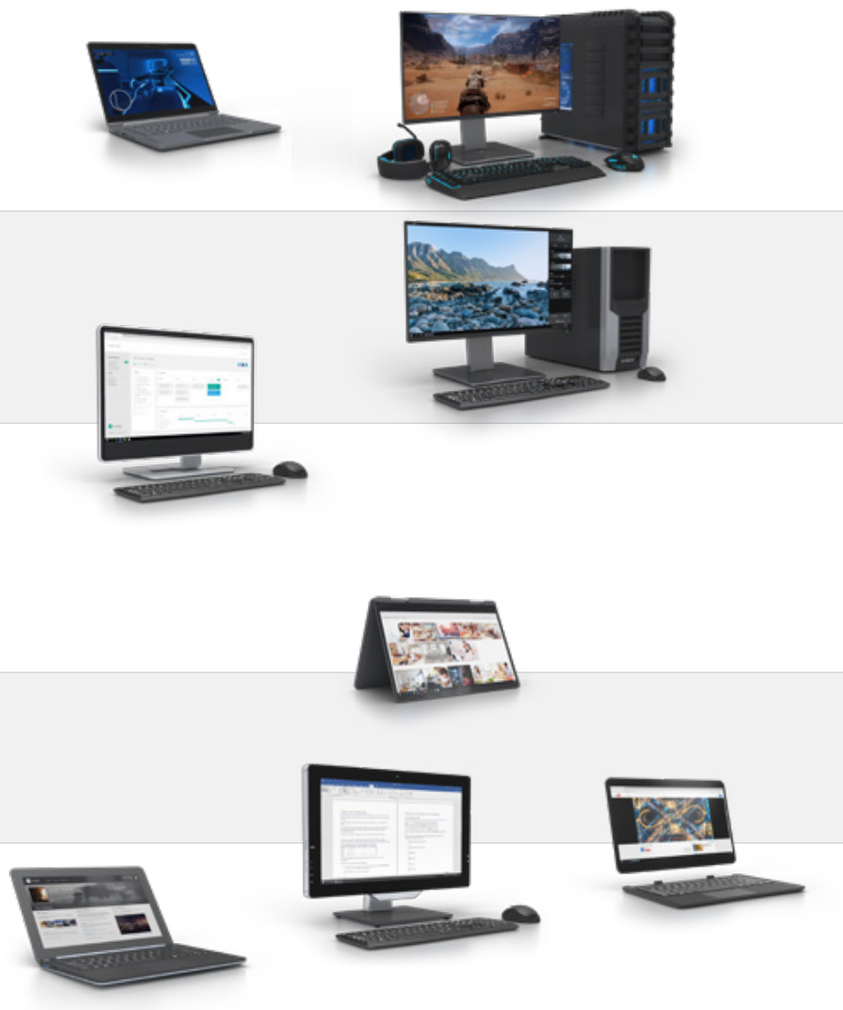
OPTIMIZE YOUR GAMING EXPERIENCE – VISIT GAMEPLAY.INTEL.COM

- **Auto-detect / Enter Intel processor details and explore supported games**
- **Click on chosen games and discover optimal in-game settings per your hardware**
- **Optimized settings available for hundreds of games over multiple genres**

Visit gameplay.intel.com

Settings only available for 4th Generation Intel® Core™ processor or higher.

8TH AND 9TH GEN INTEL® CORE™ PROCESSOR GRAPHICS ADVOCACY



Intel® Core™ Processor H-Series, X-Series, S-Series 'K', and G-Series High-End Discrete Graphics	• >1080p gaming & premium VR experiences with H-series processors optimized for discrete graphics
Intel® Core™ Processor S-Series Intel® UHD Graphics Mid-Range Discrete Graphics	• Up to Intel® UHD Graphics for HD gaming • 5K support • UHD resolution support
Intel® Core™ Processor U-Series Intel® Iris® Plus Graphics Intel® UHD Graphics	• Up to Intel® Iris® Plus Graphics for 1080p gaming • UHD resolution support
Intel® Core™ Processor Y-Series Intel® UHD Graphics	• Up to Intel® UHD Graphics for HD gaming • UHD resolution support
Intel® Core™ Processor N-Series Intel® UHD Graphics	• Up to Intel® UHD Graphics • UHD resolution support

9TH GENERATION INTEL® PROCESSOR GRAPHICS

9th Generation Intel® Processor Graphics

Premium content comes to life in 4K Ultra HD, so users can enjoy amazing and vibrant multimedia experiences on compatible displays. Edit photos and videos like a pro with fast processor graphics. Expand entertainment with multiple video streams, 360° video and high resolution video chat. Challenge your skills with agile, texture-rich graphics for HD gaming. Get the high-impact visuals you want on premium Notebooks, 2 in 1s, minipcs and all-in-ones.

	INTEL® UHD GRAPHICS 630
Processor Family	Intel® Core™
Max Dynamic Frequency	1.2 GHz
Processor Number	i9-9900K
	i7-9700K
	i5-9600K

8th Generation Intel® Core™ Processor with Radeon™ RX Vega M Graphics

NEXT LEVEL PERFORMANCE IN SLEEK, THIN & LIGHT COMPUTERS

The new 8th Gen Intel® Core™ mobile processor with Radeon™ RX Vega M graphics is Intel's first processor and discrete graphics bundled in a single package. This unprecedented design unlocks performance levels previously unseen in thin and light form factors with Intel processors due to its ultra-small footprint and unique power sharing capability. This new processor is for the high performing, small form factor computers like 2-in-1's, thin and light notebooks and mini-PC's.

	INTEL® CORE™ i7-8809G PROCESSOR	INTEL® CORE™ i7-8709G PROCESSOR	INTEL® CORE™ i7-8706G PROCESSOR	INTEL® CORE™ i7-8705G PROCESSOR	INTEL® CORE™ i5-8305G PROCESSOR
Discrete Graphics	Radeon™ RX Vega M GH	Radeon™ RX Vega M GH	Radeon™ RX Vega M GL	Radeon™ RX Vega M GL	Radeon™ RX Vega M GL
Intel HD Graphics	630	630	630	630	630
Graphics Dynamic Frequency (MHz)	Up to 1100	Up to 1100	Up to 1100	Up to 1100	Up to 1100
Intel® Quick Sync Video	Yes	Yes	Yes	Yes	Yes
Discrete GPU & HBM Overclocking	Yes	No	No	No	No

8th Generation Intel® Processor Graphics

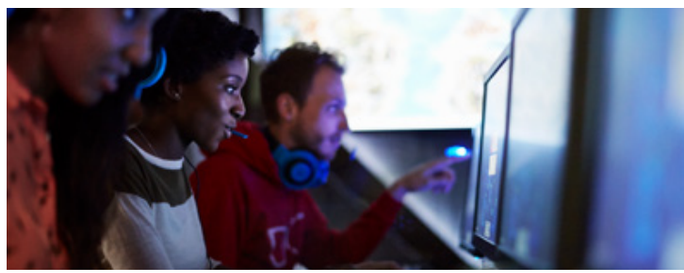
Starting with 8th Gen Intel® Core™ processors, Intel's integrated graphics offerings will be branded Intel® UHD Graphics. Intel® UHD graphics brand aligns the brand to the 4K platform capabilities of 8th Generation Intel® Core™ processors, including content playback, content creation, output, and display. Premium content comes to life in 4K Ultra HD, so users can enjoy amazing and vibrant multimedia experiences on compatible displays. Edit photos and videos like a pro with fast processor graphics. Expand entertainment with multiple video streams, 360° video and high resolution video chat. Challenge your skills with agile, texture-rich graphics for HD gaming. Get the high-impact visuals you want on premium Notebooks, 2 in 1s, mini-pcs and all-in-ones.

	INTEL IRIS PLUS GRAPHICS 655	INTEL UHD GRAPHICS P630	INTEL® UHD GRAPHICS 630	INTEL® UHD GRAPHICS 620	INTEL® UHD GRAPHICS 615	INTEL UHD GRAPHICS 610	INTEL UHD GRAPHICS 605	INTEL UHD GRAPHICS 600
Processor Family	Intel® Core™	Intel® Xeon™	Intel® Core™ / Intel® Pentium®	Intel® Core™	Intel® Core™	Intel® Pentium® / Intel® Celeron®	Intel® Pentium®	Intel® Celeron®
Max Dynamic Frequency	1.2 GHz	1.2 GHz	1.2 GHz	1.15 GHz	1.10 GHz	1.05 GHz	800 MHz	750 MHz
eDRAM	128 Mb	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Processor Number	i7-8559U	E-2186G	i9-8950HK	i7-8650U	i7-8500Y	Pentium® Gold G5400	Pentium® Silver N5000	N4100
	i5-8269U	E-2176G	i7-8850H	i7-8565U	i5-8200Y	Pentium® Gold G5400T	Pentium® Silver J5005	N4000
	i5-8259U	E-2174G	i7-8750H	i5-8550U	m3-8100Y	Celeron® G4920		J4105
	i3-8109U	E-2146G	i7-8700K	i5-8350U		Celeron® G4900		J4005
		E-2144G	i7-8700	i5-8265U		Celeron® G4900T		
		E-2126G	i7-8700T	i5-8250U				
		E-2124G	i5-8600K	i3-8145U				
		E-2104G	i5-8600	i3-8130U				
		E-2186M	i5-8600T					
		E-2176M	i5-8500					
			i5-8500T					
			i5-8400					
			i5-8400H					
			i5-8400T					
			i3-8350K					
			i3-8300					
			i3-8300H					
			i3-8300T					
			i3-8100					
			i3-8100T					
			Pentium® Gold G5600					
			Pentium® Gold G5500					
			Pentium® Gold G5500T					

7TH GENERATION INTEL® PROCESSOR GRAPHICS

Advanced Performance for Captivating Visuals

Intel® 7th Generation Processor Graphics delivers advanced performance for captivating visuals. With 7th Gen Intel® Core™ processors, you can watch, create, share, and game like never before. Premium content comes to life in 4K Ultra HD, so users can enjoy amazing and vibrant multimedia experiences on compatible displays. Edit photos and videos like a pro with fast processor graphics. Expand entertainment with multiple video streams, 360° video and high resolution video chat. Challenge your skills with agile, texture-rich graphics for HD gaming. Get the high-impact visuals you want on premium Notebooks, 2 in 1s, mini-pcs and all-in-ones.



		INTEL® HD GRAPHICS 620[2]	INTEL® HD GRAPHICS 650[4]
Productivity	SYSmark* 2014	1.0	1.11x
Video Editing	TouchXPRT* 2016	1.0	1.40x
Gaming	3DMark* 11	1.0	1.65x

7th Generation Intel® Processor Graphics

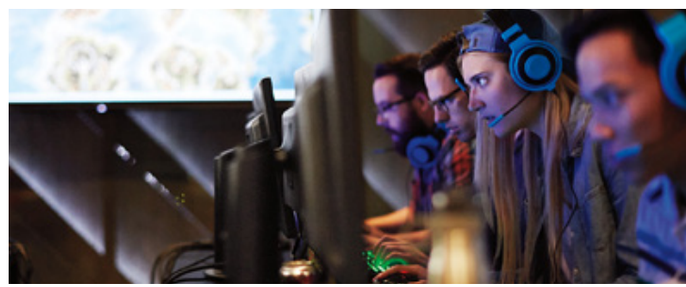
	INTEL® IRIS™ PLUS GRAPHICS 650	INTEL® IRIS™ PLUS GRAPHICS 640	INTEL® HD GRAPHICS 630	INTEL® HD GRAPHICS 620	INTEL® HD GRAPHICS 610	INTEL® HD GRAPHICS 615
Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ M Family
Processor Line	U-Series	U-Series	H-Series	U-Series	U-Series	Y-Series
Platform	Mobile	Mobile	Mobile	Mobile	Mobile	Mobile
Processor Number	i7-7567U	i7-7660U	i7-7920HQ	i7-7600U	4415U	m-7Y75
	i5-7287U	i7-7560U	i7-7820HQ	i7-7500U	3965U	m-7Y57
	i5-7267U	i5-7360U	i7-7820HK	i5-7300U	3865U	m-7Y54
	i3-7167U	i5-7260U	i7-7700HQ	i5-7200U		m-7Y30
			i5-7440HQ	i3-7100U		
			i5-7300HQ			
			i3-7100H			

6TH GENERATION INTEL® PROCESSOR GRAPHICS

Intel® Iris™ Graphics

Intel® Iris™ Graphics delivers advanced performance for captivating 4K visuals. Edit photos and videos like a pro with fast processor graphics. Expand entertainment to multiple screens for home entertainment and gaming. Challenge your skills with agile, texture-rich graphics for gaming. Get the high-impact visuals you want on premium Notebooks, 2 in 1s, mini-pcs and all-in-ones.

		INTEL® HD GRAPHICS 520[2]	INTEL® IRIS™ GRAPHICS 540[3]	INTEL® HD GRAPHICS 550[4]
Productivity	SYSmark* 2014 Overall	1.0	1.06x	1.12x
Video Editing	CyberLink* MediaEspresso 7 Ultra HD Media Transcode	1.0	1.40x	1.40x
Gaming	3DMark* 11 Graphics Score (relative)	1.0	1.30x	1.80x



6th Generation Intel® Processor Graphics

	INTEL® IRIS™ GRAPHICS 580	INTEL® IRIS™ GRAPHICS 550	INTEL® IRIS™ GRAPHICS 540	INTEL® HD GRAPHICS 530	INTEL® HD GRAPHICS 520	INTEL® HD GRAPHICS 510	INTEL® HD GRAPHICS 515
Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ Processor Family	Intel® Core™ M Family
Processor Line	H-Series	U-Series	U-Series	H-Series	U-Series	U-Series	Y-Series
Platform	Mobile	Mobile	Mobile	Mobile	Mobile	Mobile	Mobile
Processor Number	i7-6970HQ	i7-6567U	i7-6650U	i7-6920HQ	i7-6600U	4405U	m-6Y75
	i7-6870HQ	i5-6287U	i7-6560U	i7-6820HQ	i7-6500U	3995U	m-6Y57
	i7-6770HQ	i5-6267U	i5-6360U	i7-6820HK	i5-6300U	3855U	m-6Y54
	i5-6350HQ	i3-6167U	i5-6260U	i7-6700HQ	i5-6200U		m-6Y30
				i5-6440HQ	i3-6100U		
				i5-6300HQ			
				i3-6100H			

5TH GENERATION INTEL® PROCESSOR GRAPHICS

Intel® Iris™ Graphics

Intel® Graphics Technology gives you discrete-level graphics power and performance without the additional add-in card, integrated right into your favorite Intel processor. The results are clear: home theater, gaming, conferencing and video and photo editing are smooth, vivid and faster than ever before. It's an immersive experience for premium notebooks, Ultrabook™, mini-pcs, and all-in-ones.

		INTEL® HD GRAPHICS 5500[5]	INTEL® IRIS™ GRAPHICS 6100[6]	INTEL® IRIS™ PRO GRAPHICS 6200[7]
Productivity	CPU Performance SYSmark* 2014 Overall	1x	1.10x	1.70x
Video Editing	Quick Sync Video Accelerated Conversion Performance HDXPRT* Video Conversion	1x	1.20x	1.95x
Gaming	3DMark* 11-P Graphics Subscore, 3DMark* Firestrike Graphics Subscore, 3DMark* Vantage-P Graphics Subscore	1x	1.50x	2x

5th Generation Intel® Processor Graphics

	INTEL® IRIS™ PRO Graphics 6200	INTEL® IRIS™ PRO Graphics 6200	INTEL® IRIS™ Graphics 6100	INTEL® IRIS™ Graphics 6000	INTEL® HD Graphics 5600	INTEL® IRIS™ Graphics 5500	INTEL® HD Graphics 5300	INTEL® HD Graphics
Processor Family	Intel® Core™ Processor Family	Intel® Core™ M Processor Family	Intel® Core™ M Processor Family	Intel® Core™ M Processor Family	Intel® Core™ M Processor Family	Intel® Core™ M Processor Family	Intel® Core™ M Processor Family	Intel® Pentium® / Intel® Celeron®
Processor Line	S-Series	H-Series	U-Series	U-Series	H-Series	U-Series	Y-Series	U-Series
Platform	Desktop	Mobile	Mobile	Mobile	Mobile	Mobile	Mobile	Mobile
Processor Number	i7-5775R	i7-5950HQ	i7-5557U	i7-5650U	i7-5700HQ	i7-5600U	M-5Y70	3805U
	i7-5775C	i7-5850HQ	i7-5287U	i7-5550U		i7-5500U	M-5Y71	3755U
	i5-5675R	i7-5750HQ	i7-5257U	i5-5350U		i5-5300U	M-5Y31	3205U
	i5-5675C	i5-5350H	i7-5157U	i5-5250U		i5-5200U	M-5Y10	3825U
	i5-5575R					i5-5010U	M-5Y10a	3765U
						i5-5005U	M-5Y10c	3215U

Intel® Core™ i7-7567U Processor (e*) up to 4 GHz, 4T/2C, 4MB w/ Iris Plus Graphics 650 vs. Intel® Core™ i7-7500U Processor (e*) up to 3.5GHz, 4T/2C, 4MB w/ HD Graphics 620

Estimates and measurements based on (1) Productivity - SYSmark* 2014 Overall Score, (2) Media Editing – TouchXPRT* 2016 –Convert Videos for sharing Sub-score, (3) 3DMark* Sky Diver* - Graphics Score

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to http://www.intel.com/performance

1 Data based on SKUs below

2 Core i7-6500U 15W w/HD Graphics 520

3 Core i7-6560U 15W w/Iris Graphics 540

4 Core i7-6567U 28w w/Iris Graphics 550

5 System configuration for 5th Generation Intel Core Processor w/ HD Graphics 5500: Intel CRB, Intel® Core™ i7-5600U Processor, 2C4T, Turbo up to 3.2GHz, Memory: 2x2GB LPDDR3-1600, Storage: Intel SSD, Display Resolution:1920x1080.

6 System configuration for 5th Generation Intel Core Processor w/ Iris Graphics 6100: Intel CRB, Intel® Core™ i7-5557U 15W/28W, 2C4T, Turbo up to 3.2GHz/3.4 GHz, Memory: 2x2GB LPDDR3-1866, Storage: Intel SSD, Display Resolution:1920x1080. (Estimates based on measurements done with DDR3L)

7 System configuration for 5th Generation Intel Core Processor w/ Iris Pro Graphics 6200: Intel CRB, Intel® Core™ i7-5950HQ PL1=47W TDP, 4C8T, Turbo up to 3.8 GHz, Memory: 2x4GB DDR3-1866, Storage: Intel SSD, Display Resolution:1920x1080.

System configuration for Desktop LGA 5th Generation Intel Core Processor w/ Iris Pro Graphics 6200: Intel CRB, Intel® Core™ i7-5775C PL1=65W TDP, 4C8T, Turbo up to 3.7 GHz, Memory: 2x4GB DDR3-1866, Storage: Intel SSD, Display Resolution:1920x1080. System configuration for Previous Gen Desktop LGA 4th Generation Intel Core Processor: Intel CRB, Intel® Core™ i7-4790S 65W, 4C8T, Turbo up to 4.0 GHz, Memory: 2x4GB DDR3L-1600, Storage: Intel SSD, Display Resolution:1920x1080.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

* Other names and brands may be claimed as the property of others.

FLEXIBILITY. STABILITY. EFFICIENCY.

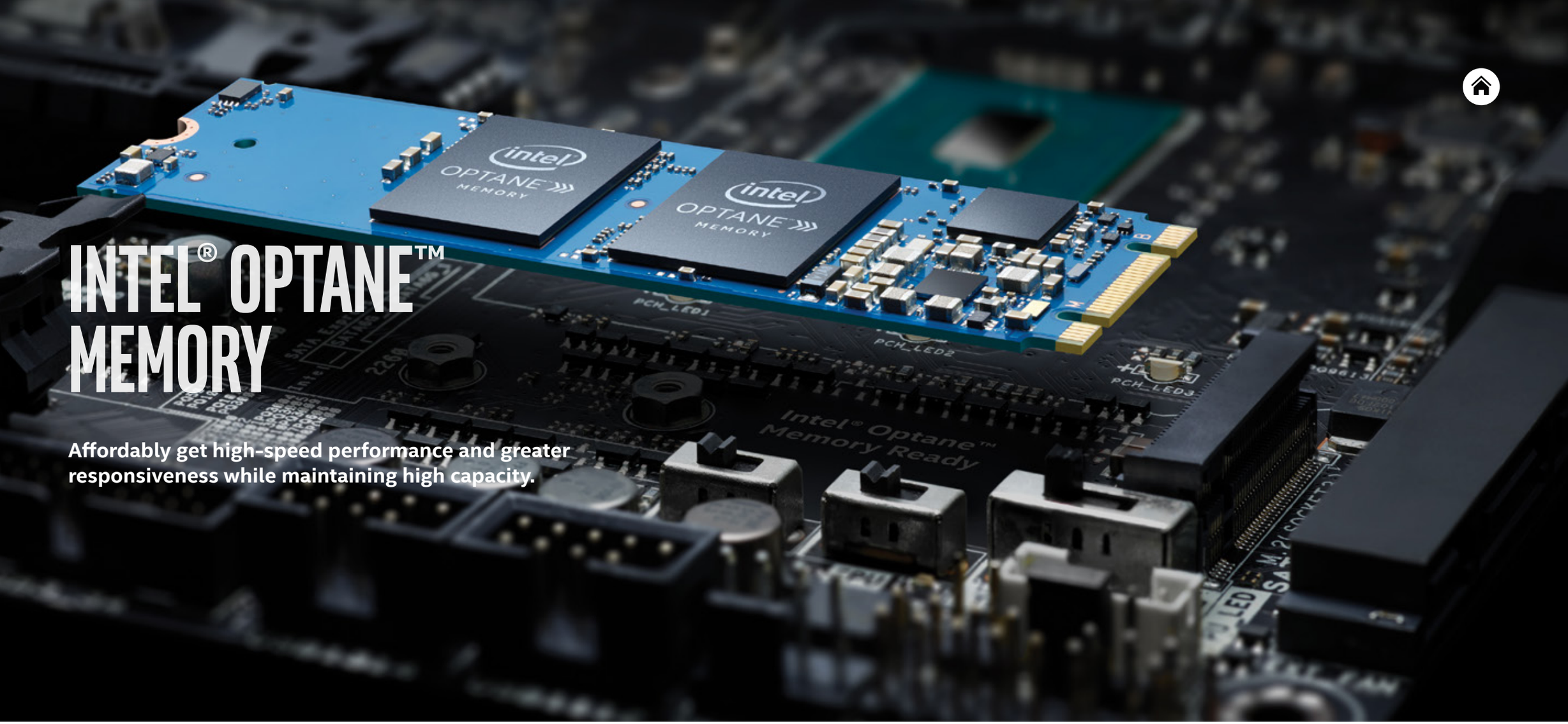
INTEL® MEMORY AND STORAGE

Intel® Product Quick Reference Matrix

Q4 2018

MEMORY AND STORAGE

Intel provides technically-advanced products that support every level of computing—from data center workloads to enthusiast usage. Intel® Optane™ memory creates an accelerated bridge between memory and storage. Intel® Solid State Drives (Intel® SSDs) provide storage flexibility, stability, and efficiency.



INTEL® OPTANE™ MEMORY

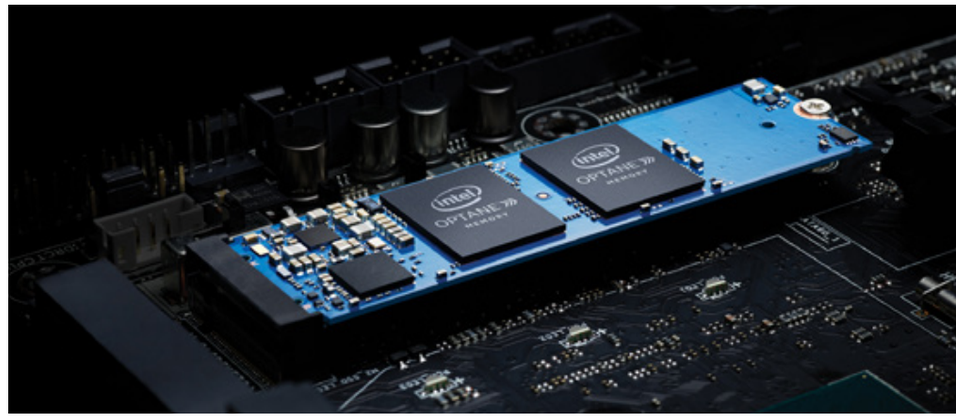
Affordably get high-speed performance and greater responsiveness while maintaining high capacity.

BREAKTHROUGH SPEED. UNCOMPROMISED CAPACITY.

Increase PC responsiveness with Intel® Optane™ memory, smart and adaptable system accelerator that pairs with a 7th Gen or greater Intel® Core™ processor based PC to deliver high-performance responsiveness for almost everything—from checking email and web surfing to gaming and business.

INTEL® OPTANE™ MEMORY OFFERS BETTER END USER VALUE

USES	• System Acceleration with 7th/8th Gen Core based systems and a SATA HDD • Intel® Optane™ Memory Ready Motherboards
TARGET SEGMENTS	• Desktops, Workstations (Refer to Intel® Optane™ Memory POR document CDI 568777 for full list of supported platforms)
FEATURES	• High Speed & 2x Responsiveness • Revolutionary Intel® Optane™ Technology • Intelligent System Acceleration • High performance at low queue depth • Intel Q&R backed by 5Yr Warranty • Software Encryption with Bitlocker and McAfee • New Sell-Up Opportunity • Platform Confidence & Intel Branded Solution



	16 GB INTEL® OPTANE™ MEMORY	32 GB INTEL® OPTANE™ MEMORY
MARKET SEGMENT	• Mainstream / DIY Builder • SMB / Mainstream Corporate Users	• Mainstream Enthusiast / DIY Builder • Enthusiast / Corporate Users
IDEAL FOR USERS THAT	• Need high capacity storage and affordable performance • Task switch across online applications • Often have multiple browser tabs open • Utilize a smaller-footprint workload • Run multiple applications throughout the day	• Need high capacity storage and affordable performance • Work in applications with large data sets • Run a variety of data intensive applications • Play Mainstream games • Work in content creation applications • Regularly multi-task

PERFORMANCE BENEFITS FROM INTEL® OPTANE™ MEMORY

16 GB Intel® Optane™ memory + 1 TB HDD 4 GB DDR delivers better responsiveness than 1 TB HDD 8 GB DDR

MAINSTREAM

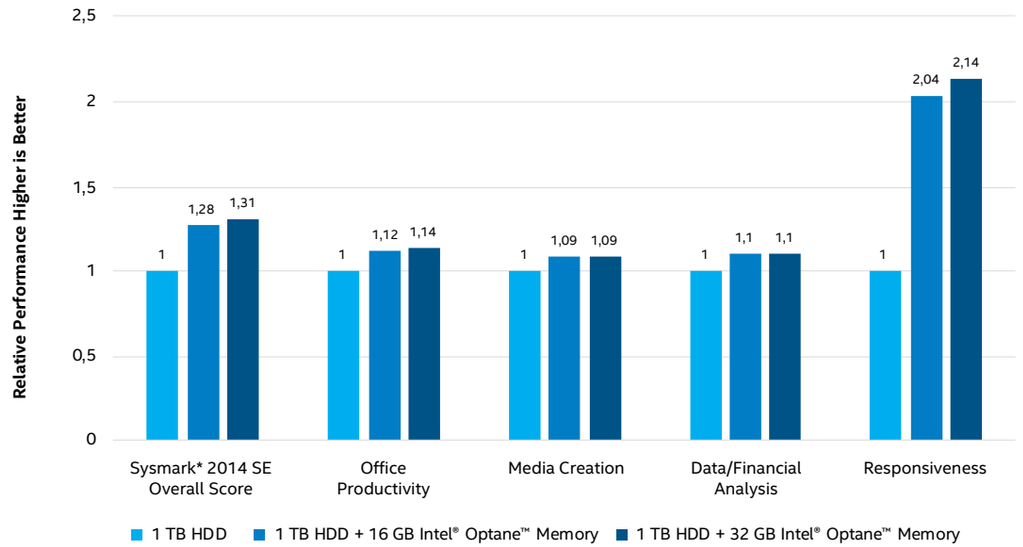
ENTHUSIAST

BUSINESS

16 GB Intel® Optane™ Memory + HDD

Everyday Tasks [1]	Up to 2x More Responsive
Storage Performance [2]	Up to 14x/21x Faster
Computer Boot Time [3]	Up to 2x Faster
Launch Web Browser [4]	Up to 5x Faster
Launch Game [5]	Up to 67% Faster
Game Level Load [5]	Up to 65% Faster
Open Large Media Projects [6]	Up to 4.1x Faster
Launch Email [7]	Up to 5.8x Faster
Launch Presentations [8]	Up to 3.8x Faster
Windows* File Search [9]	Up to 4x Faster

Sysmark* 2014 SE Comparison



[1] SYSmark 2014 SE (Responsiveness Subscore) [2] PCMark* Vantage (HDD Suite) [3] OS Load Time Workload [4] Browser Launch Workload [5] Game Launch & Level Load Workload [6] Media Project Load Workload [7] Email Launch Workload [8] Presentation Launch Workload [9] File Search Workload

*Other names and brands may be claimed as the property of others

Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors.

Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information, go to www.intel.com/benchmarks.

INTEL® SOLID STATE DRIVE OPTANE™ FAMILY

INTEL® SSD	INTEL® OPTANE™ SSD 905P	INTEL® OPTANE™ SSD 900P	INTEL® OPTANE™ SSD 800P
USES	For the most demanding storage workloads and high performance desktop • Media Content creation, high performance gaming • CGI, Particle Simulation, Rendering, Game Development • High resolution image and video • Engineering design and workloads	Storage for high performance Desktop and Workstations • CGI, Particle Simulation, Rendering, Game Development • High Resolution Image and Video • Engineering design and high workload • Media creation	Ideal OS drive for fast boot and quick application launch M.2 slim form factor and low power design provide the versatility for mobile and desktop devices
INTERFACE	PCI Express* 3.0x 4, NVM Express*	PCI Express* 3.0x 4, NVM Express*	PCI Express* 3.0x 2, NVM Express*
FORM FACTOR	AIC, U.2 (15mm), M.2	AIC, U.2(15mm)	M.2 80mm
CAPACITIES	380GB / 480GB / 960GB / 1.5TB	280GB / 480GB	58GB / 118GB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 575k IOPS Writes: Up to 550k IOPS	Reads: Up to 550k IOPS Writes: Up to 500k IOPS	Reads: Up to 300k IOPS Writes: Up to 120k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 2.7 GB/s Writes: Up to 2.2 GB/s	Reads: Up to 2.5 GB/s Writes: Up to 2.0 GB/s	Reads: Up to 1350 MB/s Writes: Up to 500 MB/s
SECURITY	AES 256 bit encryption	AES 256 bit encryption	AES 256 bit encryption
ENDURANCE	10 DWPD	10 DWPD	10 DWPD
WARRANTY	5 year limited	5 year limited	5 year limited

Intel® Data Migration Software

- Transfer operating system, applications, and files from an old HDD or SSD to a new Intel® Solid State Drive[4]
- Easy to use
- Free

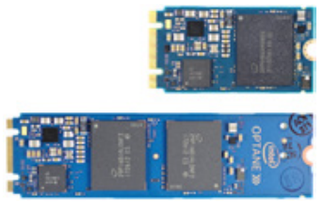
Download now at **www.intel.com/go/ssdinstallation**

*Other names and brands may be claimed as the property of others.

Intel® SSD Toolbox v3.5.3

- Update Intel® SSD firmware and Intel® drivers on host PC
- Optimize PC configuration for Intel SSDs, run drive diagnostics, and Secure Erase
- View SMART attributes, such as host writes and media wear out
- Supported in multiple languages

Download now at **www.intel.com/go/ssdtoolbox**



INTEL® SSD	INTEL® OPTANE™ MEMORY	INTEL® OPTANE™ MEMORY M10
USES	System Acceleration with 7th/8th Gen Core based systems	System Acceleration with 7th/8th Gen Core based systems
INTERFACE	PCI Express* 3.0x 2, NVM Express*	PCI Express* 3.0x 2, NVM Express*
FORM FACTOR	M.2 80mm	M.2 80mm, M.2 42mm
CAPACITIES	16GB / 32 GB	80mm: 16GB / 32GB / 64GB 42mm: 16GB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 240k IOPS Writes: Up to 65k IOPS	Reads: Up to 300k IOPS Writes: Up to 120k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 1350 MB/s Writes: Up to 290 MB/s	Reads: Up to 1350 MB/s Writes: Up to 500 MB/s
ENDURANCE	40GB DWPD	40GB DWPD
WARRANTY	5 year limited	5 year limited

Intel® Data Migration Software

- Transfer operating system, applications, and files from an old HDD or SSD to a new Intel® Solid State Drive[4]
- Easy to use
- Free

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- Supported in multiple languages

Download now at **www.intel.com/go/ssdtoolbox**

INTEL® SOLID STATE DRIVES

Intel Corporation manufactures industry leading solid state drives targeting data center, embedded, professional, and consumer market segments.

CONSUMER FAMILY

Impressive performance with NVMe*/PCIe* and SATA for enthusiasts and mainstream consumers.

PROFESSIONAL FAMILY

Enhanced security and remote manageability with vPro™ integration for the corporate client.

DATA CENTER FAMILY

Consistently amazing performance for NVMe*/PCIe* and SATA with broad industry compatibility, and robust enterprise RAS features.

INTEL® SOLID STATE DRIVE CONSUMER FAMILY

INTEL® SSD	INTEL® SSD 760p SERIES	INTEL® SSD 660p SERIES
USES	PCs- notebooks, desktops, NUCs Everyday computing Gaming Mobile computing	PCs - Desktop & Mobile computing, NUCs Everyday Computing HDD Replacement SATA SSD Replacement Gaming
INTERFACE	PCI Express* 3.0x 2, NVM Express*	PCIe* 3.0x4, NVM Express*
FORM FACTOR	M.2 80mm	M.2 80mm
CAPACITIES	128GB / 256GB / 512GB / 1024MB (1TB) / 2048MB (2TB) (Double Sided)	512MB / 1024MB (1TB) / 2048MB (2TB)
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 350k IOPS Writes: Up to 280k IOPS	Reads: Up to 220k IOPS Writes: Up to 220k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 3200 MB/s Writes: Up to 1600 MB/s	Read: Up to 1800MB/s Write: Up to 1800MB/s
SECURITY	End-to-end data protection[3] AES 256 bit encryption	End-to-end data protection[3] AES 256 bit encryption
ENDURANCE	Up to 576 TBW	Up to 200 TBW
WARRANTY	5-year limited	5-year limited

Intel® Data Migration Software

- Transfer operating system, applications, and files from an old HDD or SSD to a new Intel® Solid State Drive[4]
- Easy to use
- Free

Download now at **www.intel.com/go/ssdinstallation**

*Other names and brands may be claimed as the property of others.

Intel® SSD Toolbox v3.5.3

- Update Intel® SSD firmware and Intel® drivers on host PC
- Optimize PC configuration for Intel SSDs, run drive diagnostics, and Secure Erase
- View SMART attributes, such as host writes and media wear out
- Supported in multiple languages

Download now at **www.intel.com/go/ssdtoolbox**

INTEL® SSD	INTEL® SSD 600p SERIES	INTEL® SSD 545s SERIES
USES	PCs- notebooks, desktops, NUCs Everyday computing Gaming Mobile computing	PCs- notebooks, desktops, NUCs Everyday computing Gaming Mobile computing
INTERFACE	PCI Express*, NVM Express*	SATA 6Gb/s
FORM FACTOR	M.2 80mm	M.2 80mm, 2.5"(7mm)
CAPACITIES	128GB / 256GB / 512GB / 1TB	M.2: 128GB / 256GB / 512GB 2.5": 128GB / 256GB / 512GB / 1TB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 155k IOPS Writes: Up to 128k IOPS	Reads: Up to 90k IOPS Writes: Up to 75k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 1800 MB/s Writes: Up to 560 MB/s	Reads: Up to 560 MB/s Writes: Up to 500 MB/s
SECURITY	AES 256 bit Encryption	AES 256 bit encryption
ENDURANCE	Up to 576 TBW	Up to 72 TBW
WARRANTY	5 year limited	5 year limited

INTEL® SOLID STATE DRIVE PROFESSIONAL FAMILY

INTEL® SSD	INTEL® SSD PRO 7600p SERIES	INTEL® SSD PRO 6000p SERIES	INTEL® SSD PRO 5450s SERIES
USES	Corporate IT Managed Client Workstation Thin and light form factors: Ultrabook*, business tablets, 2-in-1s Desktop and all-in-ones Managed mini-Pcs / Intel NUC	Corporate IT Managed client Workstation Thin and light form factors: Ultrabook*, business tablets, 2-in-1s Desktop and all-in-ones Managed mini-PCs / Intel NUC	Corporate IT Managed Client Workstation Thin and light form factors: Ultrabook*, business tablets, 2-in-1s Desktop and all-in-ones Managed mini-Pcs / Intel NUC
INTERFACE	PCI Express* 3.0, NVM Express*	PCI Express* 3.0, NVM Express*	SATA 6Gb/s
FORM FACTOR	M.2 80mm	M.2 80mm	M.2 80mm, 2.5"(7 mm)
CAPACITIES	128GB / 256GB / 360GB / 512GB / 1TB / 2TB	1.2 TB/ 512 GB/ 256 GB/ 128 GB	M.2 80mm: 256GB / 512GB 2.5": 256GB / 512GB / 1TB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 350k IOPS Writes: Up to 280k IOPS	Reads up to: 100K IOPS Writes up to: 90K IOPS	Reads: Up to 75k IOPS Writes Up to 90k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 3200 MB/s Writes: Up to 1600 MB/s	Reads up to: 1700 MB/s Writes up to: 600 MB/s	Reads: Up to 560 MB/s Writes: Up to 500 MB/s
SECURITY	AES 256b Encryption, OPAL 2.0 features, eDrive capable	AES 256b Encryption, OPAL 2.0 features, eDrive capable	AES 256b Encryption, OPAL 2.0 features, eDrive capable
ENDURANCE	Up to 576 TBW	72TBW (40GB DWPD)	Up to 576 TBW
WARRANTY	5 years limited	5 year limited	5 year limited

Intel® SSD Data Center Family for PCIe* - Intel® Optane™ Technology

INTEL® SSD	INTEL® OPTANE™ SSD DC P4800X SERIES
USES	Fast storage or cache Extended memory
INTERFACE	PCI Express* 3.0, NVM Express*
FORM FACTOR	AIC, U.2(15mm)
CAPACITIES (MB)	AIC: 375GB / 750GB / 1.5TB U.2: 375GB / 750GB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 550k IOPS Writes: Up to 550k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 2500 MB/s Writes: Up to 2200 MB/s
SECURITY	AES 256b Encryption
ENDURANCE	375GB - 20.5PBW (30 DWPD) 750GB - 41PBW (30 DWPD) 1.5TB - 164PBW (60 DWPD)
WARRANTY	5 year limited

* Other names and brands may be claimed as the property of others.

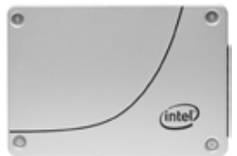
Intel® Solid State Drive Data Center Family for PCIe*

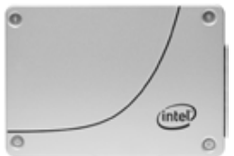
INTEL® SSD	INTEL® SSD DC P4500 SERIES	INTEL® SSD DC P4501 SERIES
USES	Cloud storage Scale out storage Hard drive replacement	Cloud storage Scale out storage SATA replacement
INTERFACE	PCI Express* 3.0, NVM Express*	PCI Express* 3.0, NVM Express*
FORM FACTOR	U.2(15mm), AIC	U.2(7mm), M.2 (110mm)
CAPACITIES (MB)	U.2: 1TB / 2TB / 4TB AIC: 4TB / 8TB	U.2: 500GB / 1TB / 2TB / 4TB M.2: 1TB / 2TB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 688k IOPS Writes: Up to 65k IOPS	Reads: Up to 361k IOPS Writes: Up to 46.5k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 3200 MB/s Writes: Up to 1850 MB/s	Reads: Up to 3200 MB/s Writes: Up to 900 MB/s
SECURITY	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption
ENDURANCE	<1 DWPD	<1 DWPD
WARRANTY	5 year limited	5 year limited

Intel® Solid State Drive Data Center Family for PCIe*

INTEL® SSD	INTEL® SSD DC P4510 SERIES	INTEL® SSD DC P4511 SERIES
USES	Cloud storage Scale Out Storage Hard Drive replacement	Increases server agility and utilization, and accelerates applications across a wide range of cloud workloads.
INTERFACE	PCI Express* 3.0, NVM Express*	PCIe* 3.1 x4, NVMe* 1.2
FORM FACTOR	U.2 (15mm)	M.2 (110mm x 22mm)
CAPACITIES (MB)	1TB / 2TB / 4TB / 8TB	1TB / 2TB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 650k IOPS Writes: Up to 135k IOPS	Read: Up to 295k IOPs Write: Up to 36k IOPs
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 3200 MB/s Writes: Up to 3000 MB/s	Read: Up to 1900 MB/s Write: Up to 1430 MB/s
SECURITY	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption
ENDURANCE	Up to 2.61 PBW	Up to 0.9 DWPD
WARRANTY	5 year limited	5 year limited

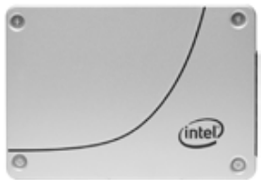
Intel® Solid State Drive Data Center Family for PCIe*

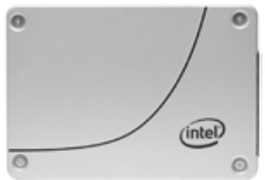




INTEL® SSD	INTEL® SSD DC P4600 SERIES	INTEL® SSD DC P4601 SERIES	INTEL® SSD DC P4608 SERIES
USES	Virtualization Caching Database Business Analytics	Cloud storage Scale Out Storage SATA replacement	High performance computing Database Big Data Analysis
INTERFACE	PCI Express* 3.0, NVM Express*	PCI Express* 3.0, NVM Express*	PCI Express* 3.0, NVM Express*
FORM FACTOR	AIC, U.2 (15mm)	U.2 (7mm)	AIC x8
CAPACITIES (MB)	AIC: 2TB / 4TB U.2: 1.6TB / 2TB / 3.2TB / 6.4TB	4TB	6.4TB
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 680k IOPS Writes: 246k IOPS	Reads: Up to 325k IOPS Writes: Up to 100k IOPS	Reads: Up to 1379k IOPS Writes: Up to 428k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 3200 MB/s Writes: Up to 2000 MB/s	Reads: Up to 3200 MB/s Writes: Up to 900 MB/s	Reads: Up to 6500 MB/s Writes: Up to 3100 MB/s
SECURITY	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption
ENDURANCE	3 DWPD	3 DWPD	3 DWPD
WARRANTY	5 year limited	5 year limited	5 year limited

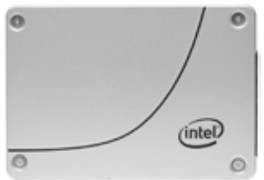
Intel® Solid State Drive Data Center Family for SATA

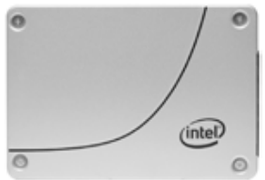




INTEL® SSD	INTEL® SSD DC S4600 SERIES	INTEL® SSD D3-S4610 SERIES
USES	Manufacturing Retail Virtualization Analytical & operational databases Machine generated data	Replace HDDs with the highly efficient Intel® SSD D3-S4510 and D3-S4610 Series to reduce storage operating cost, accelerate read-intensive workloads with power efficient performance.
INTERFACE	SATA 6Gb/s	SATA 6Gb/s
FORM FACTOR	2.5”(7mm)	2.5”(7mm)
CAPACITIES (MB)	240GB / 480GB / 960GB / 1.92TB	240GB, 480GB, 960GB, 2TB (1.92TB), 4TB (3.84TB), 8TB (7.68TB)
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 72k IOPS Writes: Up to 65k IOPS	Read: Up to 97K IOPS Write: Up to 51k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 500 MB/s Writes: Up to 490 MB/s	Read: Up to 560 MB/s Write: Up to 510 MB/s
SECURITY	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption
ENDURANCE	3 DWPD	3 DWPD
WARRANTY	5 year limited	5 year limited

Intel® Solid State Drive Data Center Family for SATA





INTEL® SSD	INTEL® SSD DC S4500 SERIES	INTEL® SSD D3-S4510 SERIES
USES	Cloud Embedded Boot, Static Web Content Low data rate, Operational databases & Analytics Web server and SQL Logs OS Paging and Media Streaming	Replace HDDs with the highly efficient Intel® SSD D3-S4510 and D3-S4610 Series to reduce storage operating cost, accelerate read-intensive workloads with power efficient performance.
INTERFACE	SATA 6Gb/s	SATA 6Gb/s
FORM FACTOR	2.5"(7mm)	2.5"(7mm)
CAPACITIES (MB)	240GB / 480GB / 960GB / 1.92TB / 3.84TB	240GB, 480GB, 960GB, 2TB (1.92TB), 4TB (3.84TB), 8TB (7.68TB)
MAXIMUM RANDOM PERFORMANCE	Reads: Up to 72k IOPS Writes: Up to 33k IOPS	Read: Up to 97k IOPS Write: Up to 36k IOPS
MAXIMUM SEQUENTIAL PERFORMANCE	Reads: Up to 500 MB/s Writes: Up to 490 MB/s	Read: Up to 560 MB/s Write: Up to 510 MB/s
SECURITY	End-to-end data protection Power-loss data protection AES 256-bit encryption	End-to-end data protection Power-loss data protection AES 256-bit encryption
ENDURANCE	1 DWPD	Up to 2 DWPD
WARRANTY	5 year limited	5 year limited

Consumer Family SSDs

PRODUCT NAME	CAPACITY	PRODUCT CODE	PRODUCT DESCRIPTION	PACKAGE TYPE	PACKAGE CONTENTS	QUANTITY PER BOX
Intel® Optane™ SSD 905P Series	480GB	**SSDPE21D480GAX1**	(480GB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ Standard U.2 Cable	1
	480GB	**SSDPE21D480GAM3**	(480GB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ M.2 Adapter Cable	1
	960GB	**SSDPE21D960GAX1**	(960GB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ M.2 Adapter Cable	1
	960GB	**SSDPE21D960GAM3**	(960GB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ Standard U.2 Cable	1
	1.5TB	**SSDPE21D015TAX1**	(1.5TB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ Standard U.2 Cable	1
	1.5TB	**SSDPE21D015TAM3**	(1.5TB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single Pack	w/ M.2 Adapter Cable	1
Intel® Optane™ SSD 900P Series	280GB	**SSDPED1D280GASX**	(280GB, ½ Height PCIe 3.0 X4, 20nm 3D XPoint™)	Star Citizen Promo	SSD and Star Citizen Code	1
	280GB	**SSDPED1D280GAX1**	(280GB, 1/2 Height PCIe x4, 3D XPoint™)	Reseller Single Pack	SSD only	1
	280GB	**SSDPE21D280GAX1**	(280GB, 2.5in PCIe x4, 3D XPoint™)	Reseller Single	SSD only	1
	280GB	**SSDPE21D280GASM**	(280GB, 2.5in PCIe x4, 3D XPoint™)	Star Citizen Promo	SSD and Star Citizen Code	1
	280GB	**SSDPE21D280GASX**	(280GB, 2.5in PCIe x4, 3D XPoint™)	Star Citizen Promo	SSD and Star Citizen Code	1
	480GB	**SSDPED1D480GASX**	(480GB, ½ Height PCIe 3.0 X4, 20nm 3D XPoint™)	Star Citizen Promo	SSD and Star Citizen Code	1
	480GB	**SSDPED1D480GAX1**	(480GB, 1/2 Height PCIe x4, 3D XPoint™)	Reseller box	SSD only	1
Intel® Optane™ SSD 800P Series	60GB	**SSDPEK1W060GAXT**	(60GB, M.2 80mm PCIe x4, 3D Xpoint™)	Retail Box	SSD only	10
	120GB	**SSDPEK1W120GAXT**	(120GB, M.2 80mm PCIe x4, 3D Xpoint™)	Retail Box	SSD only	10
	120GB	**SSDPEK1W120GAX1**	(120GB, M.2 80mm PCIe x4, 3D Xpoint™)	Retail Box	SSD only	1
	60GB	**SSDPEK1W060GA01**	(60GB, M.2 80mm PCIe x4, 3D Xpoint™)	Generic Pack	SSD only	1
	120GB	**SSDPEK1W120GA01**	(120GB, M.2 80mm PCIe x4, 3D Xpoint™)	Generic Pack	SSD only	1
	60GB	**SSDPEK1W060GA**	(60GB, M.2 80mm PCIe x4, 3D Xpoint™)	Generic Pack	SSD only	100
	120GB	**SSDPEK1W120GA**	(120GB, M.2 80mm PCIe x4, 3D Xpoint™)	Generic Pack	SSD only	100
Intel® SSD 760p Series	1.024TB	**SSDPEKKW010T8X1**	(1.024TB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box	SSD only	1
	512GB	**SSDPEKKW512G8XT**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box	SSD only	10
	512GB	**SSDPEKKW512G801**	(512GB, M.2 80mm, PCIe 3.0 x4, 3D2, TLC)	Generic Single Pack	SSD only	1
	256GB	**SSDPEKKW256G8XT**	(256GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box	SSD only	10
	256GB	**SSDPEKKW256G801**	(256GB, M.2 80mm, PCIe 3.0 x4, 3D2, TLC)	Generic Single Pack	SSD only	1
	128GB	**SSDPEKKW128G8XT**	(128GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box	SSD only	10
	128GB	**SSDPEKKW128G801**	(128GB, M.2 80mm, PCIe 3.0 x4, 3D2, TLC)	Generic Single Pack	SSD only	1

Intel® SSD 660p Series	256GB	**SSDPEKNW256G801**	(256GB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Generic Pack	SSD only	1
	512GB	**SSDPEKNW512G801**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Generic Pack	SSD only	1
	512GB	**SSDPEKNW512G8X**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Retail Box	SSD only	1
	512GB	**SSDPEKNW512G810**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Generic Pack	SSD only	10
	512GB	**SSDPEKNW512G8XT**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Retail Box	SSD only	10
	1.0TB	**SSDPEKNW010T801**	(1.0TB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Generic Pack	SSD only	1
	1.0TB	**SSDPEKNW010T8X1**	(1.0TB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Retail Box	SSD only	1
	2.0TB	**SSDPEKNW020T801**	(2.0TB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Generic Pack	SSD only	1
	2.0TB	**SSDPEKNW020T8X1**	(2.0TB, M.2 80mm PCIe 3.0 x4, 3D2, QLC)	Retail Box	SSD only	1
Intel® SSD 600p Series	1024 GB	**SSDPEKKW010T7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	512 GB	**SSDPEKKW512G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	256 GB	**SSDPEKKW256G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	128 GB	**SSDPEKKW128G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
Intel® SSD 545s Series	1.024TB	**SSDSC2KW010T8X1**	(1.024TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail box	SSD only	1
	512GB	**SSDSC2KW512G8**	(512GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	512GB	**SSDSC2KW512G8XT**	(512GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	10
	512GB	**SSDSC2KW512G8X1**	(512GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1
	512GB	**SSDSCKKW512G8X1**	(512GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1
	256GB	**SSDSC2KW256G8**	(256GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	256GB	**SSDSC2KW256G8XT**	(256GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	10
	256GB	**SSDSC2KW256G8X1**	(256GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1
	256GB	**SSDSCKKW256G8**	(256GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	256GB	**SSDSCKKW256G8XT**	(256GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	10
	256GB	**SSDSCKKW256G8X1**	(256GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1
	128GB	**SSDSC2KW128G8**	(128GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	128GB	**SSDSC2KW128G8XT**	(128GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	10
	128GB	**SSDSC2KW128G8X1**	(128GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1
	128GB	**SSDSCKKW128G8X1**	(128GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Retail Box	SSD only	1

Consumer Family SSDs Intel® Optane™ Memory

PRODUCT NAME	DENSITY	MM#	PRODUCT DESCRIPTION	PRODUCT CODE
Intel® Optane™ Memory	16GB	**957790**	Intel® Optane™ Memory Series	MEMPEK1W016GAXT
	16GB	**953340**	Intel® Optane™ Memory Series	MEMPEK1W016GA01
	16GB	**957794**	Intel® Optane™ Memory Series	MEMPEK1W016GA
	32GB	**953341**	Intel® Optane™ Memory Series	MEMPEK1W032GA01
	32GB	**957795**	Intel® Optane™ Memory Series	MEMPEK1W032GA
	32GB	**957793**	Intel® Optane™ Memory Series	MEMPEK1W032GAXT

Professional Family SSDs

PRODUCT NAME	CAPACITY	PRODUCT CODE	PRODUCT DESCRIPTION	PACKAGE TYPE	PACKAGE CONTENTS	QUANTITY PER BOX
Intel® SSD Pro 7600p Series	2.048TB	**SSDPEKKF0202T8X1**	(2.048TB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	1.02TB	**SSDPEKKF010T8X1**	(1.024TB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	512 GB	**SSDPEKKF512G8X1**	(512GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	256 GB	**SSDPEKKF256G8X1**	(256GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	128 GB	**SSDPEKKF128G8X1**	(128GB, M.2 80mm PCIe 3.0 x4, 3D2, TLC)	Retail Box Single Pack	SSD only	1
Intel® SSD Pro 6000p Series	1024 GB	**SSDPEKKF010T7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	512 GB	**SSDPEKKF512G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	360 GB	**SSDPEKKF360G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	256 GB	**SSDPEKKF256G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
	128 GB	**SSDPEKKF128G7X1**	3D1, TLC / M.2 / 80mm PCI Express 3.0	Reseller box	SSD only	1
Intel® SSD Pro 5450s Series	512GB	**SSDSC2KF512G8X1**	(512GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	256GB	**SSDSC2KF256G8X1**	(256GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Retail Box Single Pack	SSD only	1
	256GB	**SSDSCKKF256G8ES**	(256GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Generic Single Pack	SSD only	1
	256GB	**SSDSCKKF256G8X1**	(256GB, M.2 80mm SATA 6Gb/s, 3D2, TLC)	Retail Box Single Pack	SSD only	1

Intel® Solid State Drives Data Center for PCIe*

PRODUCT NAME	CAPACITY	PRODUCT CODE	PRODUCT DESCRIPTION	PACKAGE TYPE	PACKAGE CONTENTS	QUANTITY PER BOX
Intel® Optane™ SSD DC P4800X Series	750GB	**SSDPED1K750GA01**	(750GB, 1/2 Height PCIe x4, 3D XPoint™)	Generic Pack	SSD only	1
	750GB	**SSDPE21K750GA01**	(750GB, 2.5in PCIe x4, 3D XPoint™)	Generic Pack	SSD only	1
	375GB	**SSDPED1K375GA01**	(375GB, 1/2 Height PCIe x4, 3D XPoint)	Generic Pack	SSD only	1
	375GB	**SSDPE21K375GA01**	(375GB, 2.5in PCIe x4, 3D XPoint™)	Generic Pack	SSD only	1

Intel® SSD DC P4500 Series	8TB	**SSDPERKX080T701**	(8.0TB, Ruler PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	4TB	**SSDPE2KX040T701**	4.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	4TB	**SSDPEDKX040T701**	(4.0TB, 1/2 Height PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	4TB	**SSDPERKX040T701**	(4.0TB, Ruler PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	2TB	**SSDPE2KX020T701**	(2.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	1TB	**SSDPE2KX010T701**	(1.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
Intel® SSD DC P4501 Series	4TB	**SSDPE7KX040T701**	(4.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	2TB	**SSDPE7KX020T701**	(2.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	1TB	**SSDPE7KX010T701**	(1.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	500GB	**SSDPE7KX500G701**	(500GB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
Intel® SSD DC P4510 Series	2TB	**SSDPE2KX020T810**	(2.0TB, 2.5in PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	10
	2TB	**SSDPE2KX020T801**	(2.0TB, 2.5in PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	1
	1TB	**SSDPE2KX010T810**	(1.0TB, 2.5in PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	10
	1TB	**SSDPE2KX010T801**	(1.0TB, 2.5in PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	1
Intel® SSD DC P4511 Series	1TB	**SSDPELKX010T801**	(1.0TB, M.2 110mm PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	1
	2TB	**SSDPELKX020T801**	(2.0TB, M.2 110mm PCIe 3.1 x4, 3D2, TLC)	Generic Pack	SSD only	1
Intel® SSD DC P4600 Series	6.4TB	**SSDPE2KE064T701**	(6.4TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	4TB	**SSDPEDKE040T701**	(4.0TB, 1/2 Height PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	3.2TB	**SSDPE2KE032T701**	(3.2TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	2TB	**SSDPEDKE020T701**	(2.0TB, 1/2 Height PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	2TB	**SSDPE2KE020T701**	(2.0TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	1.6TB	**SSDPE2KE016T701**	(1.6TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
Intel® SSD DC P4601 Series	4TB	**SSDPE7KE040T701**	(4TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	1
	4TB	**SSDPE7KE040T7**	(4TB, 2.5in PCIe 3.1 x4, 3D1, TLC)	Generic Pack	SSD only	50
Intel® SSD DC P4608	6.4TB	**SSDPECKE064T701**	(6.4TB, 1/2 Height PCIe 3.1 x8, 3D1, TLC)	Generic Pack	SSD only	1

Intel® SSD Data Center Family for SATA

PRODUCT NAME	CAPACITY	PRODUCT CODE	PRODUCT DESCRIPTION	PACKAGE TYPE	PACKAGE CONTENTS	QUANTITY PER BOX
Intel® SSD DC S4600 Series	1.9TB	**SSDSC2KG019T701**	(1.9TB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	960GB	**SSDSC2KG960G701**	(960GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	480GB	**SSDSC2KG480G701**	(480GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	240GB	SSDSC2KG240G701	(240GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1

Intel® SSD D3-S4610 Series	240GB	SSDSC2KG240G8	(240GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	240GB	SSDSC2KG240G801	(240GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	480GB	SSDSC2KG480G8	(480GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	480GB	SSDSC2KG480G801	(480GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	960GB	SSDSC2KG960G8	(960GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	960GB	SSDSC2KG960G801	(960GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	1.92TB	SSDSC2KG019T8	(1.92TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	1.92TB	SSDSC2KG019T801	(1.92TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	3.84TB	SSDSC2KG038T8	(3.84TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	3.84TB	SSDSC2KG038T801	(3.84TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
Intel® SSD DC S4500 Series	3.8TB	**SSDSC2KB038T701**	(3.8TB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	1.9TB	**SSDSC2KB019T701**	(1.9TB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	960GB	**SSDSC2KB960G701**	(960GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	480GB	**SSDSC2KB480G701**	(480GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
	240GB	**SSDSC2KB240G701**	(240GB, 2.5in SATA 6Gb/s, 3D1, TLC)	Generic Pack	SSD only	1
Intel® SSD D3-S4510 Series	240GB	**SSDSC2KB240G8**	(240GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	240GB	**SSDSC2KB240G801**	(240GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	480GB	**SSDSC2KB480G8**	(480GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	480GB	**SSDSC2KB480G801**	(480GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	960GB	**SSDSC2KB960G8**	(960GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	960GB	**SSDSC2KB960G801**	(960GB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	1.9TB	**SSDSC2KB019T8**	(1.9TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	1.9TB	**SSDSC2KB019T801**	(1.9TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1
	3.8TB	**SSDSC2KB038T8**	(3.8TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	50
	3.8TB	**SSDSC2KB038T801**	(3.8TB, 2.5in SATA 6Gb/s, 3D2, TLC)	Generic Pack	SSD only	1

For more information, visit www.intel.com/ssd

1 Performance varies by capacity. Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. System configurations:

1a Intel® Core™ i7-4770 CPU at 3.4 GHz, 8GB DDR3 at 1600 MHz, Intel® SSD DC P3608 Series 1.6TB

1b Intel Core i7-3770K CPU @ 3.50GHz, 8GB of system memory, Windows[1] Server 2012, IOMeter. Random performance is collected with 4 workers each with 32 QD. Average RMS Active write power measured at max bandwidth

1c Performance measured by Intel using Iometer 1.1.0 with queue depth 32. Measurements are performed on 8 GB of Logical Block Address (LBA) range on a full SSD. System configuration: Intel® Core i7-5960X processor, Intel® X99 chipset, PC2666 16GB DRAM.

2 Random 4 KB reads. Performance specifications apply to both compressible and non-compressible data.

3 Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com

4 1 PB = 1000 TeraBytes

5 Desktop installation kit contents: SATA signal cables, screws, installation guide, and warranty documentation.

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary. For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

* Other names and brands may be claimed as the property of others.

PREPARE TO BE AMAZED

INTEL® DESKTOP PROCESSORS

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® DESKTOP PROCESSORS

This new generation of processors extends all the capabilities users have come to love in our desktop platforms with advanced innovations that deliver exciting new features to immerse you in incredible experiences on a variety of form factors.

INTEL® DESKTOP PROCESSORS

ACCELERATE PERFORMANCE WITH 8TH GEN INTEL® CORE™ PROCESSOR FAMILY.

**All-new performance. All-new experiences.
An all-new computer.**

PERFORMANCE TO EXCITE

A desktop computer based on a 8th Generation Intel® Core™ processor is always ready for real-life productivity, creativity and entertainment.

EXPERIENCE TO AMAZE

8th Generation Intel® Core™ processor-based desktop PCs are packed with new and enhanced features to deliver amazing experiences that a 5-year old PC can't handle. Uncompromised gaming, while you stream, chat and share with your community – stunning visuals of Ultra HD 4K premium content – or transport into a great VR experience.

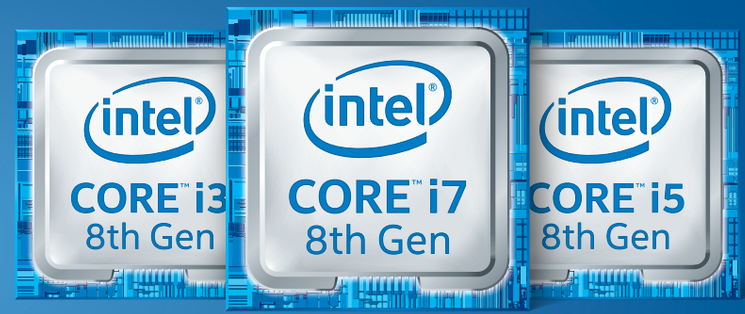
HARDWARE-BASED FEATURES MITIGATE THREATS

8th Generation Intel® Core™ processors offer hardware-level security features that strengthen the protection of your enabled security software. Hardware-based security to help you compute with greater peace of mind.

SCALABLE PORTFOLIO OF PROCESSORS

The 8th Generation Intel® Core™ processor family delivers significant value and is a great investment in your success. From the i7-8700K to the i3-8100, there is a processor to fit a wide range of budgets and needs, from the performance-hungry professionals to the first-time buyers.

8TH GENERATION INTEL® CORE™ DESKTOP PROCESSOR



Be Ready for Amazing Experiences

This new generation of processors extends all the capabilities users have come to love in our desktop platforms with advanced innovations that deliver exciting new features to immerse you in incredible experiences on a variety of form factors.

Experience Amazing

8th Generation Intel® Core™ processor-based desktop platforms are loaded with new and enhanced features to deliver amazing experiences that five-year-old systems can't handle.

Incredible VR

A high-performance processor is key to achieving a balanced platform to make your VR experiences great. Attach your premium head-mounted display (HMD) to an Intel® Core™ i7 or i5 processor-based PC, and prepare to be amazed.

Great Gaming

Outstanding gaming experiences extend beyond your personal smooth gameplay to your entire gaming community. The 8th Generation Intel® Core™ processor family makes it easy to share those experiences by live-streaming or recording, editing, and posting your epic highlights.

Ultra-high Definition Entertainment

Desktop computers based on the 8th Generation Intel® Core™ processors integrate advanced media technologies that bring premium, high-quality content to your desktop.

Ultimate Protection Built Into the Silicon[1]

8th Generation Intel® Core™ processors integrate hardware-level technologies that strengthen the protection of your enabled security[1] software. Hardware-based security helps you experience online and offline activities with peace of mind.

Scalable Portfolio of Processors

From the jaw-dropping performance of the 8th Generation Intel® Core™ i7-8700K processor with six cores to the practical capabilities of the 8th Generation Intel® Core™ i3-8100 processor, our latest generation of desktop processors fits a wide range of budgets and needs.

Prepare to be Amazed

The 8th Generation Intel® Core™ processors are raising the bar of desktop computing with innovations to drive exciting experiences, capabilities, and form factors. Experience all the amazing things you and a new 8th Generation Intel® Core™ processor-powered PC can do.

1 Intel® technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at https://www.intel.com.

* Other brands and names may be claimed as the property of others

8TH GEN INTEL® CORE™ DESKTOP PLATFORM

Exceptional Platform Performance

The 8th Generation Intel® Core™ processors redefine mainstream desktop PC performance with up to six cores for more processing power—that's two more cores than the previous generation Intel® Core™ processor family—Intel® Turbo Boost Technology 2.0 to increase the maximum turbo frequency up to 4.7 GHz, and up to 12 MB of cache memory.[1] Intel® Hyper-Threading Technology (Intel® HT Technology)[1] delivers up to 12-way multitasking support in the latest generation of Intel® Core™ processors. For the enthusiast, the unlocked 8th Generation Intel® Core™ i7-8700K processor provides you the opportunity to tweak the platform performance to its fullest potential and enjoy great gaming and VR experiences.

The new 8th Generation Intel® Core™ processor family delivers:

- An impressive portfolio of standard and unlocked systems for a broad range of usages and performance levels
- New system acceleration when paired with Intel® Optane™ memory to deliver amazing system responsiveness[1]
- Intel® Turbo Boost Technology 2.0 to give you that extra burst of performance when you need it
- Intel® Hyper-Threading Technology (Intel® HT Technology), which allows each processor core to work on two tasks at the same time, improving multitasking, speeding up workflows, and accomplishing more in less time
- DDR4 RAM memory technology support, which allows systems to have up to 64 GB of memory and up to 2666 MT/s memory transfer speeds
- The ability to set an overclocked ratio per core with unlocked processors,[1] when paired with select chipset SKUs, to provide you more control and more granularity for overclocking[2] your platform

BRAND NAME AND PROCESSOR NUMBER[3]	BASE FREQUENCY	MAX TURBO FREQUENCY[4]	MEMORY SPEED	TDP	SOCKET (LGA)
Intel® Core™ i7-8700K	3.70 GHz	4.70 GHz	2 channels DDR4-2666	95 W	1151
Intel® Core™ i7-8700	3.20 GHz	4.60 GHz	2 channels DDR4-2666	65 W	1151
Intel® Core™ i5-8600K	3.60 GHz	4.30 GHz	2 channels DDR4-2666	95 W	1151
Intel® Core™ i5-8600	3.10 GHz	4.30 GHz	2 channels DDR4-2666	65 W	1151
Intel® Core™ i5-8500	3.00 GHz	4.10 GHz	2 channels DDR4-2666	65 W	1151
Intel® Core™ i5-8400	2.80 GHz	4.00 GHz	2 channels DDR4-2666	65 W	1151
Intel® Core™ i3-8350K	4.00 GHz	N/A	2 channels DDR4-2400[5]	91 W	1151
Intel® Core™ i3-8300	3.70 GHz	N/A	2 channels DDR4-2400[5]	62 W	1151
Intel® Core™ i3-8100	3.60 GHz	N/A	2 channels DDR4-2400[5]	65 W	1151

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BRAND NAME AND PROCESSOR NUMBER[3]	BASE FREQUENCY	MAX TURBO FREQUENCY[4]	MEMORY SPEED	TDP	SOCKET (LGA)
Intel® Pentium® Gold G5600	3.90 GHz	N/A	2 channels DDR4-2400[5]	54	1151
Intel® Pentium® Gold G5500	3.80 GHz	N/A	2 channels DDR4-2400[5]	54	1151
Intel® Pentium® Gold G5400	3.70 GHz	N/A	2 channels DDR4-2400[5]	54/58[6]	1151
Intel® Celeron® G4920	3.20 GHz	N/A	2 channels DDR4-2400[5]	54	1151
Intel® Celeron® G4900	3.10 GHz	N/A	2 channels DDR4-2400[5]	54	1151

1 Intel® technologies features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at http://www.intel.com.

2 Warning: Altering PC clock or memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details. For more information, visit http://www.intel.com/content/www/za/en/gaming/overclocking-intel-processors.html.

3 NOTE: Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

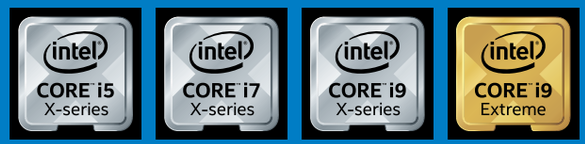
4 Refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology

5 DDR4-2400 support is 1 and 2 DPC for UDIMMs but only 1DPC for SODIMMs

6 From 4-core die (54W) and fused 6-core die (58w)

* Other brands and names may be claimed as the property of others

INTEL® CORE™ X-SERIES PROCESSOR FAMILY



Intel® Core™ X-Series Processors and Intel® X299 Chipset[1]

Up to 18 Cores, 36 Way Multitask Processing. Ultimate platform for extreme gaming systems, intensive digital content creation and virtual reality usages.

- Unprecedented scalability from 4 cores to 18 cores
- Fully unlocked for performance tuning
- Improved Intel® Turbo Boost Max Technology 3.0
- Intel® Turbo Boost Technology 2.0
- Rebalanced Intel® Smart Cache hierarchy
- Up to 44 PCI Express* 3.0 lanes
- Support for Optane™ Memory

Intel® X99 Chipset

- Processor Overclocking with all Intel® Core™ X-series processors
- PCI Express 3.0 storage support with Intel® Rapid Storage Technology

BRAND NAME AND PROCESSOR NUMBER[2]	BASE FREQUENCY	MAX TURBO FREQUENCY[3]	INTEL® TURBO BOOST MAX TECHNOLOGY 3.0[4]	CORES/THREADS	PCI EXPRESS* 3.0 LANES	MEMORY SPEED	TDP	SOCKET (LGA)
Intel® Core™ i9-7980XE	2.60 GHz	4.20 GHz	4.40 GHz	18/36	44	4 channels DDR4-2666	165 W	2066
Intel® Core™ i9-7960X	2.80 GHz	4.20 GHz	4.40 GHz	16/32	44	4 channels DDR4-2666	165 W	2066
Intel® Core™ i9-7940X	3.10 GHz	4.30 GHz	4.40 GHz	14/28	44	4 channels DDR4-2666	165 W	2066
Intel® Core™ i9-7920X	2.90 GHz	4.30 GHz	4.40 GHz	12/24	44	4 channels DDR4-2666	140 W	2066
Intel® Core™ i9-7900X	3.30 GHz	4.30 GHz	4.50 GHz	10/20	44	4 channels DDR4-2666	140 W	2066
Intel® Core™ i7-7820X	3.60 GHz	4.30 GHz	4.50 GHz	8/16	28	4 channels DDR4-2666	140 W	2066
Intel® Core™ i7-7800X	3.50 GHz	4.00 GHz	N/A	6/12	28	4 channels DDR4-2400	140 W	2066
Intel® Core™ i7-7740X	4.30 GHz	4.50 GHz	N/A	4/8	16	2 channels DDR4-2666	112 W	2066
Intel® Core™ i5-7640X	4.00 GHz	4.20 GHz	N/A	4/4	16	2 channels DDR4-2666	112 W	2066

1 Features are present with select chipsets and processor combinations. Warning: Altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications.

2 NOTE: Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

3 Refers to the maximum dual-core frequency that can be achieved with Intel® Turbo Boost Technology 2.0

4 Refers to the maximum dual-core frequency that can be achieved with Intel® Turbo Boost Technology Max 3.0

* Other brands and names may be claimed as the property of others

7TH GEN INTEL® CORE™ DESKTOP PLATFORM

7th Gen Intel® Core™ Processors and Intel® 200 Series Chipset[1]

Leading the pack is the Intel® Core™ i7-7700K processor. Architected for performance, this processor packs 4 high-performing cores with core base frequency of 4.2GHz and 8MB of cache memory. Kick up the performance even higher with Intel® Turbo Boost 2.0 technology to bump the max turbo frequency to an amazing 4.5GHz. Add Intel® Hyper-Threading Technology for 8-way multitasking to deliver the performance knockout punch. Not enough? For the enthusiast, this processor is unlocked, you can tweak the performance to its fullest potential. The new 7th Gen Intel Core desktop processors deliver:

- An impressive portfolio of standard and unlocked processors
- Supports Intel® Optane™ memory
- Intel® Turbo Boost Technology 2.0
- Intel® Hyper-Threading Technology
- Intel® Smart Cache Technology with up to 8MB of Cache
- Supports Two-Channel DDR4/DDR3L
- Intel® HD Graphics 630 (1150 MHz)
- 16 PCI Express* 3.0 lanes

Intel® Z270 Chipset

- Processor Overclocking with Intel® Processor “K” SKUs
- PCI Express 3.0 storage support with Intel® Rapid Storage Technology
- Support for processor PCIe Express* 3.0 1x16, 2x8, or 1x8 and 2x4

BRAND NAME AND PROCESSOR NUMBER[2]	BASE FREQUENCY	MAX TURBO FREQUENCY[3]	PCI EXPRESS* 3.0 LANES	MEMORY SPEED	TDP	SOCKET (LGA)
Intel® Core™ i7-7700K	4.2 GHz	Up to 4.5 GHz	16	2 channels DDR4-2400[4] DDR3L-1600	91 W	1151
Intel® Core™ i7-7700	3.6 GHz	Up to 4.2 GHz	16	2 channels DDR4-2400[4] DDR3L-1600	65 W	1151
Intel® Core™ i5-7600K	3.8 GHz	Up to 4.2 GHz	16	2 channels DDR4-2400[4] DDR3L-1600	91 W	1151
Intel® Core™ i5-7600	3.5 GHz	Up to 4.1 GHz	16	2 channels DDR4-2400[4] DDR3L-1600	65 W	1151
Intel® Core™ i3-7350K	4.2 GHz	N/A	16	2 channels DDR4-2400[4] DDR3L-1600	60 W	1151
Intel® Core™ i3-7300	4.0 GHz	N/A	16	2 channels DDR4-2400[4] DDR3L-1600	51 W	1151

1 Features are present with select chipsets and processor combinations. Warning: Altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications.

2 NOTE: Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

3 Refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology

4 DDR4-2400 support is 1 and 2 DPC for UDIMMs but only 1DPC for SODIMMs

* Other brands and names may be claimed as the property of others

INTEL® 300 SERIES CHIPSET

KEY FEATURE DIFFERENTIATION	Z370	H370	H310	Q370	B360
Intel® ME Firmware SKU	ME 11 Consumer	ME 12 Consumer/Corporate	ME 12 Consumer	Corporate	Consumer/Corporate
Processor PCI Express* 3.0 Configuration Support	1x16 or 2x8 or 1x8+2x4	1x16	1x16	1x16 or 2x8 or 1x8+2x4	1x16
Independent Display Ports / Pipes Support[3]	3/3	3/3	3/2	3/3	3/3
Memory Channels / DIMMs per Channel	2/2	2/2	2/1	2/2	2/2
Processor Overclocking[4]	✓	-	-	-	-
Integrated Intel® Wireless-AC Support	No	✓	✓	✓	✓
Intel® Smart Sound Technology[3]	✓	✓	-	✓	✓
Intel® Optane™ Memory Support	✓	✓	-	✓	✓
Intel® SIPP Eligible[5]	-	-	-	✓	-
Intel® vPro™ Technology Eligible[5]	-	-	-	✓	-
Intel® Active Management Technology[5]	-	-	-	✓	-
Integrated SDXC (SDA 3.0) Support	-	✓	✓	✓	✓
Maximum High Speed I/O Lanes	30	30	14	30	24
Total USB Ports (Maximum USB 3.1)[2]	14 (10)	14 (8)	10 (4)	14 (10)	12 (6)
Maximum USB 3.1 Ports: Gen 2 (10 Gb/s) / Gen 1 (5 Gb/s)[2]	0 / 10	4 / 8	0 / 4	6 / 10	4 / 6
Maximum SATA 3.0 Ports (6 Gb/s)[2]	6	6	4	6	6
Maximum PCI Express* 3.0 lanes[2]	24	20	6 (Gen 2.0 only)	24	12
Intel® Rapid Storage Technology	✓	✓	✓	✓	✓
Maximum Intel® RST for PCIe Storage Ports (x2 M.2 or x4 M.2)[2]	3	2	0	3	1
Intel® RST PCIe RAID 0, 1, 5[1]	✓	✓	-	✓	-
Intel® RST SATA RAID 0, 1, 5, 10[1]	✓	✓	-	✓	-
Intel® Rapid Storage Technology for CPU-attached Intel PCIe Storage[1]	✓	-	-	✓	-

1 Some features and capabilities require SSDs and/or multiple HDDs

2 Maximum lanes/port counts available may vary depending on platform implementation.

3 Certain features may not be present in all SKUs.

4 Altering clock frequency or voltage may damage or reduce the useful life of the processor and other system components, and may reduce system stability and performance. Product warranties may not apply if the processor is operated beyond its specifications. Check with the manufacturers of system and components for additional details.

5 Intel SIPP, Intel vPro™, & Intel AMT support requires select Coffee Lake-S processors and select Intel® 300 series chipsets

* Other brands and names may be claimed as the property of others.

INTEL® 200 SERIES CHIPSET

FEATURES[1]	H270	Z270	B250	Q250	Q270
Processor Support / Socket	LGA 1151	LGA 1151	LGA 1151	LGA 1151	LGA 1151
Processor Overclocking	-	✓[1]	-	-	-
Independent Display Support (digital ports/pipes)	3/3	3/3	3/3	3/3	3/3
Intel® Rapid Storage Technology	✓	✓	✓	✓	✓
Intel® Rapid Storage Technology SATA RAID 0/1/5/10	✓	✓			✓
Intel® Rapid Storage Technology for PCIe Storage Driver	✓	✓	✓	✓	✓
Intel® Smart Response Technology	-	✓			✓
Intel® Smart Connect Technology	-	-	-	-	-
Intel® Rapid Start Technology	-	-	-	-	-
Intel® Wireless Display	✓	✓	✓	✓	✓
Intel® Platform Trust Technology	✓	✓	✓	✓ (w/o Intel® TXT)	✓ (w/o Intel® TXT)
Intel® Device Protection Technology with Boot Guard	✓	✓	✓	✓	✓
Processor PCI Express* 3.0 Configuration	1x16	1x16 or 2x8 or 1x8+2x4	1x16	1x16	1x16 or 2x8 or 1x8+2x4
Intel® ME Firmware SKU[2]	Cons./Corp.	Cons.	Cons./Corp.	Corp.	Corp.
Intel® SIPP	-	-	-	✓	✓
Intel® vPro™ Technology	-	-	-	-	✓
Intel® Active Management Technology	-	-	-	-	✓
Intel® Standard Manageability	-	-	-	✓	✓
Intel® Small Business Advantage	✓	-	✓	✓	✓
Intel® Small Business Basics	✓	-	✓	✓	✓
Total USB Ports (Max USB 3.0)	14(8)	14(10)	12(6)	14(8)	14(10)
Total SATA Ports (Max 6 Gb/s)	6	6	6	6	6
Max PCI Express* Ports (Gen)	16(3.0)	24(3.0)	12(3.0)	14(3.0)	24(3.0)
Max Intel® RST for PCIe Storage (x4 M.2 or x2 SATA Express)	2	3	1	1	3

[1] Features are present with select chipsets and processor combinations. Warning: Altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications.

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications and roadmaps.

* Other brands and names may be claimed as the property of others.

8TH GENERATION INTEL® CORE™ DESKTOP PROCESSOR PRODUCTS

8th Generation Intel® Core™ Processor SKUs

Processor Number	Base Frequency (GHz)	Intel® Smart Cache	Cores/ Threads	Memory Speed Support (DDR4)[2]	Intel® Turbo Boost Technology maximum single core turbo frequency (GHz)	Unlocked[1]	Graphics	Dynamic Frequency (MHz)	Integrated Memory Controller	TDP (W)	Intel® SIPP[3]	Intel Technologies				
												Intel® vPro™ Technology[4]	ISM*[4]	Intel® TXT	Intel® Boot Guard	Intel® Optane™ Memory Ready[5]
Core i7-8700K	3.7	12M	6/12	2666	4.7	✓	Intel® UHD Graphics 630	1200	2 ch	95	✓	✓	✓	✓	✓	✓
Core i5-8600K	3.6	9M	6/6	2666	4.3	✓	Intel® UHD Graphics 630	1150	2 ch	95	✓	✓	✓	✓	✓	✓
Core i3-8350K	4	8M	4/4	2400	N/A	✓	Intel® UHD Graphics 630	1150	2 ch	91			✓		✓	✓
Core i7-8700	3.2	12M	6/12	2666	4.6		Intel® UHD Graphics 630	1200	2 ch	65	✓	✓	✓	✓	✓	✓
Core i5-8600	3.1	9M	6/6	2666	4.3		Intel® UHD Graphics 630	1150	2 ch	65	✓	✓	✓	✓	✓	✓
Core i5-8500	3	9M	6/6	2666	4.1		Intel® UHD Graphics 630	1100	2 ch	65	✓	✓	✓	✓	✓	✓
Core i5-8400	2.8	9M	6/6	2666	4		Intel® UHD Graphics 630	1050	2 ch	65			✓		✓	✓
Core i3-8300	3.7	8M	4/4	2400	N/A		Intel® UHD Graphics 630	1150	2 ch	62			✓		✓	✓
Core i3-8100	3.6	6M	4/4	2400	N/A		Intel® UHD Graphics 630	1100	2 ch	65			✓		✓	✓
Pentium Gold G5600	3.9	4M	2/4	2400	N/A		Intel® UHD Graphics 630	1100	2 ch	54			✓		✓	
Pentium Gold G5500	3.8	4M	2/4	2400	N/A		Intel® UHD Graphics 630	1100	2 ch	54			✓		✓	
Pentium Gold G5400	3.7	4M	2/4	2400	N/A		Intel® UHD Graphics 610	1050	2 ch	54/58[6]			✓		✓	
Celeron G4920	3.2	2M	2/2	2400	N/A		Intel® UHD Graphics 610	1050	2 ch	54					✓	
Celeron G4900	3.1	2M	2/2	2400	N/A		Intel® UHD Graphics 610	1050	2 ch	54					✓	
Core i7-8700T	2.4	12M	6/12	2666	4		Intel® UHD Graphics 630	1200	2 ch	35	✓	✓	✓	✓	✓	✓
Core i5-8600T	2.3	9M	6/6	2666	3.7		Intel® UHD Graphics 630	1150	2 ch	35	✓	✓	✓	✓	✓	✓

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Processor Number	Base Frequency (GHz)	Intel® Smart Cache	Cores/ Threads	Memory Speed Support (DDR4) [2]	Intel® Turbo Boost Technology maximum single core turbo frequency (GHz)	Unlocked[1]	Graphics	Dynamic Frequency (MHz)	Integrated Memory Controller	TDP (W)	Intel® SIPP[3]	Intel Technologies				
												Intel® vPro™ Technology[4]	ISM*[4]	Intel® TXT	Intel® Boot Guard	Intel® Optane™ Memory Ready[5]
Core i5-8500T	2.1	9M	6/6	2666	3.5		Intel® UHD Graphics 630	1100	2 ch	35	✓	✓	✓	✓	✓	✓
Core i5-8400T	1.7	9M	6/6	2666	3.3		Intel® UHD Graphics 630	1050	2 ch	35			✓		✓	✓
Core i3-8300T	3.2	8M	4/4	2400	N/A		Intel® UHD Graphics 630	1100	2 ch	35			✓		✓	✓
Core i3-8100T	3.1	6M	4/4	2400	N/A		Intel® UHD Graphics 630	1100	2 ch	35			✓		✓	✓
Pentium Gold G5500T	3.2	4M	2/4	2400	N/A		Intel® UHD Graphics 630	1050	2 ch	35			✓		✓	
Pentium Gold G5400T	3.1	4M	2/4	2400	N/A		Intel® UHD Graphics 610	1050	2 ch	35			✓		✓	
Celeron G4900T	2.9	2M	2/2	2400	N/A		Intel® UHD Graphics 610	1000	2 ch	35					✓	

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.
All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards)
All processors support Intel® Virtualization Technology (Intel® VT-x)

1 See overclocking disclaimer above
2 DDR4 maximum speed support is 1 and 2 DPC for UDIMMs but only 1 DPC for SODIMMs
3 Eligible for Intel® SIPP starting with Coffee Lake-S Corporate Platform availability
4 When paired with the eligible Intel® 300 Series chipset SKU, availability targeted Q1 2018.
5 Intel® Optane™ memory requires specific hardware and software configuration. Visit www.intel.com/Optanememory for configuration requirements
6 From 4-core die (54W) and fused 60-core die (58w)

7TH GENERATION INTEL® CORE™ DESKTOP PROCESSOR PRODUCTS

7th Generation Intel® Core™ Processor SKUs

Processor Number	Base Frequency (GHz)[1]	Total Cache	Cores/ Threads	Memory Support (DDR4/DDR3L)	Intel® Turbo Boost Technology maximum single core turbo frequency (GHz)[2]	Unlocked[3]	Graphics	Dynamic Frequency (MHz)	Integrated Memory Controller	TDP (W)	FMB	Intel® SIPP	Intel Technologies				
													Intel® vPro Technology	Intel® VT-d	Intel® TXT	AES-NI	Intel® Device Protection with Boot Guard
i7-7700K	4.2	8M	4/8	DDR4/DDR3L 2400²/1600	Up to 4.5GHZ	✓	Intel® HD Graphics 630	1150	2 ch	91	2015D			✓		✓	✓
i7-7700	3.6	8M	4/8	DDR4/DDR3L 2400²/1600	Up to 4.2GHz		Intel® HD Graphics 630	1150	2 ch	65	2015C	✓	✓	✓	✓	✓	✓
i5-7600K	3.8	6M	4/8	DDR4/DDR3L 2400²/1600	Up to 4.2GHz	✓	Intel® HD Graphics 630	1150	2 ch	91	2015D			✓		✓	✓
i5-7600	3.5	6M	4/4	DDR4/DDR3L 2400²/1600	Up to 3.1GHz		Intel® HD Graphics 630	1150	2 ch	65	2015C	✓	✓	✓	✓	✓	✓
i5-7500	3.4	6M	4/4	DDR4/DDR3L 2400²/1600	Up to 3.8GHz		Intel® HD Graphics 630	1050	2 ch	65	2015C	✓	✓	✓	✓	✓	✓
i5-7400	3.0	6M	4/4	DDR4/DDR3L 2400²/1600	Up to 3.5GHz		Intel® HD Graphics 630	950	2 ch	65	2015C					✓	✓
i3-7350K	4.2	4M	2/4	DDR4/DDR3L 2400²/1600	N/A	✓	Intel® HD Graphics 630	1150	2 ch	60	2015D			✓		✓	✓
i3-7320	4.1	4M	2/4	DDR4/DDR3L 2400²/1600	N/A		Intel® HD Graphics 630	1150	2 ch	51	2015C					✓	✓
i3-7300T	3.5	4M	2/8	DDR4/DDR3L 2400²/1600	N/A		Intel® HD Graphics 630	950	2 ch	35	2015A					✓	✓
i3-7300	4.0	4M	2/4	DDR4/DDR3L 2400²/1600	N/A		Intel® HD Graphics 630	1150	2 ch	51	2015C					✓	✓
i3-7100T	3.4	3M	2/4	DDR4/DDR3L 2400²/1600	N/A		Intel® HD Graphics 630	950	2 ch	35	2015A					✓	✓
i3-7100	3.9	3M	2/4	DDR4/DDR3L 2400²/1600	N/A		Intel® HD Graphics 630	1050	2 ch	51	2015C					✓	✓

1 Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: http://www.intel.com/products/processor_number/
All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards)
All processors support Intel® Virtualization Technology (Intel® VT-x)

2 Requires a system with Intel® Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your PC manufacturer. Performance varies tem configuration. For more information, visit http://www.intel.com/go/turbo

3 Warning: Altering PC clock or memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details. Intel® Turbo Boost Technology

7th Generation Intel® Core™ Processor SKUs

Processor Number	Base Frequency (GHz)[1]	Total Cache	Cores/ Threads	Memory Type	Memory Speed Support (DDR4/ DDR3L)	Intel® Turbo Boost Technology maximum single core turbo frequency (GHz)[2]	Unlocked[3]	Graphics	Dynamic Frequency (MHz)	Integrated Memory Controller	TDP (W)	FMB	Intel® SIPP	Intel Technologies				
														Intel® vPro Technology	Intel® VT-d	Intel® TXT	AES-NI	Intel® Device Protection with Boot Guard
G4620	**3.7**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 630	1100	2 ch	51	2015C			✓		✓	✓
G4600	**3.6**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 630	1100	2 ch	51	2015C						
G4560	**3.5**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 610	1100	2 ch	54[4]	2015C			✓		✓	✓
G3950	**3.0**	2M	2/2	DDR4/ DDR3L	2133/ 1600	N/A		Intel® HD Graphics 610	1050	2 ch	51	2015C			✓		✓	✓
G3930	**2.9**	2M	2/2	DDR4/ DDR3L	2133/ 1600	N/A		Intel® HD Graphics 610	1050	2 ch	51	2015C			✓		✓	✓
Socket 1151																		
i3-7300T	**3.5**	4M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 630	1100	2 ch	35	2015A			✓		✓	✓
i3-7100T	**3.4**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 630	1100	2 ch	35	2015A			✓		✓	✓
G4600T	**3.0**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 630	1050	2 ch	35	2015A			✓		✓	✓
G4560T	**2.9**	3M	2/4	DDR4/ DDR3L	2400[1]/ 1600	N/A		Intel® HD Graphics 610	1050	2 ch	35	2015A			✓		✓	✓
G3930T	**2.7**	2M	2/2	DDR4/ DDR3L	2133/ 1600	N/A		Intel® HD Graphics 610	1000	2 ch	35	2015A			✓		✓	✓

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards)

All processors support Intel® Virtualization Technology (Intel® VT-x)

1 DDR4-2400 support is 1 and 2 DPC for UDIMMs but only 1 DPC for SODIMMs

2 Requires a system with Intel® Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your PC manufacturer. Performance varies tem configuration. For more information, visit http://www.intel.com/go/turbo

3 Warning: Altering PC clock or memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details.

4 Fused from quad core source die

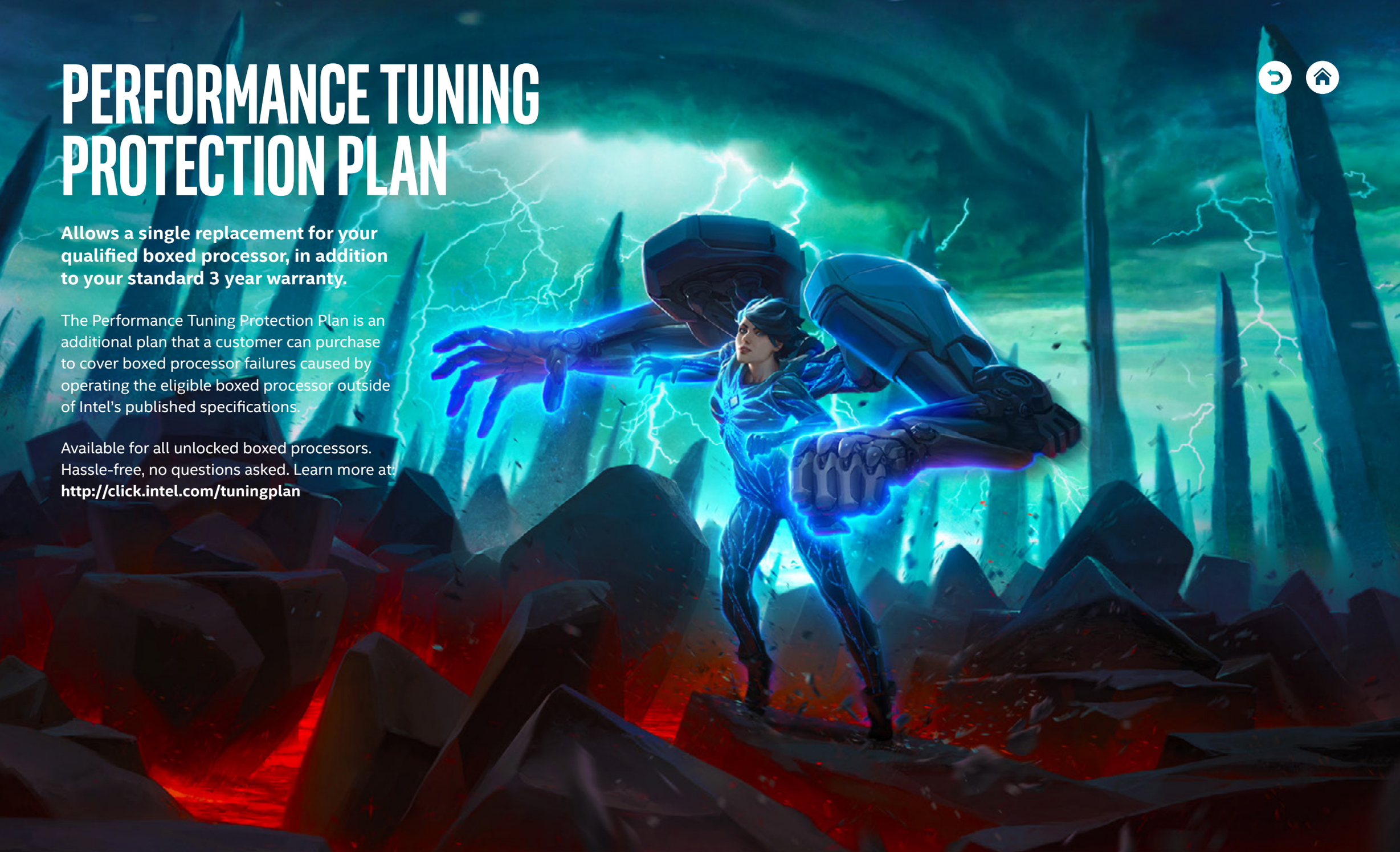
* Intel® Standard Manageability

PERFORMANCE TUNING PROTECTION PLAN

Allows a single replacement for your qualified boxed processor, in addition to your standard 3 year warranty.

The Performance Tuning Protection Plan is an additional plan that a customer can purchase to cover boxed processor failures caused by operating the eligible boxed processor outside of Intel's published specifications.

Available for all unlocked boxed processors. Hassle-free, no questions asked. Learn more at: **http://click.intel.com/tuningplan**



INTEL® ETHERNET DESKTOP ADAPTERS

Intel® Product Quick Reference Matrix

Q4 2018

1GB INTEL® ETHERNET FOR DESKTOP

PRODUCT	CONNECTOR & CABLE MEDIUM	CABLING TYPE	INTEL® ETHERNET CONTROLLER	SLOT TYPE, MAXIMUM BUS SPEED & BUS WIDTH	PORTS	SUPPORTED SLOT HEIGHTS	HALOGEN FREE	INTELLIGENT OFFLOADS	NETWORK VIRTUALIZATION TECHNOLOGY FOR CONNECTIVITY	STORAGE OVER ETHERNET	INTEL ETHERNET POWER MANAGEMENT[1]	ORDER CODES
 Intel® Gigabit CT Desktop Adapter	RJ45 Copper Twisted-pair	Category 5 or better: up to 100m	82574	PCI Express* v2.1 2.5 GT/s, x1 Lane	Single Port	Low Profile and Full Height	N/A	N/A	N/A	iSCSI, NFS, SMB	N/A	EXPI9301CT EXPI9301CTBLK

Make the Connection with Intel® Ethernet Adapters at intel.com/ethernet

[1] Intel Ethernet Power Management includes Energy Efficient Ethernet (EEE) and DMA Coalescing.

INTEL® BOXED THERMAL SOLUTIONS

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® BOXED THERMAL SOLUTIONS

INTEL® THERMAL SOLUTION TS15A

The Intel® Thermal Solution TS15A (air cooling) is an efficient thermal solution for 6th Generation Intel® Core™ processors. It is designed to support a wide range of processor sockets for performance desktops.

Features
- Supports up to 130 W processors
- Lower cost
- Shock and vibe compliant and keep out safe
- Supports the LGA 1151/1156/1150
- 3 year limited warranty

MM# 944216
Product code: BXTS15A

INTEL® THERMAL SOLUTION TS13A

The Intel® Thermal Solution TS13A (air cooling) is designed for budget-focused cooling requirements. Targeted uses include business, government, and entry-level workstations.

Features
- Supports up to 140 W processors
- Low cost
- Shock and vibe compliant and keep out safe
- Supports the LGA2011 and LGA2011-v3 socket only
- 3 year limited warranty

MM# 937425
Product code: BXTS13A

INTEL® THERMAL SOLUTION HTS1155LP

The Intel® Thermal Solution HTS1155LP is a compact cooling solution for Thin Mini-ITX based All-in-One PCs, and compatible Mini PCs.

Features
- Low-profile All-In-One / Small Form Factor thermal solution
- Supports up to 65 W processors in the LGA1155 socket
- Compatible with Thin Mini-ITX desktop boards
- Multiple options for fan placement
- Available now from authorized Intel® distributors
- 3 year limited warranty

MM# 917752
Product code: BXHTS1155LP

INTEL® NUC

Intel® Product Quick Reference Matrix

Q4 2018

SMALL PACKAGE. BIG POTENTIAL.

INTEL® NUC

The Intel® NUC is a powerful 4x4-inch mini PC with entertainment, gaming, and productivity features, including a customizable board that is ready to accept the memory, storage, and operating systems that you want.

INTEL® NUC MINI PCS

Fully configured Intel® NUC with Windows 10 pre-installed.

INTEL® NUC KITS

Customizable kit, configurable features - choose memory, storage, and operating system.

INTEL® NUC BOARDS

4x4-inch form factor with soldered-on processor.

INTEL® NUC MINI PC'S

NEW! 8th generation Intel® NUCs, now with Optane!

The Intel® NUC Mini PC has gotten faster, smaller and smarter! The latest products with 8th generation Intel® Core™ processors are available, including 3 skus with Intel® Optane memory pre-installed for an incredibly responsive PC experience. Combining an incredibly small form factor, cutting-edge technologies and the performance of Intel's latest processors, Intel® NUCs deliver an incredible user experience.

INTEL® NUC MINI PCS

Fully configured Intel® NUC with Windows 10 pre-installed.

INTEL® NUC KITS

The Intel® NUC kits are available from various retailers and include a highly customizable four-by-four-inch board that is ready to accept the memory, hard drive, and operating system you choose to install.

INTEL® NUC BOARDS

The four-by-four-inch Intel® NUC board comes complete with a soldered-on processor. The board can be purchased independently of the kit, giving you the flexibility to choose the chassis that best suits your needs.

SMALL PACKAGE, BIG POTENTIAL

The Intel® NUC is an energy-efficient, fully functioning and versatile PC.

IMMERSIVE GAMING

With a form factor as small as a game controller, but as powerful as a dragon slayer, the Intel® NUC delivers an immersive gaming experience.

BUSINESS PRODUCTIVITY

The Intel® NUC delivers a fully functioning PC at a fraction of the size, as well as support for VESA* mount brackets and much more.

HOME ENTERTAINMENT

Compact and capable, Intel® NUC gives you the performance you need to be organized, connected and enjoy a visually stunning experience.

INTEL® NUC MINI PCS

	FULL SYSTEM	FULL SYSTEM
PRODUCT FAMILY	**NUC8i3CYSM**	**NUC8i3CYSN**
DESCRIPTION	**Intel® NUC 8 Home, a mini PC with Windows® 10**	**Intel® NUC 8 Home, a mini PC with Windows® 10**
CPU & GFX	**8th Generation Intel® Core™ i3-8121U** 2.2 GHz - 3.2 GHz Turbo, Dual Core, 4MB Cache, 15W AMD Radeon™* 540 discrete graphics, 2GB GDDR5 graphics memory	
RAM	8GB Dual-channel LPDDR4-2666	4GB Dual-channel LPDDR4-2666
HDD	1TB SATA3 HDD pre-installed	
INTEL® OPTANE™ MEMORY	Yes	
OS LOAD	Windows 10 Home x64, Intel® Driver & Support Assistant pre-loaded	
DIMENSIONS	117 x 112 x 52 mm	
CONNECTIVITY	2x front USB 3.1 (one charging), 2x rear USB 3.1, and 2x internal USB 2.0 via header Front Consumer Infrared port	
VIDEO OUTPUTS	2x HDMI 2.0b ports	
SDXC	SDXC slot with UHS-I support	
NETWORKING	Intel® i219-V 10/100/1000 Mbps Ethernet; Intel® Wireless-AC 9560 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v5, internal antennas	
AUDIO	Up to 7.1 multichannel digital audio via HDMI signals	
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security	
POWER ADAPTER	$19V_{DC}$ input range, $19V_{DC}$ 90W power supply with geo-specific AC cords	
INTERNAL HEADERS	Front Panel, CEC, 2x USB2.0 internal headers	
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros VESA mounting plate included Individual retail packaging Three-year Warranty	

For more information, visit **www.intel.com/NUC**

	FULL SYSTEM	FULL SYSTEM
PRODUCT FAMILY	NUC8i7HVKVA	NUC8i7HNKQC
DESCRIPTION	**Intel® NUC 8 Enthusiast, a Mini PC with Windows 10**	**Intel® NUC 8 Business, a Mini PC with Windows 10**
CPU & GFX	**8th Generation Intel® Core™ i7-8809G, 3.1 GHz - 4.2 GHz Turbo, Quad Core, 8MB Cache, 100W** Radeon™ RX Vega M GH graphics, 1063 MHz – 1190 MHz, Unlocked and VR-capable	**8th Generation Intel® Core™ i7-8705G, 3.1 GHz - 4.1 GHz Turbo, Quad Core, 8MB Cache, 65W** Radeon™ RX Vega M GL graphics, 931 MHz – 1011 MHz
RAM	16GB DDR4-2400 pre-installed, 1.2V; Dual-channel, 32GB maximum	16GB DDR4-2400 pre-installed, 1.2V; Dual-channel, 32GB maximum
SSD	1TB Intel® NVMe SSD pre-installed, M.2 PCIe X4 Gen3; one additional slot free	512GB Intel® NVMe SSD pre-installed, M.2 PCIe X4 Gen3; one additional slot free
OS LOAD	Windows 10 Home x64, Intel® Driver & Support Assistant pre-loaded	Windows 10 Professional x64, Intel® Driver & Support Assistant pre-loaded
DIMENSIONS	221 x 142 x 39 mm (1.2 L)	
CONNECTIVITY	Front USB 3.1 Gen2 via USB-C™ and front USB type-A connectors Front charging USB 3.0, 4x rear USB 3.0, 2x internal USB 3.0 and 2x USB 2.0 via headers Front Consumer Infrared port	
VIDEO OUTPUTS	2x Mini DisplayPort 1.2 ports 2x Thunderbolt™ 3 ports Front and rear HDMI 2.0b connectors	
SDXC	SDXC slot with UHS-I support	
NETWORKING	2x Intel® 10/100/1000 Mbps (i219-LM and i210-AT) Ethernet ports Intel® Wireless-AC 8265 M.2 22x30 card, IEEE 802.11ac 2x2 + Bluetooth v4.2, internal antennas	
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front stereo headset jack, 3.5mm rear speaker / TOSLINK combo jack Beam-forming, far-field, quad-mic array	
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security	
POWER ADAPTER	$19V_{DC}$ 230W power supply with geo-specific AC cords	
INTERNAL HEADERS	Front Consumer Infrared port Common I/O header with Front Panel, CEC, 2x USB 3.0, 2x USB2.0 signals	
OTHER FEATURES	Replaceable lid with customizable RGB LED illumination and front panel status RGB LEDs Microsoft Windows* 10 logo'd, compatible with Windows Server 2016 VESA mounting plate included Individual retail packaging Three-year Warranty	

For more information, visit **www.intel.com/NUC**

FULL SYSTEM

FULL SYSTEM

FULL SYSTEM

PRODUCT FAMILY	**NUC7i5DNKPC**	**NUC7i3DNKTC**	**NUC7i3DNHNC**
DESCRIPTION	**Intel® NUC 7 Business, a Mini PC with Windows® 10 Pro**	**Intel® NUC 7 Business, a Mini PC with Windows® 10 Pro**	**Intel® NUC 7 Business, a Mini PC with Windows® 10 Pro**
CPU & GFX	**7th Generation Intel® Core™ i5-7300U** 2.6 GHz to 3.5 GHz Turbo, Dual Core, 3MB Cache, 15W Intel® HD Graphics 620, 300 MHz - 1.0 GHz Intel® vPro™ Technology, Intel® AMT v11.6	**7th Generation Intel® Core™ i3-7100U** 2.4 GHz, Dual Core, 3MB Cache, 15W Intel® HD Graphics 620, 300 MHz - 1.0 GHz	
RAM	8GB (2x 4GB) DDR4-2133 SODIMMs pre-installed (1.2V, dual-channel, 32GB maximum)	4GB DDR4-2133 SODIMM pre-installed (1.2V, dual-channel, 32GB maximum)	
HDD	256GB Intel® SSD E 6100p pre-installed, M.2 NVMe	128GB Intel® SSD E 5100s pre-installed, M.2 SATA3	1TB HDD pre-installed, 2.5" SATA3
INTEL® OPTANE™ MEMORY			M.2 22x80 slot available for SSD or Intel® Optane™ Memory
OS LOAD	Windows 10 Pro* x64 with platform drivers pre-installed		
DIMENSIONS	115 x 111 x 36 mm		115 x 111 x 52 mm
CONNECTIVITY	2x front USB 3.0, 2x rear USB 3.0, 1x internal USB 3.0 header (host & device modes) 2x internal USB 2.0 headers (all USB ports w/ individual power control)		
VIDEO OUTPUTS	Dual HDMI 2.0a (4K 60Hz, HDR), w/HDCP2.2 and basic CEC built-in for 1 port		
NETWORKING	Intel Wireless-AC 8265 vPro™ M.2 22x30 card 802.11ac 2x2 + BT 4.2, internal antennas Intel® i219-LM 10/100/1000 Mbps RJ45 Ethernet	Intel Wireless-AC 8265 M.2 22x30 card 802.11ac 2x2 + BT 4.2, internal antennas Intel® i219-LM 10/100/1000 Mbps RJ45 Ethernet	
AUDIO	Up to 7.1 multichannel (or dual 8-channel) digital audio via HDMI		
ENCLOSURE	Aluminum and plastic chassis, replaceable lid, Kensington lock with base security		
POWER ADAPTER	12 – 24V_{DC} input range, 19V_{DC} 65W power supply with geo-specific AC cords		
INTERNAL HEADERS	1x internal USB 3.0 header (host & device modes)		Speaker and microphone 3.5mm audio jacks Additional USB 3.0 port
OTHER FEATURES	Microsoft Windows* 10 (logo'd), Windows 10 IOT Enterprise, Windows Server 2016 Supports Ubuntu 16.04 LTS, compatible with various Linux distros Qualified for 24x7 operation VESA mounting plate included Individual brown-box packaging Three-year Warranty		

For more information, visit **www.intel.com/NUC**

FULL SYSTEM

FULL SYSTEM

PRODUCT FAMILY	NUC7i7BNKQ	NUC7i5BNKP
CPU & GFX	**7th Generation Intel® Core™ i7-7567U** 3.5 GHz to 4.0 GHz Turbo, Dual Core, 4 MB cache, 28W Intel® Iris™ Plus Graphics 650, 300 MHz - 1.1 GHz	**7th Generation Intel® Core™ i5-7260U** 2.2 GHz up to 3.4 GHz Turbo, Dual Core, 4 MB cache, 15W Intel® Iris™ Plus Graphics 640, 300 MHz - 950 MHz
RAM	16 GB (2x 8 GB) DDR4-2400 SODIMMs pre-installed, 1.2V; Dual-channel, 32 GB maximum	8 GB (2x 4 GB) DDR4-2400 SODIMMs pre-installed, 1.2V; Dual-channel, 32 GB maximum
SSD	512 GB Intel® 600p SSD pre-installed, M.2 22x80 PCIe X4 Gen3 NVMe	256 GB Intel® 600p SSD pre-installed, M.2 22x80 PCIe X4 Gen3 NVMe
OS LOAD	Windows 10 Home x64, Intel® Remote Keyboard, Intel® Driver & Support Assistant	
DIMENSIONS	115 x 111 x 35 mm	
CONNECTIVITY	Thunderbolt™ 3 (40 Gbps) and USB 3.1 Gen2 (10 Gbps) and DisplayPort 1.2 via USB-C™ connector 2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header Front Consumer Infrared port	
VIDEO OUTPUTS	HDMI 2.0a (4K 60Hz, HDR) and DisplayPort 1.2 via Thunderbolt™ 3 (USB-C™) port Both ports support HDCP 2.2	
SDXC	MicroSDXC slot with UHS-I support	
NETWORKING	Intel® I219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v4.2, internal antennas	
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	
ENCLOSURE	Aluminum and plastic with replaceable lid, Kensington lock with base security	
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 65W wall-wart power supply with replaceable plugs	
INTERNAL HEADERS	Front Panel, CEC, 2x USB2.0	
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros Front panel RGB LED ring Built-in dual-array microphones VESA mounting plate included Individual retail packaging Three-Year Warranty	

For more information, visit **www.intel.com/NUC**

	FULL SYSTEM	FULL SYSTEM	FULL SYSTEM
PRODUCT FAMILY	NUC7i7BNHXG	NUC7i5BNHXF	NUC7i3BNHXF
DESCRIPTION	**Intel® NUC 7 Enthusiast, a Mini PC with Windows 10**	**Intel® NUC 7 Home, a Mini PC with Windows 10**	**Intel® NUC 7 Home, a Mini PC with Windows 10**
CPU & GFX	**7th Generation Intel® Core™ i7-7567U** 3.5 GHz to 4.0 GHz Turbo, Dual Core, 4 MB cache, 28W Intel® Iris™ Plus Graphics 650, 300 MHz - 1.1 GHz	**7th Generation Intel® Core™ i5-7260U** 2.2 GHz up to 3.4 GHz Turbo, Dual Core, 4 MB cache, 15W Intel® Iris™ Plus Graphics 640, 300 MHz - 950 MHz	**7th Generation Intel® Core™ i3-7100U** 2.4 GHz, Dual Core, 3 MB cache, 15W Intel® HD Graphics 620, 300 MHz – 1 GHz
RAM	8 GB DDR4-2400 SODIMM pre-installed, 1.2V Dual-channel capable, 32 GB maximum	4 GB DDR4-2400 SODIMM pre-installed Dual-channel capable, 32 GB maximum	
INTEL® OPTANE™ MEMORY	32 GB M.2 22x80 module pre-installed	16 GB M.2 22x80 module pre-installed	
HDD	2 TB SATA3 pre-installed	1 TB SATA3 pre-installed	
USB-C™ PORT	Thunderbolt™ 3 (40 Gbps) and USB 3.1 Gen2 (10 Gbps) and DisplayPort 1.2		USB 3.1 Gen2 (10 Gbps) and DisplayPort 1.2
OS LOAD	Windows 10 Home x64, Intel® Remote Keyboard		
DIMENSIONS	115 x 111 x 51 mm		
CONNECTIVITY	2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header; Front Consumer Infrared port		
VIDEO OUTPUTS	HDMI 2.0a (4K 60Hz, HDR) and DisplayPort 1.2 via Thunderbolt™ 3 / USB-C™ port; Both ports support HDCP 2.2		
SDXC	MicroSDXC slot with UHS-I support		
NETWORKING	Intel® I219-V 10/100/1000 Mbps Ethernet; Intel® Wireless-AC 8265 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v4.2, internal antennas		
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals; 3.5mm front headset jack		
ENCLOSURE	Aluminum and plastic with replaceable lid, Kensington lock with base security		
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 65W wall-wart power supply with replaceable plugs		
INTERNAL HEADERS	Front Panel, CEC, 2x USB2.0		
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros Front panel RGB LED ring Built-in dual-array microphones VESA mounting plate included Individual retail packaging Three-Year Warranty		

For more information, visit **www.intel.com/NUC**

	FULL SYSTEM	FULL SYSTEM
PRODUCT FAMILY	NUC7CJYSAL	NUC6CAYS
DESCRIPTION	**Intel® NUC 7 Enthusiast, a Mini PC with Windows 10**	**Intel® NUC Mini PC**
CPU & GFX	**Intel® Celeron® J4005** Intel® HD Graphics 600, 700 MHz	**Intel® Celeron® J3455** Intel® HD graphics 500
RAM	4 GB DDR4-2400 SODIMM pre-installed, 1.2V Dual-channel capable, 8 GB maximum	2Gb DDR3L-1600 module preinstalled, 1.3V Dual-channel DDR3L-1866 SODIMMs, 8GB maximum
OS LOAD	Windows 10 Home x64, Intel® Remote Keyboard, Intel® Driver & Support Assistant	
FLASH STORAGE	32 GB eMMC v5.1	
2.5" SATA3	9.5mm bay and port	Supported
DIMENSIONS	115 x 111 x 49 mm	
CONNECTIVITY	2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header; Front Consumer Infrared port	Two front USB 3.0 (one charging), two rear USB 3.0, 2 internal USB 2.0 via header
VIDEO OUTPUTS	2x HDMI 2.0a (4K 60Hz, HDR); Both ports support HDCP 2.2	HDMI; VGA
SDXC	SDXC slot with UHS-I support	SDXC slot with UHS-I support on the side
NETWORKING	Intel® I218-V 10/100/1000 Mbps Ethernet ; Intel® Wireless-AC 9462 soldered-down, IEEE 802.11ac 1x1 + Bluetooth v5, internal antennas	Intel® Wireless-AC 3168 10/100/1000 Mbps Ethernet
AUDIO	Up to 7.1 multichannel digital audio via HDMI 3.5mm front headset jack, 3.5mm rear speaker / TOSLINK combo jack	Up to 7.1 multichannel digital audio via HDMI 3.5mm front headset jack, 3.5mm rear speaker / TOSLINK combo jack
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security	Replaceable lid
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 65W power supply with replaceable AC cords	Multi-country plugs (IEC types A/C/G/I)
INTERNAL HEADERS	Front Panel, CEC, RGB LED, 2x USB2.0	
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros Front panel status RGB LED Built-in dual-array microphones VESA mounting plate included Individual retail packaging Three-Year Warranty	Consumer Infrared sensor on front panel Windows 10 Home pre-installed with latest Intel®drivers 3-year Advanced Warranty Replacement

For more information, visit **www.intel.com/NUC**

INTEL® NUC MINI PC SUMMARY

INTEL® NUC	PROCESSOR[5]	SODIMM MEMORY	DIMMS	SUPPORT FOR 2.5" DRIVE	DISPLAY OUTPUT	MINI PCI Express®	AUDIO	USB 3 EXT+ INT	USB 2 EXT+ INT	LAN	3 YEAR PRODUCT LIFE	OTHER
NUC8i3CYSM	Intel® Core™ i3-8121U processor	LPDDR4	2	Yes	2x HDMI 2.0b	1 M.2	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	AMD Radeon™* 540 discrete graphics
NUC8i3CYSN	Intel® Core™ i3-8121U processor	LPDDR4	1	Yes	2x HDMI 2.0b	1 M.2	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	AMD Radeon™* 540 discrete graphics
NUC8i7HKVA	Intel® Core™ i7-8809G processor	DDR4	2	Yes	2x HDMI 2.0b 2x Mini DisplayPort 1.2	1 M.2	7.1 digital (HDMI or DP)	5 + 2	0 + 2	GbE + WiFi*	No	Thunderbolt™ 3
NUC8i7HNKQC	Intel® Core™ i7-8705G processor	DDR4	2	Yes	2x HDMI 2.0b 2x Mini DisplayPort 1.2	1 M.2	7.1 digital (HDMI or DP)	5 + 2	0 + 2	GbE + WiFi*	No	Thunderbolt™ 3
NUC7i5DNKPC	Intel® Core™ i5-7300U processor	DDR4	2	Yes	Dual HDMI 2.0a; w/HDCP2.2	1 M.2	7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	No	Intel® HD graphics; Intel® vPro™ Technology
NUC7i3DNKTC	Intel® Core™ i3-7100U processor	DDR4	1	Yes	Dual HDMI 2.0a; w/HDCP2.2	1 M.2	7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7i3DNHNC	Intel® Core™ i3-7100U processor	DDR4	1	Yes	Dual HDMI 2.0a; w/HDCP2.2	1 M.2	7.1 digital (HDMI)	5 + 1	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7i7BNKQ	Intel® Core™ i7-7567U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i5BNKP	Intel® Core™ i5-7260U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i7BNHXG	Intel® Core™ i7-7567U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i5BNHXF	Intel® Core™ i5-7260U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i3BNHXF	Intel® Core™ i3-7100U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics; CIR
NUC7CJYSAL	Intel® Celeron® J4005 processor	DDR4	2	Yes	HDMI*	0	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics; CIR
NUC6CAYS	Intel® Celeron™ J3455 processor	DDR3L	2	Yes	HDMI* + VGA	0	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics

INTEL® NUC KITS[1]

PRODUCT FAMILY	NUC7i7BNH	NUC7i5BNH	NUC7i5BNK
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	N/A	N/A	N/A
10-PACK PRODUCT CODE	N/A	N/A	N/A
PROCESSOR	**Intel® Core™ i7-7567U**	**Intel® Core™ i5-7260U**	**Intel® Core™ i5-7260U**
CHIPSET	N/A	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® Iris™ Plus graphics 650	Intel® Iris™ Plus graphics 640	Intel® Iris™ Plus graphics 640
DISPLAY OUTPUTS	HDMI DisplayPort	HDMI DisplayPort	HDMI DisplayPort
MEMORY SUPPORT[4]	Dual-Channel DDR4-2133 SODIMM, 1.2V, 32 GB[4] maximum	Dual-Channel DDR4-2133 SODIMM, 1.2V, 2 GB[4] maximum	Dual-Channel DDR4-2133 SODIMM, 1.2V, 32 GB[4] maximum
2.5" HDD SUPPORT	Yes	Yes	Yes
EXPANSION CONNECTORS	M.2 Support	M.2 Support	M.2 Support
AUDIO[3]	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack
USB PORTS	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header
ONBOARD LAN	Intel® (219-V 10/100/1000 Mbps Ethernet; Intel® Wireless-AC 8265	Intel® (219-V 10/100/1000 Mbps Ethernet; Intel® Wireless-AC 8265	Intel® (219-V 10/100/1000 Mbps Ethernet; Intel® Wireless-AC 8265
POWER CORD OPTION	Multi-country plug (Types A/C/G/I) included	Multi-country plug (Types A/C/G/I) included	Multi-country plug (Types A/C/G/I) included
TRUSTED PLATFORM MODULE	N/A	N/A	N/A
LEAD-FREE	Yes	Yes	Yes
BIOS	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOs Intel® Express BIOS update support
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty
OTHER	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support

PRODUCT FAMILY	NUC8i7HVK	NUC8i7HNK
CPU & GFX	**8th Generation Intel® Core™ i7-8809G** 3.1 GHz - 4.2 GHz Turbo, Quad Core, 8MB Cache, 100W Radeon™ RX Vega M GH graphics, 1063 MHz – 1190 MHz Unlocked and VR-capable	**8th Generation Intel® Core™ i7-8705G** 3.1 GHz - 4.1 GHz Turbo, Quad Core, 8MB Cache, 65W Radeon™ RX Vega M GL graphics, 931 MHz – 1011 MHz
RAM	Dual channel DDR4-2400+ SODIMMs, 1.2V, 32GB maximum	
SSD	2x M.2 22x42/80 key M slots for PCIe x4 Gen3 NVMe / AHCI or SATA3 SSD, RAID-0 and RAID-1 capable	
DIMENSIONS	221 x 142 x 39 mm (1.2 L)	
CONNECTIVITY	Front USB 3.1 Gen2 via USB-C™ and front USB type-A connectors Front charging USB 3.0, 4x rear USB 3.0, 2x internal USB 3.0 and 2x USB 2.0 via headers Front Consumer Infrared port	
VIDEO OUTPUTS	Front and rear HDMI 2.0b connectors 2x Mini DisplayPort 1.2 ports 2x Thunderbolt™ 3 ports	
SDXC	SDXC slot with UHS-I support	
NETWORKING	2x Intel® 10/100/1000 Mbps (i219-LM and i210-AT) Ethernet ports Intel® Wireless-AC 8265 M.2 22x30 card, IEEE 802.11ac 2x2 + Bluetooth v4.2, internal antennas	
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front stereo headset jack, 3.5mm rear speaker / TOSLINK combo jack Beam-forming, far-field, quad-mic array	
ENCLOSURE	Replaceable lid with customizable RGB LED illumination and front panel status RGB LEDs Plastic with metal inner frame, replaceable lid, Kensington lock with base security	
POWER ADAPTER	$19V_{DC}$ 230W power supply with geo-specific AC cords	
INTERNAL HEADERS	Common I/O header with Front Panel, CEC, 2x USB 3.0, 2x USB2.0 signals	
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with Windows Server 2016 VESA mounting plate included Individual retail packaging Three-year Warranty	

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PRODUCT FAMILY	NUC8i7BEH	NUC8i5BEH	NUC8i5BEK
CPU & GFX	**8th Generation Intel® Core™ i7-8559U** 2.7 GHz - 4.5 GHz Turbo, Quad Core, 8MB Cache, 28W Intel® Iris™ Plus Graphics 655, 300 MHz – 1.2 GHz	**8th Generation Intel® Core™ i5-8259U** 2.3 GHz – 3.8 GHz Turbo, Quad Core, 6MB Cache, 28W Intel® Iris™ Plus Graphics 655, 300 MHz – 1.05 GHz	
RAM	Dual channel DDR4-2400 SODIMMs, 1.2V, 32GB maximum		
INTEL® OPTANE™ MEMORY	Intel® Optane™ Memory supported		-
HDD	2.5” 9.5mm SATA3 bay and port		SATA3 port only
USB-C™ PORT	Yes		
DIMENSIONS	117 x 112 x 51 mm		117 x 112 x 36 mm
CONNECTIVITY	2x front USB 3.1 Gen2 (one charging), 2x rear USB 3.1 Gen2, and 2x internal USB 2.0 via header Front Consumer Infrared port		
VIDEO OUTPUTS	HDMI 2.0a and DisplayPort 1.2 via Thunderbolt™ 3 / USB-C™ port Thunderbolt™ 3 port		
SDXC	MicroSDXC slot with UHS-I support		
NETWORKING	Intel® i219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 9560 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v5, internal antennas		
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front stereo headset jack Beam-forming, far-field, dual-mic array		
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security		
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 90W power supply with geo-specific AC cords		
INTERNAL HEADERS	Front Panel, CEC, RGB LED, 2x USB2.0 headers; Front panel status RGB LED		
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros VESA mounting plate included Individual retail packaging Three-year Warranty		

For more information, visit **www.intel.com/NUC**

PRODUCT FAMILY	NUC8i3BEH	NUC8i3BEK
CPU & GFX	**8th Generation Intel® Core™ i3-8109U** 3.0 GHz - 3.6 GHz, Dual Core, 4MB Cache, 28W Intel® Iris™ Plus Graphics 655, 300 MHz – 1.05 GHz	
RAM	Dual channel DDR4-2400 SODIMMs, 1.2V, 32GB maximum	
INTEL® OPTANE™ MEMORY	Intel® Optane™ Memory supported	-
HDD	2.5” 9.5mm SATA3 bay and port	SATA3 port only
USB-C™ PORT	Yes	
DIMENSIONS	117 x 112 x 51 mm	117 x 112 x 36 mm
CONNECTIVITY	2x front USB 3.1 Gen2 (one charging), 2x rear USB 3.1 Gen2, and 2x internal USB 2.0 via header Front Consumer Infrared port	
VIDEO OUTPUTS	HDMI 2.0a and DisplayPort 1.2 via Thunderbolt™ 3 / USB-C™ port Thunderbolt™ 3 port	
SDXC	MicroSDXC slot with UHS-I support	
NETWORKING	Intel® i219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 9560 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v5, internal antennas	
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front stereo headset jack Beam-forming, far-field, dual-mic array	
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security	
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 90W power supply with geo-specific AC cords	
INTERNAL HEADERS	Front Panel, CEC, RGB LED, 2x USB2.0 headers; Front panel status RGB LED	
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros VESA mounting plate included Individual retail packaging Three-year Warranty	

For more information, visit **www.intel.com/NUC**

PRODUCT FAMILY	NUC7i3BNH	NUC7i3BNK
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	N/A	N/A
10-PACK PRODUCT CODE	N/A	N/A
PROCESSOR	**Intel® Core i3-7100U**	**Intel® Core i3-7100U**
CHIPSET	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® HD graphics 620	Intel® HD graphics 620
DISPLAY OUTPUTS	HDMI DisplayPort	HDMI DisplayPort
MEMORY SUPPORT[4]	Dual-channel DDR4 SODIMMs 1.2V, 2133 MHz, 32GB maximum	Dual-channel DDR4 SODIMMs 1.2V, 2133 MHz, 32GB maximum
2.5" HDD SUPPORT	Yes	No
EXPANSION CONNECTORS	M.2 Support	M.2 Support
AUDIO[3]	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack
USB PORTS	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header
ONBOARD LAN	Intel® 219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265	Intel® 219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265
POWER CORD OPTION	Multi-country plugs (IEC types A/C/G/I)	Multi-country plugs (IEC types A/C/G/I)
TRUSTED PLATFORM MODULE	N/A	N/A
LEAD-FREE	Yes	Yes
BIOS	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOs Intel® Express BIOS update support
WARRANTY	3-year Advanced Warranty Replacement	3-year Advanced Warranty Replacement
OTHER	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support

PRODUCT FAMILY	NUC7PJYH	NUC7CJYH
DESCRIPTION	-	-
CPU & GFX	**Intel® Pentium® J5005** Intel® HD Graphics 605, 800 MHz	**Intel® Celeron® J4005** Intel® HD Graphics 600, 700 MHz
RAM	Dual channel DDR4-2400 SODIMMs, 1.2V, 8 GB maximum	Dual channel DDR4-2400 SODIMMs, 1.2V, 8 GB maximum
OS LOAD	-	-
FLASH STORAGE	-	-
2.5" SATA3	9.5mm bay and port	9.5mm bay and port
DIMENSIONS	115 x 111 x 49 mm	115 x 111 x 49 mm
CONNECTIVITY	2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header; Front Consumer Infrared port	2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header; Front Consumer Infrared port
VIDEO OUTPUTS	2x HDMI 2.0a (4K 60Hz, HDR); Both ports support HDCP 2.2	2x HDMI 2.0a (4K 60Hz, HDR); Both ports support HDCP 2.2
SDXC	SDXC slot with UHS-I support	SDXC slot with UHS-I support
NETWORKING	Intel® I218-V 10/100/1000 Mbps Ethernet ; Intel® Wireless-AC 9462 soldered-down, IEEE 802.11ac 1x1 + Bluetooth v5, internal antennas	Intel® I218-V 10/100/1000 Mbps Ethernet ; Intel® Wireless-AC 9462 soldered-down, IEEE 802.11ac 1x1 + Bluetooth v5, internal antennas
AUDIO	Up to 7.1 multichannel digital audio via HDMI; 3.5mm front headset jack, 3.5mm rear speaker / TOSLINK combo jack	Up to 7.1 multichannel digital audio via HDMI; 3.5mm front headset jack, 3.5mm rear speaker / TOSLINK combo jack
ENCLOSURE	Plastic with metal inner frame, replaceable lid, Kensington lock with base security	Plastic with metal inner frame, replaceable lid, Kensington lock with base security
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 65W power supply with replaceable AC cords	12 – 19V_{DC} input range, 19V_{DC} 65W power supply with replaceable AC cords
INTERNAL HEADERS	Front Panel, CEC, RGB LED, 2x USB2.0	Front Panel, CEC, RGB LED, 2x USB2.0
OTHER FEATURES	Microsoft Windows* 10 logo'd, compatible with various Linux distros Front panel status RGB LED Built-in dual-array microphones VESA mounting plate included Individual retail packaging Three-Year Warranty	Microsoft Windows* 10 logo'd, compatible with various Linux distros Front panel status RGB LED Built-in dual-array microphones VESA mounting plate included Individual retail packaging Three-Year Warranty

PRODUCT FAMILY	NUC7i5DNHE	NUC7i5DNKE
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	BLKNUC7i5DNHE	BLKNUC7i5DNKE
10-PACK PRODUCT CODE	N/A	N/A
PROCESSOR	**Intel® Core™ i5-7300U Processor with Intel® vPro™ Technology**	**Intel® Core™ i5-7300U Processor with Intel® vPro™ Technology**
CHIPSET	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® HD graphics 620	Intel® HD graphics 620
DISPLAY OUTPUTS	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port
MEMORY SUPPORT[4]	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum
2.5" HDD SUPPORT	Yes	No
EXPANSION CONNECTORS	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card Serial port header HDMI CEC header	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card Serial port header HDMI CEC header
AUDIO[3]	Dual Eight-Channel (7.1) digital audio via HDMI ports	Dual Eight-Channel (7.1) digital audio via HDMI ports
USB PORTS	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header Two internal USB 2.0 port headers	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header Two internal USB 2.0 port headers
ONBOARD LAN	Intel® i219 - LM 10/100/1000 Network Connection; Intel® Wireless-AC 8265	Intel® i219 - LM 10/100/1000 Network Connection; Intel® Wireless-AC 8265
POWER DELIVERY	19V 65W AC power adapter	19V 65W AC power adapter
TRUSTED PLATFORM MODULE	Yes (TPM v2.0); Worldwide and China-specific options	Yes (TPM v2.0); Worldwide and China-specific options
LEAD-FREE	Yes	Yes
BIOS	Intel® Visual BIOS	Intel® Visual BIOS
WARRANTY	3 year limited warranty	3 year limited warranty
OTHER	Replaceable lid; 3 year product availability; Qualified for 24x7 operation; Backpanel opening w/DB9 bracket; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header; Kensington lock with base security; Intel® Optane™ Memory support; VESA mounting plate included	Replaceable lid; 3 year product availability; Qualified for 24x7 operation; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header; Kensington lock with base security; VESA mounting plate included

PRODUCT FAMILY	NUC7i3DNHE	NUC7i3DNKE
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	BLKNUC7i3DNHE	BLKNUC7i3DNKE
10-PACK PRODUCT CODE	N/A	N/A
PROCESSOR	**Intel® Core™ i3-7100U**	**Intel® Core™ i3-7100U**
CHIPSET	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® HD graphics 620	Intel® HD graphics 620
DISPLAY OUTPUTS	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port
MEMORY SUPPORT[4]	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum
2.5" HDD SUPPORT	Yes	No
EXPANSION CONNECTORS	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card Serial port header HDMI CEC header	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card Serial port header HDMI CEC header
AUDIO[3]	Dual Eight-Channel (7.1) digital audio via HDMI ports	Dual Eight-Channel (7.1) digital audio via HDMI ports
USB PORTS	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header Two internal USB 2.0 port headers	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header Two internal USB 2.0 port headers
ONBOARD LAN	Intel® i219 - LM 10/100/1000 Network Connection Intel® Wireless-AC 8265	Intel® i219 - LM 10/100/1000 Network Connection Intel® Wireless-AC 8265
POWER DELIVERY	19V 65W AC power adapter	19V 65W AC power adapter
TRUSTED PLATFORM MODULE	N/A	N/A
LEAD-FREE	Yes	Yes
BIOS	Intel® Visual BIOS	Intel® Visual BIOS
WARRANTY	3 year limited warranty	3 year limited warranty
OTHER	Replaceable lid; 3 year product availability; Qualified for 24x7 operation; Backpanel opening w/DB9 bracket; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header; Kensington lock with base security; Intel® Optane™ Memory support; VESA mounting plate included	Replaceable lid; 3 year product availability; Qualified for 24x7 operation; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header; Kensington lock with base security; VESA mounting plate included

PRODUCT FAMILY	NUC6CAYH	NUC5CPYH
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	N/A	N/A
10-PACK PRODUCT CODE	N/A	N/A
PROCESSOR	**Intel® Celeron® J3455**	**Intel® Celeron® J3060**
CHIPSET	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® HD graphics 500	Intel® HD Graphics
DISPLAY OUTPUTS	HDMI VGA	HDMI VGA
MEMORY SUPPORT[4]	Dual-channel DDR3L-1866 SODIMMs 1.35V, 8GB maximum	Single Channel DDR3L SODIMM 1.35V, 1333/1600 MHz, 8GB[4] maximum
2.5" HDD SUPPORT	Yes	Yes
EXPANSION CONNECTORS	SDXC slot with UHS-I support on the side	M.2 support; SDXC slot with UHS-I support on the side
AUDIO[3]	Up to 7.1 multichannel digital audio via HDMI 3.5mm front headset jack, 3.5mm rear speaker / TOSLINK combo jack	Eight-Channel (7.1) digital audio via Mini HDMI 1.4a output, two-channel via headphone jack
USB PORTS	Two front USB 3.0 (one charging), two rear USB 3.0, 2 internal USB 2.0 via header	Four USB 3.0 ports (two front panel with one being charging capable, two back panel) and two USB 2.0 ports (via internal header)
ONBOARD LAN	Intel® Wireless-AC 3168 10/100/1000 Mbps Ethernet	Intel® 10/100/1000 Network Connection Intel® Wireless-AC 3165
POWER CORD OPTION	Multi-country plugs (IEC types A/C/G/I)	Multi-country plugs (IEC types A/C/G/I)
TRUSTED PLATFORM MODULE	N/A	N/A
LEAD-FREE	Yes	Yes
BIOS	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOS BIOS Vault Technology Fast Boot
WARRANTY	3-year Advanced Warranty Replacement	3-year Advanced Warranty Replacement
OTHER	Replaceable lid Consumer Infrared sensor on front panel	Replaceable lid Consumer Infrared sensor on front panel

PRODUCT FAMILY	NUC5i3RYHS
CPU & GFX	**5th Generation Intel® Core™ i3-5005U** 2.0 GHz, Dual Core, 3MB Cache, 15W Intel® HD Graphics 5500, 300 MHz – 850 MHz
RAM	DDR3L-1600 SODIMMs, 1.35V; Dual-channel, 16GB maximum
2.5" HDD SUPPORT	2.5” 9.5mm SATA3 bay and port
STORAGE	M.2 22x42/60/80 key M slot for PCIe x4 Gen2 NVMe / AHCI SSD
DIMENSIONS	115 x 111 x 49 mm
CONNECTIVITY	2x front USB 3.0 (one charging), 2x rear USB 3.0, and 2x internal USB 2.0 via header Front Consumer Infrared port
VIDEO OUTPUTS	Mini HDMI 1.4a and Mini DisplayPort 1.2
NETWORKING	Intel® i218-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 7265 soldered-down, IEEE 802.11ac 2x2 + Bluetooth v4.2, internal antennas
AUDIO	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front stereo headset jack
ENCLOSURE	Aluminum chassis, replaceable lid, Kensington lock
POWER ADAPTER	12 – 19V_{DC} input range, 19V_{DC} 65W wall-wart power supply with replaceable plugs
INTERNAL HEADERS	AUX_PWR, 2x USB2.0 headers
OTHER FEATURES	Microsoft Windows* 10, 8.1, 7 logo’d, compatible with various Linux distros VESA mounting plate included Individual retail packaging Three-year Warranty

INTEL® NUC KITS[1], WITH INTEL OPTANE MEMORY

PRODUCT FAMILY	NUC7i7BNHX	NUC7i5BNHX	NUC7i3BNHX
KIT / BOARD	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**	**Intel® NUC Kit[1]**
5-PACK OUTERCASE	N/A	N/A	N/A
10-PACK PRODUCT CODE	N/A	N/A	N/A
PROCESSOR	**Intel® Core™ i7-7567U**	**Intel® Core™ i5-7260U**	**Intel® Core™ i3-7100U**
CHIPSET	N/A	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® Iris™ Plus graphics 650	Intel® Iris™ Plus graphics 640	Intel® HD graphics 620
DISPLAY OUTPUTS	HDMI; DisplayPort	HDMI; DisplayPort	HDMI; DisplayPort
MEMORY SUPPORT[4]	Dual-Channel DDR4-2133 SODIMM, 1.2V, 32 GB[4] maximum	Dual-Channel DDR4-2133 SODIMM, 1.2V, 32 GB[4] maximum	Dual-Channel DDR4-2133 SODIMM, 1.2V, 32 GB[4] maximum
2.5" HDD SUPPORT	Yes	Yes	Yes
EXPANSION CONNECTORS	M.2 Populated with 16GB Intel® Optane™ memory module	M.2 Populated with 16GB Intel® Optane™ memory module	M.2 Populated with 16GB Intel® Optane™ memory module
AUDIO[3]	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack	Up to 7.1 multichannel digital audio via HDMI or DisplayPort signals 3.5mm front headset jack
USB PORTS	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header	Two front USB 3.0 (one for charging), two rear USB 3.0, two internal USB 2.0 via header
ONBOARD LAN	Intel® (219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265	Intel® (219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265	Intel® (219-V 10/100/1000 Mbps Ethernet Intel® Wireless-AC 8265
POWER CORD OPTION	Multi-country plug (Types A/C/G/I) included	Multi-country plug (Types A/C/G/I) included	Multi-country plug (Types A/C/G/I) included
TRUSTED PLATFORM MODULE	N/A	N/A	N/A
LEAD-FREE	Yes	Yes	Yes
BIOS	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOs Intel® Express BIOS update support	Intel® Visual BIOs Intel® Express BIOS update support
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty
OTHER	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support	Replaceable lid Consumer Infrared sensor on front panel Micro SDXC slot with UHS-I support

INTEL® NUC KIT[1] SUMMARY

INTEL® NUC	PROCESSOR[5]	SODIMM MEMORY	DIMMS	SUPPORT FOR 2.5" DRIVE	DISPLAY OUTPUT	MINI PCI Express®	AUDIO	USB 3 EXT+ INT	USB 2 EXT+ INT	LAN	3 YEAR PRODUCT LIFE	OTHER
NUC7i7BNH	Intel® Core™ i7-7567U processor	DDR4	2	Yes	HDMI* + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7i5BNH	Intel® Core™ i5-7260U processor	DDR4	2	Yes	HDMI* + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7i5BNK	Intel® Core™ i5-7260U processor	DDR4	2	No	HDMI* + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC8i7HVK	Intel® Core™ i7-8809G processor	DDR4	2	Yes	HDMI 2.0b + DP1.2	2 M.2	7.1 digital (HDMI or DP)	4 + 2	0 + 2	GbE + WiFi*	No	Radeon™ RX Vega M GH graphics
NUC8i7HNK	Intel® Core™ i7-8705G processor	DDR4	2	Yes	HDMI 2.0b + DP1.2	2 M.2	7.1 digital (HDMI or DP)	4 + 2	0 + 2	GbE + WiFi*	No	Radeon™ RX Vega M GL graphics
NUC8i7BEH	Intel® Core™ i7-8559U processor	DDR4	2	Yes	HDMI 2.0b + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Optane™ Memory supported; Intel® Iris™ Plus Graphics 655
NUC8i5BEH	Intel® Core™ i5-8259U processor	DDR4	2	Yes	HDMI 2.0b + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Optane™ Memory supported; Intel® Iris™ Plus Graphics 655
NUC8i5BEK	Intel® Core™ i5-8259U processor	DDR4	2	No	HDMI 2.0b + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus Graphics 655
NUC8i3BEH	Intel® Core™ i3-8109U processor	DDR4	2	Yes	HDMI 2.0b + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Optane™ Memory supported; Intel® Iris™ Plus Graphics 655
NUC8i3BEK	Intel® Core™ i3-8109U processor	DDR4	2	No	HDMI 2.0b + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus Graphics 655
NUC7i3BNH	Intel® Core™ i3-7100U processor	DDR4	2	Yes	HDMI* + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7i3BNK	Intel® Core™ i3-7100U processor	DDR4	2	No	HDMI* + DP1.2	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC7PJYH	Intel® Pentium® J5005 processor	DDR4	2	Yes	HDMI*	0	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics; CIR
NUC7CJYH	Intel® Celeron® J4005 processor	DDR4	2	Yes	HDMI*	0	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics; CIR
NUC7i5DNHE	Intel® Core™ i5-7300U processor	DDR4	2	Yes	Dual HDMI 2.0a	2 M.2	Dual 7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	Yes	24x7, vPro, TPM, Serial, Int Exp.
NUC7i5DNKE	Intel® Core™ i5-7300U processor	DDR4	2	No	Dual HDMI 2.0a	2 M.2	Dual 7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	Yes	24x7, vPro, TPM, Serial
NUC7i3DNHE	Intel® Core™ i3-7100U processor	DDR4	2	Yes	Dual HDMI 2.0a	2 M.2	Dual 7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	Yes	24x7, Serial, Int Exp.
NUC7i3DNKE	Intel® Core™ i3-7100U processor	DDR4	2	No	Dual HDMI 2.0a	2 M.2	Dual 7.1 digital (HDMI)	4 + 1	0 + 2	GbE + WiFi*	Yes	24x7, Serial
NUC6CAYH	Intel® Celeron™ J3455 processor	DDR3L	2	Yes	HDMI* + VGA	0	7.1 digital (HDMI)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics
NUC5CPYH	Intel® Celeron® N3050 processor	DDR3L	1	Yes	mHDMI* + VGA	1 M.2	8-ch + 2-ch	4 + 0	0 + 2	GbE + WiFi*	No	CIR
NUC5i3RYHS	Intel® Core™ i3-5005U processor	DDR3L	2	Yes	Mini HDMI 1.4a + Mini DP 1.2		7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD Graphics 5500; CIR
NUC7i7BNHXG	Intel® Core™ i7-7567U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i5BNHXF	Intel® Core™ i5-7260U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® Iris™ Plus graphics; Thunderbolt 3; CIR
NUC7i3BNHXF	Intel® Core™ i3-7100U processor	DDR4	2	Yes	HDMI 2.0a; USB-C (DP1.2)	1 M.2	7.1 digital (HDMI or DP)	4 + 0	0 + 2	GbE + WiFi*	No	Intel® HD graphics; CIR

INTEL® NUC BOARDS

PRODUCT FAMILY	NUC7i5DNBE	NUC7i3DNBE	DE3815TYBE
KIT / BOARD	**Intel® NUC Board**	**Intel® NUC Board**	**Intel® NUC Board**
5-PACK OUTERCASE	BLKNUC7i5DNKE	BLKNUC7i5DNKE	N/A
10-PACK PRODUCT CODE	N/A	N/A	BLKDE3815TYBE
PROCESSOR	**Intel® Core™ i5-7300U Processor with Intel® vPro™ Technology**	**Intel® Core™ i3-7100U Processor**	**Intel® Atom™ E3815**
CHIPSET	N/A	N/A	N/A
INTEGRATED GRAPHICS CORE[2]	Intel® HD graphics 620	Intel® HD graphics 620	Intel® HD graphics
DISPLAY OUTPUTS	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port Internal 4-lane eDP 1.4 connector	Dual HDMI 2.0a (4k @ 60Hz) w/HDCP 2.2 and basic CEC built in for 1 port Internal 4-lane eDP 1.4 connector	HDMI*; VGA; eDP*
MEMORY SUPPORT[4]	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum	Dual-Channel SODIMM DDR4 2133 / 1.2V, 32 GB[4] maximum	Single-Channel SODIMM DDR3L 1333 / 1600 MHz, 1.35V, 8 GB[4] maximum
2.5" HDD SUPPORT	Yes	Yes	Yes
EXPANSION CONNECTORS	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card; Serial port header; HDMI CEC header	One M.2 22x80 (type M) for SATA & NVMe SSDs / One M.2 22x30 (type E) for wireless card; Serial port header; HDMI CEC header	One half-size PCI Express* Mini Card
AUDIO[3]	Dual Eight-Channel (7.1) digital audio via HDMI ports	Dual Eight-Channel (7.1) digital audio via HDMI ports	Eight-Channel (7.1) digital audio via HDMI 1.4a output, two-channel via headphone jack
USB PORTS	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header; Two internal USB 2.0 port headers	Four USB 3.0 ports (two front panel, two back panel) One internal USB 3.0 port header; Two internal USB 2.0 port headers	One USB 3.0 port (front panel), five USB 2.0 ports (two external ports and three additional ports via internal headers)
ONBOARD LAN	Intel® i219 - LM 10/100/1000 Network Connection; Intel® Wireless-AC 8265	Intel® i219 - LM 10/100/1000 Network Connection; Intel® Wireless-AC 8265	Intel® PRO 10/100/1000 Network Connection
POWER CORD OPTION	19V 65W AC power adapter	19V 65W AC power adapter	N/A
TRUSTED PLATFORM MODULE	Yes (TPM v2.0); Worldwide and China-specific options	N/A	N/A
LEAD-FREE	Yes	Yes	Yes
BIOS	Intel® Visual BIOS	Intel® Visual BIOS	Intel® Visual BIOS; BIOS Vault Technology; Fast Boot
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty
OTHER	3 year product availability; Qualified for 24x7 operation; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header	3 year product availability; Qualified for 24x7 operation; Internal power connector (12V – 24V DC); Vcc5/1A, 5Vsby/2A, 3.3Vsby/1A internal power sources via header	4 GB eMMC storage device soldered down, Custom Solutions header, watchdog timer, fanless design

INTEL® NUC BOARD SUMMARY

INTEL® NUC	PROCESSOR[5]	SODIMM MEMORY	DIMMS	SUPPORT FOR 2.5" DRIVE	DISPLAY OUTPUT	MINI PCIe*	AUDIO	USB 3 EXT+INT	USB 2 EXT+INT	LAN	3 YEAR PRODUCT LIFE	OTHER
NUC7i5DNBE	Intel® Core™ i5-7300U processor	DDR4	2	Yes	Dual HDMI	2 M.2	8-ch + 2-ch	4 + 1	0 + 2	GbE	Yes	Intel® vPro™, TPM v2.0
NUC7i3DNBE	Intel® Core™ i3-7100U processor	DDR4	2	Yes	Dual HDMI	2 M.2	8-ch + 2-ch	4 + 1	0 + 2	GbE	Yes	
DE3815TYBE	Intel® Atom™ processor E3815	DDR3L	1	Yes	HDMI + VGA + eDP*	1	8-ch + 2-ch	1 + 0	2 + 3	GbE	Yes	Fanless + 4 GB on-board memory

For more information, visit **www.intel.com/NUC**

For more information, visit www.intel.com/NUC

1 Intel® NUC Kit: Each kit contains motherboard, chassis, and power supply.

2 Requires a processor with Intel® HD graphics.

3 Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer or learn more at www.intel.com/design/chipsets/hdaudio.htm

4 System resources and hardware (such as PCI and PCI Express*) require physical memory address locations that can reduce available addressable system memory. This could result in a reduction of as much as 1 GB or more of physical addressable memory being available to the operating system and applications, depending on the system configuration and operating system.

5 Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: http://www.intel.com/products/processor_number/

Intel® NUC Mini PCs, Kits and Boards may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request. All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

* Other names and brands may be claimed as the property of others.

BUILT FOR PERFORMANCE. SIZED FOR CONVENIENCE.

INTEL® COMPUTE STICK

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® COMPUTE STICK

Intel® Compute Stick is a device the size of a pack of gum that turns any HDMI display into a fully functional computer: same operating system, same high quality graphics, and same wireless connectivity.

All this in a PC on a stick that measures 4.5 inches from end to end, and is ready to compute right out of the box.

INTEL® COMPUTE STICK

**Connect. Compute.
It's that simple.**

QUAD-CORE INTEL® ATOM™ PROCESSOR

This innovative processor delivers great performance while consuming low energy—making the Intel® Compute Stick both space and energy efficient.

INTEL® HD GRAPHICS

Exceptional clarity makes for an exceptional visual experience. The Intel® Compute Stick delivers HD wow, whether you're viewing videos, games, or photos.

INTEL® HD AUDIO

Get a high quality, multichannel sound experience, without an audio card. It's truly an immersive media experience that will have your ears seeing stars.

THE INTEL® COMPUTE STICK

Connect. Compute.
It's that simple.

INTERACTIVE DISPLAY

Transform a display into a fully functional interactive display solution.

CONFERENCE PRESENTATION

Connect to your presentation device and stream videos or display visual content with ease.

ENTERTAINMENT

Turn your HDMI* television or monitor into a home entertainment computer.

INTEL® COMPUTE STICK "CEDAR CITY"

Product Code	**STK2m3W64CC**	**STK2mv64CC**
Processor	6th generation Intel® Core™ Y-Series m3, 1.6GHz, 3MB L3 cache (M3-6Y30 SoC)	6th generation Intel® Core™ Y-Series m5, 1.6GHz, 3MB L3 cache (M3-6Y30 SoC), Intel® vPro™ Technology
Memory	Integrated in SoC Dual-channel LPDDR3; 1.2V, 1866 MHz, 2GB per channel (4GB total memory)	Integrated in SoC Dual-channel LPDDR3; 1.2V, 1866 MHz, 2GB per channel (4GB total memory)
Graphics	Intel® HD graphics; 1x HDMI 1.4b male plug	Intel® HD graphics; 1x HDMI 1.4b male plug
Audio	Multi-channel digital audio via HDMI interface	Multi-channel digital audio via HDMI interface
Peripheral Connectivity	1x USB 3.0 Type-A host port on side	1x USB 3.0 Type-A host port on side
Storage	64GB eMMC storage device soldered down; Micro SDXC v3.0 slot with UHS I-Support (on side)	64GB eMMC storage device soldered down; Micro SDXC v3.0 slot with UHS I-Support (on side)
Networking	IEEE 802.11 g/n/ac dual band and Bluetooth 4.1 Wireless module soldered down w/ dual band antennas	IEEE 802.11 g/n/ac dual band and Bluetooth 4.1 Wireless module soldered down w/ dual band antennas
Enclosure	Dimensions: Approx. 114mm x 38mm x 11mm; Black Chassis; Security Loop (Size TBD)	Dimensions: Approx. 114mm x 38mm x 11mm; Black Chassis; Security Loop (Size TBD)
Power Delivery	MicroUSB* Type-C power connector & cable 5V/2A Wall-wart style with US (includes Japan), AUS, UK, India, and EU interchangeable plugs	MicroUSB* Type-C power connector & cable 5V/2A Wall-wart style with US (includes Japan), AUS, UK, India, and EU interchangeable plugs
Additional Featured	Pre-installed OS: Windows* 10, 64-bit HDMI* Extender Cable Power LED, Power Button Three Year Warranty	HDMI* Extender Cable Power LED, Power Button Three Year Warranty

For more information, visit **www.intel.com/computestick**

Actual Intel® Compute Stick may differ from the image shown. Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/computestick

* Other names and brands may be claimed as the property of others.

INTEL® COMPUTE STICK "STERLING CITY"

Product Code	**STK1AW32SC**	**STK1A32SC**
Processor	Intel® Atom Quad-Core Processor x5-Z8300 Type 3 BGA	Intel® Atom Quad-Core Processor x5-Z8300 Type 3 BGA
Memory	Soldered down Single-channel DDR3L; 1.35V, 1600 MHz, 2GB	Soldered down Single-channel DDR3L; 1.35V, 1600 MHz, 2GB
Graphics	Intel® HD graphics (Gen 8 LP); 1x HDMI 1.4b (1080p) male plug	Intel® HD graphics (Gen 8 LP); 1x HDMI 1.4b (1080p) male plug
Audio	Multi-channel digital audio via HDMI interface	Multi-channel digital audio via HDMI interface
Peripheral Connectivity	1x USB 3.0 Type-A host port on side; 1x USB 2.0 Type-A host port on side	1x USB 3.0 Type-A host port on side; 1x USB 2.0 Type-A host port on side
Storage	32GB eMMC storage device soldered down Micro SDXC v3.0 slot with UHS I-Support (on side)	32GB eMMC storage device soldered down Micro SDXC v3.0 slot with UHS I-Support (on side)
Networking	Intel® Dual Band Wireless AC 7265 with Bluetooth 4.0	Intel® Dual Band Wireless AC 7265 with Bluetooth 4.0
Enclosure	Black chassis with Intel Inside logo, plastic enclosure Dimensions: Approx. 113 mm x 38 mm x 12 mm	Black chassis with Intel Inside logo, plastic enclosure Dimensions: Approx. 113 mm x 38 mm x 12 mm
Power Delivery	MicroUSB power connector 5V/3A wall-mount AC-DC power adapter w/ support for US, EU, UK, AUS (SKU 1) and IND, BRA, ARG, CHN, KOR (SKU 2) outlets	MicroUSB power connector 5V/3A wall-mount AC-DC power adapter w/ support for US, EU, UK, AUS (SKU 1) and IND, BRA, ARG, CHN, KOR (SKU 2) outlets
Additional Featured	Pre-installed OS: Windows* 10, 32-bit (64-bit capable) Intel BIOS Hot Plug video detect Power LED, power button One Year Warranty	Intel BIOS Hot Plug video detect Power LED, power button One Year Warranty

For more information, visit **www.intel.com/computestick**

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* Other names and brands may be claimed as the property of others.

For more information, visit **www.intel.com/computestick**

INTEL® COMPUTE CARD

THE FUTURE IS SMART

Intel® Product Quick Reference Matrix
Q4 2018

INTEL® COMPUTE CARD — SMALL IN SIZE, NOT IN CAPABILITIES

Intel® Compute Card is just slightly longer than a credit card, but it's ready to power anything from entry-level to full featured devices.

The modularity and flexibility of this computer on a card allows compute integration via card slot into devices like digital signage, kiosks, Smart TVs, appliances and more.

THE FUTURE IS SMART

The Intel® Compute Card is pushing the boundaries of where and how technology enriches life.

DRIVING INNOVATION

Now any device with a Compute Card slot is a smart device, unlocking potential everywhere compute is possible.

DELIVERING VALUE

Revolutionary in size, form, and function, the Intel® Compute Card brings tremendous value to designers, OEMs, manufacturers, distributors, channel partners, and ultimately, their customers.

DELIVERED COMPLETE

With Intel® brand processors and everything your customers need—including RAM, storage, and wireless connectivity—already built-in.

COMPUTE ANYWHERE

IN THE HOME

Smart appliances and devices for a more connected home.

IN BUSINESS

Digital signage, point of sale, intelligent vending, and smart security solutions to bring business into the future.

IN THE FACTORY

Automation, inventory management, fleet tracking and mobile workstations to reinvent the factory floor.

INTEL® COMPUTE CARD - MARBLE CREEK

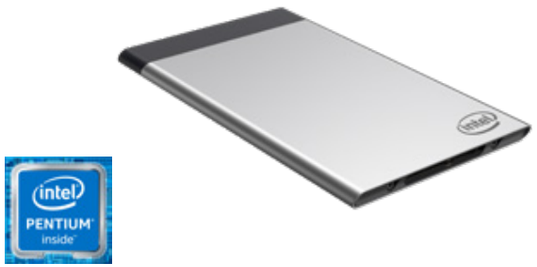
Product Code	**CD1i5128MK**	**CD1M3128MK**
Processor	7th Generation Intel® Core™ i5-7Y57 Processor	7th Generation Intel® Core™ m3-7Y30 Processor
Memory	8GB dual channel LPDDR3-1866	4GB dual channel LPDDR3-1866
Graphics	Intel® HD Graphics 630, 300 MHz up to 950 MHz	Intel® HD Graphics 615, 300 MHz up to 900 MHz
Storage	128GB PCIe x2 SSD	128GB PCIe x2 SSD
Networking	Intel® Wireless-AC 8265 802.11ac 2x2; + Bluetooth 4.2, dual internal antennas	Intel® Wireless-AC 8265 802.11ac 2x2; + Bluetooth 4.2, dual internal antennas
Enclosure	Metal with a plastic cap	Metal with a plastic cap
Additional Featured	No moving components Three year warranty	No moving components Three year warranty

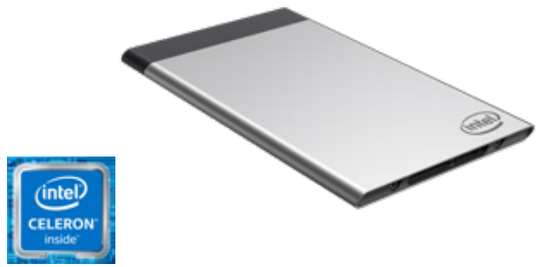
For more information, visit **www.intel.com/computecard**

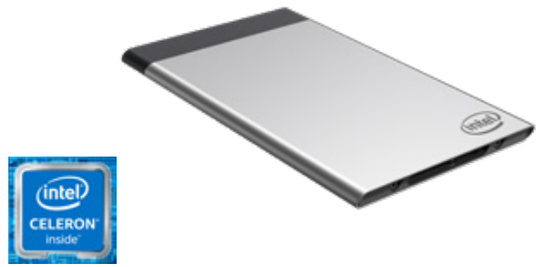
Actual Intel® Compute Card may differ from the image shown. Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/computecard

* Other names and brands may be claimed as the property of others.

INTEL® COMPUTE CARD - GRANITE CREEK







Product Code	**CD1P64GK**	**CD1C64GK**	**CD1C32GK**
Processor	Intel® Pentium® Processor N4200	Intel® Celeron® N3450 Processor	Intel® Celeron® N3350 Processor
Memory	4GB dual channel LPDDR3-1866	4GB dual channel LPDDR3-1866	2GB dual channel LPDDR3-1866
Graphics	Intel® HD Graphics 505, 200 MHz up to 750 MHz	Intel® HD Graphics 500, 200 MHz up to 700 MHz	Intel® HD Graphics 500, 200 MHz – 700MHz
Storage	64GB eMMC 5.0, HS400	64GB eMMC 5.0, HS400	32GB eMMC 5.0, HS400
Networking	Intel® Wireless-AC 7265 802.11ac 2x2; + Bluetooth 4.2, dual internal antennas	Intel® Wireless-AC 7265 802.11ac 2x2; + Bluetooth 4.2, dual internal antennas	Intel® Wireless-AC 7265 802.11ac 2x2; + Bluetooth 4.2, dual internal antennas
Enclosure	Metal with a plastic cap	Metal with a plastic cap	Metal with a plastic cap
Additional Featured	No moving components Three year warranty	No moving components Three year warranty	No moving components Three year warranty

For more information, visit **www.intel.com/computecard**

Actual Intel® Compute Card may differ from the image shown. Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/computecard

* Other names and brands may be claimed as the property of others.

INTEL® COMPUTE CARD DOCK - PORT JEFFERSON

Product Code	**DK132EPJ**
Supported Cards	CD1IV128MK Intel® Core™ i5 vPro* CD1M3128MK Intel® Core™ m3 CD1P64GK Intel® Pentium® CD1C64GK Intel® Celeron®
Security	Mechanical security latch, Compute Card ejection lock, Kensington lock
Networking	Intel® Ethernet Controller I211-AT, IEEE 802.3/u/ab, RJ45 with dual LEDs, 10/00/1000 Mbps
Enclosure	Metal with plastic
Additional Featured	Electronic ejection Active cooling One year warranty

For more information, visit **www.intel.com/computecard**

Actual Intel® Compute Card may differ from the image shown. Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/computecard

* Other names and brands may be claimed as the property of others.

For more information, visit **www.intel.com/computecard**

INTEL® WIRELESS PRODUCTS

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® WIRELESS-AC WI-FI FOR YOUR CONNECTED LIFE

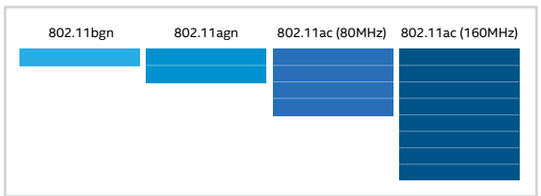
GIGABIT WI-FI POWERED BY INTEL

With the right solution from Intel, your Wi-Fi performs just as remarkably as you do—easily keeping pace with your entertainment, business, and super-connected lifestyle.

INTEL® WIRELESS PRODUCTS

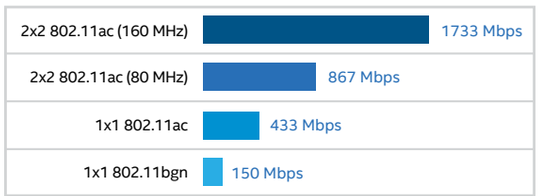
Improved Capacity[4]

802.11ac (160MHz) combines eight 20 MHz channels into a super-wide 160MHz channel. More capacity, less congestion.



Nearly Twelve Times Faster Data Rates[5]

Less time waiting, more time enjoying. 802.11ac: 2 data streams on 2 antennas for the best experience.



Progression of Wi-Fi Standards & Technologies

YEAR	WI-FI TYPE	SHORT NAME	MAX SPEED	STREAMS	CHANNEL WIDTH	CHANNEL DENSITY
2016	2x2 802.11ac	2x2AC	1733Mbps	2	160MHz	Heavy
2013	2x2 802.11ac	2x2AC	867Mbps	2	80MHz	Heavy
2013	1x1 802.11ac	1x1AC	433Mbps	1	80MHz	Heavy
2007	1x1 802.11n	1x1BGN/AGN	150Mbps	1	40MHz	Medium

Note: Wider channels, heavier channel densities, and higher number of streams each contribute to higher maximum speeds

- 802.11ac products are nearly 12X faster[5] than 802.11n, is fully backwards compatible, and supports both the 2.4GHz and 5GHz spectrum.
- PC (client) and AP/Router must both have 802.11ac to get highest speeds.
- 2x2AC clients are 2X-4X faster than 1x1AC clients[3].
- Intel has important additional unique features:
  - Wireless Intel® Active Management Technology (Intel® vPro™ Technology)[1]
  - Worldwide Regulatory Support with Intel® Dynamic Regulatory Solution[2]

Module Form Factors

M.2 2230 Socketed

M.2 1216 Soldered Down

INTEL® WIRELESS-AC PRODUCTS

Wireless Products (802.11ac Wi-Fi and Bluetooth®)

Wi-Fi is not just for laptops. Experience the flexibility and performance offered by Intel® Wireless-AC in the desktop.

PRODUCT	INTEL® WIRELESS-AC 9560	INTEL® WIRELESS-AC 9260	INTEL® WIRELESS-AC 9461/9462	INTEL® DUAL BAND WIRELESS-AC 8265	INTEL® DUAL BAND WIRELESS-AC 8260	INTEL® DUAL BAND WIRELESS-AC 7265	INTEL® DUAL BAND WIRELESS-AC 3168	INTEL® DUAL BAND WIRELESS-AC 3165
FORM FACTOR	M.2 2230, 1216 (Solder Down)	M.2 2230	M.2 2230, 1216 (Solder Down)	M.2 2230, 1216 (Solder Down)	M.2 2230, 1216 (Solder Down)	M.2 2230, 1216 (Solder Down)	M.2 2230	M.2 2230
SPEED SPATIAL STREAMS (TX AND RX)	Gigabit - 1733Mb/s (2x2)	Gigabit - 1733Mb/s (2x2)	433Mb/s (1x1) Single Antenna-9461; Diversity Antenna-9462	867Mb/s (2x2)	867 Mb/s (2x2)	867 Mb/s (2x2)	433 Mb/s (1x1)	433 Mb/s (1x1)
ENTERPRISE / SMB FEATURES	Intel® PROset/wireless software, MU-MIMO Rx, Intel® Authenticate Solution	Intel® PROset/wireless software, MU-MIMO Rx, Intel® Authenticate Solution	Intel® PROset/wireless software, MU-MIMO Rx, Intel® Authenticate Solution	Intel® PROSet/Wireless Software, MU-MIMO, Intel® Authenticate Solution	Intel® PROSet / Wireless Software, Intel® Authenticate Solution	Intel® PROSet / Wireless Software, Intel® Authenticate Solution	Intel® PROSet / Wireless Software, Intel® Authenticate Solution	Intel® PROSet / Wireless Software, Intel® Authenticate Solution
BANDS	Dual Band - 2.4GHz and 5GHz	Dual Band - 2.4GHz and 5GHz	Dual Band - 2.4GHz and 5GHz	Dual Band – 2.4 GHz and 5 GHz	Dual Band – 2.4 GHz and 5 GHz	Dual Band – 2.4 GHz and 5 GHz	Dual Band – 2.4 GHz and 5 GHz	Dual Band – 2.4 GHz and 5 GHz
INTEL® vPRO™ TECHNOLOGY[1]	✓	✓		✓	✓	✓		
BLUETOOTH®	Bluetooth® 5	Bluetooth 5	Bluetooth 5	Bluetooth® 4.2	Bluetooth 4.2	Bluetooth 4.2	Bluetooth 4.2	Bluetooth 4.2
Wi-Fi* CERTIFICATION (802.11)	WiFi certified 802.11 ac/a/b/g/n	WiFi certified 802.11 ac/a/b/g/n	WiFi certified 802.11 ac/a/b/g/n	WiFi certified 802.11ac/a/b/g/n	WiFi certified 802.11ac/a/b/g/n	WiFi certified 802.11ac/a/b/g/n	WiFi certified 802.11ac/a/b/g/n	WiFi certified 802.11ac/a/b/g/n
OPTIMIZED FOR	8th generation Intel® Core™ processors and Intel® Pentium® Silver and Intel® Celeron® processors with platforms designed to support connectivity integration	8th generation Intel® Core™ processors and Intel® Pentium® Silver and Intel® Celeron® processors	8th generation Intel® Core™ processors and Intel® Pentium® Silver and Intel® Celeron® processors with platforms designed to support connectivity integration	7th generation Intel® Core™ processors	6th generation Intel® Core™ processors	5th & 6th generation Intel® Core™ processors	6th & 7th generation Intel® Core™ processors	5th & 6th generation Intel® Core™ processors

DESKTOP WIRELESS M.2 KIT

Intel® Dual Band Wireless-AC 8265 Desktop Kit

Intel® wireless networking solutions for desktop platforms enable network connectivity without wires. This solution requires a motherboard with an M.2 key E connector for wireless and includes 2 antennas, 2 RF cables with connectors and 2 mounting brackets (long/short). Integrate wireless in the desktop vs. an external USB dongle for uncompromising performance, enhanced security, and scalability for fast, flexible connectivity at work and home.

SEGMENT	BUSINESS, EDUCATION, PERFORMANCE CONSUMER
PRODUCT	INTEL® DUAL BAND WIRELESS-AC 8265 DESKTOP KIT
FORM FACTOR	M.2 (key E)
ANTENNA	Included
SPEED SPATIAL STREAMS (TX AND RX)	867 Mb/s (2x2)[4]
BANDS	Dual Band – 2.4 GHz and 5 GHz
ENTERPRISE / SMB FEATURES	Intel® PROSet / Wireless Software, MU-MIMO
BLUETOOTH® 4	Bluetooth® 4.2
WI-FI* CERTIFICATION (802.11)	802.11ac, 802.11n
AVAILABILITY	Shipping

INTEL® CHANNEL WIRELESS PRODUCTS

Intel offers a full portfolio of advanced technologies to optimise every wireless experience

PRODUCT CODE	MM#	DESCRIPTION	PACKING	PRODUCT CONSIDERATIONS
JEFFERSON PEAK 1 & 2 - 9461, 9462 & 9560				
9560.NGWG	957714	CNVi, Gigabit (160MHz), 2x2 MU-MIMO 802.11ac/a/b/g/n + Bluetooth® 5 - M.2	100 pack	Recommended wireless solution for 8th generation Intel® Core™, Intel® Pentinum® Silver and Intel® Celeron® Processors with platforms designed for connectivity integration. Supports Intel® vPro™ Technology on 8th generation Intel® Core™ processors.
9461.NGWG.NV	958885	CNVi, Single Antenna 1x1 MU-MIMO, 802.11ac/a/b/g/n + Bluetooth 5 - M.2	100 pack	Recommended wireless solution for 8th generation Intel® Core™, Intel® Pentinum® Silver and Intel® Celeron® Processors with platforms designed for connectivity integration.
9462.NGWG.NV	958856	CNVi, Diversity Antenna 1x1 MU-MIMO, 802.11ac/a/b/g/n + Bluetooth 5 M.2	100 pack	
THUNDER PEAK 2 - 9260				
9260.NGWG	957712	Gigabit (160MHz), 2x2 MU-MIMO 802.11ac/a/b/g/n + Bluetooth 5 - M.2	100 pack	Recommended wireless solution for 8th generation Intel® Core™, Intel® Pentinum® Silver and Intel® Celeron® Processors. Supports Intel® vPro™ Technology on 8th generation Intel® Core™ processors.
WINDSTORM PEAK - 8265				
8265.NGWMG	946658	2x2 MU-MIMO 802.11ac/a/b/g/n + Bluetooth® 4.2 - m.2	100 Packs	Recommended overall wireless solution for M.2 form-factor on 7th generation Intel® Core™ processors.
8265.NGWMG.DTX1	958156	2x2 MU-MIMO 802.11ac/a/b/g/n + Bluetooth 4.2 – m.2 desktop kit	1 Retail Box	
SNOWFIELD PEAK - 8260				
8260.NGWMG	942165	2x2 MIMO 802.11ac/a/b/g/n + Bluetooth 4.2 - m.2	100 Packs	Recommended overall wireless solution for M.2 form-factor on 6th generation Intel® Core™ processors.
SANDY PEAK - 3168				
3168.NGWG	944884	1x1 802.11ac/a/b/g/n + Bluetooth 4.2 - m.2	100 Packs	Nearly 3x faster than 802.11 bgn/agn based products. [5]
STONE PEAK 1 & 2 – 3165 & 7265				
7265.NGWG.W	939155	2x2 MIMO 802.11ac/a/b/g/n + Bluetooth 4.1 - rev.2, m.2	100 Packs	Recommended overall wireless solution for M.2 form-factor on 5th generation Intel® Core™ processor-based systems. Supports Intel® vPro™ Technology on 5th generation Intel® Core™ processors. [1]
7265.NGWWB.W	945063	2x2 MIMO 802.11ac/a/b/g/n + Bluetooth 4.1 - rev.2, m.2, 10pk	10 Packs	Lower quantity pack to support smaller product orders.
3165.NGWG	940106	1x1 802.11ac/a/b/g/n + Bluetooth 4.1 - m.2	100 Packs	Nearly 3x faster than 802.11 bgn/agn based products. [5]

For more information, visit **www.intel.com/wireless**

For more information, visit **www.intel.com/wireless**

[1] Intel® vPro™ technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software, and IT environment. To learn more visit: www.intel.com/content/www/us/en/architecture- and-technology/vpro/intel-vpro-technology-developer.html

[2] For a list of country approvals, please contact your local Intel representative.

[3] Based on actual product benchmark performance. Theoretical maximum bandwidth enabled by 2x2 802.11ac (80MHz) and 2x2 802.11ac (160MHz) implementations are 867 Mbps and 1733Mbps PHY rates respectively.

[4] Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. For more complete information about performance and benchmark results, visit http://www.intel.com/performance.

[5] "Nearly 3x/6x/12x faster" Intel® Wireless-AC claims are based on the comparison of maximum theoretical data rates for single (433 Mbps), dual (867 Mbps) spatial stream 802.11ac (80MHz) and dual (1733Mbps) spatial stream 802.11ac (160MHz) vs. single spatial stream (150 Mbps) 802.11n Wi-Fi solutions as documented in IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ac wireless network routers or better.

* Other names, brands, and logos may be claimed as the property of others.

INTEL® REALSENSE™ TECHNOLOGY

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® REALSENSE™ D400 FAMILY OF PRODUCTS

Intel's Next Generation Depth Sensing Technology

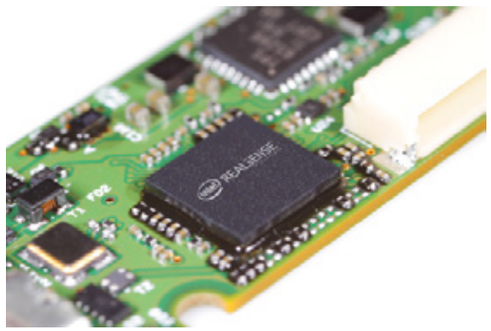
DELIVERING NEW LEVELS OF EFFICIENCY AND PRODUCTIVITY

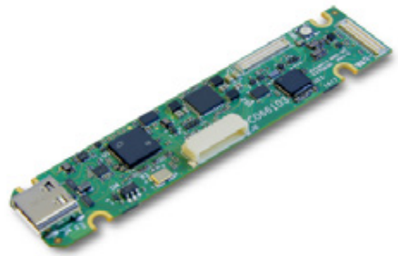
Intel® RealSense™ technology is fundamentally re-shaping the future of technology by equipping devices with the ability to see, understand, interact with, and learn from their environment. Intel® RealSense™ D400 Family of products delivers an the next generation of end to end suite of depth sensing technologies that enable you to create new and innovative ways to connect with the world.

INTEL® REALSENSE™ VISION PROCESSOR D4

Make Smart Devices Even Smarter

The Intel® RealSense™ Vision Processor D4 Series does the heavy lifting for you. It uses advanced algorithms to process raw image streams from the depth cameras and computes high resolution 3D depth maps without the need for dedicated GPU or host processor. Adding this vision processor to your system enables rapid custom design, which frees up more bandwidth for your system's host processor.





Real Time Depth Processing

A vision processor that combines advanced stereo algorithms and enhanced image processing pipeline to deliver 20X better depth compute over the previous generation.

Enhanced Performance

Generate depth data with up to 90fps dense depth map and Up to 1280x720 highest resolution depth.

Next Generation Technology

Low cost and size optimized (6.4x6.4mm) for integration flexibility across a spectrum of embedded devices.

Lower active and Standby Power with 28nm process.

Note: Intel® RealSense™ Depth Modules typically purchased in conjunction with Intel® RealSense™ Vision Processor D4 or Intel® RealSense™ Vision Processor D4 Card.

INTEL® REALSENSE™ DEPTH MODULES D400 SERIES

Integrate Depth Perception into Your Product

The Intel® RealSense™ Depth Module D400 Series provides a turnkey solution for rapid product development and integration for VR, Robotics, and any market where depth matters. Choose the module that has the best combination of power consumption, field of view, and shutter type, to optimize depth vision integration into your product. This tailored depth module adds “eyes” to your product as an enhanced solution.

	STEREO MODE	BASELINE	DEPTH SENSOR	RGB SENSOR	FOV	IR PROJECTOR	DIMENSIONS
D430	Wide	50mm	1280x720, Global	None	H: 91.2 , V: 65.5 , D: 100.6	Wide IR	X: 70.7mm, Y: 14mm , Z: 10.53mm
D420	Wide	50mm	1280x720, Global	None	H: 91.2, V: 65.5, D: 100.6	None	X: 70.7mm, Y: 14mm, Z: 10.53mm
D415	Standard	55mm	1080p, Rolling	16:9, 1920x1080	H: 69.4, V: 42.5, D: 77	Standard IR	X: 83.7mm, Y: 10mm, Z: 4.7mm
D410	Standard	55mm	1080p, Rolling	None	H: 69.4, V: 42.5, D: 77	Standard IR	X: 74.7mm, Y: 10mm, Z: 4.7mm
D400	Standard	55mm	1080p, Rolling	None	H: 69.4, V: 42.5, D: 77	None	X: 74.7mm, Y: 10mm, Z: 4.7mm

FOV: H – Horizontal FOV, V – Vertical FOV, D – Diagonal FOV. Dimensions: X – Width, Y – Height, Z – Thickness.

Note1: D415 Not Pictured

Note2: Intel® RealSense™ Depth Modules typically purchased in conjunction with Intel® RealSense™ Vision Processor D4 or Intel® RealSense™ Vision Processor D4 Card.

INTEL® REALSENSE™ DEPTH CAMERA D400 SERIES

Bolster Your Prototype with Computer Vision

Intel® RealSense™ Depth Camera D415 and D435 are ready-to-use right out of the box and can be easily added into your existing prototypes via USB. Bring innovative visual solutions to your projects with enhanced, accurate computer vision by adding high image-resolution and high frame-rate capabilities. Both Intel® RealSense™ Depth Cameras include long-range vision and work in both indoor and outdoor settings. Ideal for makers, educators, hardware prototyping and software development.

Start developing immediately with the Intel® RealSense™ SDK an open source and Cross-Platform enabling multiple computing languages, wrappers, sample code and tools.

INTEL® REALSENSE™ DEPTH CAMERA D415

INTEL® REALSENSE™ DEPTH CAMERA D435

Baseline	55mm	50mm
Left/Right Imagers Type	Standard	Wide
Left/Right Imagers FOV (degrees)	H:68 / V:41.5 / D:75	H:91.2 / V:65.5 / D:100.6
IR Projector	Standard	Wide
IR Projector FOV	H:69.5 / V:42.5 / D:77	H:100.4/V:69/D:110.4
Color Sensor	OV2740	OV2740
Color Camera FOV	H:68/V:41.5 /D:75	H:68/V:41.5 /D:75
Depth Module Dimensions (mm)	X=89.7mm Y=10mm Z=4.7mm	X=70.7mm Y=14mm Z=10.53mm

INTEL® REALSENSE™ SOFTWARE DEVELOPER KIT 2.0

Open Source, Cross Platform

Featuring:

- Tools: Intel® RealSense™ Viewer
- Utilities for Debug
- Code Samples
- RealSense™ SDK an open source and Cross-Platform enabling multiple computing languages, wrappers, sample code and tools.

For more information, visit **realsense.intel.com/develop**

Movidius
an Intel company

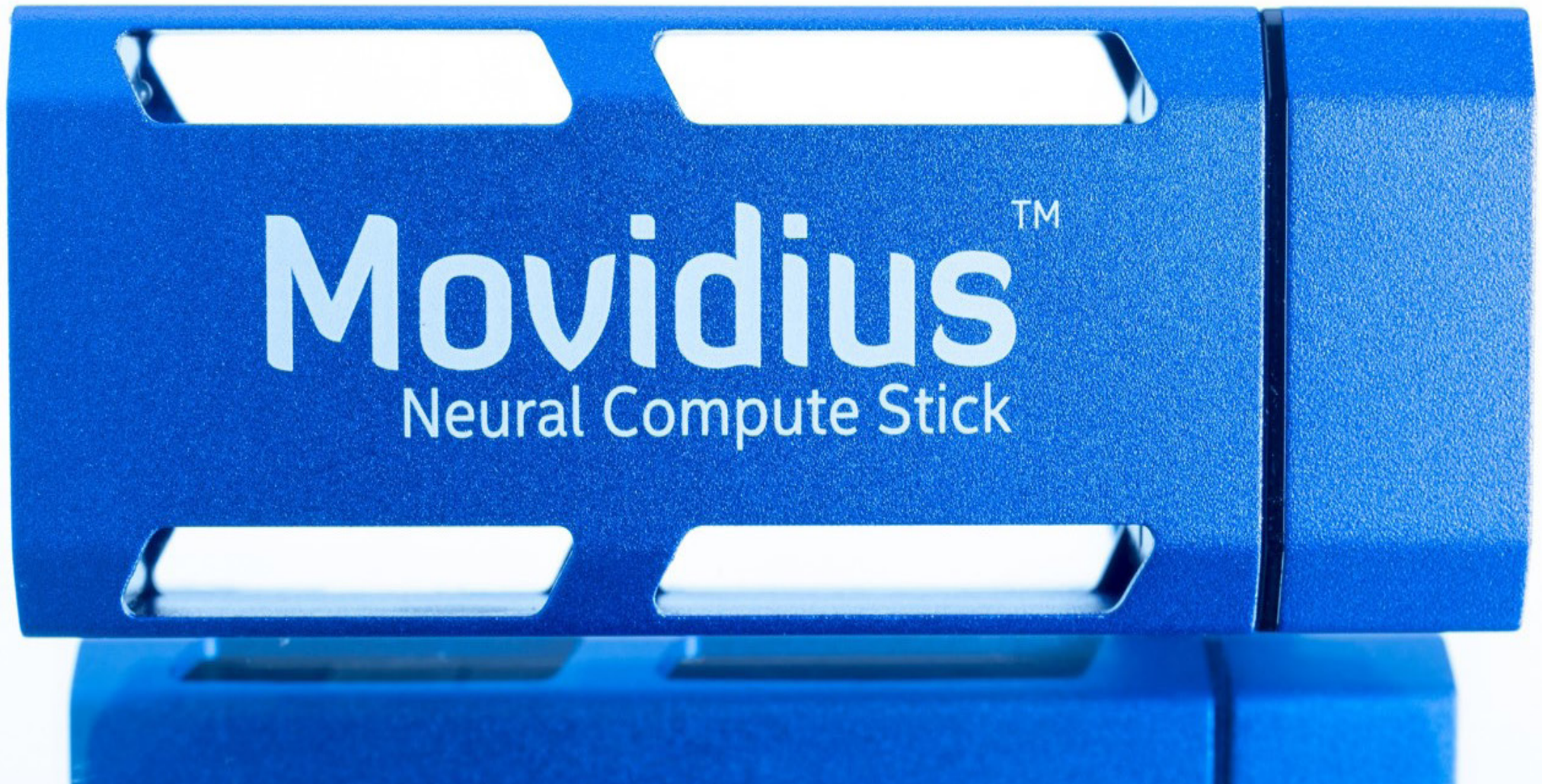
MOVIDIUS™ NEURAL COMPUTE STICK

Intel® Product Quick Reference Matrix

Q4 2018

ACCELERATE DEEP LEARNING DEVELOPMENT AT THE EDGE

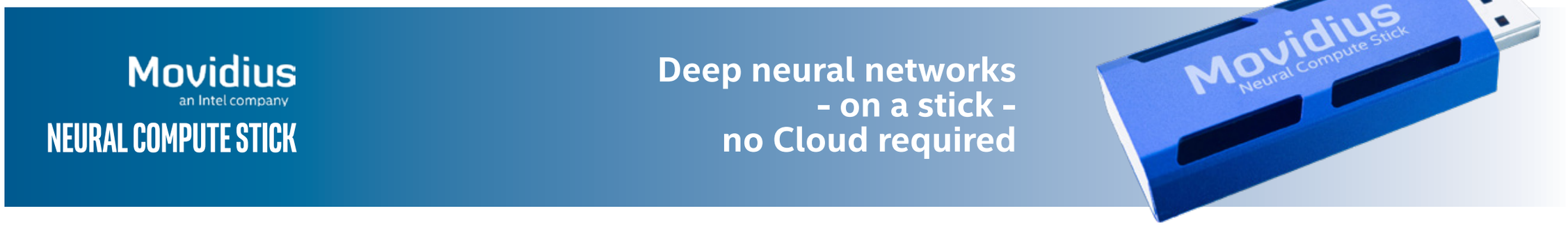
The Movidius™ Neural Compute Stick is a miniature deep learning hardware development platform that you can use to prototype and tune, validate, and your AI programs, specifically Deep Neural Networks. It features the same Movidius vision processing unit (VPU) used to bring machine intelligence to drones, surveillance cameras, and VR or AR headsets. Now, in a USB stick form factor.



MOVIDIUS™ NEURAL COMPUTE STICK

Product Insights

Powered by the Movidius™ Vision Processing Unit, capable of running high performance Floating-point CNNs at ultra-low power, packaged in a convenient USB stick form factor for real time deep learning inferences with best in class power efficiency.



Deep Learning Insights

Profile, Validate, and Run your Deep Neural Network (DNN) to get real-world embedded results for deep learning research and development insights into performance and power.

Immediate Productivity

Supports the popular Caffe DNN framework to get up and running easily. Out-of-the-box examples for x86 and Raspberry Pi* platforms help you easily integrate DNN inferences into any application.

Prototyping Versatility

USB stick form factor enables deep learning R&D and prototyping on a Linux laptop, x86 based host device, Raspberry Pi* and others to come.

Run multiple devices on the same platform to scale performance.

* Other names and brands may be claimed as the property of others.

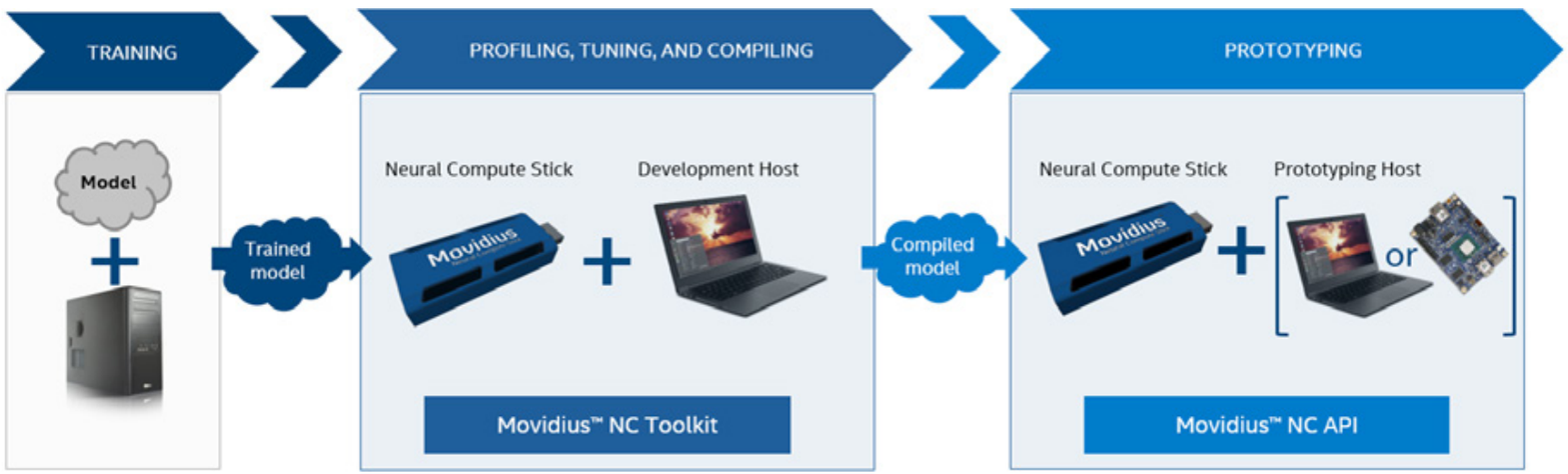
Compile, Tune and Accelerate

A Software Development Kit (SDK) containing a Toolkit and API allows deep learning developers to profile, tune, compile and deploy deep neural network (DNN) applications on the Movidius™ Neural Compute Stick.

Compile the Deep Neural Network: Automatically convert a trained Caffe-based convolutional neural network (CNN) into an embedded neural network optimized to run on the onboard Movidius Myriad 2 vision processing unit (VPU).

Tune the Network: Layer-by-layer performance metrics for both industry standard examples provided and custom-designed neural networks enable effective tuning for optimal real-world performance at ultra-low power. Validation scripts allow developers to compare the accuracy of the optimized model on the device to the original PC-based model.

Accelerate the Network on the Neural Compute Stick: Unique to Movidius Neural Compute Stick, the device can behave as a discrete neural network accelerator by adding dedicated deep learning inference capabilities to existing computing platforms for improved performance and power efficiency.



For more information, visit **developer.movidius.com**

Visit **developer.movidius.com** for more information.

INTEL® SERVER / WORKSTATION PROCESSORS

INNOVATION YOU WANT. VERSATILITY YOU NEED.

Intel® Product Quick Reference Matrix

Q4 2018

ENABLING BETTER DESIGNS AND FASTER TIME TO MARKET

The demand for faster time to market, design optimization, and cost reduction is driving the rapid adoption of workstation products in many industries. Not long ago, workstations were relegated to high-end design tasks such as complex mechanical assemblies, buildings, and aerospace design. Today, workstations are used in every major industry for tasks ranging from financial modeling, to designing complex buildings and vehicles. Workstations have become standard equipment for engineers, content creators, analysts, and others who need the highest levels of performance, visualization, and data integrity.

INTEL® SERVER / WORKSTATION PROCESSORS

Innovation You Want. Versatility You Need.

INTEL® XEON® PHI™ PRODUCT FAMILY

The Intel® Xeon Phi™ Processor – Your Path to Deeper Insight

Eliminate node bottlenecks, simplify your code modernization, and build on a power-efficient architecture with the Intel® Xeon Phi™ processor, a foundational element of Intel® Scalable System Framework. The bootable host processor offers an integrated architecture for powerful, highly parallel performance that will pave your path to deeper insight, innovation, and impact for today's most-demanding High Performance Computing applications, including Machine Learning. Supported by a comprehensive technology roadmap and robust ecosystem, the Intel® Xeon Phi™ processor is a future-ready solution that maximizes your return on investment by using open standards code that are flexible, portable, and reusable.

Product Specifications

PROCESSOR NAME	# OF CORES/ # OF THREADS	CLOCK SPEED	MAX TDP/POWER	MEMORY TYPES	FABRIC	L2 CACHE
Intel® Xeon™ Phi Processor 7250 (16GB, 1.40 GHz, 68 core)	68/272	1.4 GHz	215 W	DDR4-2400	No	34 MB
Intel® Xeon™ Phi Processor 7230 (16GB, 1.30 GHz, 64 core)	64/256	1.3 GHz	215 W	DDR4-2400	No	32 MB
Intel® Xeon™ Phi Processor 7210 (16GB, 1.30 GHz, 64 core)	64/256	1.3 GHz	215 W	DDR4-2133	No	32 MB
Intel® Xeon™ Phi Processor 7290 (16GB, 1.50 GHz, 72 core)	72/288	1.5 GHz	245 W	DDR4-2400	No	36 MB
Intel® Xeon™ Phi Processor 7290F (16GB, 1.50 GHz, 72 core)	72/288	1.5 GHz	260 W	DDR4-2400	Yes	36 MB
Intel® Xeon™ Phi Processor 7250F (16GB, 1.40 GHz, 68 core)	68/272	1.4 GHz	230 W	DDR4-2400	Yes	34 MB
Intel® Xeon™ Phi Processor 7230F (16GB, 1.30 GHz, 64 core)	64/256	1.3 GHz	230 W	DDR4-2400	Yes	32 MB
Intel® Xeon™ Phi Processor 7210F (16GB, 1.30 GHz, 64 core)	64/256	1.3 GHz	230 W	DDR4-2133	Yes	32 MB

Intel® Xeon Phi™ Coprocessors

Power breakthrough innovations with the highly parallel processing of the Intel® Xeon Phi™ coprocessor. Languages, tools, and applications run smoothly across the full spectrum of Intel® Xeon® processor family-based platforms. Intel Xeon Phi coprocessors provides 68 cores, 272 threads, and 2.828 double-precision teraFLOPS of performance,[4,5,6] and they come in a variety of configurations to address diverse hardware, software, workload, performance, and efficiency requirements.

Intel® Xeon Phi™ Coprocessor Product Family for Server Systems

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	CACHE	NO. OF CORES	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	THERMAL	UPC CODE
Intel® Xeon Phi™ Coprocessor 7240P	SC7240P	1.3 GHz	34 MB	68	✓	205W	Passive Thermal	7 35858 33734 2
Intel® Xeon Phi™ Coprocessor 7220A	SC7220A	1.2 GHz	34 MB	68	✓	205W	Active Thermal	7 35858 33731 1
Intel® Xeon Phi™ Coprocessor 7220P	SC7220P	1.2 GHz	34 MB	68	✓	205W	Passive Thermal	7 35858 33732 8
Intel® Xeon Phi™ Coprocessor 7220AEB (HS)	SC7220AEB	1.2 GHz	34 MB	68	✓	205W	Active Thermal	7 35858 33730 4

Intel® Xeon® Scalable Processors

The Intel® Xeon® Scalable processors are the new foundation for secure, agile, multi-cloud data centers. With uncompromising security and exceptional processing performance for trusted data service delivery, these processors deliver monumental leaps in I/O, memory, storage and network technology to harness actionable insights from our increasingly data-fueled smart and connected world.

Intel® Xeon® Scalable Processors for Server and Workstation Systems

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® UPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® Platinum Processor 8180	CD8067303314400 (tray) WX806738180 (box)	2.50 GHz	10.4 GT/s	38.5M	DDR4-2666 MHz	28/56	✓	2.0	205W	TBD
Intel® Xeon® Platinum Processor 8176	CD8067303314700 (tray) WX806738176 (box)	2.10 GHz	10.4 GT/s	38.5M	DDR4-2666 MHz	28/56	✓	2.0	165W	TBD
Intel® Xeon® Platinum Processor 8170	CD8067303327601 (tray) WX806738170 (box)	2.10 GHz	10.4 GT/s	35.75M	DDR4-2666 MHz	26/52	✓	2.0	165W	N/A
Intel® Xeon® Platinum Processor 8164	CD8067303408800 (tray) WX806738164 (box)	2.00 GHz	10.4 GT/s	35.75M	DDR4-2666 MHz	26/52	✓	2.0	150W	N/A
Intel® Xeon® Platinum Processor 8168	CD8067303327701 (tray)	2.70 GHz	10.4 GT/s	33M	DDR4-2666 MHz	24/48	✓	2.0	205W	N/A
Intel® Xeon® Platinum Processor 8160	CD8067303405600 (tray) WX806738160 (box)	2.10 GHz	10.4 GT/s	33M	DDR4-2666 MHz	24/48	✓	2.0	150W	TBD
Intel® Xeon® Platinum Processor 8158	CD8067303406500 (tray)	3.00 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	12/24	✓	2.0	150W	N/A
Intel® Xeon® Platinum Processor 8156	CD8067303368800 (tray)	3.60 GHz	10.4 GT/s	16.5M	DDR4-2666 MHz	4/8	✓	2.0	105W	N/A
Intel® Xeon® Platinum Processor 8153	CD8067303408900 (tray)	2.00 GHz	10.4 GT/s	22M	DDR4-2666 MHz	16/32	✓	2.0	125W	N/A
Intel® Xeon® Gold Processor 6154	CD8067303592700 (tray)	3.00 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	18/36	✓	2.0	200W	N/A
Intel® Xeon® Gold Processor 6152	CD8067303406000 (tray) WX806736152 (box)	2.10 GHz	10.4 GT/s	30.25M	DDR4-2666 MHz	22/44	✓	2.0	140W	TBD
Intel® Xeon® Gold Processor 6150	CD8067303328000 (tray)	2.70 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	18/36	✓	2.0	165W	TBD

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PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® UPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® Gold Processor 6148	CD8067303406200 (tray) WX806736148 (box)	2.40 GHz	10.4 GT/s	27.5M	DDR4-2666 MHz	20/40	✓	2.0	150W	TBD
Intel® Xeon® Gold Processor 6142	CD8067303405400 (tray) WX806736142 (box)	2.60 GHz	10.4 GT/s	22M	DDR4-2666 MHz	16/32	✓	2.0	150W	TBD
Intel® Xeon® Gold Processor 6140	CD8067303405200 (tray) WX806736140 (box)	2.30 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	18/36	✓	2.0	140W	TBD
Intel® Xeon® Gold Processor 6138	CD8067303406100 (tray) WX806736138 (box)	2.00 GHz	10.4 GT/s	27.5M	DDR4-2666 MHz	20/40	✓	2.0	125W	TBD
Intel® Xeon® Gold Processor 6132	CD8067303592500 (tray)	2.60 GHz	10.4 GT/s	19.25M	DDR4-2666 MHz	14/28	✓	2.0	133W	N/A
Intel® Xeon® Gold Processor 6136	CD8067303405800 (tray)	3.00 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	12/24	✓	2.0	148W	N/A
Intel® Xeon® Gold Processor 6134	CD8067303330302 (tray) WX806736134 (box)	3.20 GHz	10.4 GT/s	24.75M	DDR4-2666 MHz	8/16	✓	2.0	130W	N/A
Intel® Xeon® Gold Processor 6130	CD8067303409000 (tray) WX806736130 (box)	2.10 GHz	10.4 GT/s	22M	DDR4-2666 MHz	16/32	✓	2.0	125W	TBD
Intel® Xeon® Gold Processor 6128	CD8067303592600 (tray) WX806736128 (box)	3.40 GHz	10.4 GT/s	19.25M	DDR4-2666 MHz	6/12	✓	2.0	115W	N/A
Intel® Xeon® Gold Processor 6126	CD8067303405900 (tray)	2.60 GHz	10.4 GT/s	19.25M	DDR4-2666 MHz	12/24	✓	2.0	125W	N/A
Intel® Xeon® Gold Processor 5122	CD8067303330702 (tray) WX806735122 (box)	3.60 GHz	10.4 GT/s	16.5M	DDR4-2400 MHz	4/8	✓	2.0	105W	N/A
Intel® Xeon® Gold Processor 5120	CD8067303535900 (tray) WX806735120 (box)	2.20 GHz	10.4 GT/s	19.25M	DDR4-2400 MHz	14/28	✓	2.0	105W	TBD
Intel® Xeon® Gold Processor 5118	CD8067303536100 (tray)	2.30 GHz	10.4 GT/s	16.5M	DDR4-2400 MHz	12/24	✓	2.0	105W	N/A
Intel® Xeon® Gold Processor 5115	CD8067303535601 (tray)	2.40 GHz	10.4 GT/s	13.75M	DDR4-2400 MHz	10/20	✓	2.0	85W	N/A
Intel® Xeon® Sliver Processor 4116	CD8067303567200 (tray) WX806734116 (box)	2.10 GHz	9.6 GT/s	16.5M	DDR4-2400 MHz	12/24	✓	2.0	85W	TBD
Intel® Xeon® Sliver Processor 4114	CD8067303561800 (tray) WX806734114 (box)	2.20 GHz	9.6 GT/s	13.75M	DDR4-2400 MHz	10/20	✓	2.0	85W	TBD
Intel® Xeon® Sliver Processor 4112	CD8067303562100 (tray) WX806734112 (box)	2.60 GHz	9.6 GT/s	8.25M	DDR4-2400 MHz	4/8	✓	2.0	85W	TBD
Intel® Xeon® Sliver Processor 4110	CD8067303561400 (tray) WX806734110 (box)	2.10 GHz	9.6 GT/s	11M	DDR4-2400 MHz	8/16	✓	2.0	85W	TBD
Intel® Xeon® Sliver Processor 4108	CD8067303561500 (tray) WX806734108 (box)	1.80 GHz	9.6 GT/s	11M	DDR4-2400 MHz	8/16	✓	2.0	85W	TBD
Intel® Xeon® Bronze Processor 3106	CD8067303561900 (tray) WX806733106 (box)	1.70 GHz	9.6 GT/s	11M	DDR4-2133 MHz	8/16	No	No	85W	TBD
Intel® Xeon® Bronze Processor 3104	CD8067303562000 (tray) WX806733104 (box)	1.70 GHz	9.6 GT/s	8.25M	DDR4-2133 MHz	6/12	No	No	85W	TBD

INTEL® XEON® PROCESSOR E7-8800 / 4800 V4 FAMILY

Introducing the New Intel Xeon Processor E7-8800/ 4800 v4 Product Family

Unleash exceptional performance for your most demanding data workloads. Fast track your business for real-time analytics and in-memory computing with the secure, reliable, performance workhorse that is the Intel® Xeon® processor E7-8800/4800 v4 product families. Designed for the most mission-critical workloads and the always-on enterprise, the processor combines large memory capacities with leading performance, reliability, and virtualization capabilities to keep your data center supplying business advantage without interruption.

Intel® Xeon® Processor E7-8800 v4 Product Family for Server / Workstation Systems Featuring Up to Eight LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E7-8893 v4	CM8066902065502	3.20 GHz	9.6 GT/s	60M	1866 MHz (DDR4) 1600 MHz (DDR3)	4/8	✓	✓	140 W
Intel® Xeon® processor E7-8891 v4	CM8066902027903	2.80 GHz	9.6 GT/s	60M	1866 MHz (DDR4) 1600 MHz (DDR3)	10/20	✓	✓	165 W
Intel® Xeon® processor E7-8867 v4	CM8066902028403	2.40 GHz	9.6 GT/s	45M	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	165 W
Intel® Xeon® processor E7-8890 v4	CM8066902885200	2.20 GHz	9.6 GT/s	60M	1866 MHz (DDR4) 1600 MHz (DDR3)	24/48	✓	✓	165 W
Intel® Xeon® processor E7-8880 v4	CM8066902325500	2.20 GHz	9.6 GT/s	55M	1866 MHz (DDR4) 1600 MHz (DDR3)	22/44	✓	✓	150 W
Intel® Xeon® processor E7-8870 v4	CM8066902025802	2.10 GHz	9.6 GT/s	50M	1866 MHz (DDR4) 1600 MHz (DDR3)	20/40	✓	✓	140 W
Intel® Xeon® processor E7-8860 v4	CM8066902325800	2.20 GHz	9.6 GT/s	45M	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	140 W

Intel® Xeon® Processor E7-4800 v4 Product Family for Server / Workstation Systems Featuring Up to Four LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E7-4850 v4	CM8066902026904	2.10 GHz	8.0 GT/s	40M	1866 MHz (DDR4) 1600 MHz (DDR3)	16/32	✓	✓	115 W
Intel® Xeon® processor E7-4830 v4	CM8066902027102	2.00 GHz	8.0 GT/s	35M	1866 MHz (DDR4) 1600 MHz (DDR3)	14/28	✓	✓	115 W
Intel® Xeon® processor E7-4820 v4	CM8066902027500	2.00 GHz	6.4 GT/s	25M	1866 MHz (DDR4) 1333 MHz (DDR3)	10/20	✓		115 W
Intel® Xeon® processor E7-4809 v4	CM8066902027604	2.10 GHz	6.4 GT/s	20M	1866 MHz (DDR4) 1333 MHz (DDR3)	8/16	✓		115 W

INTEL® XEON® PROCESSOR E7-8800 / 4800 V3 FAMILY

Introducing the New Intel Xeon Processor E7-8800/ 4800 v3 Product Family

In Q2 2015, Intel will launch the next-generation processor family in the Mission Critical and Expandable Segment for server platforms with 2, 4, and 8+ sockets. The Intel® Xeon® Processor E7-8800/4800 v3 family will offer top-of-the-line performance, scalability, and reliability for enterprise and mission critical workloads, including advanced analytics, databases, virtualization, and scale-up HPC. Based on Haswell[1] microarchitecture on the 22nm process technology, the Intel Xeon Processor E7-8800/4800 v3 family will introduce performance improvements, new RAS capabilities, and new power and thermal management capabilities, as well as support for DDR4 memory.

Intel® Xeon® Processor E7-8800 v3 Product Family for Server / Workstation Systems Featuring Up to Eight LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E7-8893 v3	CM8064501753602	3.20 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	4/8	✓	✓	140 W
Intel® Xeon® processor E7-8891 v3	CM8064501552202	2.80 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	10/20	✓	✓	165 W
Intel® Xeon® processor E7-8890 v3	CM8064501549928	2.50 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	165 W
Intel® Xeon® processor E7-8880 v3	CM8064501550002	2.30 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	150 W
Intel® Xeon® processor E7-8880L v3	CM8064501552522	2.00 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	115 W
Intel® Xeon® processor E7-8870 v3	CM8064501550107	2.10 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	18/36	✓	✓	140 W
Intel® Xeon® processor E7-8867 v3	CM8064502025001	2.50 GHz	9.60 GT/s	45 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	16/32	✓	✓	165 W
Intel® Xeon® processor E7-8860 v3	CM8064502017900	2.20 GHz	9.60 GT/s	40 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	16/32	✓	✓	140 W

Intel® Xeon® Processor E7-4800 v3 Product Family for Server / Workstation Systems Featuring Up to Four LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E7-4850 v3	CM8064501551702	2.20 GHz	8 GT/s	35 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	18/28	✓	✓	115 W
Intel® Xeon® processor E7-4830 v3	CM8064502020101	2.10 GHz	8 GT/s	30 MB	1866 MHz (DDR4) 1600 MHz (DDR3)	12/24	✓	✓	115 W
Intel® Xeon® processor E7-4820 v3	CM8064502020200	1.90 GHz	6.40 GT/s	25 MB	1866 MHz (DDR4) 1333 MHz (DDR3)	10/20	✓		115 W
Intel® Xeon® processor E7-4809 v3	CM8064501551526	2.00 GHz	6.40 GT/s	20 MB	1866 MHz (DDR4) 1333 MHz (DDR3)	8/16	✓		115 W

Intel® Xeon® Processor E7-8800 / 4800 / 2800 v2 Product Families

Rapidly process and analyze large amounts of data in near real time with the Intel® Xeon® processor E7-8800 / 4800 / 2800 v2 product families.

Keep data local with up to 1.5 TB of memory per socket to manage data-demanding, transaction-intensive workloads. Intel® Run Sure Technology[2] helps increase system uptime and data integrity for business-critical solutions. Hardware-embedded security features help better protect data and provide a safer environment.

Intel® Xeon® Processor E7-8800 v2 Product Family for Server / Workstation Systems Featuring Eight LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E7-8893 v2	CM8063601454907	3.40 GHz	8 GT/s	37.5 MB	1600 MHz	6/12	✓	✓	155 W	N/A
Intel® Xeon® processor E7-8891 v2	CM8063601377422	3.20 GHz	8 GT/s	37.5 MB	1600 MHz	10/20	✓	✓	155 W	N/A
Intel® Xeon® processor E7-8890 v2	CM8063601213513	2.80 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	155 W	N/A
Intel® Xeon® processor E7-8880 v2	CM8063601271810	2.50 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-8880L v2	CM8063601275812	2.20 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	105 W	N/A
Intel® Xeon® processor E7-8870 v2	CM8063601272006	2.30 GHz	8 GT/s	30 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-8857 v2	CM8063601275912	3.00 GHz	8 GT/s	30 MB	1600 MHz	12/12		✓	130 W	N/A
Intel® Xeon® processor E7-8850 v2	CM8063601272306	2.30 GHz	7.20 GT/s	24 MB	1333 MHz	12/24	✓	✓	105 W	N/A

Intel® Xeon® Processor E7-4800 v2 Product Family for Server / Workstation Systems Featuring Four LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E7-4890 v2	CM8063601272412	2.80 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	155 W	N/A
Intel® Xeon® processor E7-4880 v2	CM8063601272512	2.50 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-4870 v2	CM8063601272606	2.30 GHz	8 GT/s	30 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-4860 v2	CM8063601453406	2.60 GHz	8 GT/s	30 MB	1600 MHz	12/24	✓	✓	130 W	N/A
Intel® Xeon® processor E7-4850 v2	CM8063601272906	2.30 GHz	7.20 GT/s	24 MB	1333 MHz	12/24	✓	✓	105 W	N/A
Intel® Xeon® processor E7-4830 v2	CM8063601374506	2.20 GHz	7.20 GT/s	20 MB	1333 MHz	10/20	✓	✓	105 W	N/A
Intel® Xeon® processor E7-4820 v2	CM8063601521707	2.00 GHz	7.20 GT/s	16 MB	1333 MHz	8/16	✓	✓	105 W	N/A
Intel® Xeon® processor E7-4809 v2	CM8063601537106	1.90 GHz	6.40 GT/s	12 MB	1066 MHz	6/12	✓		105 W	N/A

Intel® Xeon® Processor E7-2800 v2 Product Family for Server / Workstation Systems Featuring Two LGA2011-1 Sockets

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E7-2890 v2	CM8063601375306	2.80 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	155 W	N/A
Intel® Xeon® processor E7-2880 v2	CM8063601273306	2.50 GHz	8 GT/s	37.5 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-2870 v2	CM8063601273406	2.30 GHz	8 GT/s	30 MB	1600 MHz	15/30	✓	✓	130 W	N/A
Intel® Xeon® processor E7-2850 v2	CM8063601275706	2.30 GHz	7.20 GT/s	24 MB	1333 MHz	12/24	✓	✓	105 W	N/A

INTEL® XEON® PROCESSOR E5-4600 V4 FAMILY

Introducing the New Intel® Xeon® Processor E5-4600 v4 Product Family

Four-socket servers based on the Intel® Xeon® processor E5-4600 v4 product family provide high-density, cost-optimized, energy-efficient compute resources to support larger workloads and high virtual machine densities for the data center or cloud.

Intel® Xeon® Processor E5-4600 v4 Product Family for Server / Workstation Systems

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E5-4660 v4	CM8066002062605	2.20 GHz	9.6 GT/s	40 MB	DDR4-2400 MHz	16/32	✓	✓	120 W
Intel® Xeon® processor E5-4650 v4	CM8066002028621	2.20 GHz	9.6 GT/s	35 MB	DDR4-2400 MHz	14/28	✓	✓	105 W
Intel® Xeon® processor E5-4640 v4	CM8066002061701	2.10 GHz	8.0 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	105 W
Intel® Xeon® processor E5-4620 v4	CM8066002883900	2.10 GHz	8.0 GT/s	25 MB	DDR4-2133 MHz	10/20	✓	✓	105 W
Intel® Xeon® processor E5-4610 v4	CM8066002062800	1.80 GHz	6.4 GT/s	25 MB	DDR4-1866 MHz	10/20	✓		105 W
Intel® Xeon® processor E5-4669 v4	CM8066002064800	2.20 GHz	9.6 GT/s	55 MB	DDR4-2400 MHz	22/44	✓	✓	135 W
Intel® Xeon® processor E5-4667 v4	CM8066002064600	2.20 GHz	9.6 GT/s	45 MB	DDR4-2400 MHz	18 /36	✓	✓	135 W
Intel® Xeon® processor E5-4655 v4	CM8066002065000	2.50 GHz	9.6 GT/s	30 MB	DDR4-2400 MHz	8/16	✓	✓	135 W
Intel® Xeon® processor E5-4627 v4	CM8066002330800	2.60 GHz	9.6 GT/s	25 MB	DDR4-2400 MHz	10/10		✓	135 W

INTEL® XEON® PROCESSOR E5-4600 V3 FAMILY

Introducing the New Intel® Xeon® Processor E5-4600 v3 Product Family

Available Q2 2015, the Intel® Xeon® processor E5-4600 v3 product family is a 4-socket server platform that supports DDR4 memory technology. Target applications and usage models include large memory databases that need a highly scalable number of cores and memory bandwidth per server, and large-scale online transaction processing workloads where high-speed and large capacity memory configurations are required.

Intel® Xeon® Processor E5-4600 v3 Product Family for Server / Workstation Systems

PROCESSOR NAME[1]	PRODUCT CODE (TRAY ONLY)	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER
Intel® Xeon® processor E5-4660 v3	CM8064402018700	2.10 GHz	9.60 GT/s	35 MB	2133 MHz	14/28	✓	✓	120 W
Intel® Xeon® processor E5-4650 v3	CM8064401441008	2.10 GHz	9.60 GT/s	30 MB	2133 MHz	12/24	✓	✓	105 W
Intel® Xeon® processor E5-4640 v3	CM8064401442601	1.90 GHz	8 GT/s	30 MB	1866 MHz	12/24	✓	✓	105 W
Intel® Xeon® processor E5-4620 v3	CM8064401442401	2.00 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	105 W
Intel® Xeon® processor E5-4610 v3	CM8064402018800	1.70 GHz	6.40 GT/s	25 MB	1600 MHz	10/20	✓		105 W
Intel® Xeon® processor E5-4669 v3	CM8064401864100	2.10 GHz	9.60 GT/s	45 MB	2133 MHz	18/36	✓	✓	135 W
Intel® Xeon® processor E5-4667 v3	CM8064401864200	2.00 GHz	9.60 GT/s	40 MB	2133 MHz	16/32	✓	✓	135 W
Intel® Xeon® processor E5-4655 v3	CM8064402018600	2.90 GHz	9.60 GT/s	30 MB	2133 MHz	6/12	✓	✓	135 W
Intel® Xeon® processor E5-4627 v3	CM8064401544203	2.60 GHz	8 GT/s	25 MB	2133 MHz	10/10		✓	135 W

Intel® Xeon® Processor E5-2600 v4 Product Family

The powerful new Intel® Xeon® processor E5-2600 v4 product family offers versatility across diverse workloads. These processors are designed for architecting next-generation data centers running on, software defined infrastructure supercharged for efficiency, performance, and agile services delivery across cloud-native and traditional applications. They support workloads for cloud, high-performance computing, networking, and storage.

Intel® Xeon® Processor E5-2600 v4 Product Family for Server and Workstation Systems

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
SERVER SKUS										
Intel® Xeon® Processor E5-2699 v4	CM8066002022506 (tray)	2.20 GHz	9.6 GT/s	55M	DDR4-2400 MHz	22/44	✓	2.0	145	N/A
Intel® Xeon® Processor E5-2698 v4	CM8066002024000 (tray)	2.20 GHz	9.6 GT/s	50M	DDR4-2400 MHz	20/40	✓	2.0	135	N/A
Intel® Xeon® Processor E5-2697 v4	CM8066002023907 (tray) BX80660E52697V4 (box)	2.30 GHz	9.6 GT/s	45M	DDR4-2400 MHz	18/36	✓	2.0	145	735858310574
Intel® Xeon® Processor E5-2697A v4	CM8066002645900 (tray)	2.60 GHz	9.6 GT/s	40M	DDR4-2400 MHz	16/32	✓	2.0	145	N/A
Intel® Xeon® Processor E5-2695 v4	CM8066002023801 (tray) BX80660E52695V4 (box)	2.10 GHz	9.6 GT/s	45M	DDR4-2400 MHz	18/36	✓	2.0	120W	735858310628
Intel® Xeon® Processor E5-2690 v4	CM8066002030908 (tray) BX80660E52690V4 (box)	2.60 GHz	9.6 GT/s	35M	DDR4-2400 MHz	14/28	✓	2.0	135W	735858310857
Intel® Xeon® Processor E5-2683 v4	CM8066002023604 (tray) BX80660E52683V4 (box)	2.10 GHz	9.6 GT/s	40M	DDR4-2400 MHz	16/32	✓	2.0	120W	735858310529
Intel® Xeon® Processor E5-2680 v4	CM8066002031501 (tray) BX80660E52680V4 (box)	2.40 GHz	9.6 GT/s	35M	DDR4-2400 MHz	14/28	✓	2.0	120W	735858310802
Intel® Xeon® Processor E5-2660 v4	CM8066002030908 (tray) BX80660E52660V4 (box)	2.00 GHz	9.6 GT/s	35M	DDR4-2400 MHz	14/28	✓	2.0	105W	735858310758
Intel® Xeon® Processor E5-2650 v4	CM8066002031103 (tray) BX80660E52650V4 (box)	2.20 GHz	9.6 GT/s	30M	DDR4-2400 MHz	12/24	✓	2.0	105W	735858310703

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Intel® Xeon® Processor E5-2600 v4 Product Family for Server and Workstation Systems

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
SERVER SKUS										
Intel® Xeon® Processor E5-2640 v4	CM8066002032701 (tray) BX80660E52640V4 (box)	2.40 GHz	9.6 GT/s	25M	DDR4-2133 MHz	10/20	✓	2.0	90W	735858314220
Intel® Xeon® Processor E5-2630v4	CM8066002032301 (tray) BX80660E52630V4 (box)	2.20 GHz	8 GT/s	25M	DDR4-2133 MHz	10/20	✓	2.0	85W	735858314121
Intel® Xeon® Processor E5-2620v4	CM8066002032201 (tray) BX80660E52620V4 (box)	2.10 GHz	8 GT/s	20M	DDR4-2133 MHz	8/16	✓	2.0	85W	735858314077
Intel® Xeon® Processor E5-2609v4	CM8066002032901 (tray) BX80660E52609V4 (box)	1.70 GHz	8 GT/s	20M	DDR4-1866 MHz	8/8	✓	2.0	85W	735858314022
Intel® Xeon® Processor E5-2603v4	CM8066002032805 (tray) BX80660E52603V4 (box)	1.70 GHz	6.4 GT/s	15M	DDR4-1866 MHz	6	✓	2.0	85W	735858313971
Intel® Xeon® Processor E5-2650L v4	CM8066002033006 (tray)	1.70 GHz	9.6 GT/s	35M	DDR4-2400 MHz	14/28	✓	2.0	65W	N/A
Intel® Xeon® Processor E5-2630L v4	CM8066002033202 (tray)	1.80 GHz	8 GT/s	20M	DDR4-2133 MHz	10/20	✓	2.0	55W	N/A
Intel® Xeon® Processor E5-2667 v4	CM8066002041900 (tray)	3.20 GHz	9.6 GT/s	25M	DDR4-2400 MHz	8/16	✓	2.0	135W	N/A
Intel® Xeon® Processor E5-2643 v4	CM8066002041500 (tray)	3.40 GHz	9.6 GT/s	20M	DDR4-2400 MHz	6/12	✓	2.0	135W	N/A
Intel® Xeon® Processor E5-2637 v4	CM8066002041100 (tray)	3.50 GHz	9.6 GT/s	15M	DDR4-2400 MHz	4/8	✓	2.0	135W	N/A
Intel® Xeon® Processor E5-2623 v4	CM8066002402400 (tray)	2.60 GHz	8 GT/s	10M	DDR4-2133 MHz	4/8	✓	2.0	85W	N/A
WORKSTATION SKU										
Intel® Xeon® Processor E5-2687W v4	CM8066002042802 (tray) BX80660E52687V4 (box)	3.0GHz	9.6 GT/s	30M	DDR4-2400 MHz	12/24	✓	2.0	160W	735858310901

Intel® Xeon® Processor E5-1600 v4 Product Family for Server and Workstation Systems

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
SERVER SKUS										
Intel® Xeon® Processor E5-1680 v4	CM8066002044401 (tray)	3.40 GHz	0 GT/s QPI	20M	DDR4-2400 MHz	8/16	✓	2.0	140W	N/A
Intel® Xeon® Processor E5-1660 v4	CM8066002646401 (tray)	3.20 GHz	0 GT/s QPI	20M	DDR4-2400 MHz	8/16	✓	2.0	140W	N/A
Intel® Xeon® Processor E5-1650 v4	CM8066002044306 (tray) BX80660E51650V4 (box)	3.60 GHz	0 GT/s QPI	15M	DDR4-2400 MHz	3/12	✓	2.0	140W	735858318952
Intel® Xeon® Processor E5-1630 v4	CM8066002395300 (tray)	3.70 GHz	0 GT/s QPI	10M	DDR4-2400 MHz	4/8	✓	2.0	140W	N/A
Intel® Xeon® Processor E5-1620 v4	CM8066002044103 (tray) BX80660E51620V4 (box)	3.50 GHz	0 GT/s QPI	10M	DDR4-2400 MHz	4/8	✓	2.0	140W	735858314176
WORKSTATION SKU										
Intel® Xeon® Processor E5-1650 v4	BX80660E51650V4 (box)	3.60 GHz	0 GT/s QPI	15M	DDR4-2400 MHz	3/12	✓	2.0	140W	

Intel® Xeon® Processor E5-2600 / 1600 v3 Product Family

Intel® Xeon® processor E5-2600 / 1600 v3 product families are at the heart of an agile, efficient data center and help meet your needs for compute, storage, and network. These energy-efficient marvels are designed to help deliver a combination of performance, built-in capabilities, and cost-effectiveness. Whether addressing technical computing challenges, enabling cloud deployments, delivering intelligent storage, or powering design automation and data analytics, enjoy better-than-ever performance. Help better safeguard your data and infrastructure with technology foundational for greater security. Break challenging data management performance bottlenecks with 40 gigabit Intel® Ethernet, DDR4 support, and innovative storage features. Built-in capabilities that measure and monitor make Intel-powered platforms the smart choice for a software-defined world. With the flexibility and versatility of the Intel Xeon processor E5-2600 / 1600 v3 families, you only have to remember one thing: It's what's inside that counts.

Intel® Xeon® Processor E5-2600 v3 Product Family for Server and Workstation Systems Featuring Two LGA2011 Sockets

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
ADVANCED SKUS										
Intel® Xeon® processor E5-2690 v3	BX80644E52690V3 (box) CM8064401439416 (tray)	2.60 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	135 W	7 35858 28363 2
Intel® Xeon® processor E5-2680 v3	BX80644E52680V3 (box) CM8064401439612 (tray)	2.50 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	120 W	7 35858 28358 8
Intel® Xeon® processor E5-2670 v3	BX80644E52670V3 (box) CM8064401544801 (tray)	2.30 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	120 W	7 35858 28368 7
Intel® Xeon® processor E5-2660 v3	BX80644E52660V3 (box) CM8064401446117 (tray)	2.60 GHz	9.60 GT/s	25 MB	DDR4-2133 MHz	10/20	✓	✓	105 W	7 35858 28353 3
Intel® Xeon® processor E5-2650 v3	BX80644E52650V3 (box) CM8064401723701 (tray)	2.30 GHz	9.60 GT/s	25 MB	DDR4-2133 MHz	10/20	✓	✓	105 W	7 35858 28378 6
STANDARD SKUS										
Intel® Xeon® processor E5-2640 v3	BX80644E52640V3 (box) CM8064401830901 (tray)	2.60 GHz	8 GT/s	20 MB	DDR4-1866 MHz	8/16	✓	✓	90 W	7 35858 28522 3
Intel® Xeon® processor E5-2630 v3	BX80644E52630V3 (box) CM8064401831000 (tray)	2.40 GHz	8 GT/s	20 MB	DDR4-1866 MHz	8/16	✓	✓	85 W	7 35858 28533 9
Intel® Xeon® processor E5-2620 v3	BX80644E52620V3 (box) CM8064401831400 (tray)	2.40 GHz	8 GT/s	15 MB	DDR4-1866 MHz	8/16	✓	✓	85 W	7 35858 28538 4
BASIC SKUS										
Intel® Xeon® processor E5-2609 v3	BX80644E52609V3 (box) CM8064401850800 (tray)	1.90 GHz	6.40 GT/s	15 MB	DDR4-1600 MHz	6/6			85 W	7 35858 28373 1
Intel® Xeon® processor E5-2603 v3	BX80644E52603V3 (box) CM8064401844200 (tray)	1.60 GHz	6.40 GT/s	15 MB	DDR4-1600 MHz	6/6			85 W	7 35858 28517 9

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PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
SEGMENT-OPTIMIZED SKUS										
Intel® Xeon® processor E5-2699 v3	CM8064401739300 (tray only)	2.30 GHz	9.60 GT/s	45 MB	DDR4-2133 MHz	18 / 36	✓	✓	145 W	N/A
Intel® Xeon® processor E5-2698 v3	CM8064401609800 (tray only)	2.30 GHz	9.60 GT/s	40 MB	DDR4-2133 MHz	16 / 26	✓	✓	135 W	N/A
Intel® Xeon® processor E5-2697 v3	BX80644E52697V3 (box) CM8064401807100 (tray)	2.60 GHz	9.60 GT/s	35 MB	DDR4-2133 MHz	14 / 28	✓	✓	145 W	7 35858 28264 2
Intel® Xeon® processor E5-2695 v3	BX80644E52695V3 (box) CM8064401438110 (tray)	2.30 GHz	9.60 GT/s	35 MB	DDR4-2133 MHz	14 / 28	✓	✓	120 W	7 35858 28269 7
Intel® Xeon® processor E5-2683 v3	CM8064401609728 (tray only)	2 GHz	9.60 GT/s	35 MB	DDR4-2133 MHz	14 / 28	✓	✓	120 W	N/A
WORKSTATION SKUS										
Intel® Xeon® processor E5-2687W v3	BX80644E52687V3 (box) CM8064401613502 (tray)	3.10 GHz	9.60 GT/s	25 MB	DDR4-2133 MHz	10/20	✓	✓	160 W	7 35858 28348 9
FREQUENCY-OPTIMISED SKUS										
Intel® Xeon® processor E5-2667 v3	CM8064401724301 (tray only)	3.20 GHz	9.60 GT/s	20 MB	DDR4-2133 MHz	8/16	✓	✓	135 W	N/A
Intel® Xeon® processor E5-2643 v3	CM8064401724501 (tray only)	3.40 GHz	9.60 GT/s	20 MB	DDR4-2133 MHz	6/12	✓	✓	135 W	N/A
Intel® Xeon® processor E5-2637 v3	CM8064401724101 (tray only)	3.50 GHz	9.60 GT/s	15 MB	DDR4-2133 MHz	4/8	✓	✓	135 W	N/A
Intel® Xeon® processor E5-2623 v3	CM8064401832000 (tray only)	3 GHz	8 GT/s	10 MB	DDR4-1866 MHz	4/8	✓	✓	105 W	N/A
LOW-POWER SKUS										
Intel® Xeon® processor E5-2650L v3	CM8064401575702 (tray only)	1.80 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	65 W	N/A
Intel® Xeon® processor E5-2630L v3	CM8064401832100 (tray only)	1.80 GHz	8 GT/s	20 MB	DDR4-1866 MHz	8/16	✓	✓	55 W	N/A
EMBEDDED SKUS										
Intel® Xeon® processor E5-2658 v3	CM8064401545904 (tray only)	2.20 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	105 W	N/A
Intel® Xeon® processor E5-2648L v3	CM8064401546007 (tray only)	1.80 GHz	9.60 GT/s	30 MB	DDR4-2133 MHz	12/24	✓	✓	75 W	N/A
Intel® Xeon® processor E5-2628L v3	CM8064401547200 (tray only)	2 GHz	8 GT/s	25 MB	DDR4-1866 MHz	10/20	✓	✓	75 W	N/A
Intel® Xeon® processor E5-2622 v3	CM8064401576904 (tray only)	2.40 GHz	8 GT/s	20 MB	DDR4-1866 MHz	8/16	✓	✓	85 W	N/A
Intel® Xeon® processor E5-2618L v3	CM8064401610301 (tray only)	2.30 GHz	8 GT/s	20 MB	DDR4-1866 MHz	8/16	✓	✓	75 W	N/A
Intel® Xeon® processor E5-2608L v3	CM8064401909500 (tray only)	2 GHz	6.40 GT/s	15 MB	DDR4-1866 MHz	6/12	✓		52 W	N/A

Intel® Xeon® Processor E5-1600 v3 Product Family for Workstation Systems Featuring One LGA2011 Socket

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
ADVANCED SKUS									
Intel® Xeon® processor E5-1680 v3	CM8064401547809 (tray only)	3.20 GHz	20 MB	DDR4-2133 MHz	8/16	✓	✓	140 W	N/A
Intel® Xeon® processor E5-1660 v3	CM8064401909200 (tray only)	3 GHz	20 MB	DDR4-2133 MHz	8/16	✓	✓	140 W	N/A
Intel® Xeon® processor E5-1650 v3	CM8064401548111 (tray only)	3.50 GHz	15 MB	DDR4-2133 MHz	6/12	✓	✓	140 W	N/A
Intel® Xeon® processor E5-1630 v3	CM8064401614501 (tray only)	3.70 GHz	10 MB	DDR4-2133 MHz	4/8	✓	✓	140 W	N/A
Intel® Xeon® processor E5-1620 v3	CM8064401973600 (tray only)	3.50 GHz	10 MB	DDR4-2133 MHz	4/8	✓	✓	140 W	N/A

Intel® Xeon® Processor E5-4600 / 2600 / 2400 / 1600 v2 Product Families

The Intel® Xeon® processor E5-2600 / 1600 v2, E5-2400 v2, and E5-4600 v2 product families are at the heart of an agile, efficient data center. Deploy a more trusted private cloud with the technology foundational for greater security. Put the "instantaneous" into data analysis with the performance to quickly process big data. These new Intel Xeon processor families enable greater energy efficiency and power management for a range of enterprise applications.

Intel® Xeon® Processor E5-4600 v2 Product Family for Server Systems Featuring Four LGA2011 Sockets

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E5-4657L v2	CM8063501285605 (tray only)	2.40 GHz	8 GT/s	30 MB	1866 MHz	12/24	✓	✓	115 W	N/A
Intel® Xeon® processor E5-4650 v2	CM8063501541700 (tray only)	2.40 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	95 W	N/A
Intel® Xeon® processor E5-4640 v2	CM8063501285713 (tray only)	2.20 GHz	8 GT/s	20 MB	1866 MHz	10/20	✓	✓	95 W	N/A
Intel® Xeon® processor E5-4627 v2	CM8063501454002 (tray only)	3.30 GHz	7.20 GT/s	16 MB	1866 MHz	8/8		✓	130 W	N/A
Intel® Xeon® processor E5-4624L v2	CM8063501293407 (tray only)	1.90 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	70 W	N/A
Intel® Xeon® processor E5-4620 v2	CM8063501393202 (tray only)	2.60 GHz	7.20 GT/s	20 MB	1600 MHz	8/16	✓	✓	95 W	N/A
Intel® Xeon® processor E5-4610 v2	CM8063501521600 (tray only)	2.30 GHz	7.20 GT/s	16 MB	1600 MHz	8/16	✓	✓	95 W	N/A
Intel® Xeon® processor E5-4607 v2	CM8063501377604 (tray only)	2.60 GHz	6.40 GT/s	12 MB	1333 MHz	6/12	✓	✓	95 W	N/A
Intel® Xeon® processor E5-4603 v2	CM8063501453800 (tray only)	2.20 GHz	6.40 GT/s	10 MB	1333 MHz	4/8	✓	✓	95 W	N/A

Intel® Xeon® Processor E5-2600 v2 Product Family for Server / Workstation Systems Featuring Two LGA2011 Sockets

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E5-2697 v2	BX80635E52697V2 (box) CM8063501288843 (tray)	2.70 GHz	8 GT/s	30 MB	1866 MHz	12/24	✓	✓	130 W	7 35858 26666 6
Intel® Xeon® processor E5-2695 v2	BX80635E52695V2 (box) CM8063501288706 (tray)	2.40 GHz	8 GT/s	30 MB	1866 MHz	12/24	✓	✓	115 W	7 35858 26671 0
Intel® Xeon® processor E5-2690 v2	BX80635E52690V2 (box) CM8063501374802 (tray)	3 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	130 W	7 35858 26832 5
Intel® Xeon® processor E5-2687W v2	BX80635E52687V2 (box) CM8063501287203 (tray)	3.10 GHz	8 GT/s	20 MB	1866 MHz	8/16	✓	✓	150 W	7 35858 26922 3
Intel® Xeon® processor E5-2680 v2	BX80635E52680V2 (box) CM8063501374901 (tray)	2.80 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	130 W	7 35858 26837 0
Intel® Xeon® processor E5-2670 v2	BX80635E52670V2 (box) CM8063501375000 (tray)	2.50 GHz	8 GT/s	20 MB	1866 MHz	10/20	✓	✓	115 W	7 35858 26842 4
Intel® Xeon® processor E5-2667 v2	CM8063501287304 (tray only)	3.30 GHz	8 GT/s	25 MB	1866 MHz	8/16	✓	✓	130 W	N/A
Intel® Xeon® processor E5-2660 v2	BX80635E52660V2 (box) CM8063501452503 (tray)	2.20 GHz	8 GT/s	25 MB	1866 MHz	10/20	✓	✓	95 W	7 35858 26847 9
Intel® Xeon® processor E5-2650 v2	BX80635E52650V2 (box) CM8063501375101 (tray)	2.60 GHz	8 GT/s	20 MB	1866 MHz	8/16	✓	✓	95 W	7 35858 26852 3
Intel® Xeon® processor E5-2650L v2	CM8063501287602 (tray only)	1.70 GHz	7.20 GT/s	25 MB	1600 MHz	10/20	✓	✓	70 W	N/A
Intel® Xeon® processor E5-2643 v2	CM8063501287403 (tray only)	3.50 GHz	8 GT/s	25 MB	1866 MHz	6/12	✓	✓	130 W	N/A
Intel® Xeon® processor E5-2640 v2	BX80635E52640V2 (box) CM8063501288202 (tray)	2 GHz	7.20 GT/s	20 MB	1600 MHz	8/16	✓	✓	95 W	7 35858 26857 8
Intel® Xeon® processor E5-2637 v2	CM8063501520800 (tray only)	3.50 GHz	8 GT/s	15 MB	1866 MHz	4/8	✓	✓	130 W	N/A
Intel® Xeon® processor E5-2630 v2	BX80635E52630V2 (box) CM8063501288100 (tray)	2.60 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	80 W	7 35858 26884 4
Intel® Xeon® processor E5-2630L v2	CM8063501376200 (tray only)	2.40 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	80 W	N/A
Intel® Xeon® processor E5-2620 v2	BX80635E52620V2 (box) CM8063501288301 (tray)	2.10 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	80 W	735858 26889 9
Intel® Xeon® processor E5-2609 v2	BX80635E52609V2 (box) CM8063501375800 (tray)	2.50 GHz	6.40 GT/s	10 MB	1333 MHz	4/4			80 W	7 35858 26894 3
Intel® Xeon® processor E5-2603 v2	BX80635E52603V2 (box) CM8063501375902 (tray)	1.80 GHz	6.40 GT/s	10 MB	1333 MHz	4/4			80 W	7 35858 26899 8

Intel® Xeon® Processor E5-2400 v2 Product Family for Server / Workstation Systems Featuring Two LGA2011 Sockets

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E5-2470 v2	BX80634E52470V2 (box) CM8063401286102 (tray)	2.40 GHz	8 GT/s	25 MB	1600 MHz	10/20	✓	✓	95 W	7 35858 27206 3
Intel® Xeon® processor E5-2450 v2	BX80634E52450V2 (box) CM8063401376400 (tray)	2.50 GHz	8 GT/s	20 MB	1600 MHz	8/16	✓	✓	95 W	7 35858 27211 7
Intel® Xeon® processor E5-2450L v2	CM8063401287001 (tray only)	1.70 GHz	8 GT/s	20 MB	1600 MHz	8/16	✓	✓	70 W	N/A
Intel® Xeon® processor E5-2440 v2	BX80634E52440V2 (box) CM8062000862604 (tray)	1.90 GHz	7.20 GT/s	20 MB	1600 MHz	8/16	✓	✓	95 W	7 35858 27201 8
Intel® Xeon® processor E5-2430 v2	BX80634E52430V2 (box) CM8063401286400 (tray)	2.50 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	80 W	7 35858 27196 7
Intel® Xeon® processor E5-2430L v2	CM8063401376704 (tray only)	2.40 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	60 W	N/A
Intel® Xeon® processor E5-2420 v2	BX80634E52420V2 (box) CM8063401286503 (tray)	2.20 GHz	7.20 GT/s	15 MB	1600 MHz	6/12	✓	✓	80 W	7 35858 27191 2
Intel® Xeon® processor E5-2407 v2	BX80634E52407V2 (box) CM8063401286600 (tray)	2.40 GHz	7.20 GT/s	10 MB	1333 MHz	4/4			80 W	7 35858 27186 8
Intel® Xeon® processor E5-2403 v2	BX80634E52403V2 (box) CM8063401286702 (tray)	1.80 GHz	7.20 GT/s	10 MB	1333 MHz	4/4			80 W	7 35858 27181 3

Intel® Xeon® Processor E5-1600 v2 Product Family for Workstation Systems Featuring One LGA2011 Socket

(Thermal Solution Sold Separately)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E5-1660 v2	BX80635E51660V2 (box) CM8063501291808 (tray)	3.70 GHz	15 MB	1866 MHz	6/12	✓	✓	130 W	7 35858 26927 8
Intel® Xeon® processor E5-1650 v2	CM8063501292204 (tray only)	3.50 GHz	12 MB	1600 MHz	6/12	✓	✓	130 W	N/A
Intel® Xeon® processor E5-1620 v2	CM8063501292405 (tray only)	3.70 GHz	10 MB	1600 MHz	4/8	✓	✓	130 W	N/A

Intel® Xeon® W Processors for Workstation Systems

Intel® Xeon® W processors deliver optimized performance for the needs of mainstream workstation professionals. Hardware-enhanced workload performance, security, and reliability for the increasing demands of professional workstations and ready for professional quality VR design.

PROCESSOR NAME[1]	PRODUCT CODE TRAY	PRODUCT CODE BOX	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® W-2123 Processor	CD8067303533002	BX80673W2123	3.60 GHz	8.25 MB	2400 MHz	4/8	✓	✓	120W	735858351737
Intel® Xeon® W-2125 Processor	CD8067303533303	N/A	4.00 GHz	8.25 MB	2400 MHz	4/8	✓	✓	120W	N/A
Intel® Xeon® W-2133 Processor	CD8067303533204	N/A	3.60 GHz	8.25 MB	2400 MHz	6/12	✓	✓	140W	N/A
Intel® Xeon® W-2135 Processor	CD8067303533403	BX80673W2135	3.70 GHz	8.25 MB	2400 MHz	6/12	✓	✓	140W	735858355131
Intel® Xeon® W-2145 Processor	CD8067303533601	N/A	3.70 GHz	11 MB	2400 MHz	8/16	✓	✓	140W	N/A
Intel® Xeon® W-2155 Processor	CD8067303533703	N/A	3.30 GHz	13.75 MB	2400 MHz	10/20	✓	✓	140W	N/A
Intel® Xeon® W-2195 Processor	CD8067303805901	N/A	2.30 GHz	24.75 MB	2400 MHz	18/36	✓	✓	140W	N/A

INTEL® XEON® PROCESSOR E3-1500 V5 FAMILY

Introducing the Intel® Xeon® Processor E3-1500 v5 product family—the data center graphics powerhouse

Create visually stunning user experiences at low total cost of ownership with the new Intel® Xeon® processor E3-1500 v5 product family featuring Intel® Iris™ Pro graphics P580.

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® Processor E3-1585 v5	JQ8066201935710	3.50 GHz	8 MB	2133 MHz	4/8	✓	✓	65W	N/A
Intel® Xeon® Processor E3-1585L v5	JQ8066201935627	3.00 GHz	8 MB	2133 MHz	4/8	✓	✓	45W	N/A
Intel® Xeon® Processor E3-1565L v5	JQ8066201935626	2.50 GHz	8 MB	2133 MHz	4/8	✓	✓	35W	N/A

Intel® Xeon® Processor E3-1200 v6 Product Family for Server and Workstation Systems

The latest Intel® Xeon® processor E3-1200 v6 product family-based platforms are a smart investment for a wide range of business needs and sizes. In addition to gains in CPU performance, CPU performance per watt, Intel Xeon processor E3-1200 v6 product family-based platforms offer fast access to data, protect the data's integrity, and have proven reliability for a range of business needs.

PROCESSOR NAME[1]	PRODUCT CODE TRAY	PRODUCT CODE BOX	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® Processor E3-1280 v6	CM8067702870647	N/A	3.9 GHz	8 MB	2400 MHz	4/8	✓	✓	72 W	N/A
Intel® Xeon® Processor E3-1275 v6	CM8067702870931	BX80677E31275v6	3.8 GHz	8 MB	2400 MHz	4/8	✓	✓	73 W	00735858328364
Intel® Xeon® Processor E3-1270 v6	CM8067702870648	BX80677E31270v6	3.8 GHz	8 MB	2400 MHz	4/8	✓	✓	72 W	00735858328487
Intel® Xeon® Processor E3-1245 v6	CM8067702870932	BX80677E31245v6	3.7 GHz	8 MB	2400 MHz	4/8	✓	✓	73 W	00735858328128
Intel® Xeon® Processor E3-1240 v6	CM8067702870649	BX80677E31240v6	3.7 GHz	8 MB	2400 MHz	4/8	✓	✓	72 W	00735858328180
Intel® Xeon® Processor E3-1230 v6	CM8067702870650	BX80677E31230v6	3.5 GHz	8 MB	2400 MHz	4/8	✓	✓	72 W	00735858328425
Intel® Xeon® Processor E3-1225 v6	CM8067702871024	BX80677E31225v6	3.3 GHz	8 MB	2400 MHz	4/4	✓	✓	73 W	00735858328241
Intel® Xeon® Processor E3-1220 v6	CM8067702870812	BX80677E31220v6	3.0 GHz	8 MB	2400 MHz	4/4		✓	72 W	00735858328302

INTEL® XEON® PROCESSOR E3-1200 V5 FAMILY

Intel® Xeon® Processor E3-1200 v5 Product Family for Server and Workstation Systems

The latest Intel® Xeon® processor E3-1200 v5 product family-based platforms are a smart investment for a wide range of business needs and sizes. In addition to gains in CPU performance, CPU performance per watt, and graphics performance, Intel Xeon processor E3-1200 v5 product family-based platforms offer fast access to data, protect the data's integrity, and have proven reliability for a range of business needs.

PROCESSOR NAME[1]	PRODUCT CODE TRAY	PRODUCT CODE BOX	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® Processor E3-1280 v5	CM806620192160		3.7 GHz	8 MB	2133 MHz	4/8	✓	✓	80 W	N/A
Intel® Xeon® Processor E3-1270 v5	CM8066201921712	BX80662E31270V5	3.6 GHz	8 MB	2133 MHz	4/8	✓	✓	80 W	735858301732
Intel® Xeon® Processor E3-1260L v5	CM8066201921903		2.9 GHz	8 MB	2133 MHz	4/8	✓	✓	45 W	N/A
Intel® Xeon® Processor E3-1240L v5	CM8066201935808		2.1 GHz	8 MB	2133 MHz	4/8	✓	✓	25 W	N/A
Intel® Xeon® Processor E3-1240 v5	CM8066201921715	BX80662E31240V5	3.5 GHz	8 MB	2133 MHz	4/8	✓	✓	80 W	735858301855
Intel® Xeon® Processor E3-1230 v5	CM8066201921713	BX80662E31230V5	3.4 GHz	8 MB	2133 MHz	4/8	✓	✓	80 W	735858301916
Intel® Xeon® Processor E3-1220 v5	CM8066201921804	BX80662E31220V5	3 GHz	8 MB	2133 MHz	4/4	✓	✓	80 W	735858302036
Intel® Xeon® Processor E3-1275 v5	CM8066201934909	BX80662E31275V5	3.6 GHz	8 MB	2133 MHz	4/8		✓	80 W	735858301671
Intel® Xeon® Processor E3-1245 v5	CM8066201934913	BX80662E31245V5	3.5 GHz	8 MB	2133 MHz	4/8		✓	80 W	735858301794
Intel® Xeon® Processor E3-1235L v5	CM8066201935807		2 GHz	8 MB	2133 MHz	4/4		✓	25 W	N/A
Intel® Xeon® Processor E3-1225 v5	CM8066201922605	BX80662E31225V5	3.3 GHz	8 MB	2133 MHz	4/4		✓	80 W	735858301978

Intel® Xeon® Processor E3-1200 v4 Product Family for Server and Workstation Systems

The Intel® Xeon® Processor E3-1200 v4 product family supports up to 1.8x the overall graphics performance of the previous-generation[2], and delivers high-quality visual experiences with up to 1.4x more video transcoding performance per node[4] and up to 4,300 simultaneous HD video streams per rack than the previous generation Intel® Xeon® processor E3-1200 v3 product family.[3]

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E3-1285 v4[5]	CM8065802482701	3.50 GHz	6 MB	1866 MHz	4/8	✓	✓	95 W	N/A
Intel® Xeon® processor E3-1285L v4[5]	CM8065802482901	3.40 GHz	6 MB	1866 MHz	4/8	✓	✓	65 W	N/A
Intel® Xeon® processor E3-1265L v4[5]	CM8066201937901	2.30 GHz	6 MB	1866 MHz	4/8	✓	✓	35 W	N/A
Intel® Xeon® processor E3-1278L v4[6]	FH8065802420303	2.0 GHz	6 MB	1600 MHz	4/8	✓	✓	47 W	N/A
Intel® Xeon® processor E3-1258L v4[6, 7]	FH8065802420602	1.8 GHz	6 MB	1600 MHz	4/8	✓	✓	47 W	N/A

For more information, visit **www.intel.com/xeone3**

1 Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: http://www.intel.com/products/processor_number/

2 Up to 1.8x better performance on 3DMark* 11. Baseline configuration: Intel® Hermosa Beach 2 CRB platform with Intel® Xeon® processor E3-1286v3, 32GB memory (4x 8GB DDR3-1333 UDIMM), 64GB SATA SSD, Intel® Turbo Boost enabled, HT enabled, Red Hat Enterprise Linux* 6.3, Oracle* Java* Hotspot Java 1.7.0_17. 3DMark* Score 1524, Source: Internal Intel measurements as of April 2014.

Intel® Xeon® processor workstation platform (Intel® Server Board 51200RP) with one Intel® Xeon® processor E3-1285 v4 (quad- core, 3.5GHz, 6M cache) BIOS 51200RP.8

68.03.01.0002.041520151123, Intel® Hyper-Threading Technology best configuration, 32GB memory (4x8GB DDR3-1600 ECC UDIMM), Intel® Iris™ Pro graphics P6300 with driver 10.18.10.3980, Intel SSDSC2BB300G4, Microsoft Windows 8.1* 3DMark* Score 2881, Source: Intel internal testing as of June 2015.

3 Up to 4300 streams per rack, or 1.4x vs previous generation. Rack density based on the Supermicro* SuperServer 5038ML-H24TRF 3U chassis with 12 sleds. Each sled containing 2 Intel® Xeon® E3-1200 v3 or v4 processors for a total of 24 E3-1200 v3 or v4 processors per 3U chassis. Assuming 2U for top of rack switches, 13 3U chassis could fit in each rack, giving 24*13=312 sockets in a 42u rack. 312*10=3120 streams E3-1286L v3; 312*14=4368 streams on E3-1285L v4

4 Up to 1.4x transcoding performance with Intel® Xeon® E3-1285L v4 when compared with Intel® Xeon® E3-1286L v3 on Intel Media Server Studio 2015 R3 Essentials Edition. Number of real time threads transcoded simultaneously: 10 on E3-1286L v3, 14 on E3-1285L v4, using 1080p30 20Mbps streams. Baseline configuration: Intel Rainbow Pass SR1200V3RP platform with Intel(R) Xeon® E3-1285L v4 (65W, 4C, 3.4Ghz, Intel® Iris Pro Graphics P6300) or Intel® Xeon® Processor E3-1286L v3 (65W, 4C, 3.2Ghz, Intel® HD Graphics P4700), 32 GB (4x8GB DDR3-1600MHz UDIMM), 160GB 7200 SATA HOD, Turbo Boost Enabled, HT Enabled, Windows Server 2012 R2, Intel Media Server Studio 2015 R3 Essentials Edition, Multi Transcoding Sample Version 6.0.0.36, Intel graphics driver pGFX 10.18.14.4172, BIOS S1200RP.86B.03.01.002. Source: Intel internal measurements as of May 2015

5 Intel® Iris™ Pro Graphics P6300 requires the latest-version Intel® Graphics Driver, Intel C226 chipset, and Intel® Xeon® processor E3-1285 v4, Intel® Xeon® processor E3-1278L v4, or Intel® Xeon® processor E3-1265 v4 to enable data centre graphics application optimizations.
To learn more about Intel Xeon processors for data center graphics, visit intel.com/datacentregraphics.

6 BGA package

7 HD P5700 graphics

Intel® Xeon® Processor E3-1200 v3 Product Family

The Intel® Xeon® Processor E3-1200 v3 product family supports a range of business needs. Platforms based on the Intel Xeon processor E3-1200 v3 product family can be used as an entry server for small business applications or as an entry workstation for CAD and financial services. Low-power SKUs are uniquely suited to support scale-out workloads in Microserver platforms, and graphics-enabled SKUs support remote / virtual graphics capabilities and media transcode usages in the data center.

Intel® Xeon® Processor E3-1200 v3 Product Family for Server and Workstation Systems Featuring One LGA1150 Socket

(Thermal Solution Included with Box SKUs)

PROCESSOR NAME[1]	PRODUCT CODE	CLOCK SPEED	SINGLECORE TURBO MAX. SPEED	INTEL® SMART CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® GRAPHICS ENGINE	INTEL® HYPER-THREADING TECHNOLOGY[2]	INTEL® TURBO BOOST TECHNOLOGY[2]	POWER	UPC CODE
Intel® Xeon® processor E3-1281 v3	CM8064601575329 (tray only)	3.70 GHz	4.10 GHz	8 MB	1600 MHz	4/8		✓	✓	80 W	N/A
Intel® Xeon® processor E3-1276 v3	BX80646E31276V3 (box) CM8064601575216 (tray)	3.60 GHz	4 GHz	8 MB	1600 MHz	4/8	Intel HD graphics P4600	✓	✓	84 W	7 35858 27876 8
Intel® Xeon® processor E3-1271 v3	BX80646E31271V3 (box) CM8064601575330 (tray)	3.60 GHz	4 GHz	8 MB	1600 MHz	4/8		✓	✓	80 W	7 35858 27900 0
Intel® Xeon® processor E3-1246 v3	BX80646E31246V3 (box) CM8064601575205 (tray)	3.50 GHz	3.90 GHz	8 MB	1600 MHz	4/8	Intel HD graphics P4600	✓	✓	84 W	7 35858 27882 9
Intel® Xeon® processor E3-1245 v3	BX80646E31245V3 (box) CM8064601466509 (tray)	3.40 GHz	3.80 GHz	8 MB	1600 MHz	4/8	Intel HD graphics P4600	✓	✓	84 W	7 35858 25940 8
Intel® Xeon® processor E3-1241 v3	BX80646E31241V3 (box) CM8064601575331 (tray)	3.50 GHz	3.90 GHz	8 MB	1600 MHz	4/8		✓	✓	80 W	7 35858 27906 2
Intel® Xeon® processor E3-1231 v3	BX80646E31231V3 (box) CM8064601575332 (tray)	3.40 GHz	3.80 GHz	8 MB	1600 MHz	4/8		✓	✓	80 W	7 35858 27912 3
Intel® Xeon® processor E3-1230L v3	CM8064601467601 (tray only)	1.80 GHz	2.80 GHz	8 MB	1600 MHz	2/4		✓	✓	25 W	N/A
Intel® Xeon® processor E3-1226 v3	BX80646E31226V3 (box) CM8064601575206 (tray)	3.30 GHz	3.70 GHz	8 MB	1600 MHz	4/4	Intel HD graphics P4600		✓	84 W	7 35858 27894 2
Intel® Xeon® processor E3-1225 v3	BX80646E31225V3 (box) CM8064601466507 (tray)	3.20 GHz	3.60 GHz	8 MB	1600 MHz	4/4	Intel HD graphics P4600		✓	84 W	7 35858 25946 0
Intel® Xeon® processor E3-1220 v3	BX80646E31220V3 (box) CM8064601467204 (tray)	3.10 GHz	3.50 GHz	8 MB	1600 MHz	4/4			✓	80 W	7 35858 25976 7
Intel® Xeon® Processor E3-1220L v3	CM8064601481914 (tray only)	1.10 GHz	1.50 GHz	4 MB	1600 MHz	2/4		✓	✓	13 W	N/A

For more information, visit **www.intel.com/xeon**

For more information, visit **www.intel.com/xeon**

1 Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: http://www.intel.com/products/processor_number/

2 Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer or learn more at www.intel.com

3 Intel® QPI–Intel® QuickPath Interconnect; GT/s–Gigatransfers per second.

4 Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information, go to www.intel.com/performance

5 Claim based on calculated theoretical peak double precision performance capability for a single coprocessor. 16 DP FLOPS/clock/core * 61 cores * 1.238 GHz = 1.208 TeraFLOPS.

6 Results have been estimated based on internal Intel analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance.

7 Intel® Xeon® Processor E5-2600 v4 product family (22C, 55M Cache) compared to Intel® Xeon® Processor E5-2600 v3 product family (18C, 45M Cache).

8 E5 v4 up to 47% vs. previous-generation E5 v3 performance based on binomialcpu v3.0_AVX2 financial services workload results as of 16 March 2016) comparing 1-Node, 2 x Intel® Xeon® Processor E5-2699 v3 on Grantley-EP (Wellsburg) with 128 GB Total Memory on Red Hat Enterprise Linux* 6.4 kernel 2.6.32-358, Options per second Score: 106025 vs. 2 x Intel® Xeon® Processor E5-2699 v4 on Grantley-EP (Wellsburg) with 128 GB Total Memory on Red Hat Enterprise Linux* 6.4 kernel 2.6.32-358, Options per second Score: 156141 Higher is better. Data Source: Request Number: 1871 E5 v4 up to 27% vs. previous-generation E5 v3 average performance based on key industry-standard benchmarks calculations submitted by OEMs as of 16 March 2016) comparing 2-socket Intel® Xeon® processor E5 v3 to v4 family. Key industry benchmarks include: SPECint*_rate_base2006, SPECint*_base 2006 (Speed), SPECfp*_rate_base 2006, SPECfp*_base2006 (Speed), SPECmpiL*_base2007, SPECmpiM*_base2007, SPECompG*_base2012, SPECvirt_sc*2013, VMmark* 2.5 performance (matched pairs), TPC-E*, SPECjEnterprise*2010, Two-tier SAP SD* Windows*/Linux, 1-Node TPC-H* 1TB, TPCx-BB* and SPECjbb*2015 MultiJVM. See http://www.intel.com/performance/datacenter for full configuration details.

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/xeon

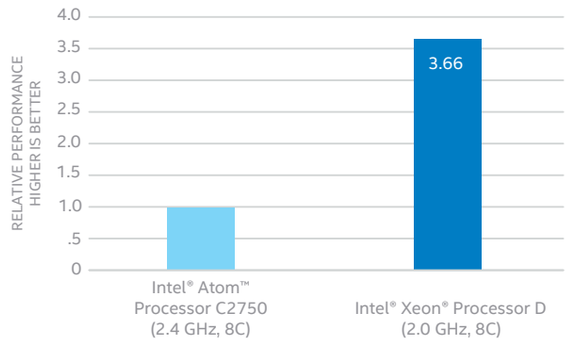
INTEL® XEON PROCESSOR D-1500 PRODUCT FAMILY

The Intel® Xeon® processor D family offers new options for infrastructure optimization, by bringing the performance and advanced intelligence of Intel® Xeon® processors into a dense, lower-power system-on-a-chip. The Intel Xeon processor D product family is Intel's 3rd generation 64-bit SoC and the first based on Intel Xeon processor technology. It can be deployed for a variety of workloads including dynamic web serving, dedicated web hosting, warm storage, network routing, and more.

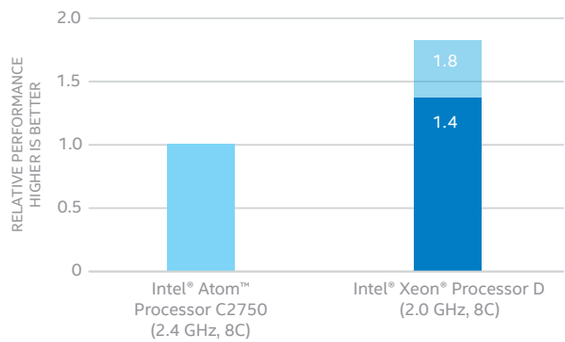
Intel® Xeon® Processor D-1500 Product Family

	INTEL® XEON® PROCESSOR D-1541	INTEL® XEON® PROCESSOR D-1521
Thermal Design Point	45W	45W
Frequency	2.1 GHz	2.4 GHz
Max Turbo Frequency	2.7 GHz	2.7 GHz
Cores	8	4
Threads	16	8
Memory Channels	2	2
DIMMS per Channel	2	2
DRAM Interface	ECC (DDR4), DDR3	ECC (DDR4), DDR3
Max. Memory Speed	2133 MT/s	2133 MT/s
Max. DRAM Capacity	128 GB	128 GB
Integrated I/O	24 PCIe 3.0* 8 PCIe 2.0* x4 USB 3.0 x4 USB 2.0 x6 SATA 3	24 PCIe 3.0* 8 PCIe 2.0* x4 USB 3.0 x4 USB 2.0 x6 SATA 3
Network Interface	2 x 1/2.5/10 GbE Intel Ethernet	2 x 1/2.5/10 GbE Intel Ethernet
Built-In Intel® Virtualization Technology	VT-x, VT-d, and Cache QoS	VT-x, VT-d, and Cache QoS
Cache Hierarchy	L1 (32K data, 32K instructions per core) L2 (256K per core) LLC (1.5 MB per core)	L1 (32K data, 32K instructions per core) L2 (256K per core) LLC (1.5 MB per core)

Performance
Dynamic Web Serving



Performance per Watt
Dynamic Web Serving



Intel® Xeon® Processor D-1500 Product Family

Intel® Xeon® Processor Intelligence in a Low-Power SoC	Up to 3.6x higher performance per node1,3 versus Intel® Atom™ processor C2750-based solutions. Includes up to 8 cores, two integrated ports of 10 Gigabit Intel® Ethernet, plus support for up to 128 GB of memory. Also includes Intel® 64-bit software support[4], L1 cache (32K data, 32K instructions per core), L2 cache (256K per core), LLC cache (1.5 MB per core), Intel® Turbo Boost Technology[4], and Intel® Hyper-Threading Technology.[4]
Industry-Leading 14 nm Process Technology	Enables dense, low power system designs with thermal design points of ~20W to 45W and system level performance per watt of up to 1.8x that of Intel Atom processor C2750-based solutions[2,3].
Server-Class Reliability, Availability, and Serviceability (RAS)	Provides high system reliability and data integrity with support for error correction code (ECC) memory, single device data correction (SDDC), memory demand and patrol scrubbing, and much more.
Built-In Intel® Virtualization Technology	Delivers near-native compute and I/O performance in virtualized data centers, network infrastructure, and cloud computing, with advanced monitoring of cache and memory bandwidth for better service level and infrastructure management.
Hardware-Enhanced Security and Compliance	Intel Advanced Encryption Standard New Instructions (Intel AES-NI) provide integrated support for fast, low-overhead encryption and Intel® Trusted Execution Technology (Intel® TXT) provides platform verification (through authenticated boot) to enable strong security with reduced performance impact[5].
Server-Class Manageability	Includes Intel® Node Manager Base for adaptive power management.
Intel® Platform Storage Extensions	Enables fast data movement and high availability through integrated support for non-transparent bridging (NTB), asynchronous DRAM self-refresh (ADR), and Intel® QuickData technology, which provides a direct memory access (DMA) engine within the SoC[6].

For more information, visit **www.intel.com/xeon**

1 Up to 3.6x better performance on Dynamic Web Serving Intel® Xeon Processor D-based reference platform with one Xeon Processor D (8C, 2.0GHz, 45W, ES2), Turbo Boost Enabled, Hyper-Threading enabled, 64GB memory (4x16GB DDR4-2133 RDIMM ECC), 2x10GBase-T X552, 3x S3700 SATA SSD, Fedora* 20 (3.17.8-200.fc20.x86_64, Nginx* 1.4.4, Php-fpm* 15.4.14, memcached* 1.4.14, Simultaneous users=43844 Supermicro SuperServer* 5018A-TN4 with one Intel Atom Processor C2750 (8C, 2.4GHz,20W), Turbo Boost Enabled, 32GB memory (4x8GB DDR3-1600 SO-DIMM ECC), 1x10GBase-T X520, 2x S3700 SATA SSD, Ubuntu* 14.10(3.16.0-23 generic), Nginx* 1.4.4, Php-fpm* 15.4.14, memcached* 1.4.14, Simultaneous users=12896.

2 Up to 1.8x (estimated) better performance per watt on Dynamic Web Serving Intel® Xeon Processor D-based reference platform with one Xeon Processor D (8C, 2.0GHz, 45W, ES2), Turbo Boost Enabled, Hyper-Threading enabled, 64GB memory (4x16GB DDR4-2133 RDIMM ECC), 2x10GBase-T X552, 3x S3700 SATA SSD, Fedora* 20 (3.17.8-200.fc20.x86_64, Nginx* 1.4.4, Php-fpm* 15.4.14, memcached* 1.4.14, Simultaneous users=43844, Estimated wall power based on microserver chassis, power=90W, Perf/W=487.15 users/W Supermicro SuperServer* 5018A-TN4 with one Intel Atom Processor C2750 (8C, 2.4GHz,20W), Turbo Boost Enabled, 32GB memory (4x8GB DDR3-1600 SO-DIMM ECC), 1x10GBase-T X520, 2x S3700 SATA SSD, Ubuntu* 14.10 (3.16.0-23 generic), Nginx* 1.4.4, Php-fpm* 15.4.14, memcached* 1.4.14, Simultaneous users=12896. Maximum wall power =46W, Perf/W=280.3 users/W

3 Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

4 Intel technologies may require enabled hardware, specific software, or services activation. Check with your system manufacturer or retailer.

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5 Intel technologies’ features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com

6 Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

For more information go to http://www.intel.com/performance

INTEL® SERVER BOARDS

THE QUALITY YOU WANT. THE CONFIDENCE YOU NEED.

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® SERVER BOARDS

High quality, unbranded server building blocks featuring Intel's most innovative technologies with Intel world-class validation, compatibility, certification, warranty and support. Reliable solutions made easy.

INTEL® SERVER BOARDS

High quality, unbranded server building blocks featuring Intel's most innovative technologies with Intel world-class validation, compatibility, certification, warranty and support. Reliable solutions made easy.

THE QUALITY YOU WANT WITH THE CONFIDENCE YOU NEED

Intel designs and builds to a high specification, delivering server products with maximum processing power, great flexibility, excellent manageability, and high reliability. Stringent design and manufacturing practices, rigorous validation and testing, and excellent warranty and technical support ensure you receive value that is difficult to find anywhere else.

Platform connected boards featuring Intel® Xeon® processor Scalable family

Intel® Server Board S2600WF family:
Power and performance at peak efficiency supporting a 1U and 2U rack mount server form factor.

Intel® Server Board S2600BP family:
Density optimized board enabling highest processing and memory performance.

Intel® Server Board S2600ST family:
Flexible general purpose boards in an SSI EEB form factor.

Single-socket board featuring bootable Intel® Xeon Phi™ processor family

Intel® Server Board S7200AP family:
A High Performing Compute Node Featuring a bootable Intel® Xeon Phi™ Processor. This board family is designed to support the demands of parallel processing while delivering performance, high availability, and serviceability.

Single-socket board featuring Intel® Xeon® processor E3 v6 family

Refreshed Intel® Server Board S1200SP family:
Reliable, cost effective, easy to manage board in a microATX form factor.

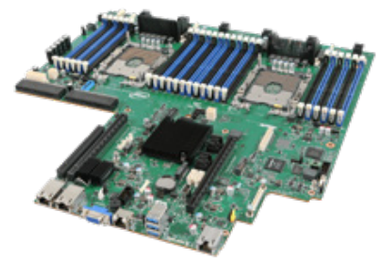
Delivering high performance and increased memory bandwidth

The Intel® Xeon® processor families deliver versatility across diverse workloads in the data center or cloud.

Intel® Server Board S2600WF Product Family Featuring Intel® Xeon® Scalable Processors

FULL FEATURED WITH MAXIMUM FLEXIBILITY FOR EXPANSION

The Intel® Server Board S2600WF product family delivers power and performance at peak efficiency in a 1U and 2U rack mount server form factor that features the energy-efficient dual Intel® Xeon® processor Scalable Family. High memory capacity, networking, storage and I/O flexibility combine with innovative design to provide an exceptional and reliable server for business IT, appliance, data center, cloud and high performance computing applications.



DESCRIPTION	Full-featured Server Board family with maximum flexibility for expansion; available as a 1U or 2U rack-mount form factor featuring the energy efficient Intel® Xeon® processor Scalable Family.		
TARGET MARKETS	Enterprise, Storage, Cloud, Telco, HPC/AI		
ORDER CODE	S2600WF0	S2600WFT	S2600WFQ
INTEL® QUICKASSIST TECHNOLOGY	No	No	Yes
FORM FACTOR	Custom (16.7" x 17")		
INTEL® SERVER CHASSIS	Intel® Server Chassis R1000WF family; Intel® Server Chassis R2000WF family; Intel® Server System R1000WF family; Intel® Server System R2000WF family		
PROCESSOR SUPPORT[1]	Intel® Xeon® Scalable processor: up to 140W TDP (on all System SKUs), 165W TDP (Select System SKUs), 205W TDP (Board only)		
CHIPSET	Intel® C624 Chipset	Intel® C624 Chipset	Intel® C628 Chipset
TOTAL PCI SLOTS	Up to 8 PCIe slots via 3 Risers, One x8 PCIe Gen 3 SAS Mezz Module		
M.2	Up to 2-M.2 SATA/PCIe (x2, x4) storage device 80 mm		
DIRECT ATTACH PCIe* 2.5" SSD	4 OCuLink connectors	4 OCuLink connectors	2 OCuLink connectors
MEMORY CAPACITY	24 DDR4 RDIMM/LRDIMMs, 2 SPC, 12x channels/system		
ONBOARD PCIe* NVME	4 OCuLink connectors, Intel® VMD Support, Intel® RST e/Intel® VROC Support (accessory option)	4 OCuLink connectors, Intel® VMD Support, Intel® RST e/Intel® VROC Support (accessory option)	4 OCuLink connectors, Intel® VMD Support, Intel® RST e/Intel® VROC Support (accessory option)
SATA PORTS	8x via MiniSAS HD 2x 7pin Connector	8x via MiniSAS HD 2x 7pin Connector	2x 7pin Connector
SAS OPTIONS	6 Gb/s or 12 Gb/s SAS via optional SAS module		
INTEGRATED LAN	2 integrated Dual Port Intel® Ethernet Controller I350 (1 GbE) or 2 integrated Dual Port Intel® Ethernet Controller X540 (10 GbE)		
MANAGEMENT SUPPORT	Integrated baseboard mangaement controller (IPMI 2.0 compliant), Support for Intel®Server Management software, dedicated onboard RJ45 management port, Advanced server management via Intel® RMM4 Lite (accessory option)		
INTEL® RAID SUPPORT	Embedded SATA Software RAID: Intel® RSTe 5.0, Intel® Embedded Server RAID Technology 1 1.60 with optional RAID 5 key support		
MODULE UPGRADES	Intel® OCP Mezzanine Expansion Module; Intel Remote Management Module 4; Trusted Platform Module 2.0; Integrated SAS RAID module, QSFP+ Modules		
INTEL® TRANSPARENT SUPPLY CHAIN	Intel® Trusted Platform Module 2.0 (Accessory Option)		
WARRANTY	3 year limited warranty, optional 2 year extended warranty available		

Intel® Server Board S2600BP Product Family featuring Intel® Xeon® Scalable processors

PERFORMANCE OPTIMIZED FOR PROCESSOR AND MEMORY CAPACITY

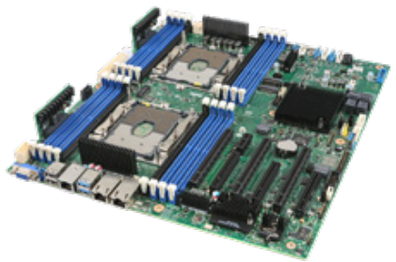
The Intel® Server Board S2600BP product family is a purpose built, density-optimized server board ideal for use in hyper-converged, data analytics, storage, cloud and high performance computing applications. Designed to support 16 DDR4 DIMM slots per server board at 2 DIMMs per channel and the Intel® Xeon® processor Scalable Family, the S2600BP family maximizes memory and processor bandwidth to meet demanding compute use requirements.

DESCRIPTION	This density-optimized board family enables high processing and memory performance, making this a compelling offering for compute-intensive workloads.		
TARGET MARKETS	Enterprise, Storage, Cloud, Telco, HPC/AI		
ORDER CODE	S2600BPB	S2600BPS	S2600BPQ
INTEL® QUICKASSIST TECHNOLOGY	No	No	Yes
FORM FACTOR	6.8” x 19.1”		
INTEL® SERVER CHASSIS	Intel® Server Chassis H2000P Product Family		
PROCESSOR SUPPORT	Intel® Xeon® Scalable processor: up to 165W TDP (on Intel® Server Chassis H2204XXLRE or HNS2600BPBLC only), 140W TDP on all other SKUs		
CHIPSET	Intel® C621Chipset	Intel® C622 Chipset	Intel® C628 Chipset
PCIe* SLOT TYPES	Two x16 PCIe* lanes on two risers, and two x24 PCIe* lanes on two risers	Two x16 PCIe* lanes on two risers, and two x24 PCIe* lanes on two risers	One riser with x16 PCIe* lanes, and two x24 PCIe* lanes on two risers
M.2	One (1) 42mm M.2 SATA/PCIe* x4		
MEMORY CAPACITY	16 DIMM Slots (8 per CPU) – DDR4 RDIMM/LRDIMM		
ONBOARD PCIe* NVME	None		
SATA PORTS	Four (4) SATA 6Gbps ports via Mini-SAS HD (SFF-8643) connector (from PCH)	Four (4) SATA 6Gbps ports via Mini-SAS HD (SFF-8643) connector (from PCH)	None
SAS OPTIONS	6 Gb/s or 12 Gb/s SAS via bridgeboard (specific SKUs only)		
NETWORKING	Dual 10GBase-T ports	Dual 10GbE SFP+ ports Support	Dual 10GBase-T ports
MANAGEMENT SUPPORT	Integrated baseboard mangaement controller (IPMI 2.0 compliant), Support for Intel® Server Management software, dedicated onboard RJ45 management port, Advanced server management via Intel® RMM4 Lite (accessory option)		
INTEL® RAID SUPPORT	Embedded SATA Software RAID: Intel® RSTe 5.0, Intel® Embedded Server RAID Technology 1 1.60 with optional RAID 5 key support		
MODULE UPGRADES	Intel® OCP Mezzanine Expansion Module; Intel Remote Management Module 4; Trusted Platform Module 2.0; Integrated SAS RAID module, QSFP+ Modules		
INTEL® TRANSPARENT SUPPLY CHAIN	Intel® Trusted Platform Module 2.0 (Accessory Option)		
WARRANTY	3 year limited warranty, optional 2 year extended warranty available		

Intel® Server Board S2600ST Product Family featuring Intel® Xeon® Scalable processors

FLEXIBLE, GENERAL PURPOSE SERVER BOARD IN A STANDARD FORM FACTOR

The Intel® Server Board S2600ST product family delivers robust features and powerful performance in a standard 12" x 13" EEB form factor for flexibility and ease of adoption. Featuring Intel® Xeon® Scalable processors, high PCIe* lane availability and SAS/SATA/NVMe* flexibility, it provides a cost-effective option for pedestal, rack mount, or custom systems. The S2600ST is ideal for use in small and medium business, storage, networking, web hosting, and security appliances where feature capacity and price-performance balance is key.



DESCRIPTION	A family of flexible general purpose server boards supporting two Intel® Xeon® Scalable processors up to 205W and 16 DIMMs in a standard SSI EEB form factor board.	
TARGET MARKET	Small- and medium-sized businesses, storage, virtualization & web hosting, Telco & Networking, Security	
ORDER CODE	S2600STB	S2600STQ
INTEL® QUICKASSIST TECHNOLOGY	No	Yes
FORM FACTOR	SSI EEB 12" W x 13" L	
INTEL® SERVER CHASSIS	Intel® Server Chassis P4000G Family	
PROCESSOR SUPPORT[1]	Intel® Xeon® Scalable processors: up to 205W TDP	
CHIPSET	Intel® C624 Chipset	Intel® C628 Chipset
TOTAL PCIe* SLOTS	CPU0: 1 x8 Gen3, 1 x16 Gen3 CPU1: 2 x8 Gen3, 2 x16 Gen3	
M.2	Dual M.2 SATA/PCIe (x2, x4) 80 mm connectors	
DIRECT ATTACH PCIe* 2.5" SSD	4 OCuLink connectors	Up to 2 OCuLink connectors
MEMORY CAPACITY	16 DDR4 RDIMMs or LRDIMMs, 2-1-1 Slot Config	
ONBOARD PCIe* NVME	4 OCuLink connectors, Intel® VMD Support, Intel® RST e/Intel® VROC Support (accessory option)	4 OCuLink connectors, Intel® VMD Support, Intel® RST e/Intel® VROC Support (accessory option)
SATA PORTS	8x via MiniSAS HD 2x 7-pin Connector	2x 7pin Connector
SAS OPTIONS	Via PCIe adapters	
INTEGRATED LAN	Dual 10GBase-T down or Dual 10GbE SFP+ via custom AIC	
MANAGEMENT SUPPORT	Integrated baseboard mangaement controller (IPMI 2.0 compliant), Support for Intel® Server Management software, dedicated onboard RJ45 management port, Advanced server management via Intel® RMM4 Lite (accessory option)	
INTEL® RAID SUPPORT	Embedded SATA Software RAID: Intel® RSTe 5.0, Intel® Embedded Server RAID Technology 1 1.60 with optional RAID 5 key support	
MODULE UPGRADES	Intel Remote Management Module 4; Trusted Platform Module 2.0; Integrated SAS RAID module, QSFP+ Modules	
INTEL® TRANSPARENT SUPPLY CHAIN	Intel® Trusted Platform Module 2.0 (Accessory Option)	
WARRANTY	3 year limited warranty, optional 2 year extended warranty available	

Intel® Server Boards Supporting the Intel® Xeon® Processor E5-2600 v4 Family

RELIABLE SOLUTIONS MADE EASY

Get Intel® Server Products built on a foundation of high-quality technology with the Intel® Xeon® processor E5-2600 v4 family of server solutions. These products are designed to span multiple use-cases and customization requirements while offering performance, power, and cost flexibility to meet customers' requirements and growth needs now and in the future. To address customer security concerns and guard against counterfeiting and malware, select product families feature the Intel® Transparent Supply Chain which enables the ability to verify the authenticity of board components and firmware. Intel® Server Products products ordered with the new Refresh order codes include the BIOS installed for the Intel® Xeon® Processor E5-2600 v4[1]. Previous genertation products will require an Intel® Xeon® processor E5-2600 v3 (Haswell) in order to update to an Intel® Xeon® processor E5-2600 v4 (Broadwell) production BIOS.

PRODUCT NAME	INTEL® SERVER BOARD S2600KP FAMILY	INTEL® SERVER BOARD S2600TP FAMILY
DESCRIPTION	A hot-pluggable, high-density compute module integrated with an Intel® Server Board S26000KP model (available with or without integrated FDR InfiniBand*), maximum memory bandwidth, and flexible configuration options for the Intel® Server Chassis H2000G family.	A hot-pluggable, high-density compute module integrated with an Intel® Server Board S2600TP model (available with or without integrated FDR InfiniBand*) for higher memory capability and flexible configuration options for the Intel® Server Chassis H2000G family.
TARGET MARKET	High performance computing (HPC) / big data	Hyper-converged infrastructure/ High performance computing (HPC) / big data / storage / cloud
ORDER CODE	HNS2600KPR: 1U node with S2600KPR HNS2600KPFR: 1U node with S2600KPFR, onboard FDR InfiniBand* (1 rear InfiniBand 56 Gb/s port) BBS2600KPR: Board BBS2600KPFR: Board with FDR InfiniBand (56 Gb/s) BBS2600KPTR: Board with TPM 1.2	HNS2600TPR: 1U node with S2600TPR HNS2600TPFR: 1U node with S2600TPFR, onboard FDR InfiniBand (1 rear InfiniBand 56 Gb/s port) HNS2600TP24R: 1U node for 24 x 2.5" drive chassis; dual 1G BaseT, dual 10G BaseT HNS2600TP24SR: 1U node for 24 x 2.5" drive chassis; dual 1G BaseT, dual 10G (SFP+) HNS2600TP24STR: 1U node for 24 x 2.5" drive chassis; dual 1G BaseT with TPM2.0 BBS2600TPR: Board BBS2600TPFR: Board with FDR InfiniBand (56 Gb/s)
FORM FACTOR	Custom (6.4" x 17.7")	Custom (6.8" x 18.9")
INTEL® SERVER CHASSIS OR SYSTEM	Intel® Server Chassis H2000G family	Intel® Server Chassis H2000G family
PROCESSOR SUPPORT,[1] MAX TDP	2 Intel® Xeon® processors E5-2600 v4 or v3 product family Boards only: 160 W Compute Modules: 145 W	2 Intel® Xeon® processors E5-2600 v4 or v3 product family Boards only: 160 W Compute Modules: 145 W
CHIPSET	Intel® C612 Chipset	Intel® C612 Chipset
TOTAL PCIe* SLOTS	3 Riser slots	4 Riser slots
PCIe* SLOT TYPES	1 PCI Express* 3.0 x16, 2 PCI Express 3.0 x24 super slots or 2 PCI Express 3.0 x16, 1 PCI Express 3.0 x24 super slot	2 PCI Express* 3.0 x16, 2 PCI Express 3.0 x24 super slots or 3 PCI Express 3.0 x16, 1 PCI Express 3.0 x24 super slot
MEMORY CAPACITY	8 LR / R/ DIMMs 1333 /1600 / 1866 / 2133 / 2400 MHz ECC DDR42 NVDIMMs 2133MHz[3] 1024 GB max per system	16 LR / R/ DIMMs 1333 / 1600 / 1866 / 2133 / 2400 MHz ECC DDR42 NVDIMMs 2133MHz[3] 2048 GB max per system
SATA PORTS	10-port SATA (6 Gb/s)	HNS2600TP24R/HNS2600TP24SR: 6-port 6 Gb/s SATA; 10-port SATA (6 Gb/s)
SAS OPTIONS	12 Gb/s SAS via optional 12 GB SAS bridge board and Intel® RAID module / adapter	12 Gb/s SAS via optional 12 GB SAS bridge board and Intel® RAID module / adapter HNS2600TP24R/HNS2600TP24SR: 12 GBb/s SAS via integrated 12 GB SAS bridge board
INTEGRATED LAN	2 integrated Dual Port Intel® Ethernet Controller I350 (1 GbE); 1 dedicated integrated management port	2 integrated Dual Port Intel® Ethernet Controller I350 (1 GbE); 1 dedicated integrated management port
MANAGEMENT SUPPORT	Intel® Server Management Software Integrated BMC with IPMI 2.0	Intel® Server Management Software Integrated BMC with IPMI 2.0
INTEL® RAID SUPPORT	Intel® Rapid Storage Technology 4.0 (0, 1, 5, and 10) Intel® Embedded Server RAID Technology 2 (ESRT2) RAID levels 0, 1, and 10 Up to SW Raid 5 with optional upgrade key	Intel® Rapid Storage Technology 4.0 (0, 1, 5, and 10) Intel® Embedded Server RAID Technology 2 (ESRT2) RAID levels 0, 1, and 10 Up to SW Raid 5 with optional upgrade key
MODULE UPGRADES	Intel® I/O Expansion Module Intel® Remote Management Module 4 Single port 100Gb/s Intel® Omni-Path Fabric	Intel® I/O Expansion Module Intel® Remote Management Module 4 Single port 100Gb/s Intel® Omni-Path Fabric
INTEL® TRANSPARENT SUPPLY CHAIN	Statement of Conformance; Platform Certificate	Statement of Conformance
WARRANTY	3 year limited warranty, optional 2 year extended warranty available	3 year limited warranty, optional 2 year extended warranty available

[1] Intel always recommends updating the BIOS/BM/FRUSDR prior to server deployment [2] Maximum memory speed supported depends on the processor used. [3] NVDIMM support refer to Intel® Server Configurator Tool (https://serverconfigurator.intel.com).

PRODUCT NAME	INTEL® SERVER BOARD S2600CW FAMILY	INTEL® SERVER BOARD S2600WT FAMILY
DESCRIPTION	A family of flexible general purpose server boards supporting two Intel® Xeon® processor E5-2600 v4 family up to 145 W and 16 DIMMs in a standard SSI EEB form factor. Board variations available for two 1 Gb or 10 Gb Ethernet ports, as well as options for an 8-port SAS controller.	A rack-optimized server board supporting two Intel® Xeon® processor E5-2600 v4 family up to 145 W, 24 DIMMs, and two 1 Gb or 10 Gb Ethernet port options available.
TARGET MARKET	Embedded / small- and medium-sized businesses / storage / cloud	Enterprise and medium business IT / big data / storage / cloud
ORDER CODE	DBS2600CW2R: Dual 1 Gb Ethernet ports DBS2600CWTR: Dual 10 Gb Ethernet ports DBS2600CW2SR: Dual 1 Gb Ethernet ports, 8-port LSI* 3008 SAS controller DBS2600CWTSR: Dual 10 Gb Ethernet ports, 8-port LSI 3008 SAS controller	S2600WT2R: 1 Gb Ethernet ports S2600WTTR: 10 Gb Ethernet ports S2600WTTS1R: 10 Gb Ethernet ports with TPM2.0
FORM FACTOR	SSI EEB (12" x 13")	Custom (16.7" x 17")
INTEL® SERVER CHASSIS OR SYSTEM	Intel® Server Chassis P4000G family	Intel® Server Chassis R1000WT family Intel® Server Chassis R2000WT family Intel® Server System R1000WT family Intel® Server System R2000WT family
PROCESSOR SUPPORT,[1] MAX TDP	2 Intel Xeon processors E5-2600 v4 or v3 product family; 145 W Max	2 Intel Xeon processors E5-2600 v4 or v3 product family; 145 W Max
CHIPSET	Intel® C612 Chipset	Intel® C612 Chipset
TOTAL PCIe* SLOTS	6	3 Riser slots; 1 Intel® I/O Expansion Module Connector; 1 Intel® RAID Module Connector
PCIe* SLOT TYPES	1 PCI Express* 3.0 x8, 4 PCI Express 3.0 x16, 1 PCI Express 2.0 x4 2 PCI Express 3.0 x8, 3 PCI Express 3.0 x16, 1 PCI Express 2.0 x4 (models with LSI* 3008)	2 PCI Express* 3.0 x24 riser super socket (supporting x8, x16, and PCI-X riser card slot options) 1 PCI Express 3.0 mixed x8, x4 slot riser socket (supporting x4, and x8 riser card slot options) 1 PCI Express 3.0 x8 Intel® I/O Expansion Module, 1 PCI Express 3.0 x8 Intel® RAID Module
MEMORY CAPACITY	16 R / LR DIMMs 1333/ 1600 / 1866 / 2133 / 2400 MHz ECC DDR4[2] NVDIMMs 2133MHz[3] 1 TB max using 64 GB DIMMs 2 TB max using 128 GB DIMMs	24 R / LR DIMMs 1333/ 1600 / 1866 / 2133 / 2400 MHz ECC DDR4[2] NVDIMMs 2133MHz[3] 1.50 TB max using 64 GB DIMMs
SATA PORTS	10-port SATA (6.0 Gb/s)	10-port SATA (6.0 Gb/s)
SAS OPTIONS	Models with LSI* 3008: 8 Integrated SAS ports, 12G SAS with battery-less hardware RAID	6 Gb/s or 12 Gb/s SAS via optional SAS module
INTEGRATED LAN	2 integrated Dual Port Intel® Ethernet Controller I350 (1 GbE) or 2 integrated Dual Port Intel® Ethernet Controller X540 (10 GbE)	2 integrated Dual Port Intel® Ethernet Controller I350 (1 GbE) or 2 integrated Dual Port Intel® Ethernet Controller X540 (10 GbE)
MANAGEMENT SUPPORT	Intel® Server Management Software; Integrated BMC with IPMI 2.0	Intel® Server Management Software; Integrated BMC with IPMI 2.0
INTEL® RAID SUPPORT	PCH SATA 6G with Intel® Embedded Server RAID Technology 2 (ESRT2) RAID levels 0, 1, and 10 optional RAID 5 supported through the ESRT2 RAID 5 upgrade key Integrated RAID levels 0, 1, 1E, and 10; optional RAID level 5 upgrade available	Intel® Rapid Storage Technology[2] 4.0 (SW RAID levels 0, 1, 5, and 10) Intel® Embedded Server RAID Technology 2 (SW Raid levels 0, 1, and 10; optional RAID level 5 upgrade available)
MODULE UPGRADES	Intel® Integrated RAID Module (ROC or IOC) Intel® Remote Management Module 4 Lite Trusted Platform Module	Intel® I/O Expansion Module Intel Integrated RAID Module (ROC or IOC) Intel Remote Management Module 4 Lite Trusted Platform Module
INTEL® TRANSPARENT SUPPLY CHAIN	N/A	Statement of Conformance; Platform Certificate
WARRANTY	3 year limited warranty, optional 2 year extended warranty available	3 year limited warranty, optional 2 year extended warranty available

[2] Maximum memory speed supported depends on the processor used. [3] NVDIMM support refer to Intel® Server Configurator Tool (https://serverconfigurator.intel.com).

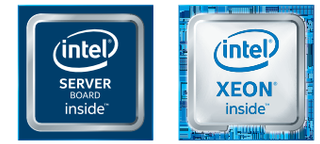
Intel® Server Board S7200AP family supporting the Intel® Xeon Phi™ Processor (Knights Landing and Knights Mill)

RELIABLE SOLUTIONS MADE EASY

Get Intel® Server Products built on a foundation of high-quality technology with the Intel® Xeon® Phi™ processor family of server solutions for customers. The latest server products are designed to span multiple use-cases and customization requirements while offering performance, power, and cost flexibility to meet customers' requirements and growth needs now and in the future.

PRODUCT NAME	INTEL® SERVER BOARD S7200AP FAMILY	
DESCRIPTION	A hot-pluggable, efficient, high-density compute module integrated with the Intel® Server Board S72000AP and optimized memory performance. Customizable as a 2U, four node system with serviceability and high availablility, hot-swappable compute modules, 2.5" or 3.5" drive bays and redundant power supplies.	
TARGET MARKET	High performance computing (HPC)	
ORDER CODE	**S7200APR** **HNS7200APR** **HNS7200APRL**	**S7200AP** **HNS7200AP** **HNS7200APL**
FORM FACTOR	Custom (6.8" x 14.2")	
INTEL® SERVER CHASSIS	Intel® Server Chassis H2204XXLRE	Intel® Server Chassis H2216XXLR2 Intel® Server Chassis H2312XXLR2
PROCESSOR SUPPORT,[1] MAX TDP	Intel® Xeon Phi™ Processor, up to 320W	Intel® Xeon Phi™ Processor, up to 230W
CHIPSET	Intel® C612 Chipset	
PCIe* SLOT TYPES	Riser 1: PCIe Gen3 x 16 Riser 2: PCIe Gen3 x 20 (x16 or x4)	
MEMORY CAPACITY	6 x DDR4 DIMMs, 1SPC, 6 x native channels/system	
SATA PORTS	Integrated 9-port SATA: 4 ports to bridge board, 1 port to mSATA, 4 ports to MiniSAS HD connector	
SAS OPTIONS	12 Gb/s SAS via optional PCIe* card	
ETHERNET	2x Intel® i210 (1GbE) Controllers	
MANAGEMENT SUPPORT	Pilot 3 BMC with optional advanced features via RMM4-lite module	
INTEL® RAID SUPPORT	Intel® Embedded Server RAID Technology 2 (ESRT2) RAID levels 0, 1, and 10	
MODULE UPGRADES	Intel® Remote Management Module 4Lite Intel® Omni-Path Port Upgrade Kit (Two Port) Intel® Omni-Path low provide PCIe* adapter	
INTEL® TRANSPARENT SUPPLY CHAIN	Statement of Conformance Platform Certificate	
WARRANTY	3 year limited warranty, optional 2 year extended warranty available	

Intel® Server Boards Supporting the Intel® Xeon® Processor E3-1200 v6 Family



RELIABLE SOLUTIONS MADE EASY

Get Intel® Server Products built on a foundation of high-quality technology in the sixth generation Intel® Xeon® processor E3-1200 v6 family of server solutions. The latest server products are designed to span multiple use-cases and customization requirements while offering performance, reliability, security, and cost flexibility to meet customers' requirements and growth needs now and in the future.

DESCRIPTION	A flexible and feature-rich entry-level server board family in a uATX form factor is available as a rack-mount system or easily integrated into a general purpose Intel® Server Chassis or 3rd party chassis.		
TARGET MARKET	Entry level server for small and medium businesses (SMBs), embedded, and storage and security appliance applications		
ORDER CODE	**DBS1200SPLR**	**DBS1200SPSR**	**DBS1200SPOR**
FORM FACTOR	microATX (9.6" x 9.6")		
INTEL® SERVER CHASSIS	Intel® Server Chassis P40000SFDR, P4304XXSFCN, P4304XXSHCN Intel® Server System R1000SPO family		
PROCESSOR SUPPORT,[1] MAX TDP	Intel® Xeon® processor E3-1200 v5/v6 and Intel® Core® processor i3 series up to 80W TDP	Intel® Xeon® processor E3-1200 v5/v6 without HD Graphic up to 80W TDP	Intel® Xeon® processor E3-1200 v5/v6 without HD Graphic up to 80W TDP
CHIPSET	Intel® C236 Chipset	Intel® C232 Chipset	Intel® C236 Chipset
TOTAL PCI SLOTS	3 Riser Slots	1 Riser Slot	3 Riser Slots
PCIe* SLOT TYPES	1-PCIe 3.0 x8 elec, x16 mech 1-PCIe 3.0 x4 elec, x8 mech 1-PCIe 3.0 x8 elec, x8 mech	1-PCIe 3.0 x8 elec, x16 mech 1-PCIe 3.0 x4 elec, x8 mech 1-PCIe 3.0 x8 elec, x8 mech	1-PCIe 3.0 x8 elec, x16 mech with Riser Card suport
MEMORY CAPACITY	4 UDIMMs up to 2400 MHz ECC DDR4 64 GB max		
SATA PORTS	8-port 6Gb/s	6-port 6Gb/s	8-port 6Gb/s
SAS OPTIONS	With Intel® Integrated RAID module (optional)	No	With Intel® Integrated RAID module (optional)
INTEGRATED LAN	Dual port integrated Intel® Ethernet Controller i210 (1 GbE)		
MANAGEMENT SUPPORT	Intel® Server Management Software Integrated BMC with IPMI 2.0		
INTEL® RAID SUPPORT	Intel® Embedded Server RAID Technology 2 (ESRT2) RAID levels 0, 1, and 10 Intel® Rapid Storage Technology2 4.0 (0, 1, 5, and 10)		
MODULE UPGRADES	Intel® Integrated RAID Module, 22x42mm M.2 module, Intel® Remote Management Module 4 Lite2, Trusted Platform Module 1.2	-	Intel® I/O Expansion Module, Intel® Integrated RAID module, 22x42mm M.2 Module, Intel® Remote Management Module 4 Lite2, Trusted Platform Module 1.2
WARRANTY	3 year limited warranty, optional 2 year extended warranty available		

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/go/serverboards** or **ark.intel.com**

[1] Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.
Refer to http://support.intel.com/ support/motherboards/server for up-to-date details on processors supported by each server board.

[2] Requires a 4th generation Intel® Core™ processor, enabled chipset, and Intel® Rapid Storage Technology (Intel® RST) software.

[3] On interposer (need accessory kit AXXRMM4IOM or AXXRMM4IOMW).

[4] The Intel® Server Chassis H2204XXLRE is offered as part of the Intel® Data Center Blocks for HPC only. This product can not be ordered separately.

INTEL® SERVER SYSTEMS

PERFORMANCE.
RELIABILITY.
SECURITY.

Intel® Product Quick Reference Matrix
Q4 2018

INTEL® SERVER SYSTEMS

Based on Intel's most innovative technologies with Intel world-class validation, compatibility, certification, warranty and support. Reliable solutions made easy.

FEATURE-RICH INTEL® SERVER SYSTEMS FOR PERFORMANCE, RELIABILITY AND SECURITY

Customers want data center products designed for outstanding performance and reliability that will address their unique needs. With Intel® Server Systems featuring the latest Intel® Xeon® processor families you can count on trusted performance, quality and reliability to help solve the most complex business challenges.

Intel® Server Systems Supporting the Intel® Xeon® Processor Scalable Family

INTEL® SERVER SYSTEMS R1000WF AND R2000WF BASED ON THE INTEL® SERVER BOARD S2600WF FAMILY — RELIABLE SOLUTIONS MADE EASY

Intel® Server S2600WF Product family delivers power and performance at peak efficiency in a 1U and 2U rack mount server form factor that features the energy- efficient dual Intel® Xeon® processor Scalable Family. High memory capacity, networking, storage and I/O flexibility combine with innovative design to provide an exceptional and reliable server for business IT, appliance, data center, cloud and high performance computing applications.

DESCRIPTION	Manage highly demanding application workloads with 1U and 2U rack systems based on the premier Intel® Server Board W2600WF family featuring power-efficient spread core design, incredible 24 DDR4 DIMMS, and support for dual Intel® Xeon® processors Scalable Family.
TARGET MARKET	Enterprise and medium business IT / big data / storage / cloud
SERVER BOARD INCLUDED	**S2600WFT: Onboard 10 Gb Ethernet** **S2600WF0: No LOM**
PROCESSOR SUPPORT,[1] MAX TDP	**2 x Intel Xeon processors Scalable Family** NOTE: Max CPU TDP supported up to 165 W with configuration limitations, see Technical Product Specifications
TOTAL PCI SLOTS	3 Riser slots 1 Intel® RAID Module Connector
PCI SLOT TYPES	1U: 2 x PCI Express* 3.0 x16 (FHHL), 1 x PCI Express 3.0 x8 Intel® I/O Expansion Module, 1 x PCI Express 3.0 x8 Intel® Integrated RAID Module 2U: 3 Riser Options: Total of up to 7 PCI Express 3.0 x8 or 2 PCI Express 3.0 x16, 3 PCI Express 3.0 x8, 1 x PCI Express 3.0 x8 Intel I/O Expansion Module, 1 x PCI Express 3.0 x8 Intel Integrated RAID Module Riser 1 and 2 Options: 1) 3 x PCI Express 3.0 x8 (2 FHFL, 1 FHHL) Riser 1 and 2 Options: 2) 1 x PCI Express 3.0 x16 FHFL, 1 x PCI Express 3.0 x8 FHHL Riser 3: 1 x PCI Express 3.0 x8 LP, 1 x PCI Express 3.0 x4 LP via 3rd riser
MEMORY CAPACITY	24 LR / R / DIMMs 1333 / 1600 / 1866 / 2133 / 2400 / 2666 MHz ECC DDR4[2] NVDIMMs 2666 MHz[3]
MODULE UPGRADES	Intel® OCP Mezzanine Expansion Module Intel® Integrated RAID Module (ROC or IOC) Intel® Remote Management Module 4 Lite Trusted Platform Module
INTEL® TRANSPARENT SUPPLY CHAIN	Statement of Conformance Platform Certificate
WARRANTY	3 year limited warranty, optional 2 year extended warranty available

For the latest product SKUs and specifications, visit **ark.intel.com**

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Intel® Server Systems R1000WF Based on the Intel® Server Board S2600WF Family

1U RACK SYSTEMS

Dimensions (H x W x D)	1.72” x 17.25” x 28”
System Cooling	Redundant cooling fans
Power Supply	1100 W AC Redundant PSU (Platinum Efficiency) Optional 750 W DC 48 V Redundant PSU (Gold Efficiency) NOTE: Second power supply sold separately
Thermal Solution	Included
PCI Riser Slots	2 x PCI Express* 3.0 x16 (FHHL) 1 x PCI Express 3.0 x8 Intel® Integrated RAID Module
Additional Expansion	1x OCP Mezzanine Expansion Module
Other Components	Intel® System Management Software Integrated BMC with IPMI 2.0 Optional optical disk drive
Warranty	3 year limited warranty, optional 2 year extended warranty available

SPECIFIC SKUs

R1208WFTYS	Intel® Server Board S2600WFT Supports up to 165W TDP processors Single 1100W AC 80 PLUS Platinum PSU Dual 10GbE ports Support for 8x 2.5” hot-swap drives 24 DDR4 DIMMs

SPECIFIC SKUs

R1304WF0YS	Intel® Server Board S2600WF0 Supports up to 165W TDP processors Single 1100W AC 80 PLUS Platinum PSU Support for 4x 3.5” hot-swap drives 24 DDR4 DIMMs No LOM
R1304WFTYS	Intel® Server Board S2600WFT Supports up to 165W TDP processors Single 1100W AC 80 PLUS Platinum PSU Dual 10GbE ports Support for 4x 3.5” hot-swap drives 24 DDR4 DIMMs

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Product does not include memory, processors, or hard drives. For compatibility information please refer to the configuration guide at **www.intel.com/support**

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Intel® Server Systems R2000WF Based on the Intel® Server Board S2600WF Family

2U RACK SYSTEMS

Dimensions (H x W x D)	3.44” x 17.25” x 28”
System Cooling	Redundant and hot-swap cooling fans
Power Supply	1300 W AC redundant-capable PSU (Titanium Efficiency) Optional 1100 W AC redundant-capable PSU (Platinum Efficiency) Optional 750 W DC 48 V Redundant PSU (Gold Efficiency) NOTE: Second power supply sold separately
Thermal Solution	Included
PCI Riser Slots	3 Riser Options: Total of up to 6 PCI Express* 3.0 x8 or 2 PCI Express 3.0 x16, 2 PCI Express 3.0 x8,1 x PCI Express 3.0 x8 Intel® Integrated RAID Module Option 1) 3 x PCI Express 3.0 x8 (2 FHFL, 1 FHHL) Option 2) 1 x PCI Express 3.0 x16 FHFL, 1 x PCI Express 3.0 x8 FHHL Additional: 1 x PCI Express 3.0 x8 LP, 1 x PCI Express 3.0 x4 LP via 3rd riser
Additional Expansion	1x Intel® OCP Mezzanine Expansion Module
Other Components	Intel® System Management Software Integrated BMC with IPMI 2.0 Optional optical disk drive
Warranty	3 year limited warranty, optional 2 year extended warranty available

SPECIFIC SKUs

R2208WFTZS	Intel® Server Board S2600WFT Supports up to 165W TDP processors Integrated Dual 10GbE ports Single 1300W AC 80 PLUS Titanium PSU Support for 8x 2.5” SAS/SATA/NVMe hot-swap drives 24 DDR4 DIMMs
R2208WF0ZS	Intel® Server Board S2600WF0 Supports up to 165W TDP processors Single 1300W AC 80 PLUS Titanium PSU Support for 8x 2.5” SAS/SATA/NVMe hot-swap drives 24 DDR4 DIMMs No LOM

SPECIFIC SKUs

R2224WFTZS	Intel® Server Board S2600WFT Supports up to 140W TDP processors Single 1300W AC 80 PLUS Titanium PSU Support for 24 x 2.5” hot-swap SAS/SATA/NVME drives Integrated Dual 10GbE ports

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Intel® Server Systems R2000WF Based on the Intel® Server Board S2600WF Family

2U RACK SYSTEMS

SPECIFIC SKUs

R2308WFTZS	Intel® Server Board S2600WFT Supports up to 165W TDP processors Single 1300W AC 80 PLUS Titanium PSU Dual 10GbE ports Support for 8x 3.5” hot-swap drives 24 DDR4 DIMMs
R2312WFTZS	Intel® Server Board S2600WFT Supports up to 140W TDP processors Single 1300W AC 80 PLUS Titanium PSU Dual 10GbE ports Support for 12x 3.5” hot-swap drives 24 DDR4 DIMMs

SPECIFIC SKUs

R2312WF0NP	Intel® Server Board S2600WF0 Supports up to 140W TDP processors Support for 12x 3.5” hot-swap drives 24 DDR4 DIMMs No LOM No PSU

Product does not include memory, processors, or hard drives.

For compatibility information please refer to the configuration guide at **www.intel.com/support**

For more information, visit **www.intel.com/go/serversystems**

[1] Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

[2] Overall memory size depends on the processor used.

[3] NVDIMM support refer to Intel® Server Configurator Tool (https://serverconfigurator.intel.com).

Intel® Server Systems Supporting the Intel® Xeon® Processor E5-2600 v4 Family

INTEL® SERVER SYSTEMS R1000WT AND R2000WT BASED ON THE INTEL® SERVER BOARD S2600WT FAMILY — RELIABLE SOLUTIONS MADE EASY

Supporting 1U and 2U rack systems for expansion flexibility and maximum compute, memory, and I/O capacity to address customer security concerns and guard against counterfeiting and malware, select product families feature the Intel® Transparent Supply Chain which enables the ability to verify the authenticity of board components and firmware. Get the latest Intel® Server Products built on a foundation of high-quality technology in the next-generation Intel® Xeon® processor E5-2600 v4 family of server solutions. The latest Intel Server Products are designed to span multiple use-cases and customization requirements while offering performance, reliability, and security to meet customers' requirements and growth needs now and in the future.

DESCRIPTION	Manage highly demanding application workloads with 1U and 2U rack systems based on the premier Intel® Server Board W2600WT family featuring power-efficient spread core design, incredible 24 DDR4 DIMMS, and support for dual Intel® Xeon® processors E5-2600 v4.
TARGET MARKET	Enterprise and medium business IT / big data / storage / cloud
SERVER BOARD INCLUDED	**S2600WT2R: 1 Gb Ethernet** **S2600WTTR: 10 Gb Ethernet**
PROCESSOR SUPPORT,[1] MAX TDP	**2 x Intel Xeon processors E5-2600 v4 product family** NOTE: Max CPU TDP supported 145 W with configuration limitations, see Technical Product Specifications
TOTAL PCI SLOTS	3 Riser slots 1 Intel® I/O Module Connector 1 Intel® RAID Module Connector
PCI SLOT TYPES	1U: 2 x PCI Express* 3.0 x16 (FHHL), 1 x PCI Express 3.0 x8 Intel® I/O Expansion Module, 1 x PCI Express 3.0 x8 Intel® Integrated RAID Module 2U: 3 Riser Options: Total of up to 6 PCI Express 3.0 x8 or 2 PCI Express 3.0 x16, 2 PCI Express 3.0 x8, 1 x PCI Express 3.0 x8 Intel I/O Expansion Module, 1 x PCI Express 3.0 x8 Intel Integrated RAID Module Option 1) 3 x PCI Express 3.0 x8 (2 FHFL, 1 FHHL) Option 2) 1 x PCI Express 3.0 x16 FHFL, 1 x PCI Express 3.0 x8 FHHL Option 3) 2 PCI-X 133 MHz FHFL, 1 x PCI Express 3.0 x8 FHHL Additional: 1 x PCI Express 3.0 x8 LP, 1 x PCI Express 2.0 x4 LP via 3rd riser
MEMORY CAPACITY	24 LR / R / DIMMs 1333/ 1600 / 1866 / 2133 / 2400 MHz ECC DDR4[1] NVDIMMs 2133MHz[2] 1.50 TB max using 64 GB DIMMS
MODULE UPGRADES	Intel® I/O Expansion Module Intel® Integrated RAID Module (ROC or IOC) Intel® Remote Management Module 4 Lite Trusted Platform Module
INTEL® TRANSPARENT SUPPLY CHAIN	Statement of Conformance Platform Certificate
WARRANTY	3 year limited warranty, optional 2 year extended warranty available

For the latest product SKUs and specifications, visit **ark.intel.com**

1 Maximum memory speed supported depends on the processor used.

2 NVDIMM support refer to Intel® Server Configurator Tool (https://serverconfigurator.intel.com).

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Intel® Server Systems R1000WT Based on the Intel® Server Board S2600WT Family

1U RACK SYSTEMS

Dimensions (H x W x D)	1.72” x 17.25” x 28”
System Cooling	Redundant cooling fans
Power Supply	750 W AC Redundant PSU (Platinum Efficiency) Optional 750 W DC 48 V Redundant PSU (Gold Efficiency) NOTE: Second power supply sold separately
Thermal Solution	Included
PCI Riser Slots	2 x PCI Express* 3.0 x16 (FHHL) 1 x PCI Express 3.0 x8 Intel® I/O Expansion Module 1 x PCI Express 3.0 x8 Intel® Integrated RAID Module
Other Components	Intel® System Management Software Integrated BMC with IPMI 2.0 Optional optical disk drive
Warranty	3 year limited warranty, optional 2 year extended warranty available

SPECIFIC SKUs

R1208WT2GSR	Intel® Server Board S2600WT2R 8 x 2.5” hot-swap HDD, optional support for 1 x 2.5” fixed internal drive 750 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller I350 (1 GbE)
R1208WTTGSR	Intel® Server Board S2600WTTR 8 x 2.5” hot-swap HDD, optional support for 1 x 2.5” fixed internal drive 750 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE)
R1304WT2GSR	Intel® Server Board S2600WT2R 4 x 3.5” hot-swap HDD, optional support for 1 x 2.5” fixed internal drive 750 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller I350 (1 GbE)

SPECIFIC SKUs

R1304WTTGSR	Intel® Server Board S2600WTTR 4 x 3.5” hot-swap HDD, optional support for 1 x 2.5” fixed internal drive 750 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE)

Product does not include memory, processors, or hard drives. For compatibility information please refer to the configuration guide at **www.intel.com/support**

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Intel® Server Systems R2000WT Based on the Intel® Server Board S2600WT Family

2U RACK SYSTEMS

Dimensions (H x W x D)	3.44” x 17.25” x 28”
System Cooling	Redundant and hot-swap cooling fans
Power Supply	750 W AC redundant-capable PSU (Platinum Efficiency) 750 W DC -48V redundant-capable power supply (Gold Efficiency) 1100 W AC redundant-capable PSU (Platinum Efficiency) NOTE: Second power supply sold separately
Thermal Solution	Included
PCI Riser Slots	3 Riser Options: Total of up to 6 PCI Express* 3.0 x8 or 2 PCI Express 3.0 x16, 2 PCI Express 3.0 x8, 1 x PCI Express 3.0 x8 Intel® I/O Expansion Module,1 x PCI Express 3.0 x8 Intel® Integrated RAID Module Option 1) 3 x PCI Express 3.0 x8 (2 FHFL, 1 FHHL) Option 2) 1 x PCI Express 3.0 x16 FHFL, 1 x PCI Express 3.0 x8 FHHL Option 3) 2 PCI-X 133 MHz FHFL, 1 x PCI Express 3.0 x8 FHHL Additional: 1 x PCI Express 3.0 x8 LP, 1 x PCI Express 2.0 x4 LP via 3rd riser
Other Components	Intel® System Management Software Integrated BMC with IPMI 2.0 Optional optical disk drive
Warranty	3 year limited warranty, optional 2 year extended warranty available

SPECIFIC SKUs

R2208WT2YSR	Intel® Server Board S2600WT2R 8 x 2.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 1100 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller I350 (1 GbE) 6 PCI Express* 3.0 x8 (4 FHFL, 2 FHHL), 1 riser PCI Express 3.0 x8 LP, PCIe 2.0 x4 LP
R2208WTTYC1R	Intel® Server Board S2600WTTR 8 x 2.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 2 x 1100 W AC redundant-capable PSU Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE) 2 PCI Express* 3.0 x16, 2 PCI Express 3.0 x8, 1 PCI Express 3.0 x8 LP, PCIe 2.0 x4 LP

SPECIFIC SKUs

R2208WTTYSR	Intel® Server Board S2600WTTR 8 x 2.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 1100 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE) 6 PCI Express* 3.0 x8 (4 FHFL, 2 FHHL), 1 riser PCI Express 3.0 x8 LP, PCIe 2.0 x4 LP
R2224WTTYSR	Intel® Server Board S2600WTTR 24 x 2.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 1100 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE) 6 PCI Express* 3.0 x8 (4 FHFL, 2 FHHL)

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Intel® Server Systems R2000WT Based on the Intel® Server Board S2600WT Family

SPECIFIC SKUs

R2308WTTYSR	Intel® Server Board S2600WTTR 8 x 3.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 1100 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE) 6 PCI Express* 3.0 x8 (4 FHFL, 2 FHHL) 1 riser PCI Express 3.0 x8 LP, PCIe 2.0 x4 LP
R2312WTTYSR	Intel® Server Board S2600WTTR 12 x 3.5” hot-swap HDD, optional 2 x 2.5” SATA rear hot-swap drives, 2 x 2.5” fixed internal drives 1100 W AC redundant-capable PSU; second PSU sold separately Integrated Dual Port Intel® Ethernet Controller X540 (10 GbE) 6 PCI Express* 3.0 x8 (4 FHFL, 2 FHHL)

Product does not include memory, processors, or hard drives. For compatibility information please refer to the configuration guide at **www.intel.com/support**

[1] Maximum memory speed supported depends on the processor used.

Intel® Server Boards S1200SP–Based Systems Supporting the Intel® Xeon® Processor E3-1200 v6 Family

RELIABLE, COST EFFECTIVE AND EASY TO MANAGE

Get Intel® Server Products built on a foundation of high-quality technology in the sixth generation Intel® Xeon® processor E3-1200 v6 family -based server system. The Intel® Server System R1000SP Family has the processing power to deliver reliability, durability and performance along with server management features and options for increased storage, functionality or faster networking speed. Intel® Server Products are backed by Intel's design excellence and manufacturing expertise to deliver processing power with high levels of flexibility, manageability and reliability.

DESCRIPTION	Robust and cost effective server s that can scale as customers grow. The Intel Server System R1000SP Famiily offers systems that scale via SATA and PCIe* expansion options, server management and storage flexibility at budget friendly prices.
TARGET MARKET	Small and medium businesses, embedded, storage or security appliances and web hosting rack installations
SERVER BOARD INCLUDED	**S1200SPOR: Rack optimized to support Intel® I/O Expansion Module and storage modules**
PROCESSOR SUPPORT[1]	**1 x Intel® Xeon® processor E3-1200 v6 product family**
TOTAL PCI SLOTS	1
PCI SLOT TYPES	1 PCIe* Gen3 x8 with x16 connection
MEMORY CAPACITY	4 x DDR4 UDIMMs up to 2400 MHz ECC 64 GB max
MODULE UPGRADES	Intel® I/O Expansion Module Intel® Integrated RAID Module Intel® Remote Management Module 4 LITE2 Trusted Platform Module 1.2

1U RACK SYSTEMS

Dimensions (H x W x D)	1.7" x 17.26" x 23.84"
System Cooling	Fixed cooling fans
Power Supply	450 W Redundant (Gold Efficiency)
Thermal Solution	Sold separately
Other Components	Optional optical disk drive
Warranty	3 year limited warranty

SPECIFIC SKUs

R1208SPOSHORR	8 x 2.5" hot-swap HDD Intel® Server Board S1200SPOR 2 x 450 W hot-swap Redundant PSU
R1304SPOSHBNR	4 x 3.5" hot-swap HDD Intel® Server Board S1200SPOR 1 x 350 W fixed PSU
R1304SPOSHORR	4 x 3.5" hot-swap HDD Intel® Server Board S1200SPOR 2 x 450 W hot-swap Redundant PSU

Product does not include memory, processors, or hard drives. For compatibility information please refer to the configuration guide at **www.intel.com/support**

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/go/serversystems**

[1] Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

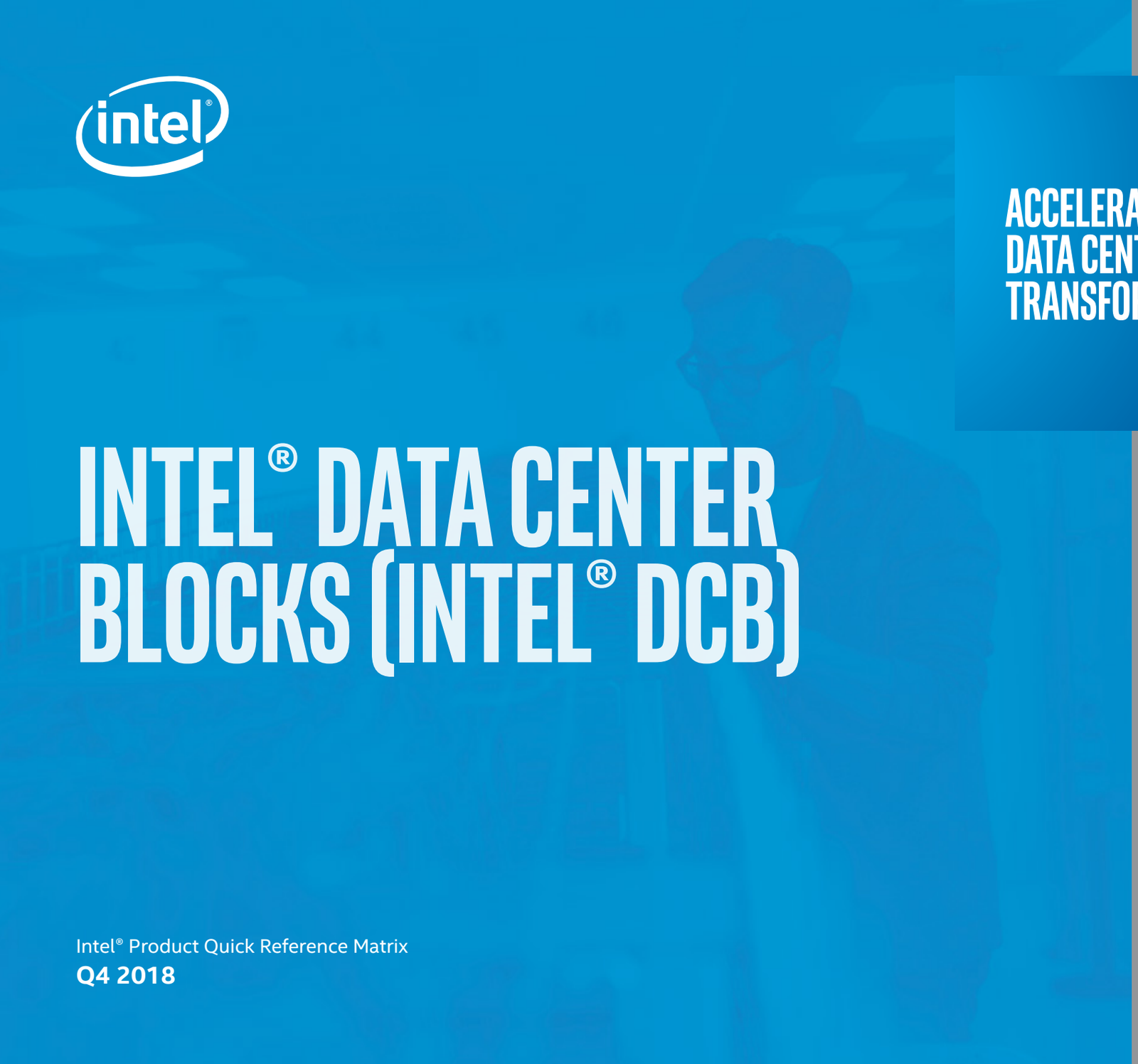
[2] High efficiency power supply.

[3] On interposer (need accessory kit AXXRMM4IOM or AXXRMM4IOMW).

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/go/serversystems.



ACCELERATING DATA CENTER TRANSFORMATION

INTEL® DATA CENTER BLOCKS (INTEL® DCB)

Intel® Product Quick Reference Matrix

Q4 2018

REDUCE COMPLEXITY AND DRIVE INNOVATION

Customer data centers today require unique server solutions that run complex, business-critical workloads. Increasingly, it takes more of your resources to develop those solutions. Intel® Data Center Blocks make it easier for you to adopt, qualify, and sell the latest Intel® technology, helping you address the demands of today's data centers.

INTEL® DATA CENTER BLOCKS

Reduce complexity and speed time to market with unbranded, fully-validated data center blocks that feature Intel's latest technologies.

HIGHER INTEGRATION AND VALIDATION FOR FASTER TIME-TO-MARKET

The world of computing is getting more complex. In order to help partners keep up with the rapid pace of technological demands, Intel is making it easier to adopt, qualify and sell the latest Intel technology with purpose-built Data Center Blocks. These fully-validated server building blocks feature the required Intel technology to deliver customized solutions that meet complex customer needs. Because these Data Center Blocks come with a higher level of integration and validation, partners can reallocate R&D resources to higher value activities and accelerate time to market with innovative solutions.

Cloud and Software-Defined Infrastructure

Gain increased access to the private cloud and SDI market with fully-validated, server systems featuring the latest Intel® technologies and ISV software certifications.

High Performance Computing (HPC)

Accelerate your growth in the HPC market with unbranded, semi-integrated 1 and 2U rack system options built-to-order for intensive workloads.

Transform Business with Enterprise Performance

Grow and transform your business with pre-configured, fully validated server systems designed for the needs of business IT.

Intel® Data Center Blocks for Networking – NFVI Server Block section

SIMPLIFYING AND ACCELERATING NETWORK FUNCTIONS VIRTUALIZATION INFRASTRUCTURE (NFVI) DEPLOYMENT

With the global network functions virtualization (NFV) market projected to grow at a compound annual growth rate (CAGR) of 42%, reaching $15.5 billion by 2020, a massive market opportunity exists. However, many system builders do not have deep experience in designing for the unique requirements of multi-function systems and are looking for a way to address the complexity they face in selecting and validating optimal configurations. The NFVI Server Block designed and tested by Intel to deliver exceptional performance for NFVI workloads. Rather than procuring hardware as components and building the system from scratch, this Data Center Block comes as a pre-configured system to help partners accelerate time to market with workload optimized solutions.

KEY BENEFITS

- Optimized for the unique needs of network functions virtualization infrastructure (NFVI) workloads to deliver exceptional performance
- Fully validated, pre-configured Data Center Block saves time and money[1] freeing up resources to focus on value-add and competitive differentiation
- Single order code simplifies procurement and reduces complexity associated with system design and validation
- Intel quality and reliability with world-class integration, validation, certification, and support
- Standard Intel three-year warranty ensures customer satisfaction

NFVI ENABLEMENT OPTIONS FROM INTEL

NFVI Server Block	Intel® Select Solution for NFVI Reference Architecture	Intel® Select Fast Track Kit for NFVI
Pre-configured, fully-validated Intel Xeon® Scalable processor-based system with balanced Intel® QuickAssist Technology (Intel® QAT), Networking, and NVMe* Storage are designed to accelerate time to market. Ensures efficient data flows, with consistent, repeatable performance. Designed to meet the Intel® Select Solution for NFVI hardware specification.	Reference Architecture that includes a hardened configuration of hardware, firmware, and software optimized for essential NFV workloads. Delivered as a branded Intel® Select Solution systems through Intel partners. The NFVI Server Block hardware is used for reference architecture validation.	Combines the NFVI Server Block with pre-installed Intel® Select Solution for NFVI software (Ubuntu or RedHat). Provides faster access to a fully functional NFVI optimized development platform.

Continued on next page

Intel® Data Center Blocks for Networking – NFVI Server Block section (Continued)

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PRODUCT SPECIFICATIONS

ORDER CODE	NB2208WFQNFVI
PROCESSOR	2x Intel® Xeon® Gold 6152 processor, 22 Cores, 2.1 GHz, Base non-AVX Core frequency, 30.25 LLC (MB), 140 W TDP
BOARD + CHASSIS	Intel® Server System R2208WFQZS (including Intel® Server Board S2600WFQ with symmetric Intel® QAT and 2U Intel® Server Chassis with 8 x 2.5” backplane
DIMENSIONS	16.93" x 27.95" x 3.44"
POWER SUPPLY	2x Redundant 1300 W CRPS - AC, Titanium
MEMORY	24x RDIMM 16 GB – DDR4 288-pin, 2666 MHz (384 GB total)
STORAGE-CAPACITY	4x Intel® SSD DC P4500 (1.0 TB)
BOOT DRIVES (R1)	2x Intel® SSD DC S4500 (240 GB)
NVME* SWITCH	1x 4 Port Switch adapter (CPU1 riser)
CABLES - STORAGE	4x OCuLink* Cables for 4 drives -- AXXCBL470CVCR (1), AXXCBL530CVCR (1), AXXCBL800CVCR (2)
CONNECTIVITY - NICS	4x Intel® Ethernet Network Adapter XXV710-DA2 (25 GbE, 2 adapters per riser)
MANAGEMENT NIC	1x Intel® Ethernet Network Connection OCP I357-T4
REAR HOT SWAP BACKPLANE (HSBP)	Rear Hot-swap Dual Drive Cage Upgrade Kit

[1] Cost reduction scenarios described are intended as examples of how a given Intel®-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

Intel® Data Center Block with Firmware Resilience

Making It Easier to Deliver Competitive and Secure[1] Servers for Critical Infrastructure, Government, and Financial Institutions.

As security threats continue to evolve and increase, security IT officers are driving for a holistic and expanded view to protect their critical infrastructure. This includes protecting the server all the way down to the firmware at the lowest layers of the platform, where threats are most difficult to detect. While technologies exist to protect the higher layers of the infrastructure stack, system IT users need assurance that the underlying platform launching these security technologies can be trusted.

As hackers seek new ways to infiltrate servers, the lower layers of the platform, where threats are most difficult to detect become a more common target. To address this, Intel has developed the Intel® Data Center Block with Firmware Resilience. Featuring Intel® Platform Firmware Resilience technology, this preconfigured, validated server system enables platform security starting in the factory through power-on, system boot, OS load, and beyond[1]. With this offering, customers can protect firmware from being intercepted, detect firmware corruption, and automatically restore a system if malware is detected. The ability to correct firmware corruptions is a new and innovative capability, and an ideal solution for security-sensitive industries including government, financial institutions, and critical infrastructure.

Intel is simplifying adoption of this technology through fully-validated, configure-to-order systems featuring security-optimized Intel® Xeon® processor, Intel® Server Boards, Intel® Server Chassis, and multiple upgrade options to provide a solution that customers can deploy quickly and with confidence.

Configure a system designed for your needs. Choose from three security-optimized processors and a variety of upgrade options.

Intel® Platform Firmware Resilience technology protects, detects critical firmware during boot and runtime attacks
9 pre-configured system SKUs with Order Codes: LFRB2208WFTF801, LFRB2208WFTF601, LFRB2208WFTF401, LFRB2312WFTF801, LFRB2312WFTF601, LFRB2312WFTF401,LFRB1208WFTF801, LFRB1208WFTF601, LFRB1208WFTF401
Intel® Server Board S2600WFTF
Intel® Server Chassis R2000WFTF and R1000WFTF families; 2U & 1U chassis with 1100WAC or 1300WAC Power Supplies.
3x Security Optimized Processor Options (Intel® Xeon® Scalable processor, Platinum, Gold & Silver)
Includes two memory modules:16GB, RDIMM, DDR4, 2666 MT/s
RFID Antenna for Protect-In-Transit
Intel Fabric, Ethernet and RAID adapters (Optional)
Support for 8x2.5" or 12x3.5" (only 2U) drives
Intel® Server Products hardware and accessories from supported families

[1] Intel® technologies features and benefits depend on system configuration and may require enabled hardware, software, or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer to learn more at intel.com.

Software Guard Extensions Server Block

CONTENT DELIVERY NETWORKS, CLOUD SERVICE PROVIDERS, COMMUNICATIONS NETWORKS, AND FINANCIAL INSTITUTIONS

The Software Guard Extensions Server Block is optimized for information security, featuring Intel's industry-leading cryptographic isolation technology - Intel® Software Guard Extensions (Intel® SGX). Intel® SGX provides CPU-hardened enclaves, or protected areas of execution in memory, that increase security for selected code and data on compromised platforms. The Software Guard Extensions Server Block is an unbranded server system designed to be a cost-effective cryptographic security solution that delivers enterprise-grade performance, reliability and security in an easy-to-manage system.

PRODUCT	Software Guard Extensions Server Block
DESCRIPTION	Pre-configured, fully validated 1U rack system, featuring Intel® Software Guard Extensions (Intel® SGX) for cryptographic security; includes the Intel® Server Board S1200SPOR, as well as other Intel components and 3rd party memory that can scale as customers grow via SATA and PCIe* expansion options for increased storage functionality or faster networking speed.
ORDER CODE	LR1304SPCFSGX1
TARGET MARKET	Security optimized server for customers with high data protection needs
SERVER BOARD	Intel® Server Board S1200SPOR
FORM FACTOR	1U; microATX 9.6" x 9.6"
PROCESSOR SUPPORT	Single Intel® Xeon® processor E3-1270 v6, up to 72W TDP
CHIPSET	Intel® C236 chipset
MEMORY	64GB (4 x16GB), 2133MHZ, DDR4, UDIMM
SATA PORTS	One DH-10 Serial Port 'A' connector
INTEGRATED LAN	Dual 1GbE – Intel® i210
MANAGEMENT SUPPORT	Intel® Remote Management Module 4 Lite 2 (AXXRMM4LITE2)
CHASSIS	Intel 1U chassis with hot-swappable 4 x 3.5" (2.5" SSD ready) drive trays, dual 450W redundant PSUs (R1304SPOSHOR)
CHASSIS DIMENSIONS	1.7 in (43.18 mm) x 17.26 in (438.5mm) x 21.06 in (548.9 mm) (Height x Width x Depth)
SECURITY	TPM 2.0 Module
FANS	Three managed 40mm single rotor system fans One fan for each installed power supply module
STORAGE	4 x 3.5" (2.5" SSD Ready) hot-swap drive bays 1 x optical drive bay
UPGRADE OPTIONS	Two Intel® SSD DC S3520 Series (1.2 TB, 2.5in. SATA 6Gb/s, 16nm, MLC) Intel® Integrated RAID Module options Intel® I/O Expansion Module options
WARRANTY	3 year limited warranty with options to expand to 5 years

Intel® Data Center Blocks for Business - Entry Server Block

ENTERPRISE PERFORMANCE FOR ENTRY NEEDS

In a highly competitive market, small enterprise and cloud service providers (CSPs) need a cost-effective server that delivers enterprise-grade performance, reliability and security in an easy-to-manage system. They also need solutions that are able to scale and be more agile, while also being competitively priced. To help address this demand, Intel is providing pre-configured, fully-validated Entry Server Blocks that will help accelerate time to market with server solutions optimized for the needs of small enterprises and CSPs. This 1U rack system includes Intel® components and 3rd party memory, in an unbranded offering that will help reduce the complexity and costs associated with designing, configuring and validating server solutions.

ENTRY SERVER BLOCK FROM INTEL

PRODUCT	Intel® Data Center Blocks for Business - Entry Server Block
DESCRIPTION	Pre-configured, fully validated 1U rack system, featuring the Intel® Server Board S1200SPOR as well as other Intel components and 3rd party memory that can scale as customers grow via SATA and PCIe* expansion options for increased storage functionality or faster networking speed.
ORDER CODE	LR1304SPCFG1R
TARGET MARKET	Entry level server for small and medium businesses (SMBs), optimized for web hosting, enterprise applications and storage
SERVER BOARD	Intel® Server Board S1200SPOR
FORM FACTOR	1U; microATX 9.6” x 9.6”
PROCESSOR SUPPORT	Single Intel® Xeon® processor E3-1230 v6, up to 72W TDP
CHIPSET	Intel® C236 chipset
MEMORY	16GB (1 x16GB), 2133MHZ, DDR4, UDIMM
SATA PORTS	One DH-10 Serial Port ‘A’ connector
INTEGRATED LAN	Dual 1GbE – Intel® i210
MANAGEMENT SUPPORT	Intel® Remote Management Module 4 Lite 2 (AXXRMM4LITE2)
CHASSIS	Intel 1U chassis with hot-swappable 4 x 3.5” (2.5” SSD ready) drive trays, dual 450W redundant PSUs (R1304SPOSHOR)
CHASSIS DIMENSIONS	1.7 in (43.18 mm) x 17.26 in (438.5mm) x 21.06 in (548.9 mm) (Height x Width x Depth)
FANS	Three managed 40mm single rotor system fans One fan for each installed power supply module
STORAGE	4 x 3.5” (2.5” SSD Ready) hot-swap drive bay, drives not included 1 x optical drive bay
UPGRADE OPTIONS	Up to 4x 2.5” SSD drives; Intel® Integrated RAID Module options; Intel® I/O Expansion Module options
WARRANTY	3 year limited warranty with options to expand to 5 years

INTEL® DATA CENTER BLOCKS FOR HPC

Making the path to reliable HPC Solutions Easier

The process of configuring and validating the foundational components of an HPC solution that is tuned to meet specific customer requirements is a complex and resource intensive process. To help address these challenges, Intel provides high-quality, fully validated Data Center Blocks for HPC that can reduce complexity for resellers. These HPC Compute Blocks incorporate Intel's latest data center technologies - already optimized to work better together - allowing partners to accelerate time to market with reliable HPC solutions.

HPC Compute Blocks

BUILD TO ORDER

HPC Compute Blocks are build-to-order and embody the Intel® Scalable System Framework - a flexible blueprint for developing high performance, efficient and reliable HPC systems. These blocks capture the innovations taking place in compute, fabric, storage and memory in a building block optimized for HPC environments. This means partners can order based on the specific needs of their customer. By taking advantage of Intel's latest technologies, as well as world-class engineering and validation expertise, partners can build innovative solutions faster and with a lower total cost of ownership.

MIX AND MATCH: BUILD YOUR OWN RACK

1U and 2U Rack form factors:
R1208WFTYS
R1304WF0YS, R1304WFTYS
R2208WFTZS, R2208WF0ZS, R2208WFQZS, R2224WFTZS, R2224WFQZS
R2308WFTZS, R2312WFTZS, R2312WF0NP, R2312WFQZS
HNS2600BPB, HNS2600BPB24, HNS2600BPS, HNS2600BPS24, HNS2600BPQ, HNS2600BPQ24
HNS2600KPR, HNS2600KPFR
HNS2600TPR, HNS2600TP24R, HNS2600TP24SR, HNS2600TPFR
R1304WT2GSR, R1304WTTGSR
R1208WT2GSR, R1208WTTGSR
R2208WT2YSR, R2208WTTYC1R, R2208WTTYSR, R2224WTTYSR
R2308WTTYSR, R2312WTTYSR
HNS7200AP
Intel® Xeon® Scalable Processors Family
Intel® Xeon Phi™ processor family
Intel® Omni-Path Fabric
Intel Ethernet and RAID adapters
Intel® Server Products hardware and accessories from supported families

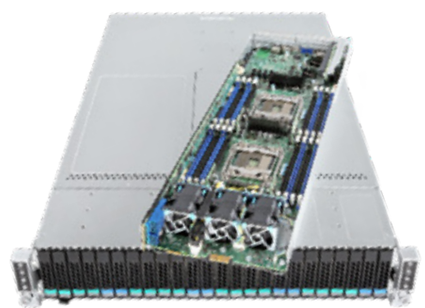
Intel® Data Center Blocks for Cloud – VMware* (VSAN Ready Node)

Designing, testing and validating an SDS solution can be a complex and resource-intensive process. Cloud Blocks for VMware (VSAN Ready Node) are fully-validated, pre-configured server systems with VMware VSAN certifications included. Designed to address the challenges of storage modernization, this offering helps resellers reduce complexity and speed time to market.

INTEL® DATA CENTER BLOCKS FOR CLOUD - VMWARE (VSAN READY NODE)

PRODUCT	Intel® Data Center Blocks for Clouds - VMware (VSAN Ready Node)
DESCRIPTION	Intel Cloud Blocks for VMware are fully-validated, pre-configured server systems featuring the latest Intel technology, including Intel® Server Boards and Chassis, Intel® Xeon® processors, and Intel® Solid State Drives (SSDs), as well as third-party memory and VMware VSAN certifications in configurations optimized for SDS solutions. These VSAN Ready Nodes from Intel are available in multiple All-Flash (AF) or Hybrid (HY) system configurations, each designed for specific workloads and use cases.
TARGET MARKET	Software-Defined Storage and Private Cloud. Recommended customer use cases include: Business-Critical Applications, Virtual Desktop Infrastructure, Disaster Recovery, Test and Development scenarios, and Enterprise Production Workloads.

ORDER CODES	VMWARE* VSAN PROFILE	INTEL® SERVER SYSTEM	FEATURES*
		ALL-FLASH CONFIGURATIONS (SATA SSDs for capacity, NVMe* SSDs for cache)	
VRN2208WFAF83	All Flash (AF-8)[3]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• Up to 120 VMs and 80K IOPs per node • 24 TB raw storage capacity per node • Intel® Xeon® Gold 6152 processor • 768GB memory
VRN2208WFAF82	All Flash (AF-8)[3]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WFO	• Up to 120 VMs and 80K IOPs per node • 12 TB raw storage capacity per node • Intel® Xeon® Gold 5120 processor • 384 GB memory
VRN2208WFAF81	All Flash (AF-8)[3]	2U 1 node Intel® Server Chassis R2208WF0ZS and Intel® Server Board S2600WFO	• Up to 120 VMs and 80K IOPs per node • 11.5 TB raw storage capacity per node • Intel® Xeon® Gold 5118 processor • 384 GB memory
VRN2224BPAF6	All Flash (AF-6)[3]	2U 4 node Intel® Server Chassis H2224XXLR3 with Intel® Server Board S2600BPS	• Up to 60 VMs and 50K IOPs per node • 9.6 TB raw storage capacity per node • Intel® Xeon® Xeon Gold 5118 processor • 256 GB memory
		HYBRID CONFIGURATIONS (Hard for capacity, SSDs for cache)	
VRN2208WFHY6	Hybrid (HY-6)[2]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• Up to 50 VMs and 20K IOPs per node • 12 TB raw storage capacity per node • Intel® Xeon® Gold 5115 processor • 256 GB memory
VRN2224BPHY6	Hybrid (HY-6)[2]	2U 4 node Intel® Server Chassis VRN2224BPHY6 and Intel® Server Board S2600BPS	• Up to 50 VMs and 20K IOPs per node • 8 TB raw storage capacity per node • Intel® Xeon® Gold 5115 processor • 256 GB memory



[2] 3rd party SW stack and HDD NOT included

[3] 3rd party SW stack NOT included

* Other names and brands may be claimed as the property of others

Intel® Data Center Blocks for Cloud - Microsoft Windows Server* 2016

Designing, testing and validating an SDS solution can be a complex and resource-intensive process. Cloud Blocks for Microsoft* are fully-validated, pre-configured server systems with Microsoft Windows Server 2016 certifications included. Designed to address the challenges of storage modernization, this offering helps resellers reduce complexity and speed time to market.

CLOUD BLOCKS FROM INTEL

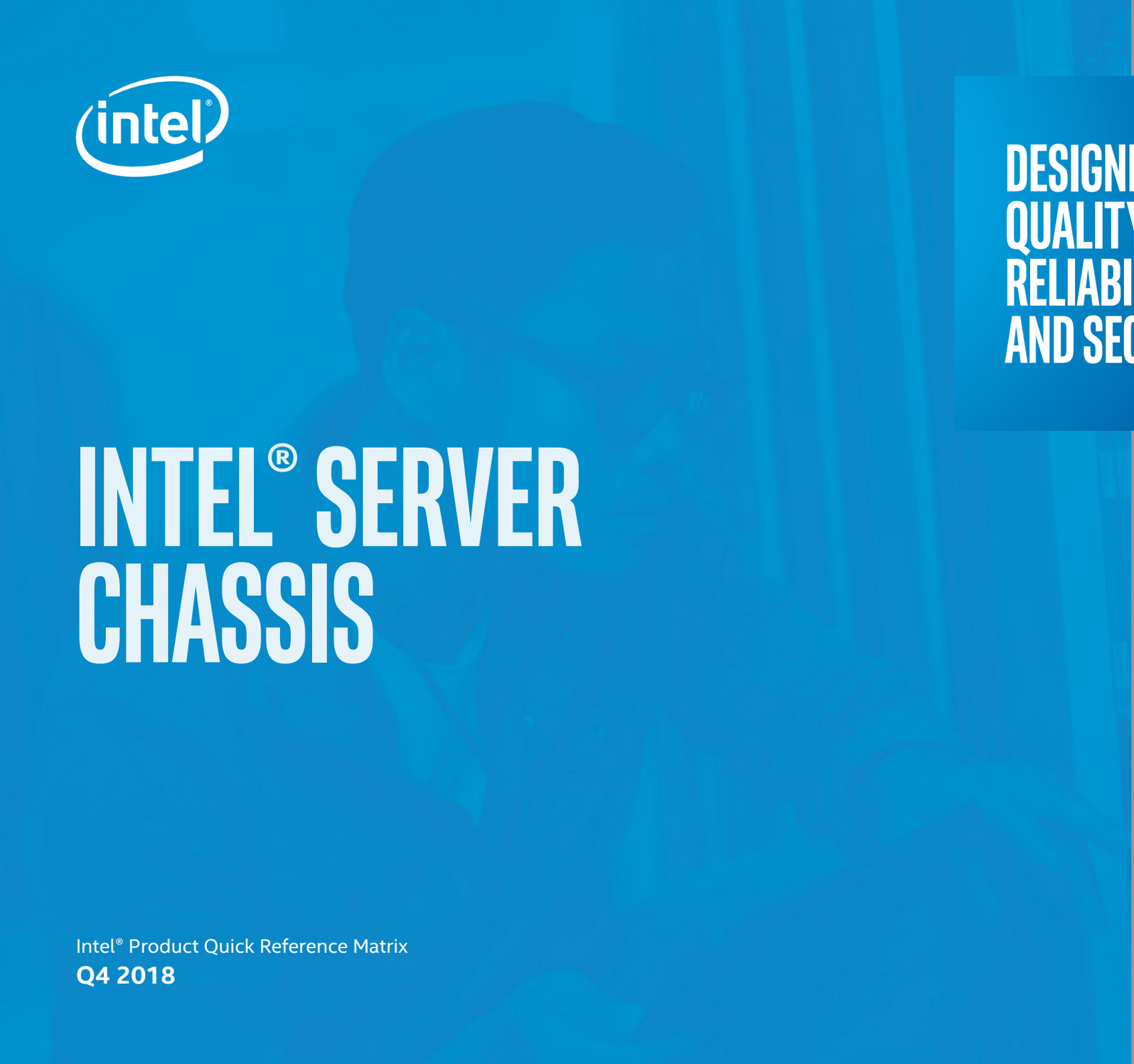
PRODUCT	Intel® Data Center Blocks for Cloud – Microsoft Windows Server* 2016
DESCRIPTION	Cloud Blocks for Microsoft Windows Server* 2016 are fully-validated, pre-configured server systems featuring the latest Intel® technology, including Intel® Server Boards and Chassis, Intel® Xeon® processors, and Intel® Solid State Drives (SSDs), as well as third-party memory and Windows Server 2016 certifications in configurations optimized for SDS solutions. These blocks are available in multiple All-Flash (AF) or Hybrid (HY) system configurations, each designed for specific workloads and use cases.
TARGET MARKET	Software-Defined Storage and Private Cloud. Recommended customer use cases include: Business-Critical Applications, Virtual Desktop Infrastructure, Disaster Recovery, Test and Development scenarios, and Enterprise Production Workloads.

ORDER CODES	INTEL® SERVER SYSTEM	FEATURES*
	ALL-FLASH CONFIGURATIONS (SATA SSDs for capacity, NVMe* SSDs for cache)	
MCB2208WFAF6[3]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• 24 TB raw storage capacity • Intel® Xeon® Gold 6152 processor • 768 GB memory
MCB2208WFAF5[3]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• 12 TB raw storage capacity • Intel® Xeon® Gold 5120 processor • 384 GB memory
MCB2208WFAF4[3]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• 11.5 TB raw storage capacity • Intel® Xeon® Gold 5118 processor • 384 GB memory
MCB2224BPAF3[3]	2U 4 node Intel® Server Chassis H2224XXLR3 and Intel® Server Board S2600BPS	• 7.7 TB raw storage capacity per node • Intel® Xeon® Gold 5118 processor • 256 GB memory
	HYBRID CONFIGURATIONS (Hard drives for capacity, SSDs for cache)	
MCB2208WFHY2[2]	2U 1 node Intel® Server System R2208WF0ZS and Intel® Server Board S2600WF0	• 12 TB raw storage capacity • Intel® Xeon® Gold 5118 processor • 128 GB memory
MCB2224BPHY1[2]	2U 4 node Intel® Server Chassis H2224XXLR3 and Intel® Server Board S2600BPS	• 8 TB raw storage capacity per node • Intel® Xeon® Gold 5115 processor • 128 GB memory

[2] 3rd party SW stack and HDD NOT included
[3] 3rd party SW stack NOT included
[4] Virtual Machine count modeled after Microsoft Azure A2 Basic compute instance with Hyper-threading, no oversubscription of any components (CPU, memory and storage).
* Other names and brands may be claimed as the property of others

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/dcb** or **ark.intel.com**



INTEL® SERVER CHASSIS

Intel® Product Quick Reference Matrix

Q4 2018

DESIGNED FOR QUALITY, RELIABILITY, AND SECURITY.

1U/2U RACK

New flexible and highly serviceable 1U and 2U rack chassis targeted for cloud and datacenter environments support custom form factor server boards. Find high-density, 2U rackable chassis supporting up to 4 hot-pluggable Intel® Compute Modules up to 24 2.5 inch hot-swap drives or up to 12 3.5 inch hot-swap drives.

TOWER CHASSIS

Pedestal chassis ideal for small and medium business environments and purpose-built appliances.

INTEL® SERVER CHASSIS H2000G FAMILY FOR THE INTEL® XEON® SCALABLE PROCESSOR

INTEL® SERVER CHASSIS H2000G FAMILY[3]

CHASSIS	2U rack chassis supporting up to 4 hot-pluggable Intel® Compute Module HNS2600BPB24, HNS2600BPQ24 or HNS2600BPS24, 24 2.5″ hot-swap drives, and 2 2130 W AC Platinum efficiency common redundant power supplies	2U rack chassis supporting up to 4 hot-pluggable Intel® Compute Module HNS2600BPB, HNS2600BPQ, or HNS2600BPS, up to 4 2.5″ hot-swap drives and 2 2130 W AC Platinum efficiency common redundant power supplies	High-density, 2U rackable chassis supporting up to 4 hot-pluggable Intel® Compute Module HNS2600BPB, HNS2600BPQ, HNS2600BPS up to 12 3.5″ hot-swap drives and two 2130 W AC Platinum efficiency common redundant power supplies
TARGET MARKET	Hyper-converged infrastructure, Cloud, Datacenter		
MODEL	24 2.5″ hot-swap drives	4 2.5″ hot-swap drives	3.5″ Hot-swap drive model
COMPUTE MODULE SUPPORT[1]	HNS2600BP24	HNS2600BPB	
CHASSIS ORDER CODE[1]	**H2224XXLR3**	**H2204XXLRE:** Available only as part of the HPC Data Center Block offering	**H2312XXLR3**
SPARES KIT ORDER CODE[2]	**AHWBPBGB24:** 6-Port IT Bridge Board with LSI* 3008 IOC, 6G SATA / 12G SAS, 2 NVMe* drives (pass-through), no RAID **AHWBPBGB24R:** 6-Port iMR Bridge Board with LSI 3008 IOC, 6G SATA / 12G SAS, RAID, 2 NVMe drives (pass-through), RAID 0/1/10 **AHWBPBGB24P:** 6-Port Add-In-Card (AIC) pass-through Bridge Board; Must be used in combination with an add-in RAID card to be functional	**AHWBPBGB:** 4-Port SATA SW RAID Bridge Board, 6G SATA only, no RAID **AHWBP12GBGB:** 4-Port Bridge Board with LSI 3008 IOC, 6G SATA / 12G SAS, RAID 0/1/10 **AHWBP12GBGBR5:** 4-Port iMR Bridge Board with LSI 3008 IOC, 6G SATA / 12G SAS, RAID 0/1/5/10	**AHWBPBGB:** 4-Port SATA SW RAID Bridge Board, 6G SATA Only, no RAID **AHWBP12GBGB:** 4-Port Bridge Board with LSI* 3008 IOC, 6G SATA / 12G SAS, RAID 0/1/10 **AHWBP12GBGBR5:** 4-Port iMR Bridge Board with LSI 3008 IOC, 6G SATA / 12G SAS, RAID 0/1/5/10
FORM FACTOR	2U Rack		
DRIVE BAYS	Supports up to 24 2.5″ hot-swap SAS / SATA drives	Supports up to four 2.5″ hot-swap SAS / SATA drives	Up to 12 2.5″ or 3.5″ hot-swap SAS / SATA drives
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	Included		
NVMe*	Support up to 8 2.5″ PCIe* SFF devices	None	N/A
SYSTEM COOLING	3 x 40mm x 56mm dual rotor fans per module		
POWER SUPPLIES	2 Common redundant 2130 W AC (Platinum Efficiency)		
TOOL-LESS FEATURES	PSU, Compute module, HDD bays are all hot-swap		
DIMENSIONS (H x W x D)	3.46″ x 17.24″ x 28.86″	3.46″ x 17.24″ x 30.35″	
BEZEL FEATURES	Black, independate front panel controls for each individual module		
FRONT CONNECTORS	N/A		
SYSTEM SECURITY	Protection for chassis drives with a lock to the chassis		

INTEL® SERVER CHASSIS H2000G FAMILY FOR THE INTEL® XEON® PROCESSOR E5-V4

INTEL® SERVER CHASSIS H2000G FAMILY[3]

CHASSIS	2U rack chassis supporting up to four hot-pluggable Intel® Compute Module HNS2600TP24R, HNS2600TP24SR or HNS2600TP24STR up to 24 2.5" hot-swap drives and two 1600W common redundant power supplies.	2U rack chassis supporting up to four hot-pluggable Intel® Compute Module NS2600TP24R, HNS2600TP24SR or HNS2600TP24STR up to 24 2.5" hot-swap drives and two 2130 W common redundant power supplies.
TARGET MARKET	Hyper-converged infrastructure/Cloud/Datacenter	
MODEL	4 2.5" hot-swap drives, including support for up to eight 2.5" PCIe* small form factor (SFF) devices	
INTEL® SERVER BOARD SUPPORT[1]	HNS2600TP24R, HNS2600TP24SR	
CHASSIS ORDER CODE[1]	**H2224XXKR2**	**H2224XXLR2**
SPARES KIT ORDER CODE[2]	24 x 2.5" Backplane: FHW24X25HS12G Power interposer board: FXXCRPSPIB Power docking board: FH2000NPB24 Bridge board: FHWKPTPBGB24	24 x 2.5" Backplane: FHW24X25HS12G Bridge board: FHWKPTPBGB24 Front control panel kit: FH2000FPANEL2 Power distribution board: FXXCRPSPDB2 Power board: FH2000NPB24 Power in backplane bridge board module: FXXCRPSPIB
FORM FACTOR	2U Rack	
DRIVE BAYS	Supports up to twenty-four 2.5" hot-swap SAS drives	
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	Included	
NVMe*	Support up to eight 2.5" PCIe* SFF devices	
SYSTEM COOLING	3 x 40mm x 56mm dual rotor fans per module	
POWER SUPPLIES	(2) Common Redundant 1600 W (Platinum Efficiency)	
I/O SLOTS	Up to 2	
BACKPLANE	Included combination backplane with PCIe* SFF device support	
TOOL-LESS FEATURES	PSU, Compute module, HDD bays are all hot-swap	
DIMENSIONS (H x W x D)	3.46" x 17.24" x 28.86"	
BEZEL FEATURES	Black, independate front panel controls for each individual module	
FRONT CONNECTORS	N/A	
SYSTEM SECURITY	Protection for chassis drives with a lock to the chassis	

INTEL® SERVER CHASSIS H2000G FAMILY FOR THE INTEL® XEON® PROCESSOR E5-V4

INTEL® SERVER CHASSIS H2000G FAMILY[3]

CHASSIS	High-density, 2U rackable chassis supporting up to four half-width Intel® Compute Modules.	
MODEL	3.5″ drive model	2.5″ drive model
INTEL® SERVER BOARD SUPPORT[1]	HNS2600KPR, HNS2600KPFR HNS2600TPR, HNS2600TPFR	
CHASSIS ORDER CODE[1]	**H2312XXKR2**	**H2216XXKR2**
SPARES KIT ORDER CODE[2]	12 x 3.5″ Backplane: FHW12X35HS12G 1600 W PSU Spare: FXX1600PCRPS Bridge Board: FHWKPTPBGB Control Panel Spare: FH2000FPANEL2 Node Power Board: FH2000NPB2 Power Distribution Board Spares: FXXCRPSPDB2	16 x 2.5″ Backplane: FHW16X25HS12G 1600 W PSU Spare: FXX1600PCRPS Bridge Board: FHWKPTPBGB Control Panel Spare: FH2000FPANEL2 Node Power Board: FH2000NPB2 Power Distribution Board Spares: FXXCRPSPDB2
FORM FACTOR	2U Rack	
DRIVE BAYS	Up to twelve 2.5″ or 3.5″ hot-swap SAS / SATA drives	Up to sixteen 2.5″ hot-swap SAS / SATA drives
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	FXX35HSCAR	FXX25HSCAR
NVMe*	N/A	
SYSTEM COOLING	3 x 40mm x 56mm dual rotor fans per module	
POWER SUPPLIES	(2) Common Redundant 1600 W (Platinum Efficiency)	
I/O SLOTS	Up to 2	
BACKPLANE	Included	
TOOL-LESS FEATURES	PSU, Compute module, HDD bays are all hot-swap	
DIMENSIONS (H x W x D)	3.42″ x 17.24″ x 30.35″ (87mm x 438mm x 771mm)	3.42″ x 17.24″ x 28.86″ (87mm x 438mm x 771mm)
BEZEL FEATURES	Black, independate front panel controls for each individual module	
FRONT CONNECTORS	N/A	
SYSTEM SECURITY	Protection for chassis drives with a lock to the chassis	

INTEL® SERVER CHASSIS H2000G FAMILY FOR THE INTEL® XEON PHI™ PROCESSOR

INTEL® SERVER CHASSIS H2000G FAMILY[3]

CHASSIS	High-density, 2U rackable chassis supporting up to four half-width Intel® Compute Modules.	
MODEL	3.5″ drive model	2.5″ drive model
INTEL® SERVER BOARD SUPPORT[1]	HNS7200AP; HNS7200APL; HNS2600KPR, HNS2600KPFR; HNS2600TPR, HNS2600TPFR	
CHASSIS ORDER CODE[1]	**H2312XXLR2**	**H2216XXLR2**
SPARES KIT ORDER CODE[2]	12 x 3.5″ Backplane: FHW12X35HS12G 2130 W PSU Spare: FXX2130PCRPS Control Panel Spare: FH2000FPANEL2 Node Power Board: FH2000NPB2 Power Distribution Board Spare: FXXCRPSPDB2 Passive Heat-Sink: AXXAPHS Intel® Omni-Path Port Upgrade Kit (2 Port): AXX2PFABKIT 1U Spare PCIe Riser (Slot 2): FHW1U20APRISER 1U PCI Express x16 riser card for Slot 1: FHW1U16APRISER 1U PCI Express x16 riser card for Slot 2: FHW1U20APRISER 1U PCI Express x4 riser card for Slot 2: FHW1U4APRISER Bridge Board Spare: FHWAPBGB	16 x 2.5″ Backplane: FHW16X25HS12G 2130 W PSU Spare: FXX2130PCRPS Control Panel Spare: FH2000FPANEL2 Node Power Board: FH2000NPB2 Power Distribution Board Spare: FXXCRPSPDB2 Passive Heat-Sink: AXXAPHS Intel® Omni-Path Port Upgrade Kit (2 Port): AXX2PFABKIT 1U Spare PCIe Riser (Slot 2): FHW1U20APRISER 1U PCI Express x16 riser card for Slot 1: FHW1U16APRISER 1U PCI Express x16 riser card for Slot 2: FHW1U20APRISER 1U PCI Express x4 riser card for Slot 2: FHW1U4APRISER Bridge Board Spare: FHWAPBGB
FORM FACTOR	2U Rack	
DRIVE BAYS	Up to twelve 2.5″ or 3.5″ hot-swap SAS / SATA drives	Up to sixteen 2.5″ hot-swap SAS / SATA drives
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	FXX35HSCAR	FXX25HSCAR
NVMe*	N/A	
SYSTEM COOLING	3 x 40mm x 56mm dual rotor fans per module	
POWER SUPPLIES	(2) Common Redundant 2130 W (Platinum Efficiency)	
I/O SLOTS	Up to 2	
BACKPLANE	Included	
TOOL-LESS FEATURES	PSU, Compute module, HDD bays are all hot-swap	
DIMENSIONS (H x W x D)	3.42″ x 17.24″ x 30.35″ (87mm x 438mm x 771mm)	3.42″ x 17.24″ x 28.86″ (87mm x 438mm x 771mm)
BEZEL FEATURES	Black, independate front panel controls for each individual module	
FRONT CONNECTORS	N/A	
SYSTEM SECURITY	Protection for chassis drives with a lock to the chassis	

INTEL® SERVER CHASSIS R1000WF AND INTEL® SERVER CHASSIS R1000WT FAMILIES

The Intel® Server Chassis R1000WF and Intel® Server Chassis R1000WT families support the Intel® Server Board S2600WF family and Intel® Server Board S2600WT family, respectively. See the Accessories and Spares section of the chosen Intel Server Board configuration guide for recommended part numbers.

	INTEL® SERVER CHASSIS R1000WF FAMILY	INTEL® SERVER CHASSIS R1000WT FAMILY
CHASSIS	Flexible and highly serviceable 1U and 2U rack chassis targeted for cloud and datacenter environments supporting custom form factor server boards.	
MODEL	Hot-swap drive models	
INTEL® SERVER BOARD SUPPORT[1]	S2600WFT, S2600WF0, S2600WFQ†	S2600WT2R, S2600WTTR
CHASSIS ORDER CODE[1]	**R1304WFXXX**	**R1208WTXXX** **R1304WTXXX**
SPARES KIT ORDER CODE[2]	1U riser for PCI Express* 3.0 x16 FHHL: F1UL16RISER3 SAS cables depend on usage model, reference Configuration Guide	
FORM FACTOR	1U Rack	
DRIVE BAYS	**R1304WTXXX:** Up to four 2.5″ or 3.5″ hot-swap SAS / SATA drives **Optional:** Fixed-mount SSD in optical drive bay (requires AXXSSDODDKIT accessory)	**R1208WTXXX:** Up to eight 2.5″ hot-swap SAS / SATA drives, up to 4 PCI Express SSD with optional accessory (A1U44X25NVMEDK) **R1304WTXXX:** Up to four 2.5″ or 3.5″ hot-swap SAS / SATA drives **Optional:** Fixed-mount SSD in optical drive bay (requires AXXSSDODDKIT accessory)
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	Included	
SYSTEM COOLING	6 x 40mm internal redundant chassis fans	
POWER SUPPLIES	(2) Common Redundant 1100 W AC (Platinum Efficiency) (2) Common Redundant 750 W DC -48V (Gold Efficiency) NOTE: Power supply sold separately	
I/O SLOTS	Up to 2 PCI Express 3.0 x8 (HLFH) with purchase of risers F1UL16RISER2, Intel® I/O Expansion module, SAS module	
BACKPLANE	Included	
TOOL-LESS FEATURES	Front bezel, PCI card retainer, peripheral bays, PSU installation, and fixed drive carriers	
DIMENSIONS (H x W x D)	Rack: 17.25″ x 1.72″ x 28″ (438mm x 44mm x 711mm)	
BEZEL FEATURES	Black, control panel, two USB ports	
FRONT CONNECTORS	2 x USB	
SYSTEM SECURITY	Locking bezel and chassis intrusion	

† Q SKU launches Q4'17

For more information, visit **www.intel.com/products/server/chassis** or **ark.intel.com**

INTEL® SERVER CHASSIS R2000WF AND INTEL® SERVER CHASSIS R2000WT FAMILIES

The Intel® Server Chassis R2000WF and Intel® Server Chassis R2000WT families support the Intel® Server Board S2600WF family and Intel® Server Board S2600WT family, respectively. See the Accessories and Spares section of the chosen Intel Server Board configuration guide for recommended part numbers.

	INTEL® SERVER CHASSIS R2000WF FAMILY	INTEL® SERVER CHASSIS R2000WT FAMILY
CHASSIS	Flexible and highly serviceable 1U and 2U rack chassis targeted for cloud and datacenter environments supporting custom form factor server boards.	
MODEL	Hot-swap drive models	
INTEL® SERVER BOARD SUPPORT[1]	S2600WFT, S2600WF0	S2600WT2R, S2600WTTR
CHASSIS ORDER CODE[1]	**R2000WFXXX**	**R2000WTXXX; R2312WTXXX**
SPARES KIT ORDER CODE[2]		Accessory 2U Hot-swap Drive Cage Upgrade Kit with 4x NVMe SSD support: A2U44X25NVMEDK
	2U 3 slot riser for PCI Express* 3.0 x8: A2UL8RISER2 2U short riser PCI Express 3.0 x8, PCI Express x4: A2UX8X4RISER Accessory 2U 2 slot riser for PCI Express 3.0 x16: A2UL16RISER2 Rear 2-drive cage accessory: A2UREARHSDK SAS cables depend on usage model, reference Configuration Guide, See Configuration Guide for detailed list of Spares and Accessories	
FORM FACTOR	2U Rack	
DRIVE BAYS	**R2000FTXXX:** Requires accessory bays to support hot-swap drives, support for 2.5″ SSDs, optional 2 x 2.5″ rear hot-swap drives available with accessory (A2UREARHSDK)	**R2312WTXXX:** Up to 12 x 3.5″ hot-swap SAS / SATA drives, support for 2.5″ SSDs, optional 2 x 2.5″ rear hot-swap drives available with accessory (A2UREARHSDK) **R2000WTXXX:** Requires accessory bays to support hot-swap drives, support for 2.5″ SSDs, optional 2 x 2.5″ rear hot-swap drives available with accessory (A2UREARHSDK)
	Optional: 4 x 2.5″ NVM Express* (PCI Express SSDs) available with accessory (A2U44X25NVMEDK)	
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	A2U8X35S3PHSDK1: 8 x 2.5″ drives (Single port) A2U8X35S3PHSDK1(x3), Storage rack handle A2UHANDLKIT2 for 24 x 2.5″ drives (Single port) A2U8X25S3DPDK2: Dual port drive cage kit supports dual port SAS drives up to 24 drives	A2U8X25S3HSDK: 8 x 2.5″ drives (Single port) A2U8X25S3HSDK (x3), Storage rack handle A2UHANDLKIT for 24 x 2.5″ drives (Single port) A2U8X35S3HSDK: 8 x 3.5″ drives A2U44X25NVMEDK: Upgrade kit supporting up to 4 x 2.5″ NVMe* drives, optional 8 x 2.5″ HDD backplane A2U8X25S3DPDK: Dual port drive cage kit supports dual port SAS drives up to 24 drives
	See Configuration Guide for detailed list of cables needed	
SYSTEM COOLING	6 x 80mm internal redundant and hot-swap chassis fans	
POWER SUPPLIES	(2) Common Redundant 1300 W AC (Titanium Efficiency)	(2) Common Redundant 750 W AC (Platinum Efficiency)
	(2) Common Redundant 750 W DC -48V (Gold Efficiency); (2) Common Redundant 1100 W AC (Platinum Efficiency); NOTE: Power supply sold separately	
I/O SLOTS	Up to 8 x PCI Express 3.0 with purchase of risers: 2 x A2UL8RISER2 and 1 x A2UX8X4RISER	
BACKPLANE	R2000WFXXX: See ‘Drive Bays’	R2312WTXXX: Included; R2000WTXXX: See ‘Drive Bays’
TOOL-LESS FEATURES	Front bezel, top cover, PCI card retainer, fans, hot-swap drive carriers, hot-swap drive bays, peripheral bays, and PSU installation	
DIMENSIONS (H x W x D)	Rack: 17.25″ x 3.44″ x 28″ (438mm x 87mm x 711mm)	
BEZEL FEATURES	Black, control panel, security lock, two USB ports	
FRONT CONNECTORS	2 x USB	
SYSTEM SECURITY	Locking bezel and chassis intrusion	

INTEL® SERVER CHASSIS P4000M FAMILY FOR THE INTEL® XEON® SCALABLE PROCESSOR AND INTEL® XEON® PROCESSOR E5-V4

Intel® Server Chassis P4000 series requires the separate purchase of a thermal solution kit and air duct specific to the Intel® Server Board selected. See the Accessories and Spares section of the chosen Intel Server Board configuration guide for recommended part numbers. Other boxed Intel® Thermal Solutions are mechanically compatible with the processor socket but are not thermally validated in Intel Server Chassis.

	INTEL® SERVER CHASSIS P4000 FAMILY
CHASSIS	A sleek and flexible mid-length tower chassis targeted at small- to medium-sized businesses supporting custom form factor server boards.
MODEL	Fixed drive models (upgradeable to hot-swap drive support)
INTEL® SERVER BOARD SUPPORT[1]	S2600STB, S2600STS, S2600CW2R, S2600CWTR, S2600CW2SR, S2600CWTSR
CHASSIS ORDER CODE[1]	**P4304XXMFEN2, P4304XXMUXX**
SPARES KIT ORDER CODE[2]	120mm Fixed Fan PCI area: FUPMNHFANPCI 120mm Fixed Fan for CPU area: FUPNHFANCPU 1600 W Common Redundant Power Supply: FXX1600PCRPS Accessory kit enables support for 2.5" FF PCI Express* 3.0 SSDs (NVMe): FUP8X25S3NVDK Bezel Spare for P4000 Chassis Supporting Fixed HDD: FUPCRPSCAGE Bracket and Extension Kit for P4000M Chassis Family: AUPMCOPROBR Front bezel with door: FUPBEZELHSD2 High Current P4000 Family Chassis Power Distribution Board Spare: FUPPDBHC2 hot-swap Drive Cage: FXX25SHCAR Redundant Power Supply Cage for Intel® Server Chassis P4000 Family: FUPCRPSCAGE SRC-B tower passive heat sink 92mm x 100mm: AUPCWPBTP Spare 3.5" Fixed HDD Carriers: FUP4X35NHDK Spare hot-swap Fan Kit for Intel® Server Chassis P4000M: FUPMLHSFAN
FORM FACTOR	4U Tower (rackable)
DRIVE BAYS	Up to 4 x 3.5" fixed drives, optional 4 or 8 x 3.5" or 8 or 16 x 2.5" hot-swap drive bay (2.5" configurations also support up to 4x PCIe 3.0 SSD's)
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	Upgrade: Convert up to 8 SAS / SATA hot-swap drive bays using the upgrade kit: (FUP8X25HSDK) Upgrade: Convert up to 8 hot-swap PCI Express* drive cages to support 2.5" FF PCIe SSDs (NVMe*): FUP8X25S3NVDK
SYSTEM COOLING	P4304XXMFEN2: 2 x 120mm Internal fixed chassis fans; P4304XXMUXX : 5 x 80mm Redundant hot-swap internal chassis fans
POWER SUPPLIES	P4308XXMFEN2: (1) Fixed Non-redundant 550 W (Silver Efficiency); P4304XXMUXX: (2) Common Redundant 750 W (Platinum Efficiency) or (2) Common Redundant 1600 W (Platinum Efficiency) sold separately
I/O SLOTS	Up to 6
BACKPLANE	None included
TOOL-LESS FEATURES	Front bezel, EMI cover, side cover, PCI card retainer, peripheral bays, PSU installation, and fixed drive carriers
DIMENSIONS (H x W x D)	Tower: 17.24" x 6.81" x 24.9" (438mm x 173mm x 632mm)
BEZEL FEATURES	Black, control panel, two USB ports
FRONT CONNECTORS	2 x USB
SYSTEM SECURITY	Locking bezel and chassis intrusion

INTEL® SERVER CHASSIS P4000S FAMILY

CHASSIS	A general purpose 4U tower chassis supporting the Intel® Server Board S1200SP family with up to four 3.5″ fixed drives, two 460W common redundant power supplies optimized for thermal and acoustic performance.	A general purpose tower chassis optimized for thermal and acoustic performance.	
MODEL	4 x 3.5″ Fixed drives	Fixed drive models	Hot-swap drive models
INTEL® SERVER BOARD SUPPORT[1]	S1200SPLR, S1200SPSR		
CHASSIS ORDER CODE[1]	**P4000XXSFDR**	**P4304XXSFCN**	**P4304XXSHCN**
SPARES KIT ORDER CODE[2]	Front Panel board: FXXFPANELR Power Distribution Board: AP4000E3V5PDB 4 x 3.5″ 6Gb/s hard drive hot-swap backplane: FUP4X35HSBP 8 x 3.5″ 6Gb/s hard drive hot-swap backplane: FUP8X35HSBP 4 x 3.5″ 12Gb/s hard drive hot-swap backplane: FUP4X35S3HSBP 460W Cold redundant power supply: FXX460GCRPS	Mechanical Spares Kit: FUPSMSK Electrical Spares Kit: FUPSESK Air ducts sold separately based on board purchased	
FORM FACTOR	4U Tower		
DRIVE BAYS	Up to four 3.5″ fixed drives	Up to four 3.5″ fixed SAS / SATA drives	Up to four 3.5″ hot-swap SAS / SATA drives
HOT-SWAP DISK DRIVE BAY (ORDER CODE)	Hot-swap 6Gbps SATA drives: FUP4X35HSDK Hot-swap 6Gbps SATA drives: FUP8X35HSDK Hot-swap 12Gbps SAS drives: FUP4X35S3HSDK Hot-swap 12Gbps SAS drives: 2x FUP4X35S3HSDK	Upgrade: convert to four slot hot-swap drive bays using the following Drive Bay upgrade kit: (FUP4X35HSDK), supports four SAS / SATA hot-swap drives	Share the same hot-swap drive bay kit (FUP4X35HSDK), use as a spare
SYSTEM COOLING	(2) 92mm fixed fans (one PCIe* zone and one rear system fan)	2 x 92mm internal chassis fan (single fan in P4304XXSFCN)	2 x 92mm internal chassis fan (single fan in P4304XXSHCN)
POWER SUPPLIES	(2) Common Redundant 460 W (Gold Efficiency)	P4304XXSFCN: (1) Fixed 365 W (Silver Efficiency)	P4304XXSHCN: (1) Fixed 365 W (Silver Efficiency) P4304XXSHDR: (2) Common Redundant 460 W (Gold Efficiency)
I/O SLOTS	Up to 3	Up to 6	
BACKPLANE	None included		
TOOL-LESS FEATURES	Front bezel, EMI cover, PCI card retainer, peripheral bays, power supply unit installation, and fixed drive carriers	Front bezel, EMI cover, side cover, PCI card retainer, peripheral bays, PSU installation, and fixed drive carriers	Front bezel, side cover, PCI card retainer, hot-swap drive carriers, hot-swap drive bay, peripheral bays, and PSU installation
DIMENSIONS (H x W x D)	Tower: 17.24″ x 6.81″ x 22.05″ (438mm x 173mm x 560mm)	Tower: 17.24″ x 6.81″ x 21.5″ (438mm x 173mm x 546mm)	
BEZEL FEATURES	Black, control panel, three 5.25″ peripheral drive bays, four internal drive bays	Black, control panel, three 5.25″ peripheral drive bays, four internal drive bays, two USB ports	Black, control panel, three 5.25" peripheral drive bays, four hot-swap drive bays and carriers (behind door), security lock, two USB ports
FRONT CONNECTORS	Two USB 3.0 ports	2 x USB	
SYSTEM SECURITY	Protection for chassis drives with a lock to the chassis	Side cover: A padlock loop slot available at the rear of the system access cover to prevent access to the processors, memory, and add-in devices Side cover: Intrusion switch Back panel: Kensington* cable lock mounting hole	Front door: Security lock (available on hot-swap drive SKUs only) Side cover: A padlock loop slot available at the rear of the system access cover to prevent access to the processors, memory, and add-in devices Side cover: Intrusion switch Back panel: Kensington* cable lock mounting hole

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Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/products/server/chassis** or **ark.intel.com**

[1] Refer to http://support.intel.com/support/motherboards/server for up-to-date details on server boards supported by each chassis.

[2] For complete spare and accessory list, please download the latest configuration guide from Spare Parts list and Configuration Guide at http://support.intel.com/support/motherboards/server

[3] Intel® Server Chassis H2000 series requires the separate purchase of Intel® Compute Modules. See the Accessories and Spare Parts section of the chosen Intel® Server Board configuration guide for recommended part numbers.

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/products/server/chassis or ark.intel.com.

INTEL® STORAGE SYSTEMS

HIGH AVAILABILITY WITH FLEXIBILITY.

BUILT WITH INTEL QUALITY, RELIABILITY AND PERFORMANCE

Intel® Server Products are backed by Intel's design excellence and manufacturing expertise to deliver processing power with high levels of flexibility, manageability and reliability.

Intel® Product Quick Reference Matrix

Q4 2018

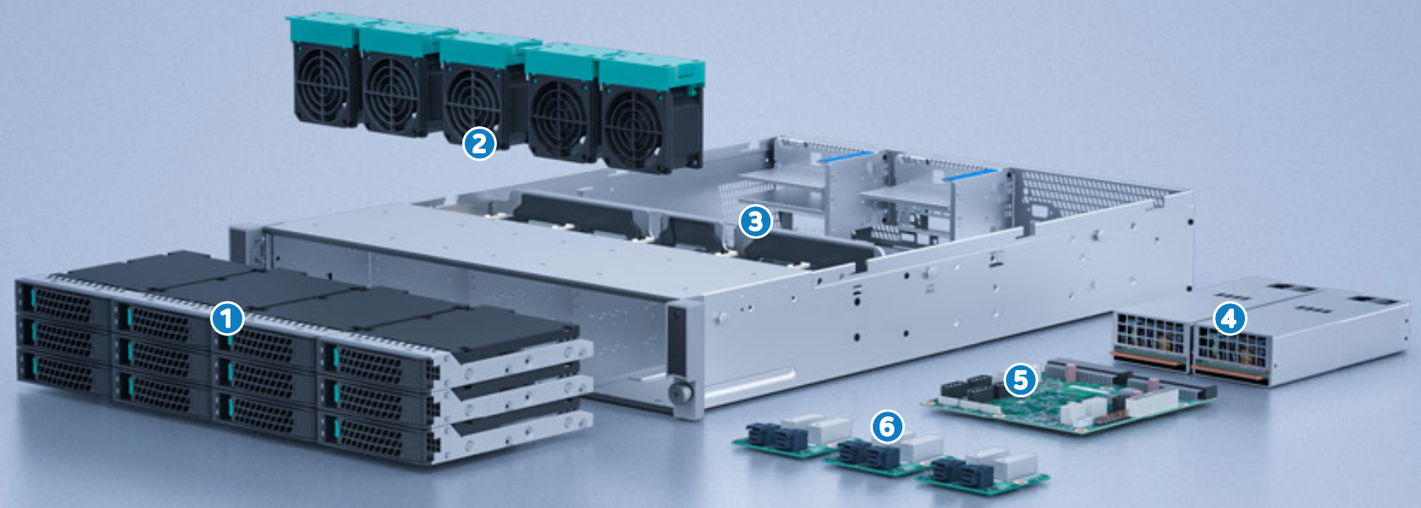
INTEL® STORAGE SYSTEM JBOD2312S3SP

Intel® JBOD2312S3SP

2U form factor storage system supporting
up to 48-TB 3.5-in. drives.

Key Features

- Options for single or redundant SAS/SATA 6G connectivity via SFF-8088
- Fan and PSU monitoring and notification via SES
- Redundant power and cooling
- Less than 25-inch deep chassis (3.44 inches by 16.93 inches by 24.95 inches)
- Allows for multiple levels of cascading — multiple JBOD's can be connected in a chained sequence
- Dual-port backplane offering full redundancy
- Options to support up to 48-TB storage capacity



1	12 x 3.5-in. drives	**2**	Redundant cooling with monitoring and notification via SES	**3**	Redundant power with monitoring and notification via SES
4	Power distribution board	**5**	SAS 3.0 Converter	**6**	SAS Expanders with optional redundant configuration

Systems do not include processors.

Intel® Storage System JBOD2000 Product Family

The Intel® Storage System JBOD2000 product family works seamlessly with Intel® Server Systems and Intel® RAID and can even be used as a virtual RBOD by using Intel® RAID Controller RS25SB008 or an Intel® Intelligent RAID module. Combine with Intel® Solid State Drives using Intel® SSD Cache Technology, or set up a network using a SAS switch to serve multiple servers. With several configuration options available, it is a flexible and expandable storage system that simplifies your server environment.

DESCRIPTION	A flexible and expandable storage system with single- and multi-cable connectivity, redundant fans, and options for redundant power supplies simplifies your server configuration. Features 12 x 3.5" drives or 24 x 2.5" drives and works seamlessly with Intel® Server Systems and Intel® RAID for a complementary storage solution. Up to 48 TB storage capacity possible. Cascading up to 2 levels. (Extended life product.)
TARGET MARKET	Enterprise / storage

2U RACK SYSTEMS

Dimensions (H x W x D)	3.44" x 16.93" x 27.95"
System Cooling	Redundant cooling fans
Power Supply	460 W Redundant PSU (Gold Efficiency)
Other Components	Dual-port backplane for full redundancy Fan and PSU monitoring via SES
Warranty	3 year limited warranty, optional 2 year extended warranty available

SPECIFIC SKUs

JBOD2312S3SP	12 x 3.5" hot-swap HDD 2 x 36-port SAS expander 2 x 460 W AC PSU Single SAS/SATA 12.0 Gb/s 4 x external SFF-8088 connectors

For the latest product SKUs and specifications, visit **http://ark.intel.com**
For more information, visit **www.intel.com/go/serverproducts**

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INTEL® RAID

EXCEPTIONAL DATA PROTECTION. FASTER PERFORMANCE. EASE OF USE.

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® TRI-MODE GENERATION RAID PRODUCTS

The Intel® Tri-Mode RAID controllers, featuring LSI* SAS3500/SAS3400 series RAID-on-Chip (ROC) processors, offer significant performance enhancements for solutions architected with SAS, SATA, and PCIe* 3.0 NVMe* drives.

INTEL® RAID EXPANDER BOARDS

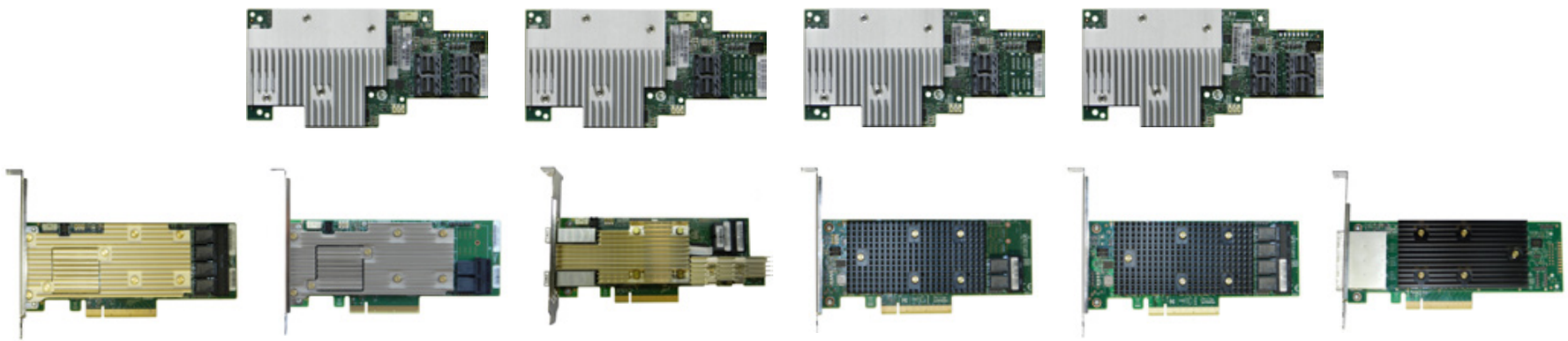
For high drive count solutions, Intel offers 12Gb/s SAS expander boards (available in midplane and add-in card form factors) and PCIe 3.0 switches and retimers.

INTEL® RAID PREMIUM FEATURES

Get more performance and data protection with Premium Features for Intel® RAID solutions. When combined with Intel® RAID controllers, you can further enhance storage applications and deliver higher ROI for your server boards and systems.

Tailor a Solution to Match Your Storage Needs

Intel offers multiple categories of RAID products to protect data, increase performance, scale storage, and enhance server availability. A brief description of each category is listed below.



Controller Cards and Modules

- Intel® RAID Modules are designed for select 2U Intel® Xeon® Processor-based server solutions, affording up to 16 ports of PCIe*/SAS/SATA connectivity without taking up a standard add-in card PCIe* slot, for a highly integrated configuration.
- Intel® RAID Adapters come in a low-profile MD2 standard PCIe* form-factor, and are PCIe* compliant for flexibility of configuration and use in any system by any vendor.

RAID Cache Backup

- Maintenance Free Backup Units (MFBUs) are available for Full-Featured RAID products with embedded cache. The backup options are listed in the “Backup Option” row of the product tables.

Expander Boards

- Intel® RAID Expander Cards are intended for any system with more than 8 drives. As an example of use, 8 RAID ports can be expanded to 24 ports.

Premium Feature Keys

- Several upgrade features can be added to enhance the performance and data protection of Intel’s intelligent RAID cards and modules.

Cable Kits and Converter Boards

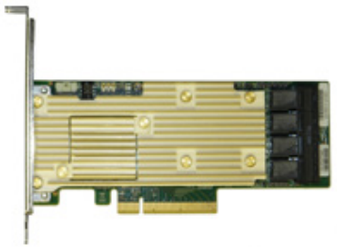
- Newer-generation RAID products do not ship with cables, as multiple options exist depending on the system in which the RAID products are installed. Therefore, Intel offers a variety of cables. A converter board that allows for two internal 8087 connectors to be converted to two external 8088 connectors is also available.

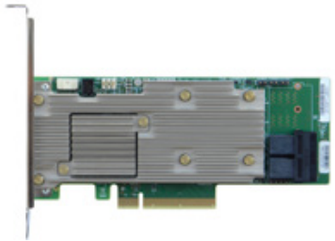
For the latest product SKUs and specifications, visit **http://ark.intel.com**

Intel® Integrated RAID Modules (Tri-Mode)

CONTROLLER	INTEL® INTEGRATED RAID MODULE RMSP3AD160F	INTEL® INTEGRATED RAID MODULE RMSP3CD080F	INTEL® INTEGRATED RAID MODULE RMSP3HD080E	INTEL® INTEGRATED RAID MODULE RMSP3JD160J
DESCRIPTION	Tri-Mode SAS/SATA/PCIe* full-featured RAID mezzanine module with 16 internal ports using four Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe full-featured RAID mezzanine module with eight internal ports using two Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe entry-level RAID mezzanine module with eight internal ports using two Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe JBOD mezzanine module with 16 internal ports using four Mini-SAS-HD connectors
MARKET SEGMENT	Full-featured RAID	Full-featured RAID	Entry-level RAID	JBOD
ORDER CODE	**RMSP3AD160F**	**RMSP3CD080F**	**RMSP3HD080E**	**RMSP3JD160J**
PROCESSOR	**LSI 3516**	**LSI 3508**	**LSI 3408**	**LSI 3416**
ONBOARD CACHE MEMORY	4GB DDR4	4GB DDR4	N/A	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8	PCI Express 3.0 x8	PCI Express 3.0 x8
PORTS	16 Internal ports	8 Internal ports	8 Internal ports	16 Internal ports
CHASSIS COMPATIBILITY	Mezzanine-capable motherboard in 2U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis
RAID LEVELS	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50 and JBOD mode	JBOD mode only
CACHE BACKUP OPTIONS	AXXRMFBU7	AXXRMFBU7	N/A	N/A
CABLES	Purchased separately	Purchased separately	Purchased separately	Purchased separately
INTEL® SERVER BOARD SUPPORT	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector
AVAILABILITY	Q2 2017	Q2 2017	Q2 2017	Q2 2017
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty	3 year limited warranty

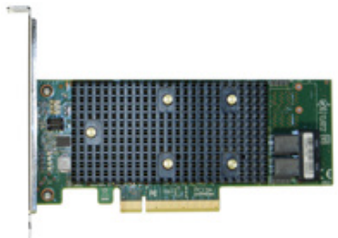
Intel® RAID Controllers (Tri-Mode) - Full-Featured

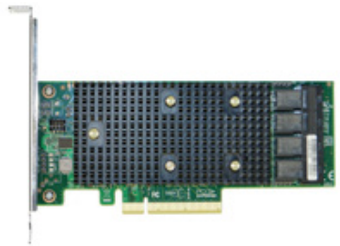




CONTROLLER	INTEL® INTEGRATED RAID MODULE RMSP3AD160F	INTEL® INTEGRATED RAID MODULE RMSP3CD080F	INTEL® INTEGRATED RAID MODULE RMSP3HD080E
DESCRIPTION	Tri-Mode SAS/SATA/PCIe* full-featured RAID mezzanine module with 16 internal ports using four Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe full-featured RAID mezzanine module with eight internal ports using two Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe entry-level RAID mezzanine module with eight internal ports using two Mini-SAS-HD connectors
MARKET SEGMENT	Full-featured RAID	Full-featured RAID	Entry-level RAID
ORDER CODE	**RMSP3AD160F**	**RMSP3CD080F**	**RMSP3HD080E**
PROCESSOR	**LSI 3516**	**LSI 3508**	**LSI 3408**
ONBOARD CACHE MEMORY	4GB DDR4	4GB DDR4	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8	PCI Express 3.0 x8
PORTS	16 Internal ports	8 Internal ports	8 Internal ports
CHASSIS COMPATIBILITY	Mezzanine-capable motherboard in 2U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis
RAID LEVELS	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50 and JBOD mode
CACHE BACKUP OPTIONS	AXXRMFBU7	AXXRMFBU7	N/A
CABLES	Purchased separately	Purchased separately	Purchased separately
INTEL® SERVER BOARD SUPPORT	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector
AVAILABILITY	Q2 2017	Q2 2017	Q2 2017
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty

Intel® RAID Controllers (Tri-Mode) - Entry-Level and JBOD



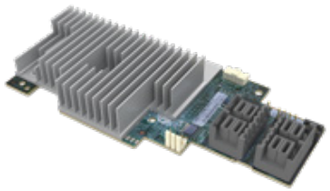


CONTROLLER	INTEL® RAID CONTROLLER RSP3WD080E	INTEL® INTEGRATED RAID MODULE RSP3QD160J	INTEL® INTEGRATED RAID MODULE RSP3GD016J
DESCRIPTION	Tri-Mode SAS/SATA/PCIe* entry-level RAID adapter with eight internal ports using two Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe entry-level JBOD adapter with 16 internal ports using four Mini-SAS-HD connectors	Tri-Mode SAS/SATA/PCIe entry-level JBOD adapter with 16 external ports using four external Mini-SAS-HD connectors
MARKET SEGMENT	Entry-level RAID	JBOD	JBOD
ORDER CODE	**RSP3WD080E**	**RSP3QD160J**	**RSP3GD016J**
PROCESSOR	**LSI* 3408**	**LSI 3416**	**LSI 3416**
ONBOARD CACHE MEMORY	N/A	N/A	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8	PCI Express 3.0 x8
PORTS	8 Internal ports	16 Internal ports	8 External ports
CHASSIS COMPATIBILITY	MD2 compliant PCIe x8	MD2 compliant PCIe x8	MD2 compliant PCIe x8
RAID LEVELS	0, 1, 10, 5, 50 and JBOD mode	JBOD only mode	JBOD only mode
CACHE BACKUP OPTIONS	N/A	N/A	N/A
CABLES	Purchased separately	Purchased separately	Purchased separately
INTEL® SERVER BOARD SUPPORT	Intel® Server boards + third party boards	Intel® Server boards + third party boards	Intel® Server boards + third party boards
AVAILABILITY	Q2 2017	Q2 2017	Q2 2017
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty

Intel® Integrated RAID Modules (12Gb/s SAS 3.0)

CONTROLLER	INTEL® INTEGRATED RAID MODULE RMS3CC080	INTEL® INTEGRATED RAID MODULE RMS3CC040	INTEL® INTEGRATED RAID MODULE RMS3HC080	INTEL® INTEGRATED RAID MODULE RMS3JC080
DESCRIPTION	12 Gb/s SAS/SATA full-featured RAID mezzanine module with eight internal connectors and a storage I/O connector	12 Gb/s SAS/SATA full-featured RAID mezzanine module with four internal connectors and a storage I/O connector	12 Gb/s SAS/SATA entry-level RAID mezzanine module with eight internal ports and a storage I/O connector	12 Gb/s SAS/SATA entry-level RAID mezzanine module with eight internal ports and a storage I/O connector
MARKET SEGMENT	Full-featured RAID	Full-featured RAID	Entry-level RAID	Entry-level RAID
ORDER CODE	**RMS3CC080**	**RMS3CC040**	**RMS3HC080**	**RMS3JC080**
PROCESSOR	**LSI* 3108 ROC**	**LSI* 3108 ROC**	**LSI* 3008 IOC**	**LSI* 3008 IOC**
ONBOARD CACHE MEMORY	1 GB DDR3	1 GB DDR3	N/A	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express* 3.0 x8	PCI Express* 3.0 x8	PCI Express* 3.0 x8
PORTS	8 Internal ports	4 Internal ports	8 Internal ports	8 Internal ports
CHASSIS COMPATIBILITY	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis
RAID LEVELS	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50 and JBOD mode	0, 1, 1E, 10 and JBOD mode
CACHE BACKUP OPTIONS	AXXRMFBU5	AXXRMFBU5	N/A	N/A
CABLES	Purchased separately	Purchased separately	Purchased separately	Purchased separately
INTEL® SERVER BOARD SUPPORT	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty	3 year limited warranty

Intel® Integrated RAID Modules (12Gb/s SAS 3.0) - High Port Count



CONTROLLER	INTEL® INTEGRATED RAID MODULE RMS3AC160	INTEL® INTEGRATED RAID MODULE RMS3VC160
DESCRIPTION	A 12 Gb/s SAS/SATA full-featured RAID mezzanine module with 16 internal ports and dual core RAID-On-Chip (ROC)	A 12 Gb/s SAS/SATA JBOD mezzanine module with sixteen internal ports and dual core RAID-On-Chip (ROC)
MARKET SEGMENT	Full-featured RAID	Full-featured RAID
ORDER CODE	**RMS3AC160**	**RMS3VC160**
PROCESSOR	**LSI* 3316 ROC**	**LSI* 3216 ROC**
ONBOARD CACHE MEMORY	2 GB DDR3	NA
PCI E* INTERFACE	PCI Express 3.0 x8	PCI Express 3.0 x8
PORTS	16 internal ports	16 internal ports
CHASSIS COMPATIBILITY	Mezzanine-capable motherboard in 2U (or greater) chassis	Mezzanine-capable motherboard in 1U (or greater) chassis
RAID LEVELS	0, 1, 10, 5, 50, 6, 60	N/A (JBOD mode only)
CACHE BACKUP OPTIONS	AXXRMFBU6	NA
CABLES	Purchased separately	Purchased separately
INTEL® SERVER BOARD SUPPORT	Select Intel® Xeon® server boards with a storage I/O module connector	Select Intel® Xeon® server boards with a storage I/O module connector
WARRANTY	3 year limited warranty	3 year limited warranty

Intel® RAID Controllers (12Gb/s SAS 3.0) - Full-Featured

CONTROLLER	INTEL® RAID CONTROLLER RS3DC080	INTEL® RAID CONTROLLER RS3DC040	INTEL® RAID CONTROLLER RS3SC008
DESCRIPTION	A 12 Gb/s SAS/SATA full-featured RAID adapter (PCIe* AIC) with 8 internal ports	A 12 Gb/s SAS/SATA full-featured RAID adapter (PCIe* AIC) with 4 internal ports	A12 Gb/s SAS/SATA full-featured RAID adapter (PCIe AIC) with 8 external ports
MARKET SEGMENT	Full-featured RAID	Full-featured RAID	Full-featured RAID
ORDER CODE	**RS3DC080**	**RS3DC040**	**RS3SC008**
PROCESSOR	**LSI* SAS3108 ROC**	**LSI* SAS3108 ROC**	**LSI* SAS3108 ROC**
ONBOARD CACHE MEMORY	1GB DDR3	1GB DDR3	1GB DDR3
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8	PCI Express 3.0 x8
PORTS	8 Internal ports	4 Internal ports	8 External ports
CHASSIS COMPATIBILITY	MD2 compliant PCIe x8	MD2 compliant PCIe x8	MD2 compliant PCIe x8
RAID LEVELS	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60	0, 1, 10, 5, 50, 6, 60
CACHE BACKUP OPTIONS	AXXRMFBU4	AXXRMFBU4	AXXRMFBU4
CABLES	Purchased separately	Purchased separately	Purchased separately
WARRANTY	3 year limited warranty	3 year limited warranty	3 year limited warranty

Intel® RAID Controllers (12Gb/s SAS 3.0) – Entry Level

CONTROLLER	INTEL® RAID CONTROLLER RS3WC080	INTEL® RAID CONTROLLER RS3UC080
DESCRIPTION	A 12 Gb/s SAS/SATA entry-level RAID adapter (PCIe AIC) with 8 internal ports	A 12 Gb/s SAS/SATA entry-level RAID Adapter (PCIe AIC) with 8 internal ports
MARKET SEGMENT	Entry-level	Entry-level
ORDER CODE	**RS3WC080**	**RS3UC080**
PROCESSOR	**LSI* SAS3008 IOC**	**LSI* SAS3008 IOC**
ONBOARD CACHE MEMORY	N/A	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8
PORTS	8 Internal ports	8 Internal ports
CHASSIS COMPATIBILITY	MD2 compliant PCIe x8	MD2 compliant PCIe x8
RAID LEVELS	0, 1, 10, 5, 50 and JBOD mode	0, 1, 1E, 10 and JBOD mode
CACHE BACKUP OPTIONS	N/A	N/A
CABLES	Purchased separately	Purchased separately
WARRANTY	3 year limited warranty	3 year limited warranty

Intel® Storage Controllers (12Gb/s SAS 3.0) - JBOD Only

CONTROLLER	INTEL® RAID CONTROLLER RS3GC008	INTEL® RAID CONTROLLER RS3UC080J
DESCRIPTION	A 12 Gb/s SAS/SATA JBOD Adapter (PCIe AIC) with 8 external ports	A 12 Gb/s SAS/SATA JBOD Adapter (PCIe AIC) with 8 internal ports
MARKET SEGMENT	JBOD	JBOD
ORDER CODE	**RS3GC008**	**RS3UC080J**
PROCESSOR	**LSI* SAS3008**	**LSI* SAS3008**
ONBOARD CACHE MEMORY	N/A	N/A
PCI E* INTERFACE	PCI Express* 3.0 x8	PCI Express 3.0 x8
PORTS	8 External ports	8 Internal ports
CHASSIS COMPATIBILITY	MD2 compliant PCIe x8	MD2 compliant PCIe x8
RAID LEVELS	JBOD mode (SAS Connectivity)	JBOD mode (SAS Connectivity)
CACHE BACKUP OPTIONS	N/A	N/A
CABLES	Purchased separately	Purchased separately
WARRANTY	3 year limited warranty	3 year limited warranty

Intel® VROC – Virtual RAID on CPU

Intel® VROC is available on Intel® Server Board S2600WF, S2600BP, and S2600ST family boards. It enables RAID levels 0, 1, 10 (Standard) and 5 (Premium) with no RAID write hole. Intel® VROC boasts high IOPS and low latency.

ACTIVATION KEY	PRODUCT NAME	SKU STORAGE FUNCTIONALITY
VROCSTANMOD	Intel® Virtual RAID on CPU (Standard)	Activation key to support 3rd party NVMe SSDs and enable RAID (0, 1, 10) functionality
VROCPREMMOD	Intel® Virtual RAID on CPU (Premium)	Activation key to support 3rd party NVMe SSDs and enable Intel® VROC Premium, RAID 0,1,5,10 with RAID Write Hole Closure
VROCISSDMOD	Intel® Virtual RAID on CPU (Premium)	Activation key to support 3rd party NVMe SSDs and enable Intel® VROC Premium, RAID 0,1,5,10 with RAID Write Hole Closure (for use with Intel® SSD's only)

Intel® RAID Expanders (12 Gb/s SAS 3.0)

EXPANDER BOARD	INTEL® RAID EXPANDER RES3FV288	INTEL® RAID EXPANDER RES3TV360
DESCRIPTION	12 Gb/s SAS/SATA expander adapter (PCIe AIC) with 28 internal ports and 8 external ports	12 Gb/s SAS/SATA Expander Midplane Board with 36-ports
ORDER CODE	**RES3FV288**	**RES3TV360**
PCI E* INTERFACE	PCIe x4 (for Power Only)	N/A
PORTS	28 Internal ports / 8 External ports	36 Internal ports
CHASSIS COMPATIBILITY	MD2 compliant PCIe* x4 or chassis mount	2U (or greater) system; requires chassis mount
POWER OPTIONS FOR EXPANDERS	PCIe x4 or 4-pin Molex	4-pin Molex
MANAGEMENT	SGPIO	SGPIO
FAULT LED HEADERS	Includes 2 pin headers to support each SAS port	Includes 2 pin headers to support each SAS port
WARRANTY	3 year limited warranty	3 year limited warranty

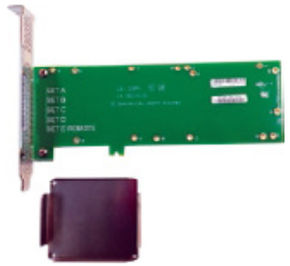
Intel® RAID Premium Features

These features are available as an upgrade for all LSI* SAS2208 and SAS3108 processor-based Intel® RAID products. To identify products with these processors, please refer to the Processor row of the preceding feature tables. The Premium Feature Keys are described below.

PREMIUM FEATURE	SSD CACHE 2 – 12G SAS only	DRIVE ENCRYPTION MANAGEMENT – 12G SAS and Tri-Mode
Key Benefits	SSD Cache allows Solid State Drives (SSD) to be utilized as additional cache for the RAID controller. Frequently accessed information is stored in the cache, allowing rapid access.	Drive encryption management enables authentication key management, auto-lock, and instant erase of self-encrypting drives (SED).
	SSD Cache capacity of up to 2 TB possible for SAS3108-based products.	All drives eventually leave the data center and the use of SEDs helps reduce risk of data breaches.
	SSD partitioning so that a portion of the drive is available to the operating system and the remainder for cache.	Instant-erase significantly reduces the cost and time of repurposing or retiring drives.
Order Code	AXXRPFKSSD2	AXXRPFKDE2

Mounting Brackets

MOUNTING BRACKET	ORDER CODE	DESCRIPTION	INTERNAL CONNECTORS	EXTERNAL CONNECTORS
Intel® RAID Battery Remote Mounting Bracket	AXXBBUBRKTP	A mounting bracket that fits in a low-profile PCI Express* slot and holds two RAID batteries or Maintenance Free Backup Units.	None	None



Cable Kits and Converter Boards

The following cables are available for connecting Intel® RAID cards and modules to storage devices and drive bays. Intel® cables are designed to a high-quality specification and include the ability to bend at a very small radii. These cables allow low-profile Intel RAID products with vertical 8087 connectors to be used in 2U rack chassis while installed in a standard PCI Express* slot. Intel offers many other cable kits that help optimize the integration of RAID products into specific Intel® Server Systems. For a list of these cables, refer to the Server Board and System Configuration Guide available on the support web site for each given Intel Server System.

CABLE KIT ORDER CODE	NUMBER OF CABLES INCLUDED IN KIT	INITIATOR CONNECTOR	TARGET CONNECTOR	LENGTH
AXXCBL650HDMS	2	HD mini-SAS straight[1]	8087 mini-SAS straight[1]	650mm
AXXCBL730HDMS	2	HD mini-SAS straight[1]	8087 mini-SAS straight[1]	730mm
AXXCBL750MS7P	2	8087 mini-SAS straight[1]	Four x 7-pin SATA style	750mm
AXXCBL650MSMS	2	8087 mini-SAS straight[1]	8087 mini-SAS straight[1]	650mm

[1] Cable is reversible so that either connector can be on the target or initiator side. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For the latest product SKUs and specifications, visit **http://ark.intel.com**

INTEL® ETHERNET SERVER ADAPTERS

INTEL®
ETHERNET.
IT JUST
WORKS.

Intel® Product Quick Reference Matrix
Q4 2018

WHY INTEL® ETHERNET?

Driving continuous innovation for more than 35 years, Intel® Ethernet products deliver a reliable out-of-the-box experience, and proven interoperability for your current and future networking infrastructure.

INTEL® ETHERNET SERVER ADAPTERS

Intel® Ethernet. It Just Works.

WHY INTEL® ETHERNET?

Driving continuous innovation for more than 35 years, Intel® Ethernet products deliver a reliable out-of-the-box experience, and proven interoperability for your current and future networking infrastructure.

High Compatibility and Broad Interoperability

- Fully tested network adapters and accessories (optics and cables)
- Hardware and software is thoroughly validated across server and networking ecosystem
- Supports a broad selection of operating systems

Ease of Use

- Works out of the box
- Automatic and highly optimized configuration setups
- Delivers the right traffic to the right VM with 128 perfect match filters

Performance Assurance

- Optimized for Intel® architecture and broad OSV ecosystem
- Scales with CPU technology, leverages intelligent hardware offloads, network virtualization, and fast packet processing via Data Plane Development Kit (DPDK)

Worldwide product support

- World-class pre- and post-sales support provide convenient accessibility to customers
- Adheres to global regulatory, environmental, and market requirements
- Long product lifecycle support

Broad Product Selection and Accessories

- Supports all speeds (1/10/25/40GbE) and media types (BASE-T, Fiber, SFP+, QSFP+, SFP28, QSFP28, KR, XAUI, CAUI)
- Available in many different form factors: discrete controller, Intel® SoCs, and add-in cards (PCIe*, OCP, and custom form factors)

INTEL® ETHERNET 700 SERIES NETWORK ADAPTERS

Accelerate the delivery of new services and capabilities by increasing the speed and efficiency of your network infrastructure. The Intel® Ethernet 700 Series is the foundation for server connectivity, providing broad interoperability, critical performance optimizations, and increased agility for Telecommunications, Cloud, and the Data Center.

- **Interoperability** - Multiple speeds and media types for broad compatibility backed by extensive testing and validation.
- **Optimization** - Intelligent offloads and accelerators to unlock network performance in servers with Intel® Xeon® processors.
- **Agility** - Both kernel and Data Plane Development Kit (DPDK) drivers for scalable packet processing.

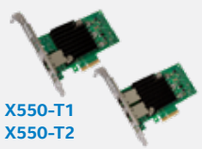
PRODUCT	CONNECTOR & CABLE MEDIUM	CABLING TYPE	INTEL® ETHERNET CONTROLLER	SLOT TYPE, MAXIMUM BUS SPEED & BUS WIDTH	BUS SPEED & BUS WIDTH CONNECTION SPEED	PORTS	SUPPORTED SLOT HEIGHTS	ADVANCED FEATURES	STORAGE OVER ETHERNET	ORDER CODES
 XXV710-DA1 XXV710-DA2	SFP28 Direct Attach Copper Twinaxial SFP28 LC Fiber Optic Module	Direct Attach Passive Twinaxial 25GbE: up to 5m with RS-FEC, up to 3m with no FEC Direct Attach Passive Twinaxial 10 GbE: up to 15m Multimode Fiber: up to 70m (OM3), up to 100m (OM4) Single-mode Fiber: up to 10km	XL710	PCI Express* v 3.0 8.0 GT/s, x8 Lanes	1 GbE / 10 GbE / 25 GbE	Single and Dual Port	Low Profile and Full Height	Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, NFS, SMB	XXV710DA1, XXV710DA1BLK, XXV710DA2, XXV710DA2BLK
 X710-DA2 X710-DA4FHBLK	SFP+ Direct Attach Copper Twinaxial SFP+ LC Fiber Optic Module	Direct Attach Passive Twinaxial: up to 15m Multimode Fiber: up to 300m (OM3), up to 400m (OM4) Single-mode Fiber: up to 10km	X710	PCI Express* v 3.0 8.0 GT/s, x8 Lanes	1 GbE / 10 GbE	Dual and Quad Port	Low Profile (DA2 only) and Full Height	Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, NFS, SMB	X710DA2, X710DA2BLK, X710DA4FH, X710DA4FHBLK
 XL710-QDA1 XL710-QDA2	QSFP+ Direct Attach Copper Twinaxial QSFP+ Fiber Optic Module	Direct Attach Passive Twinaxial: up to 7m Multimode Fiber: up to 100m (OM3), up to 150m (OM4) Single-mode Fiber: up to 10km	XL710	PCI Express* v 3.0 8.0 GT/s, x8 Lanes	10 GbE / 40 GbE	Single and Dual Port	Low Profile and Full Height	Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, NFS, SMB	XL710QDA1, XL710QDA1BLK, XL710QDA2, XL710QDA2BLK
 X710-T4	RJ45 Copper Twisted-pair	Category 6: up to 55m Category 6A or better: up to 100m	XL710	PCI Express* v 3.0 8.0 GT/s, x8 Lanes	100 Mb / 1 GbE / 10 GbE	Quad Port	Low Profile and Full Height	Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, NFS, SMB	X710T4, X710T4BLK
 X722-DA2 X722-DA4	SFP+ Direct Attach Copper Twinaxial SFP+ LC Fiber Optic Module	Direct Attach Passive Twinaxial: up to 15m Multimode Fiber: up to 300m (OM3), up to 400m (OM4) Single-mode Fiber: up to 10km	X710	PCI Express* v 3.0 8.0 GT/s, x8 Lanes	1 GbE / 10 GbE	Dual and Quad Port	Low Profile (DA2 only) and Full Height	iWARP/RDMA Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, NFS, SMB	X722DA2, X722DA4FH

[1] Learn more about DPDK at intel.com/dpdk
All Intel® Ethernet 700 Series and 500 Series Network Adapters include intelligent offloads, are optimized for Data Plane Development Kit (DPDK) and Intel® Ethernet Flow Director, and include these server virtualization attributes: on-chip QoS and traffic management, Flexible Port Partitioning, Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable.

INTEL® ETHERNET 500 SERIES NETWORK ADAPTERS

The best choice for 10GBASE-T, the Intel® Ethernet 500 Series is a backward compatible with existing 1000BASE-T networks, simplifying the transition to 10GbE when more bandwidth is needed.

- Supports 100Mb, and 1/2.5/5/10GBASE-T
- Low cost, low power
- Optimized for network virtualization overlays

PRODUCT	CONNECTOR & CABLE MEDIUM	CABLING TYPE	INTEL® ETHERNET CONTROLLER	SLOT TYPE, MAXIMUM BUS SPEED & BUS WIDTH	BUS SPEED & BUS WIDTH CONNECTION SPEED	PORTS	SUPPORTED SLOT HEIGHTS	NETWORK VIRTUALIZATION ACCELERATION	STORAGE OVER ETHERNET	ORDER CODES
 X550-T1 X550-T2	RJ45 Copper Twisted-pair	Category 6: up to 55m (10 GbE); Category 6A or better: up to 100m (10 GbE); Category 5 or better: up to 100m (1 GbE / 2.5 GbE / 5 GbE)	X550	PCI Express* v3.0 8.0 GT/s, x4 Lanes Operable in x8 and x16 slots	100 Mb / 1 GbE / 2.5 GbE / 5 GbE / 10 GbE	Single and Dual Port	Low Profile and Full Height	Multi-Queue and Stateless Offloads for NVO, such as VXLAN, NVGRE, and GENEVE Enhanced DPDK packet-processing support[1]	iSCSI, FCoE,[2] NFS, SMB	X550T1, X550T1BLK; X550T2, X550T2BLK
 X540-T1 X540-T2	RJ45 Copper Twisted-pair	Category 6: up to 55m (10 GbE); Category 6A or better: up to 100m (10 GbE); Category 5 or better: up to 100m (1 GbE)	X540	PCI Express* v2.1 5.0 GT/s, x8 Lanes	100 Mb / 1 GbE / 10 GbE	Single and Dual Port	Low Profile and Full Height	RSS for UDP for VXLAN Enhanced DPDK packet-processing support[1]	iSCSI, FCoE,[2] NFS, SMB	X540T1, X540T1BLK; X540T2, X540T2BLK
 X520-DA2	SFP+ Direct Attach Copper Twinaxial SFP+ LC Fiber Optic Module	Direct Attach Passive Twinaxial: up to 15m; Multimode Fiber: up to 300m (OM3), up to 400m (OM4); Single-mode Fiber: up to 10km	82599ES	PCI Express* v2.0 5.0 GT/s, x8 Lanes	1 GbE / 10 GbE	Dual Port	Low Profile and Full Height	RSS for UDP for VXLAN Enhanced DPDK packet-processing support[1]	iSCSI, FCoE,[2] NFS, SMB	E10G42BTDA, E10G42BTDABLK
 X520-SR1 X520-SR2	LC Fiber Optic *Customer may remove optics as needed.*	Multimode Fiber: up to 300m (OM3), up to 400m (OM4)	82599ES	PCI Express* v2.0 5.0 GT/s, x8 Lanes	1 GbE / 10 GbE	Single and Dual Port	Low Profile and Full Height	RSS for UDP for VXLAN Enhanced DPDK packet-processing support[1]	iSCSI, FCoE,[2] NFS, SMB	E10G41BFSR, E10G41BFSRBLK; E10G42BFSR, E10G42BFSRBLK
 X520-LR1	LC Fiber Optic *Customer may remove optics as needed.*	Single-mode Fiber: up to 10km	82599ES	PCI Express* v2.0 5.0 GT/s, x8 Lanes	1 GbE / 10 GbE	Single Port	Low Profile and Full Height	RSS for UDP for VXLAN Enhanced DPDK packet-processing support[1]	iSCSI, FCoE,[2] NFS, SMB	E10G41BFLR, E10G41BFLRBLK

[1] Learn more about DPDK at intel.com/dpdk

[2] Support for new operating systems will not be added to FCoE. The last operating system versions supporting FCoE are: Microsoft Windows Server* 2012 R2, Red Hat Enterprise Linux* 7.2 & 6.7, SUSE Linux Enterprise Server 11 SP4, 12 SP1; VMware ESX* 6.0

All Intel® Ethernet 700 Series and 500 Series Network Adapters include intelligent offloads, are optimized for Data Plane Development Kit (DPDK) and Intel® Ethernet Flow Director, and include these server virtualization attributes: on-chip QoS and traffic management, Flexible Port Partitioning, Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable.

INTEL® ETHERNET OPTICS AND CABLES FOR INTEL® ETHERNET 700 SERIES AND 500 SERIES NETWORK ADAPTERS

Combine these accessories with Intel Ethernet 700 Series and 500 Series Network Adapters, for dependable interoperability and consistent performance across the network.

INTEL® ETHERNET SFP+ OPTICS	INTEL® ETHERNET SFP+ TWINAXIAL CABLES	INTEL® ETHERNET QSFP+ OPTICS	INTEL® ETHERNET QSFP+ TWINAXIAL CABLES	INTEL® ETHERNET QSFP+ TWINAXIAL BREAKOUT CABLES
E10GSFPSR = SFP+ SR Optic E10GSFPSRX = SFP+ SR Optic (Extended Temp) E10GSFPLR = SFP+ LR Optic E10GSFPLRX = SFP+ LR Optic (Extended Temp)	SFP+ to SPF+ copper direct attach cable XDACBL1M = 1 Meter XDACBL3M = 3 Meter XDACBL5M = 5 Meter	E40GQSFPSR = QSFP+ SR Optic E40GQSFPLR = QSFP+ LR Optic	QSFP+ to QSFP+ copper direct attach cable XLDACBL1M = 1 Meter XLDACBL3M = 3 Meter XLDACBL5M = 5 Meter	QSFP+ to (4) SFP+ copper direct attach breakout cable X4DACBL1 = 1 Meter X4DACBL3 = 3 Meter X4DACBL5 = 5 Meter

INTEL® ETHERNET SFP28 OPTICS	INTEL® ETHERNET SFP28 TWINAXIAL CABLES	INTEL® ETHERNET QSFP28 TO SFP28 TWINAXIAL BREAKOUT CABLES	INTEL® ETHERNET ACTIVE OPTICAL CABLE SFP28	INTEL® ETHERNET ACTIVE OPTICAL CABLE QSFP28 TO SFP28 BREAKOUT
E25GSFP28SR = SFP28 SR Optic E25GSFP28SRX = SFP28 SR Optic (extended temp)	SFP28 to SFP28 copper direct attach cable XXVDACBL1M = 1 Meter XXVDACBL2M = 2 Meter XXVDACBL3M = 3 Meter	QSFP28 to (4) SFP+ copper direct attach breakout cable XXV4DACBL1M = 1 Meter XXV4DACBL2M = 2 Meter XXV4DACBL3M = 3 Meter	XXVAOC5M = 5 Meter XXVAOC10M = 10 Meter XXVAOC15M = 15 Meter XXVAOC20M = 20 Meter	XXV4AOC5M = 5 Meter XXV4AOC10M = 10 Meter XXV4AOC15M = 15 Meter XXV4AOC20M = 20 Meter

1GB INTEL® ETHERNET NETWORK ADAPTERS

PRODUCT	CONNECTOR & CABLE MEDIUM	CABLING TYPE	INTEL® ETHERNET CONTROLLER	SLOT TYPE, MAXIMUM BUS SPEED & BUS WIDTH	PORTS	SUPPORTED SLOT HEIGHTS	HALOGEN FREE	INTELLIGENT OFFLOADS	NETWORK VIRTUALIZATION TECHNOLOGY FOR CONNECTIVITY	STORAGE OVER ETHERNET	INTEL ETHERNET POWER MANAGEMENT[1]	ORDER CODES
 I210-T1	RJ45 Copper Twisted-pair	Category 5 or better: up to 100m	I210	PCI Express* v2.1 2.5 GT/s, x1 Lane	Single Port	Low Profile and Full Height	Yes	Yes	Includes Audio-Video Bridging (AVB) support 802.1Qav)	iSCSI, NFS, SMB	Yes	I210T1 I210T1BLK
 I350-T4	RJ45 Copper Twisted-pair	Category 5 or better: up to 100m	I350	PCI Express* v2.1 5 GT/s, x4 Lanes	Quad Port	Low Profile and Full Height	Yes	Yes	On-chip QoS and traffic management, Flexible Port Partitioning (FPP), Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable	iSCSI, NFS, SMB	Yes	I350T4V2
 I350-T2	RJ45 Copper Twisted-pair	Category 5 or better: up to 100m	I350	PCI Express* v2.1 5 GT/s, x4 Lanes	Dual Port	Low Profile and Full Height	Yes	Yes	On-chip QoS and traffic management, Flexible Port Partitioning (FPP), Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable	iSCSI, NFS, SMB	Yes	I350T2V2
 I350-F2	LC Fiber Optic	Multimode Fiber OM1 (62.5 µm): up to 275m Multimode Fiber OM2 or better (50 µm): up to 550m	I350	PCI Express* v2.1 5 GT/s, x4 Lanes	Dual Port	Low Profile and Full Height	N/A	Yes	On-chip QoS and traffic management, Flexible Port Partitioning (FPP), Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable	iSCSI, NFS, SMB	Yes	I350F2 I350F2BLK
 I350-F4	LC Fiber Optic	Multimode Fiber OM1 (62.5 µm): up to 275m Multimode Fiber OM2 or better (50 µm): up to 550m	I350	PCI Express* v2.1 5 GT/s, x4 Lanes	Quad Port	Full Height	N/A	Yes	On-chip QoS and traffic management, Flexible Port Partitioning (FPP), Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable	iSCSI, NFS, SMB	Yes	I350F4 I350F4BLK
 I340-F4	LC Fiber Optic	Multimode Fiber OM1 (62.5 µm): up to 275m Multimode Fiber OM2 or better (50 µm): up to 550m	82580	PCI Express* v2.1 5 GT/s, x4 Lanes	Quad Port	Full Height	N/A	Yes	On-chip QoS and traffic management, Flexible Port Partitioning (FPP), Virtual Machine Device Queues (VMDq)	iSCSI, NFS, SMB	N/A	E1G44HF

[1] Learn more about DPDK at intel.com/dpdk
All Intel® Ethernet 700 Series and 500 Series Network Adapters include intelligent offloads, are optimized for Data Plane Development Kit (DPDK) and Intel® Ethernet Flow Director, and include these server virtualization attributes: on-chip QoS and traffic management, Flexible Port Partitioning, Virtual Machine Device Queues (VMDq), PCI-SIG* SR-IOV capable.

INTEL® SERVER MANAGEMENT

Intel® Product Quick Reference Matrix

Q4 2018

BUILD.
DEPLOY.
MANAGE.

SOFTWARE TO BUILD, DEPLOY AND MANAGE SERVERS WITH EASE

Intel® Server Products come with a set of software utilities that help you manage hardware and firmware across your data center network.

REMOTE SERVER MANAGEMENT – MADE EASY

While Agent based utilities help you configure the system settings (BIOS & BMC) and update the firmware (BIOS/BMC/ME/SDR), Agent-less utilities were added recently into the suite that help you do the same from a remote management console.

INTEGRATED BASEBOARD MANAGEMENT CONTROLLER

Embedded systems management enables monitoring, debug, configuration and update via a variety of out-of-band protocols (Redfish, IPMI) as well as via the embedded web console.

INTEL® SERVER MANAGEMENT

Software to build, deploy and manage servers with ease.

GET YOUR SERVERS UP AND RUNNING FAST— AND KEEP THEM RUNNING

Intel® Server Management Software is a set of software utilities that help you manage the entire lifecycle of building, deployment and further debug and maintenance of the servers with Intel® Server boards in the data centers.

For more information, visit **www.intel.com/go/servermanagement**

SERVER MANAGEMENT - MADE EASY

Intel® Server Utilities can be broadly classified into two categories - Agent-based and Agent-less utilities. Agent-based utilities are run on the server which needs configuration and manageability. They are either run on the Server OS or EFI Shell to make the necessary system configuration changes and/or update the firmware. Agent-less utilities are run on a management console which can connect remotely through a secure network to rest of the servers in the data center and the system configuration and/or firmware upgrades can be executed remotely from the management console.

The Integrated Baseboard Management Controller enables secure access to the server via a variety of protocols to assist with the debug, monitoring, configuration and provisioning of the server.

Intel® Server Management Software

Intel® Server Management Software comes in two different modes of operation: Agent-based and Agent-less applications.

AGENT-BASED APPLICATIONS

Agent-based applications are run on the server which needs to be configured and/or updated to a new firmware released by Intel. These are essentially single server utilities which are comprised of:

- **SYSCFG** – Helps to configure BIOS and BMC Settings and supported on Linux*/Windows*/UEFI mode. These are command line based and scriptable.
- **SYSINFO** – Retrieves the system info on system inventory, FRU, BIOS, BMC and other platform firmware. Supported on Linux*/Windows*/UEFI mode.
- **SELViewer** – Displays System Event Logs (SEL) recorded by BMC in a human readable format. Clear the SEL in BMC or Save it locally. Supported on Linux*/Windows*/UEFI mode.
- **Flash Utilities** – Helps to reprogram flash memory with new versions of BIOS. BIOS/BMC/SDR/ME can be updated with this utility which can be scriptable and available on Linux*/Windows*/UEFI.
- **Intel® Multi-Server Manager (Intel® MSM)** – While all the above are single server utilities, Intel® MSM is a multi-server utility which can be connected to other servers in the same in-band network. It helps to remotely manage a number of servers and the features include monitoring health and performance, system info retrieval, BMC configuration and System FW Update for a single or a group of servers that are within the group.

AGENT-LESS APPLICATIONS

Agent-less applications take advantage of the Out-of-Band (OOB) network and connect remotely to one or a group of servers which can be reached through the Management NIC. The connections are completely secure and independent of the host network. These include:

- **VMCLI** – This tool is a command line interface for virtual media. It can be used to boot virtual media on any remote server ad perform a firmware update for example.
- **Intel® MSM** – Has the same set of features as the Agent-based version except that the management server connects to the remote servers (managed nodes) through the OOB network and can perform the same operations such as monitor health and performance, system info retrieval, BMC configuration and system FW update a single or a group of servers that are within the group. The FW update can be scheduled for a particular date and time.
- **Intel® Server Debug & Provisioning Tool (Intel® SDPTool)** – This is an OOB utility for agentless debugging and support. The tool helps to connect to a remote server (managed node) through the OOB network on the fly without any provisioning and do a bunch of system configuration settings. The features supported are platform firmware update (BIOS/BMC/ME/SDR) or a custom firmware update of any other component on the board, change the system settings supported by the SYSCFG utility (above), change the network settings, download debug logs and display the system info like CPU, Memory, FRU. The greatest advantage of this tool is it is so lightweight and can be scripted to be scaled to any number of servers without any provisioning overhead.

Firmware for Intel Server Boards can be updated through the GUI of Intel® Data Center Manager (Intel® DCM) too but please be aware that it is distributed through a license.

Intel® System Management Software

Intel® System Management Software is a set of management applications that let you view, debug, configure and provision servers across your network.

FEATURES	INTEL® ACTIVE SYSTEM CONSOLE	INTEL® SNMP SUBAGENT	INTEGRATED BMC
Install Requirements	Application: Requires install on top of operating system on the management server but no installation required on remote managed servers	Application: Requires install on top of operating system on the management server but can operate in both agent-based and agent-less modes on the managed nodes	Application: Requires agent install on top of operating system
User Interface	Command Line Interface Tool - Scriptable	Command Line Interface Tool - Scriptable	Command Line Interface Tools - Scriptable
Multiple Remote server management	Single server only but can be scripted to add many servers without provisioning	Yes	No
Operating System Support	Host - Linux*. Managed nodes can be any OS	Host - Linux*. Managed nodes can be any OS	Windows*/Linux*/UEFI
Network Configuration	OOB Network	OOB Network	Uses existing operating system network
Integration of Open-Source Plug-Ins	No	Yes – Nagios*	No
View System Info (Platform, Memory, CPU, FRU)	Yes	Yes	Yes – Use SYSINFO
Hardware Predictive Failure Analysis	Yes	Yes	Yes
Sensor Readings	Yes	Yes	Yes
Remote Firmware Update	Yes	Yes	No – (Local FW update only)
Configure Network Settings	Yes	No	No
Health Monitoring	Yes	Yes	No
BMC Configuration	Yes	Yes – many BMCs at the same tme	Yes – Use SYSCFG
Power Management	Yes	Yes	No
Remote debug with Event Logs	Yes	Yes	No
Remote Power On/Off/Reboot	Yes	Yes	No
Serial Over LAN (Console Redirection)	No	Yes	No
Download Debug Logs	Yes	No	Yes

Integrated Baseboard Management Controller (BMC)

Embedded Intel System Management Software is available in two varieties—an Integrated BMC, which has Redfish and IPMI 2.0 stack available for comprehensive remote (out-of-band) or local (in-band) management, or an Integrated BMC web console available without the requirements for any agents and is always accessible, regardless of the state of the operating system.

FEATURES	INTEL® SERVER BOARD S1200SP FAMILY	INTEL® SERVER SYSTEMS SUPPORTING INTEL® XEON® PROCESSORS E5-2600 V3 & V4 PRODUCT FAMILY AND INTEL® SERVER SYSTEMS SUPPORTING INTEL® XEON PHI™ PRODUCT FAMILY	INTEL® SERVER SYSTEMS SUPPORTING THE INTEL® XEON® PROCESSOR SCALABLE FAMILY
IPMI 2.0	Yes	Yes	Yes
Power Control	Yes	Yes	Yes
VLAN	Yes	Yes	Yes
Redfish & RSD Support			Yes
Java based Virtual Media and KVM	Yes	Yes	Yes
HTML5 Virtual Media and KVM			Yes
Remote Debug	Autonomous Debug Log	Autonomous Debug Log	Autonomous Debug Log & Remote Debug over PECI
Remote BMC/BIOS Update			Yes
Remote BIOS Configuration			Yes
SSH	SMASH CLP	SMASH CLP	SOL Only
Remote SMBIOS Retrieval	Yes	Yes	Yes
NVMEe Management			Yes
Open LDAP	Yes	Yes	Yes
Security Logs			Yes
POST Code Retrieval			Yes
Node Manager	Yes	Yes	Yes
Alerting	SNMP Traps & SMTP	SNMP Traps & SMTP	SNMP Traps & SMTP

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/go/servermanagement**

1 For the latest Intel® Server Board support, visit http://support.intel.com/support/motherboards/server

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

Features and functions of the Intel® Management Packs are dependent on the features and functions available on the server and client hardware and the loaded software and operating systems.

Not all features and functions are available on all products and may require Intel® AMT or IPMI technologies for additional functionality.

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at www.intel.com/go/servermanagement

INTEL® ACCELERATORS

OPTIMIZE VIDEO DELIVERY

SUPERCHARGE YOUR MEDIA AND GRAPHICS WORKLOADS.

The Intel® Visual Compute Accelerator is designed to optimize video delivery (transcoding and encoding). This new product is the ideal media and graphics solution bringing together the power of Intel® Xeon® Processor E5 with the graphics performance of Intel® Xeon® Processor E3 within one system along with flexible software architecture enabling software vendors to write applications quicker for many different graphics workloads.

Intel® Product Quick Reference Matrix
Q4 2018

Intel® Visual Compute Accelerator 2

SUPERCHARGE YOUR MEDIA AND GRAPHICS WORKLOADS

The Intel® Visual Compute Accelerator 2 is the second generation PCI Express* card containing three Intel® Xeon® Processors E3 v5 designed to deliver cutting edge rendering performance per watt for graphics intensive workloads.[1] For OTT content providers and telecommunications service providers, Intel® VCA 2 takes the next step in transcode density, adding HEVC encode into the Quick Sync Video portfolio of accelerated codecs.

In the enterprise domain, security concerns and worker mobility are driving the need for cloud-based remote workstations, while at same time, applications such as AutoCad* are consuming ever more graphics processing cycles.

The accelerator card provides customers:

- Best-in-class media transcode channel density for Intel® Xeon® processor E5-based systems in communications service provider deployments
- High performance remote graphics for Intel® Xeon® processor E5-based systems in purpose-built clouds and IT datacenters

PRODUCT NAME	INTEL® VISUAL COMPUTE ACCELERATOR
ORDER CODE	VCA1585LMV
TARGET MARKET	Comms SPs, Video Cloud Builders (Private Cloud), Enterprise Datacenter
PROCESSORS	Three Intel® Xeon® Processor E3-1585L v5 • 4 Cores at 3.0 GHz • 45W TDP • Intel® Iris™ Pro graphics P580 (GT4e), 128MB eDRAM
FORM FACTOR	Full-length, full-height, double-width PCIe* card
PCI	PCIe* 3.0, x16, 8 lanes per processor
POWER	235W
MEMORY	DDR4 2133MHz (1.2V), ECC SODIMMs, 2 channels per processor, up to 64GB per processor
SSD's	Not included
OPERATING SYSTEM ON CARD	CentOS* 7.2, Windows* 10 and Windows Server* 2016 Xen* and KVM hypervisors

The Intel® Server Product Marketing Library is designed as a one-stop-shop for all Intel® Server Product marketing assets and sales tools.
Visit **https://www.intelserveredge.com/**

For more information, visit **www.intel.com/xeon** and **ark.intel.com**

[1] Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer or learn more at www.intel.com.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

THE HIGH PERFORMANCE, LOW COST FABRIC FOR HPC

INTEL® OMNI-PATH ARCHITECTURE

Intel® Product Quick Reference Matrix

Q4 2018

INTEL® OMNI-PATH ARCHITECTURE

Intel® Omni-Path Architecture (Intel® OPA), an element of Intel® Scalable System Framework, delivers the performance for tomorrow's high performance computing (HPC) workloads and the ability to scale to tens of thousands of nodes—and eventually more—at a price competitive with today's fabrics.

INTEL® OMNI-PATH ARCHITECTURE

Intel® Omni-Path Architecture

THE HIGH PERFORMANCE, LOW COST FABRIC FOR HPC. INTEL® OMNI-PATH ARCHITECTURE.

Imagine you could achieve supercomputing-class performance for your HPC fabric, while reducing your infrastructure requirements by as much as 50 percent.[1]

You could use the money you saved to expand your cluster, potentially delivering up to 24 percent more compute power to your scientists and engineers.[2]

That's the transformative power of Intel® Omni-Path Architecture, a foundational component of the Intel® Scalable System Framework. This end-to-end fabric solution provides 100 Gbps port bandwidth with low latency that stays low even at extreme scale.

With cost-effective scaling from desk-side clusters to exascale supercomputers, Intel Omni-Path Architecture offers world-class fabric solutions for every level of HPC.

For more information, visit **www.intel.com/omnipath**

100GB Host Interfaces

Designed specifically for HPC, the Intel® Omni-Path Host Fabric Interface (Intel® OP HFI) uses an advanced connectionless design that delivers performance that scales with high node and core counts, making it the ideal choice for the most demanding application environments. Intel OP HFI supports 100 Gbps per port, which means each Intel OP HFI port can deliver up to 25 GBps per port of bidirectional bandwidth. The same ASIC utilized in the Intel OP HFI will also be integrated into future Intel® Xeon® processors and used in third-party products.

100GB HOST INTERFACES

INTEL PART #	**100HFA018LS** **100HFA018FS**	**100HFA016LS** **100HFA016FS**
DESCRIPTION	Single-port PCIe x8 Adapter, Low Profile and Std Height	Single-port PCIe x16 Adapter, Low Profile and Std Height
SPEED	58 Gbps	100 Gbps
PORTS, MEDIA	Single port, QSFP28	Single port, QSFP28
FORM FACTOR	Low profile PCIe Std Height PCIe	Low profile PCIe Std Height PCIe
FEATURES	Passive thermal – QSFP heatsink, supports up to Class 4 max optical transceivers	Passive thermal – QSFP heatsink, supports up to Class 4 max optical transceivers
SANDY BRIDGE	None	None
IVY BRIDGE	None	None
INTEL® XEON® PROCESSOR E5-2600 V3 (HASWELL-EP)	✓	✓
INTEL® XEON® PROCESSOR E5-2600 V4 (BROADWELL-EP)	✓	✓

Edge Switches

The next generation of high performance computing (HPC) fabrics use Intel® Omni-Path Architecture to create fabrics that meet the needs of the most demanding set of applications.

The Intel® Omni-Path Edge Switch consists of two models supporting 100 Gb/s for all ports, an entry-level 24-port switch for small clusters and a 48-port switch. The larger switch, in addition to enabling a 48-port fabric in 1U, can be combined with other edge switches and directors to build much larger multitier fabrics.

These Intel Omni-Path Edge Switches are members of the Intel® Omni-Path Fabric 100 series of switches, host adapters, and software delivering an exceptional set of high-speed networking features and functions.

100GB Host Interfaces

INTEL PART #	**100SWE48UF2 / R2 (2 Power Supplies)** **100SWE48QF2 / R2 (2 Power Supplies)** **100SWE48UF1 / R1 (1 Power Supply)** **100SWE48QF1 / R1 (1 Power Supply)**	**100SWE24UF2 / R2(2 Power Supplies)** **100SWE24QF2 / R2 (2 Power Supplies)** **100SWE24UF1 / R1 (1 Power Supply)** **100SWE24QF1 / R1 (1 Power Supply)**	**100SWE48QFH** **100SWE48UFH**
DESCRIPTION	48 Port Edge Switch (“Q” = mgmt card)	24 Port Edge Switch (“Q” = mgmt card)	Hot Swap Power Supply/Fans 48 Port Edge Switch (“Q” = mgmt card)
SPEED	100 Gbps	100 Gbps	100 Gbps
MAX EXTERNAL PORTS	48	24	48
MEDIA	QSFP28	QSFP28	QSFP28
FORM FACTOR	1U	1U	1U
FEATURES	Forward / reverse airflow and mgmt card options, up to 2 PSU	Forward / reverse airflow and mgmt card options, up to 2 PSU	Forward airflow and mgmt card options, up to 2 PSU

Hot Swap Modules

INTEL PART #	**100SWEHSFTF**	**100SWEHSPSF**
DESCRIPTION	Hot Swap Fan Module	Hot Swap Power Supply Module

Director Switches

The Intel® Omni-Path Director Class Switch (Intel® OP Director Class Switch), based on Intel's next generation 48-radix switch silicon, has many innovative features that provide optimum performance for both small and large fabrics. Both switch models are dense form factor designs capable of supporting up to 768 100 Gb/s ports in a low 20U footprint. Designed to be modular alongside edge switches, host adapters, and software, the Intel OP Director Class Switch 100 series enables customers to tailor their system configuration to meet present and future needs.





	DIRECTOR SWITCHES				
INTEL PART #	100SWD24B1N 100SWD24B1D 100SWD24B1A	100SWD06B1N 100SWD06B1D 100SWD06B1A	100SWDLF32Q	100SWDSPINE	100SWDMGTSH
DESCRIPTION	24-slot Director Class Switch, Base Config	6-slot Director Class Switch, Base Config	Director Class Switch Leaf Module	Director Class Switch Spine Module	Director Class Switch Management Module
SPEED	100 Gbps	100 Gbps	100 Gbps	100 Gbps	100 Gbps
MAX EXTERNAL PORTS	768	192	32	N/A	N/A
MEDIA	10/100/1000 Base-T USB Gen2	10/100/1000 Base-T USB Gen2	QSFP28	Internal high speed connections	10/100/1000 Base-T USB Gen2
FORM FACTOR	20U	7U	Half-width module 2 modules per leaf	Full width module, 2 boards/module	Half-width module
FEATURES	Up to 2 mgmt modules, up to 12 PSUs, AC and DC options	Up to 2 mgmt modules, up to 6 PSUs, AC and DC options	Hot swappable	96 internal mid-plane connections,hot swappable	N+1 redundancy,hot swappable

Intel® Omni-Path Cables

Intel® Omni-Path Fabric solutions support a broad array of 3rd party cable types and lengths from the industry's leading providers. These cables, together with the Intel® OPA Packet Integrity Protection feature, provide highly reliable communication links with superior bit error rate (BER) performance.

PASSIVE COPPER CABLES

CABLE LENGTH	INTEL® ONMI-PATH PASSIVE COPPER CABLES
0.5M	100CQQF3005; 100CQQH3005 (30 AWG)
1.0M	100CQQF3010; 100CQQH3010 (30 AWG)
1.5M	100CQQH2615 (26 AWG); 100CQQF3015 (30 AWG)
2.0M	100CQQH2620 (26AWG); 100CQQF3202 (30 AWG)
3.0M	100CQQH2630 (26AWG); 100CQQF3030 (30 AWG); 100CQQF2630 (26 AWG)
3.5M*	100CQQH3035 (30 AWG)
4.0M*	100CQQH2640 (26 AWG); 100CQQF3040 (30 AWG); 100CQQF2640 (26 AWG)
5.0M*	100CQQH2650 (26 AWG); 100CQQF2650 (26 AWG)
5.5M*	100CQQH2655 (26 AWG)
6.0M*	100CQQF2660 (26 AWG)

* Please consult Intel for configuration details. 100CQQx x=Vendor

ACTIVE OPTICAL CABLES

CABLE LENGTH	INTEL® OMNI-PATH ACTIVE FIBRE CABLES
3.0M	100FRRF0030; 100FRRL0030; 100FRRA0030
5.0M	100FRRF0050; 100FRRL0050; 100FRRA0050
10M	100FRRF0100; 100FRRA0050; 100FRRA0100
15M	100FRRF0150; 100FRRL0150; 100FRRA0150
20M	100FRRF0200; 100FRRL0200; 100FRRA0200
30M	100FRRF0300; 100FRRL0300; 100FRRA0300
40M	100FRRF0300; 100FRRL0300; 100FRRA0300
50M	100FRRF0500; 100FRRL0500; 100FRRA0500
60M	100FRRF0600; 100FRRL0600; 100FRRA0600
100M	100FRRF1000; 100FRRL1000; 100FRRA1000

* 100FFRx x=Vendor

For more information, visit **www.intel.com/omnipath**

FOOTNOTES

1 Reduction of infrastructure requirements claim based on a 1024-node full bisectional bandwidth (FBB) Fat-Tree configuration, using a 48-port switch for Intel Omni-Path cluster and 36-port switch ASIC for either Mellanox or Intel® True Scale clusters.

2 Configuration assumes a 750-node cluster, and number of switch chips required is based on a full bisectional bandwidth (FBB) Fat-Tree configuration. Intel® OPA uses one fully-populated 768-port director switch, and Mellanox EDR solution uses a combination of 648-port director switches and 36-port edge switches. Intel and Mellanox component pricing from www.kernelsoftware.com, with prices as of October 20, 2016. Assumes $6,200 for a 2-socket Intel® Xeon® processor based compute node.

Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors. Performance tests, such as SYSmark* and MobileMark,* are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to http://www.intel.com/performance

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can provide absolute security.

Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

* Other names and brands may be claimed as the property of others.

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