

# Thunderbolt™ 3 for Your Business



Computing is forever changing, and how we connect the personal computer to other peripherals continues to evolve to deliver new levels of performance and simplicity for your business.

Whether you're trading in mechanical docks for sleek high-speed cable docks, deploying QHD/UHD monitors with amazing color depth and detail across your enterprise, providing external GPUs to accelerate CAD / CAM or scientific calculation, shooting terabytes of video with a drone in the field or on the job site, moving massive files with the latest NVMe storage, or connecting to 10GbE networks from your Notebook. Thunderbolt 3 can help.

## **Are Thunderbolt™ 3 and USB-C the same?**

USB-C is a connector and cable. The connector is small and flippable, but only required to support USB 2.0 data. Video, charging, and alternate modes are optional. Overall, there are about 10 configurations available for the USB-C connector, thus causing considerable confusion in the market.

Thunderbolt 3 supports all USB-C configurations with the goal of reducing confusion and making state-of-the-art I/O available to everyone. In addition to one port, one cable, one brand – Thunderbolt 3 computer ports support speeds up to 40 Gb/s - 2 video streams (up to x8 lanes DP 1.2, USB 3.1 (10Gb/s), and PCIe Gen 3 x4.

Thunderbolt™ 3 brings Thunderbolt to USB-C at speeds up to 40 Gb/s, creating one compact port that does it all – delivering the fastest, most versatile connection to any dock, display, or data device. For the first time, one computer port connects to Thunderbolt devices, every display, and billions of USB devices. A single cable now provides 8X faster data than USB 3.0, and 4X more pixels than HDMI 1.4, while also supplying power.

## Is Thunderbolt 3 supported on Windows and Mac?

Thunderbolt 3 has already gained significant adoption on PCs, with more than 100 designs on systems with 7th Generation Intel Core Processors, and the latest Apple MacBook Pros. Major OEMs include Dell, HP, Lenovo and Apple.

Expanding on existing support, Apple's Mac OS X Sierra has full support for Thunderbolt 3 and Microsoft has added Thunderbolt 3 plug and play support into the now available Windows 10 Creators Update.



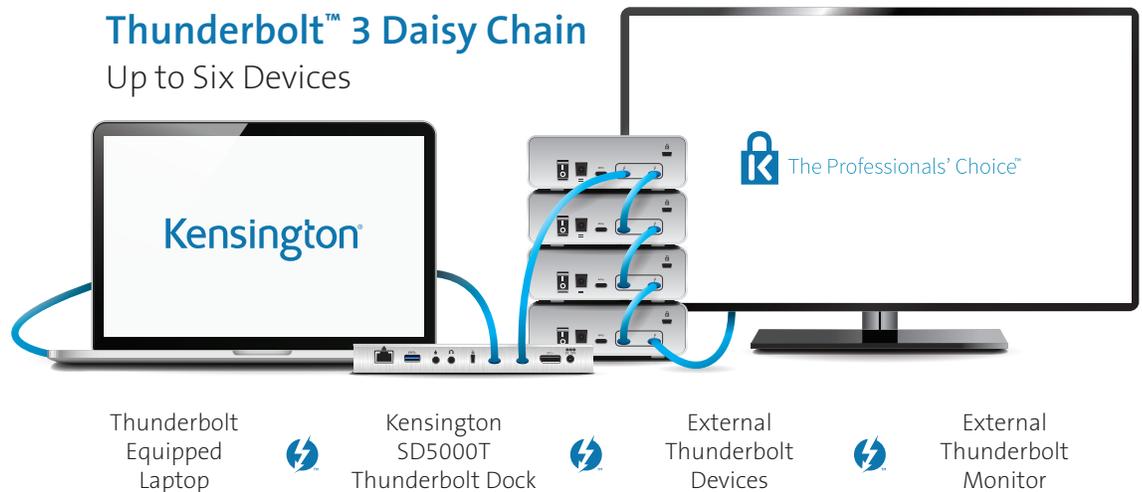
## In what ways can Thunderbolt 3 help my business?

### Single-Cable Docking

Notebooks are getting thinner and Thunderbolt 3 enables single-cable universal docks to meet the performance bar established by mechanical docks. Now, one port provides Thunderbolt 3 data transfer, support for two 4K 60 Hz displays, and quick notebook charging with a single cable. Thunderbolt 3 can support notebook charging up to 100W - according to USB PD specification. Docks based on Thunderbolt 3 can also support a variety of additional features like USB ports, GbE, Audio, and more. A Thunderbolt 3 dock also provides standard 15W to bus-powered devices enabling users to use higher speed and capacity storage, portable displays, or high-performance adapters like 10GbE.

### Thunderbolt™ 3 Daisy Chain

Up to Six Devices



Thunderbolt is a daisy chaining technology. This means the second Thunderbolt 3 port on your dock is universal. You never have to worry about an employee not being able to connect a device to the dock. Basically, the second device Thunderbolt 3 port on the dock operates the same as the Thunderbolt 3 port on the computer by supporting Thunderbolt, DisplayPort, and billions of USB devices.

- Provide quick notebook charging
- Performance guarantee – no bottlenecks
  - Only way to get 4K 60Hz video + data from one USB-C
  - Connect two 4K 60Hz displays with a single cable from computer
  - PCIe or USB data up to 40Gb/s
  - Daisy chain two displays
- Worry free and future proof
  - Required certification for PC and Mac - not offered by DisplayPort or USB
  - Connect any USB-C based device (Thunderbolt, Display Port, or USB)
  - Upgrade to 2.5, 5, or 10GbE with Thunderbolt 3 to Ethernet adapters

### Workers Who See More - Do More

Thunderbolt 3 is the only technology available today that can support two 4K video streams at 60Hz, or a single 5K video stream at 60Hz, through the single Thunderbolt cable connection. Highly productive users prefer more screen space for their computers and machines. Some users increase their amount of screen space by using two or more monitors at their desks. Others prefer using larger sized monitors, but with either approach, there is a need for more capacity in information to be shown on the screens and greater video resolution output. This improves support for the ever increasing amount of information being shown on the monitors.

Thunderbolt 3 supports two four-lane HBR2 video links

- One 4K display (4096 x 2160) 30-bit @ 120 Hz
- One 5K display (5120 x 2880) 30-bit @ 60 Hz
- Two 4K displays each (4096 x 2160) 30-bit @ 60
- Or any combination of two 4K, FHD, or QHD displays



## Moving Big Files

The technology offers up to 40Gbps of data throughput, which is superior to other technologies. Devices continue to create massive amounts of data. This is especially relevant for industries that include digital photography and video. For example, a 24fps codec like Canon RAW can shoot 1,500 GB/hour, or a drone shooting 4K or 5K can shoot 500GB in 15min. The traditional approach of using USB or Ethernet may not be able to quickly keep up with changes and the demand. Thunderbolt 3 solves this by connecting to the latest NVMe SSDs. The NVMe SSDs are quickly replacing SATA storage in notebooks, 2-in-1, tablets, etc. As a result, the cost of NVMe SSD will reach parity with SATA SSDs over the next few years.



## Flexibly Add Notebook Capability with an External GPU Boost

The super-fast data throughput also enables new computing models that have not been explored before. One such example is the use of external graphics cards. One of the biggest headaches for high-end laptop users is the limited options in terms of upgrading the computer's components when needed. Graphics cards are especially crucial as the amount of graphics processing unit (GPU) power and random access memory (RAM) capacity dedicated to graphics needs to be constantly at the cutting edge for power users in graphics applications and gaming. The ability to use Thunderbolt 3 to access new and upgraded graphics cards externally is essential to expand flexibility and optimize user experience. Enabling new computing models, Thunderbolt 3 overcomes the limited upgrade options of legacy docking laptops and machines that have traditionally lacked expansion.

## Easy Ethernet Upgrade

While backend network infrastructure has gone from legacy 1 GbE networks to 2.5, 5, or 10 GbE networks, endpoint networking to computers has plateaued at 1 GbE speed for many years. However, Thunderbolt 3 is an easy and cost effective way to deliver 2.5, 5, or 10 GbE network speeds to notebooks or desktops via a Thunderbolt to 2.5, 5, or 10 GbE adapter. Simply connect the adapter to the Mac/PC or the second device Thunderbolt 3 port on the dock, it's that simple.

## Thunderbolt Networking

In addition to Ethernet upgrades, Thunderbolt also supports Thunderbolt Networking. Thunderbolt Networking is peer-to-peer, can bridge multiple Macs/Windows/Linux computers using existing OS infrastructure and just connecting together your computers with Thunderbolt cables. For Thunderbolt 3, Thunderbolt Networking can support transfer speeds over 10Gb/s. This makes Thunderbolt Networking a great solution for PC migrations or small workgroups.

## Thunderbolt 3 Business Solution Value

With the suite of Thunderbolt 3 benefits outlined in this whitepaper, businesses have more options to increase flexibility and gain advanced capabilities. Digital imaging and broadcast industries have taken advantage of Thunderbolt for many years due to its speed, flexibility and ability to increase productivity, especially in demanding time critical workflow environments. Business use cases and applications will continue to develop as companies look to utilize faster storage, drones and virtual reality. Technology like Thunderbolt 3 enables business users to quickly and efficiently access the large amount of much needed data in the everyday workplace environment.

For IT administrators who are looking for Thunderbolt 3 technology providers, it's important to work with a partner who clearly understands the needs of business users and their work environments.

Key attributes to seek out in your B2B partner includes industry-leading support through multiple channels, such as phone, email and website. The customer-support team should be knowledgeable about the problems faced, sympathetic to IT concerns and empowered to execute the right solution. A great warranty also streamlines the process of dealing with defective units and similar problems. Partners should provide support and have the ability to manage the volume of logistics and details associated with working with larger scale corporations. It's important to keep all these different factors in mind when choosing the provider. It's a best practice to work with a brand that is proven to be reliable and trustworthy, with a successful track record of consistent results in the past. Too many companies place all their effort and resources into the pre-sales process. The representatives promise the moon and the stars, but IT administrators find it impossible to reach out to the vendor once the order is delivered.



## Choose Kensington, the Professionals' Choice

When evaluating how to get the most from your business solution, think about your strategy in working with a partner who can be trusted. Choose Kensington, the Professionals' Choice, when you need a solution that works right out of the box and offers exceptional support and service towards IT administrators and their users.



The Kensington SD5000T Thunderbolt 3 Docking Station is the game-changing dock from the leaders in desktop performance. Pushing productivity into hyper-drive with a dock that accommodates a single Thunderbolt 3 cable capable of carrying up to 40Gbps of data and support for two external 4K monitors, while also supplying power to your host device, the SD5000T Thunderbolt 3 Docking Station delivers more of everything.



The Professionals' Choice™

FOR MORE INFORMATION CONTACT:

1.855.692.0054 • [sales@kensington.com](mailto:sales@kensington.com)



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