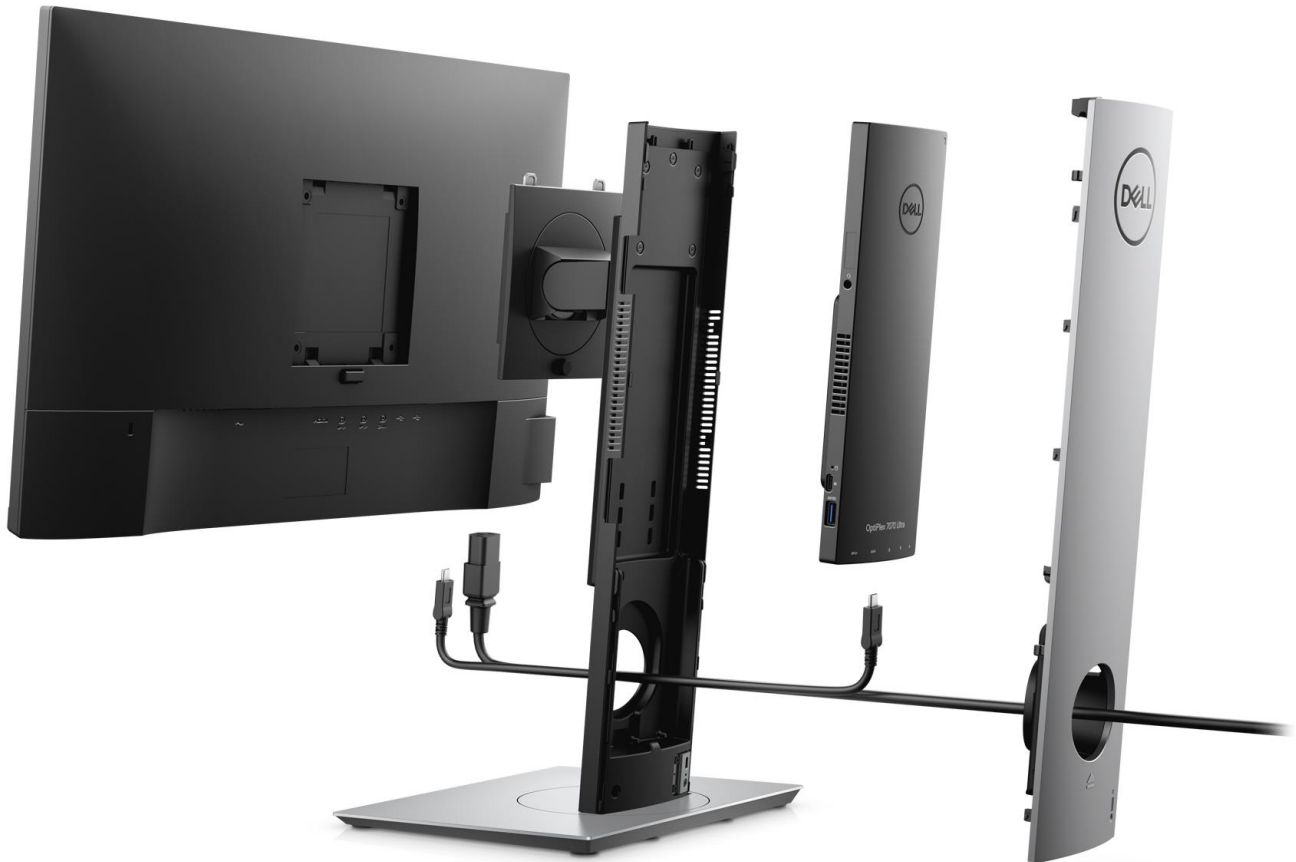


Dell OptiPlex 7070 Ultra Use Case Analysis



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Dell OptiPlex 7070 Ultra: Innovative, Forward-Looking Design Breakthrough

Dell's OptiPlex 7070 Ultra is an innovative evolution of the desktop PC form factor. Its compute module has a pamphlet-sized form factor with excellent serviceability and an innovative design that lays the foundation for a future of easily upgradable and serviceable, yet stylish and sleek desktop PCs. On the following pages we'll discuss the system's suitability and potential in various industry use case roles, but first we should briefly discuss its unique, ground-breaking design.

Dell's OptiPlex 7070 Ultra compute module measures 0.8 x 3.8 x 10.1 inches (19.7 x 96.1 x 256.2 mm) and weighs up to a mere 1.43 lb. (0.65 kg). Despite its Lilliputian proportions, the Dell OptiPlex 7070 Ultra runs on 8th Generation Intel Core processors up to the Core i7-8665U, making it a full-performance platform with optional vPro support (detailed below). Memory and NVMe storage can be user-upgraded very easily as well, via standard SO-DIMM and M.2 slots.



Why it's exceptional: Other small form factor systems and thin clients can hide out of sight behind a monitor attached to a VESA mount (and the OptiPlex 7070 Ultra can do this, as well). But for users who opt to deploy Dell OptiPlex 7070 Ultra-compatible monitor stands, this diminutive PC quickly snaps inside the monitor stand, making the system itself essentially invisible. The aesthetic benefits of this in high-traffic environments where cleanliness and professionalism matter are significant and hint at the thought Dell has put into this innovative PC's design. Also, because Dell implemented easy modularity at both the component and system levels of the design, IT departments and general users can upgrade and swap systems with almost no downtime.

When ports matter: Due to the fact that the Dell OptiPlex 7070 Ultra can run on just 65 Watts, it can be powered by and receive display video, audio and data from a single USB-C cable, which can then be managed tidily within the aforementioned Dell monitor stand. The OptiPlex 7070 Ultra has five various USB ports, in addition to AC power and Gigabit Ethernet RJ-45, but it's possible to have the monitor's power cable be the only exposed cable for the system. Moreover, because DisplayPort monitors can be easily daisy-chained, the Ultra can drive a triple-display configuration.

With that in mind, let's turn to where the Dell OptiPlex 7070 Ultra design can and should fit in today's market.

Macro Trends & The Dell OptiPlex 7070 Ultra Design

The Dell OptiPlex 7070 Ultra marks an intriguing and novel new approach to small form factor PC design, but it isn't novelty for novelty's sake – Dell has pioneered a new design paradigm with myriad of aesthetic and usability benefits. Dell is expertly responding to several macro-level trends in the business computing world, and these bear examination in order to better grasp in what applications and for which customer profiles the OptiPlex 7070 Ultra best fits.

Optimized Workflows And Environments

According to Dell, commercial customers often express the following common client system pain points:

- 85% want to upgrade displays and computers separately
- 54% call cable clutter a “challenge” when deploying PCs
- 52% select PCs with space limitations as one deciding factor

The OptiPlex 7070 Ultra design intelligently addresses all of these and does so in a way that still leaves users free to choose whichever types and brands of peripherals they please, wherever they are. (The exception is the need for Dell stands that house the proprietary Ultra form factor if you're looking for a fully integrated, invisible implementation.)

The Dell OptiPlex 7070 Ultra offers a broad range of benefits regardless of industry:

- Neat, pleasant environments
- Quick, easy cleaning and maintenance
- Space constraints and/or shrinking corporate space for non-mobile workers
- Customizability to the user's specific needs
- Ability to scale for productivity
- Low IT involvement

(As noted in our Design Analysis, the OptiPlex Ultra is largely toolless and can be swapped out in seconds.)

- Support for Dell and 3rd party VESA mount displays



Multi-Monitor Productivity

When Bill Gates wrote in [CNN Money](#) in 2006 about his triple-display desktop, it was considered quite progressive. He wrote, *“Once you have that large display area, you’ll never go back, because it has a direct impact on productivity.”* Not surprisingly, multi-monitor adoption has grown at a 10% CAGR over the last 15 years. In addition, users of multi-monitor setups have an average expected productivity increase of up to 21%, according to a recent study from Principled Technologies.

On this point, it’s important to re-emphasize the OptiPlex 7070 Ultra’s alacrity for multiple displays. Intel’s integrated UHD Graphics 620 engine can drive three displays simultaneously, and Dell builds in two USB 3.1 Gen 2 Type-C ports with DisplayPort Alt Mode enabled to support multi-monitor configurations. These can be daisy-chained with compatible DisplayPort monitors, again reducing cable clutter.

Anyone who has ever chafed against trying to manage and customize multiple-display configurations with basic Windows tools will also appreciate Dell Display Manager, which goes far beyond dual-screen spanning to enable 38 panel-based layouts along with other display controls. This utility is a must in environments that frequently need to display the same applications repeatedly in the same layout, such as surveillance or call centers, and not deal with constant window resizing.

At the same time, because the Dell OptiPlex 7070 Ultra’s rear USB-C port supports Power Delivery, that one USB-C cable from the monitor can also eliminate the need for Dell’s supplied AC adapter, assuming the monitor can supply at least 65 Watts of power.

As noted earlier, users can have a system with potentially only two visible cables, thanks to the monitor stand’s internal cable management and system’s integrated Wi-Fi (although wired Gigabit Ethernet is also integrated). We should also point out that different USB-C-equipped monitors may have differing power output power delivery characteristics. Dell USB-C panels guarantee always-on power delivery at levels more than sufficient for OptiPlex 7070 Ultra operation. They also feature narrow bezels on three sides for a more seamless data flow and user interface experience.



Dell OptiPlex Ultra Use Cases

For many years, we've heard about the idea of "computing vanishing into the background" of daily life. Though this is a futuristic embodiment, in a more current literal sense, that's what the forward-looking, innovative design of the Dell OptiPlex 7070 Ultra can achieve; the machine vanishes into the environment, yet it does so without sacrificing performance or usability. These attributes are well-suited to a host of markets, use cases, and workflow roles.

Vertical Markets

- **Energy:** Especially in the gas and oil sectors, where installations can be in remote areas, there's a large need for capable client computing in various productivity tasks. However, power itself may be in short supply. The OptiPlex Ultra can provide the compute necessary for everything from smart video surveillance to limited simulation modeling, and it can do so on a mere 65W power envelope. In the event that a system needs replacing, the Ultra is simple enough for any worker to do the job, with little on-site IT support necessary. Further, most monitoring and management of the systems can be done remotely via Intel vPro platform technologies.



- **Healthcare:** Few markets have as imperative a need for data reliability, performance and security as healthcare, where lives can literally depend on the equipment used. In addition, healthcare environments need to remain as clean and clutter-free as possible, but still maintain often times immediate and efficient access to patient data. The Dell OptiPlex 7070 Ultra's space-optimized footprint and super-efficient cable management design is ideal for healthcare settings. In addition, the 7070 Ultra's modular design affords healthcare providers easier scalability and serviceability over time, as swapping in a new Ultra compute module would be far more cost-effective and timely than replacing an entire desktop system.

- Retail:** Point of sale (POS) systems are essential in retail environments, but they become obsolete far too quickly and aren't that pleasing to the eye for patrons. With their integrated displays and proprietary designs, POS solutions also tend to be costly, difficult to service, and limited in their scaling ability as retailers want to improve customer experiences and enable employees with faster, more capable interfaces. Consider a POS system design based on the same concept as a Dell Ultra-compatible monitor stand. Not only would its sleek, streamlined design present better to customers, but its touchscreen display could serve for many years as retail processing demands scale. In addition, Dell's VESA mounting is also snap-in/snap-out simple if this display type is required. Shop managers need only click in a new Ultra as their needs evolve — and with all with much less consumption of scant retail counter space.
- Manufacturing Infrastructure:** The Industrial Internet of Things (IIoT) continues to permeate modern manufacturing, which means the number of sensors being deployed, and the depth of data gathered by those sensors, continues to climb. Those sensors stream data to acquisition systems, which in turn may interface with machine control systems. Camera-based QC and warehouse traffic monitoring may also come into play. Such environments need real-time analysis of conditions, and the closer the data processing is to the operator, the faster those businesses can react to potentially dangerous condition changes. By the time data spools out to the cloud, gets processed, and comes back, it may be too late. A modular PC like the Dell OptiPlex 7070 Ultra can potentially integrate right where the data is being gathered and process it in real-time.
- Education:** Today's classrooms often contain dozens of laptops, each of which needs to be secured after use in large, rolling carts. Because of the nature of classrooms and students, these (typically low-end) systems take a beating, experience high failure rates, provide students with sub-standard computing experiences, and soak up an unfortunate amount of IT resources. Imagine if many of these laptops could be replaced with space-efficient OptiPlex 7070 Ultra-compatible computing stations. Dell monitor stands could be fixed to desks or counters, while systems and displays can both be secured at the school's discretion via the Ultra's K-lock slot and security screw, to secure the module inside the stand. The 7070 Ultra compute module also has a K lock slot and security screw on board as well. To better fit with budgets and needs, different OptiPlex Ultra models with varying capabilities could be deployed in different classrooms, depending on student applications and workloads. And again, centralized Intel vPro management would make maintaining and monitoring these systems far easier and more time-efficient than in many existing school deployments which may rely on less sophisticated, consumer-class offerings.
- Government:** A fascinating [blog post on GAO.gov](#) noted how, after analyzing 65 federal legacy compute systems, the 10 most critical were between 8 and 51 years old and required a collective \$337 million annually to operate and maintain. Now, this is an extreme example, but it makes the point: Government agencies are notoriously slow to update compute infrastructure.

A more modular approach like the OptiPlex 7070 Ultra's that could meet all the necessary security and encryption requirements of workers may well save costs over the long term. Systems would be replaced more often, such as on a three-year cycle, but savings would be realized everywhere from lower IT time investment, to energy savings, to the ability to consolidate worker spaces. Productivity would likely increase as well due to the performance and feature benefits offered by the design.

- **Banking and Finance:** There are several areas in banking and finance that would benefit from deploying OptiPlex Ultra systems. Consider traders, who often work in very constrained desk spaces yet need multi-monitor systems for real-time updating of market conditions. Formerly, traders relied on full desktops systems rather than thin client configurations. However, the capabilities of Intel® Core™ i7 processors in some Ultra configurations provide more horsepower than traditional thin client setups, both for compute and multi-display graphics, and are decidedly more space efficient than traditional desktops. Alternatively, consider banking tellers and their work terminals. Especially in banks that place teller stations in the middle of the lobby floor, like islands, to better engage with patrons, a sleek, clean presentation is important. As with point of sale systems, an OptiPlex 7070 Ultra provides a modernized compute experience, easy scalability, and an optimized cable and PC chassis footprint. Naturally, these same benefits apply in other markets, such as hospitality, nursing stations, and small sales fronts (e.g., mall stores).



Evolving Work Roles

As you can see by now, the types of customers for Dell OptiPlex 7070 Ultra systems are almost as varied as the types of industry. Clearly, the OptiPlex 7070 Ultra is not all things for all client compute requirements. There are certain applications for laptops, for example, that simply can't be filled by desktops. However, from an everyday use perspective, the advantages of an OptiPlex 7070 Ultra over a conventional business desktop or tower PC are hard to refute. A larger form factor provides space for more optional components, such as graphics cards or hard drives, but rank and file business users have little need for these. The benefits of portability, power savings, and compact performance all seem more valuable.

That said, we can envision a number of specific applications that may be particularly well-suited to the OptiPlex 7070 Ultra's salient features.

- **Interior Or Industrial Design Studio:** There is a growing number of interior design firms that are tasked not only with designing, but with furnishing home or small-to-mid-sized, boutique office spaces. These firms are often lack knowledge of the computing market and simply incorporate power, networking, and physical spaces for the computing needs of the office, and make aesthetic and design sacrifices in the process, due to messy wiring and cable clutter of traditional desktop form factors. Engaging with the interior and industrial design community to educate firms on the form factor and aesthetic benefits of the Dell OptiPlex 7070 Ultra and its compatible displays and accessories could open additional opportunities to modernizing a clean, sleek compute resource aesthetic in an industry where presentation is everything.
- **Evolved Kiosks And Signage:** Modern kiosk systems are increasingly just touchscreens mounted on a stand with limited compute capability. In effect, they are all-in-one PCs with drawbacks of the legacy thin clients – they're inherently limited in ability, difficult to service, and perhaps impossible to scale. Why not fix all those things at once with an Ultra-compatible kiosk stand that integrates a snap-in panel, just like Dell's monitor stands? The same applies to signage panels, which typically mount to walls and may involve multiple displays. The more interactive and graphically appealing these displays are, the better the results will be for the companies deploying them. Better interfaces require stronger compute capability than what many low-powered systems not specifically designed for these applications can provide. Further, the Ultra's many connectivity paths make networking and synchronizing multiple systems a snap.
- **Call Center Clusters:** All call centers need reliable computing solutions to provide efficiently routed and clear telephony services. In a premises-based call center, where workers tend to have little space, one sufficiently powerful master system could distribute services and display interfaces to three call workers. OptiPlex 7070 Ultra systems have that level of performance. They could fill this role without consuming any additional space in the environment, and centralized IT could monitor and support them remotely.
- **Laboratories And Clinical Installations:** We discussed the Ultra's suitability in healthcare verticals earlier, but the same suitability also fits for applications beyond the public's eye, including in the life sciences. Think of blood sample analysis, biopsy scanning, and even genetic marker profiling. Edge-based Machine Learning increasingly plays a role in accelerating and improving these tasks, meanwhile there are opposing pressures on the systems that perform these tasks continue to shrink. Just as the Ultra could evolve hospital device systems, so too could it reshape (literally) lab and clinic systems. We are already seeing cases where [computers can outperform doctors](#) on identifying certain maladies. Ultra-equipped installations could assist clinicians, bringing advanced analysis into a transportable but still powerful desktop form factor that would allow better patient and specimen diagnostics for better overall results.
- **Board And Conference Rooms:** How many times have we seen someone give a presentation from their laptop and seen their personal message pop-ups or other glimpses of unwanted data? Bringing personal computing equipment into a conference space is sometimes risky and potentially unprofessional. Instead, users could have a business-safe OptiPlex 7070 Ultra system as its primary PC

display, compute and projection infrastructure. The Ultra could power up to three displays, and the cable-optimized system would maintain a clean aesthetic, along with fast setup time.

- **Surveillance/Sales Floor Robots:** [Walmart](#) now “employs” over 300 robots to rove about store aisles, check inventory levels, and coordinate with restocking order systems. [Security robots](#) now roam malls, mostly as a deterrent but also to gather data. These business-optimized robots come equipped with over a dozen sensors and cameras, and their coordination increasingly requires AI-level intelligence. Improving these abilities over time might require a significant upgrade to the robot’s processing system, which becomes easy with a platform like the OptiPlex 7070 Ultra. Moreover, there would be no need for a laborious dismantling by specialized servicers. Any store manager could install a replacement system in minutes, saving the store hundreds of dollars and all but eliminating robot downtime during upgrade cycles. This shouldn’t be misconstrued for robots replacing humans in these particular use cases, but rather humans can spend less time being slaves to the machines that are intended to serve them and augment efficiency, with lower maintenance and upgrade time investment over a bot’s useful life cycle. It should be noted that Dell’s OptiPlex 7070 Ultra has not been tested currently for *rugged* use cases with shock and vibration, so any robotics application would need to maintain adequate protection of the system from these forces.
- **Manufacturing - CNC / Milling Machinery:** In addition to storing their work, machinists leverage their experience and spend considerable time tuning and dialing in their milling and manufacturing processes for their particular use case. Though many milling machines feature proprietary control systems, there are a number of PC-based milling machines and software on the market, and a growing ecosystem of third-party PC control boards and interfaces for legacy machines. Incorporating the Dell OptiPlex 7070 Ultra into the this applications would allow machinists to not only transfer their work and settings easily from machine to machine as they upgrade or replace equipment, but also bring their work to other locations that may feature similar equipment, should they be collaborating on a project, engaged with partners, or need to perform some rapid prototyping in a new location. Again, however, we’ll note that the OptiPlex 7070 Ultra is not designed for traditional *rugged* use cases, nor does it have specific dust filtration needed for some of these environments.

Additional Considerations of The Dell OptiPlex 7070 Ultra

In the previous sections, we’ve provided many glimpses into the OptiPlex 7070 Ultra’s capabilities and potential across a wide range of market environments. However, a few additional, broadly applicable features and capabilities of the system are important to underscore.

Improving Security

Seemingly every month brings new security exploit headlines showcasing the need for tighter corporate PC and network security. The personal/corporate segregation we’ve noted earlier in BYOD environments underscores the need for IT to manage and lock down all business computing devices. Several Dell OptiPlex 7070 Ultra models contain processors enabled with Intel vPro functionality. This embodies a range of features, such as remote management, out-of-band communication, hardware-based root of trust through Intel Trusted Execution Technology, and other security-centric capabilities. Put simply, when an application can benefit from high portability or modularity, it typically requires a proportionate level of security protections. With the OptiPlex 7070 Ultra, Dell made sure to address both sides of that equation, making it easier and safer for IT to allow sensitive data to travel beyond the corporate firewall.

Note that, as of the release of 8th Generation Intel processors, vPro now includes an Intel technology called Hardware Shield. This works hand-in-hand with Dell Safe BIOS to safeguard BIOS memory and reduce system firmware threat vector surface area. Intel Hardware Shield is another valuable component in guarding against firmware attacks, while providing a secure channel for the OS to view BIOS-mapped hardware resources and system configuration.

OptiPlex 7070 Ultra - A VDI alternative

Virtual Desktop Infrastructure, which essentially has users running remotely-served versions of their desktop and applications on lower cost local hardware, can be a wonderful tool in the right situations, but VDI-related licensing can be very expensive. Factors such as connectivity latency can hamper user experiences as well. And even the headline value point for VDI, centralized management, may be overstated in certain applications. For VDI to work well, a company needs to have the specific user requirements in place at a scale that will afford the technology to be practical and cost-effective over the long term.

For SMBs and smaller enterprises, these conditions may not always exist. However, those organizations may still want VDI's benefits, including:

- Fast, convenient deployment of a common software image
- Centralized administration
- Easier troubleshooting and remediation
- Improved security

By now, it should be clear that the Dell OptiPlex 7070 Ultra can address many of these requirements for corporate users. While it's true that provisioning a new user through VDI may be as simple as initiating a new user account, many VDI corporate users also would prefer to use their own equipment, which takes us back to the earlier points about BYOD. BYOD often consumes even more IT resources, and there are still the costs and maintenance involved in localized hardware, even if most software operates on remote resources. The 7070 Ultra's TPM, Intel vPro platform technology, and other business-enabling features make the small system centrally manageable, highly secure, and easy to provision. From a total value and TCO standpoint, some business models will find a solution like the OptiPlex 7070 Ultra preferable to traditional VDI for outfitting fleets of users.

Aesthetics In Action

We have alluded to aesthetics at multiple points above, but it bears explicit mention here. Business environments with images to project need to appear clean, polished, and professional. In this context, smaller with less cable clutter is better, regardless of vertical market or application.

The trend to smaller compute footprints stems in part from the gradual elimination of many legacy components. Why have optical drives when software and media can be downloaded or streamed from the web? Why fill a tower with hard drives when all but the most essential files can be stored in the cloud? Respectable integrated graphics and audio alleviate the need for expansion slots in most business desktops, and so on. All of this leaves traditional towers and desktops consuming space that no longer needs to be sacrificed. And if the move to USB-C with power delivery can cut cable clutter and the space it consumes, as the OptiPlex 7070 Ultra does, all the better. Any organization that values showing a tidy, stylish, well-

organized work environment to the public will see the value of the Dell OptiPlex 7070 Ultra form factor when implemented with compatible monitor stands.

Going Green

Obviously, a space-optimized PC like the OptiPlex 7070 Ultra requires fewer raw materials than a conventional ATX form factor system. That's not to say that all the fabrication necessary to produce a CPU or RAM module doesn't remain similar, but at least we're dealing with significantly less PCB real estate and chassis metal. Concurrently, the power draw of a Dell OptiPlex 7070 Ultra (65W TDP) will be a fraction of most desktop counterparts. Even the ostensibly mobile CPU in our review unit, the 8th Generation Intel Core i7-8665U (8MB cache, 4 cores, 1.9 GHz to 4.8 GHz) draws a mere 25W. (Intel specifies 15W for this mobile processor, but Dell's literature notes that the "Ultra operates the CPU at the highest configurable wattage of 25W" TDP.) Compare that to the 65W Core i7-9700 desktop chip used in the OptiPlex 7070 Small Form Factor desktop equivalent. For companies trying to dampen resource consumption, reduce carbon footprint and be more eco-friendly, the OptiPlex 7070 Ultra is a nice compliment to an eco-minded business' overall environmental strategy.



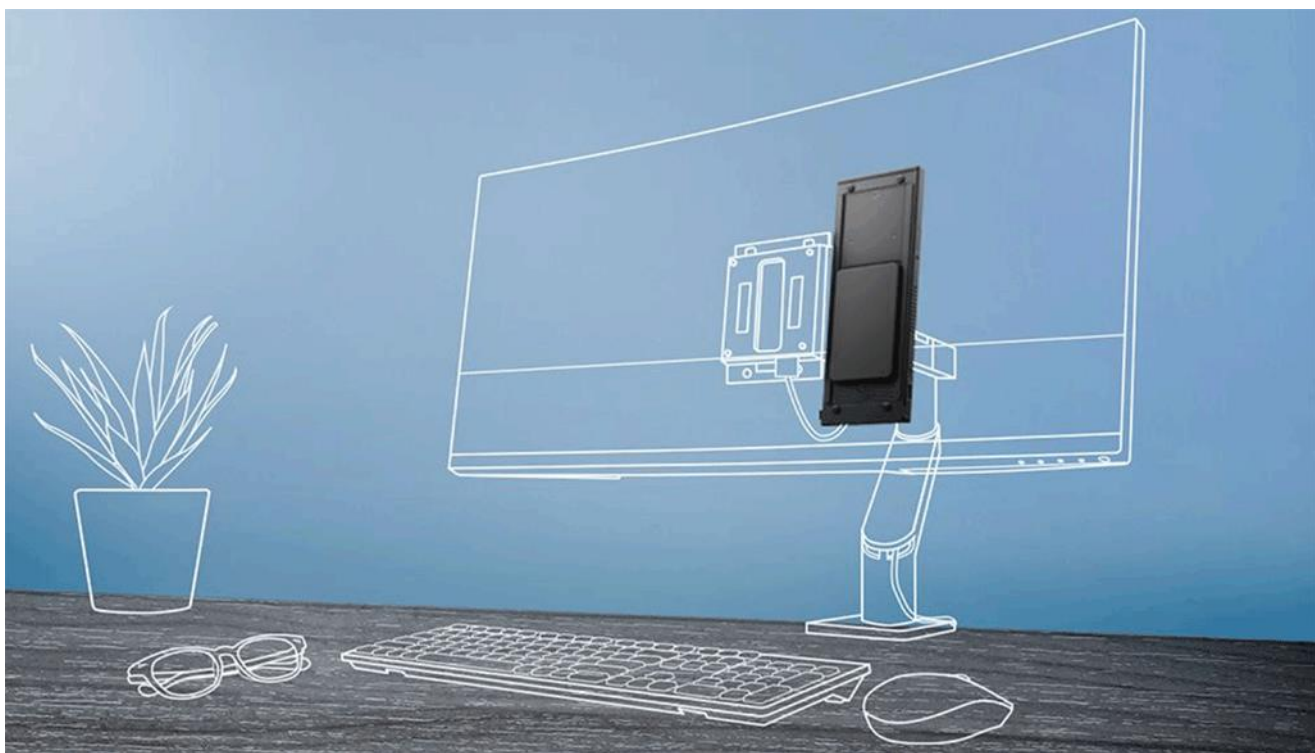
Robust Business-Class Performance

It may go against the perennial computing wisdom that faster is better, but more often currently, efficiency is king, whether it's measured in performance-per-watt or IOPS-per-dollar. The real-world difference between the OptiPlex 7070 Ultra's Core i7-8665U and a higher-end CPU, such as the Core i7-9700 found in some larger Dell OptiPlex desktops, just isn't as tangible when you're juggling browser tabs, composing PowerPoints and utilizing other general office productivity tools. Further, if most of the client's software arrives as a cloud-delivered service rather than locally run, the need for high-end processor performance becomes less critical. Most desktop processors are faster than mobile platforms, but likely not in ways that will be noticed by many business users. The integrated graphics engines in the two chips are very similar as well. The OptiPlex 7070 Ultra's many other advantages — at a surprisingly similar price point and footprint compared to the traditional desktop equivalent — more than make up for negligible performance compromises in this environment and commercial use case.

Conclusion

Riding along a decades-long series of trends toward ever-smaller desktop computing, Dell's new OptiPlex 7070 Ultra series promises to be a game-changer for customers that need simpler, cleaner, and more flexible computing solutions. Dell's OptiPlex 7070 Ultra family provides current, capable components that don't skimp on performance, yet achieve form factor dimensions and design aesthetics never before seen in the desktop world — and they literally won't be seen by those who tuck them into compatible Dell monitor stands. Dell's leadership in design and innovation and its ability to listen to and act on its customers need with new products is on fully display with the OptiPlex 7070 Ultra.

Capitalizing on USB-C features and in-house Dell software tools only increases the value for users, while IT teams will likely commit fewer resources to maintenance of an OptiPlex 7070 Ultra fleet, versus conventional desktop PCs. Most of all, the OptiPlex 7070 Ultra line brings a new level of transportability, modularity, and convenience to a desktop computing market in great need of fresh innovation.



Further, for companies whose workforce might benefit from moving compute resources between workstations and sites without the need for additional laptop or other mobile device cap-ex, the OptiPlex 7070 Ultra will be a compelling, unique approach for many users. This new Dell system's, serviceability and design innovation impressed us at first sight. Its intrinsic value proposition will no doubt turn the heads of many mainstream business teams, regardless of market verticals or size of the company.



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