



# Unleash the client

**HP t310 Zero Client couples blazing performance with advanced security features and easy management**

Drawing on the latest Teradici PCoIP® technology and VMware Horizon View, the HP t310 Zero Client delivers a true desktop experience to remote users.

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# Executive summary

With its unique mix of technologies, including the latest Teradici PCoIP® technology and VMware Horizon View, the HP t310 Zero Client delivers breakthrough multimedia performance for virtual desktop users. HP engineers validated the performance of the HP t310 in lab tests that compared the device to a selection of thin clients. In those benchmarks, the HP t310 doubled or even tripled the performance of the comparative systems.

In addition to its performance edge, the HP t310 brings together a wide range of advanced security features in a device designed for simplified management. This mix of product characteristics makes the HP t310 an ideal client endpoint for use cases that demand not just top performance but also stringent data security and easy management.



## HP t310 Zero Client

In August 2012, HP broke new ground in virtual desktop infrastructure (VDI) with the launch of the HP t310 Zero Client. Tailor-made for VMware virtual desktop users, and featuring the Teradici Tera2 PC-over-IP (PCoIP) zero client processor, the HP t310 provides a high-performance client endpoint for virtual desktops.

With the Tera2 processor, the HP t310 easily handles the most demanding multimedia needs for users in VMware View environments. The Tera2 chip delivers up to five times the imaging performance of its predecessor, the Tera1 processor.

Along with its ability to bring a desktop-like experience to the VDI client, the HP t310 offers advanced security and manageability features. The HP t310 is a true zero client with no operating system or codecs for IT to manage. With no local storage, the HP t310 provides a highly secure endpoint suitable for government, defense, healthcare, finance, and other secure-sector deployments.

The HP t310 Zero Client joins the HP t410 Smart Zero Client and the HP t510 and HP t610 Flexible Series Thin Clients to help HP deliver the industry's broadest lineup of zero and thin clients for VMware environments.

### Zero clients versus thin clients

So what exactly is a zero client, and how does it differ from a thin client? A zero client is essentially a thinned-down version of a thin client. A thin client works in conjunction with a backend server to offload much of the work that would typically be done locally on a desktop system. Thin clients often run a pared-down version of a Windows® or Linux operating system that resides on the client device.

In contrast, zero clients have no operating system, which makes them even easier to manage. They require no software drivers, no antivirus software, and no OS patches or other application software updates. They simply provide an interface for a mouse, a screen, and a keyboard. The most that zero clients might need in terms of management is centralized software to update the firmware built into the hardware processor. Everything else is handled on the backend server.

In another notable difference, zero clients are designed to handle just one virtualization protocol at a time, and to handle that protocol extremely well. (In a variation on the zero client, the HP t410 Smart Zero Client can be configured to work with multiple virtualization protocols.) In the case of the HP t310, the device was designed and optimized to use the PCoIP protocol for VMware Horizon View. The PCoIP protocol, developed by Teradici, uses host rendering to compress all graphics on the server, avoiding any compatibility issues with new applications or operating systems, and allowing for simple, stateless clients with reduced power-consumption demands.

## Putting the HP t310 to the test

HP engineers validated the performance of the HP t310 in a set of rigorous benchmarks. These benchmarks compared the performance of the HP t310 to different HP virtual desktop clients. The benchmarks measured performance in terms of megapixels per second (Mpps). A megapixel equals one million pixels, or the tiny dots that make up images on computer displays. The faster the megapixels are rendered, the better the system performance for the end user.

In the system benchmarks, the HP t310 demonstrated performance that goes far beyond that of comparable thin clients in the HP portfolio. A summary of the results follows. The benchmarks here indicate relative client pixel performance. Maximum client performance may be higher than shown in these benchmarks.

It's important to note that 6 Mpps is actually very good performance for most VDI use cases, including that of the typical office worker. You would need greater performance only if you were pushing multimedia to the clients. For example, the higher performance would be beneficial if your virtual clients were running large video windows, full-screen video, or multimedia across two monitors.

**Table 1.**

Client	Speed
HP t310 Zero Client	21 Mpps
HP t410 PCoIP Optimized Client	6 Mpps
HP t510 Software Client	8 Mpps
HP t610 Software Client	9 Mpps

### Zero versus PCoIP Optimized clients

The HP t310 Zero Client is a hardware-based client that uses a purpose-built silicon processor from Teradici. It has no application operating system, no browser, and no local data storage, and it offers the best possible security and performance for VMware Horizon View and remote workstation solutions using the PCoIP protocol. The HP t310 is an extremely low power device, it is quick to set up and easy to manage, and it can simultaneously meet the needs of knowledge workers, security conscious workers, and power users.

In contrast, PCoIP Optimized clients, such as the HP t410, offer a balance between performance, security, and flexibility. The HP t410 supports multiple protocols, and is designed to take advantage of a system on chip (SoC) processor to deliver performance that is adequate for a knowledge worker.



## Server optimization options for the HP t310

The HP t310 zero client is also ready to take advantage of the Teradici APEX™ 2800 server offload card. This card offloads PCoIP image encoding tasks and reduces server CPU utilization. By offloading image encoding to a hardware encoding card, the APEX 2800 reduces peaks in CPU utilization, to enable a consistent user experience across all users regardless of task and activity level, and to allow for increased VDI consolidation ratios and more virtual desktops per server.

The Teradici APEX 2800 card:

- Creates virtual CPU headroom to deliver consistent application performance and enable intensive applications to run smoother
- Reduces peaks in CPU utilization by up to 50% and streamlines overall CPU demand to provide a reliable and consistent level of experience regardless of the overall demand on server CPUs
- Constantly monitors the graphic encoding demands of each display and dynamically offloads up to 100 of the most active displays

As the APEX 2800 reduces server CPU utilization, the extra headroom can also be used to improve the VDI consolidation ratio by up to 1.2 times in typical office workloads (5% video, 95% office). In use cases with high levels of pixel changes, such as a number of users all watching videos at the same time, consolidation ratio improvements can be up to two times.

In addition, the HP t310 can be used in combination with a Tera2-based host card to deliver a high-performance 1:1 remote workstation experience between a GPU-enabled workstation and a remote user. While this is not a VDI use case, when connected in this fashion the performance of the HP t310 can jump to 130 Mpps to meet the needs of power users with graphically demanding applications.

## Extending the value via third-party integrations

Teradici has invested significantly in third-party integrations that offer added value for users of PCoIP zero clients. Through firmware updates, Teradici continually adds new capabilities and performance improvements.

In one such example, Teradici has added support for Imprivata OneSign® No Click Access™, a globally recognized solution for healthcare IT security. Imprivata enhances healthcare delivery by providing fast, highly secure access to patient information inside and outside the hospital via its OneSign® Single Sign-On offering coupled with OneSign Authentication Management. With the use of the same proximity badges commonly used for physical access and identification, Imprivata OneSign automates fast access to user desktops. Devices based on the Teradici PCoIP processor, including the HP t310, include native support for Imprivata OneSign Authentication in a VMware Horizon View environment.

Teradici has also added extensive PCoIP firmware support for all popular user authentication modalities, including support for common access card (CAC) and personal identity verification (PIV) cards, Secure Internet Protocol router (SIPR) hardware tokens, SafeNet eTokens, and many other solutions. For a complete list of supported smart card and user authentication solutions, please reference [Teradici knowledgebase item #15134-299](#) at [techsupport.teradici.com](http://techsupport.teradici.com).

## HP t310 with Microsoft RDSH

In addition to its support of VMware Horizon View, the HP t310 is an ideal client for servers running Microsoft® Remote Desktop Session Host (RDSH). Microsoft RDSH is the latest, advanced version of Microsoft Terminal Services. This multi-user version of Windows Server® allows backend server hardware to host Windows-based programs or the full Windows desktop. Like VDI, users can connect to RDSH desktops using a variety of client devices over a remote display protocol.

Teradici Arch™ is a software solution that allows the use of the PCoIP remote display protocol when connecting to Microsoft RDSH desktops. When used with Teradici Arch, the same HP t310 Zero Client can connect to either a Microsoft RDSH desktop or a VMware VDI desktop.

With Teradici Arch, IT managers who deploy both VMware Horizon View and Microsoft RDSH desktop environments can achieve consistent performance, security, and user experience across both types of desktop pools.

In these implementations, Teradici Arch provides:

- PCoIP protocol support for Microsoft RDSH session desktops with the benefits of high performance, enhanced security features, and a great user experience
- The ability to broker and manage both VMware Horizon View and RDSH session desktops through VMware View Manager
- The benefits of high performing, highly secure, minimal management PCoIP zero clients for RDSH session desktops
- The ability to use the Teradici APEX 2800 PCoIP server offload card to provide Microsoft RDSH desktop sessions with the same increase in performance and scalability as currently offered in VMware Horizon View deployments



## The advantages of PCoIP hardware security

### The HP t310 Zero Client takes security to a new level. Here are a few examples:

For enhanced security, the device is available with a fiber network interface card (NIC), as well as a copper NIC option. Fully encrypted sessions include support for AES-256 and NSA Suite B security protocols suitable for top-secret classification. The Trade Agreement Act (TAA)-compliant fiber SKU is designed to meet the stringent security regulations while delivering an exceptional user experience.

In another key security feature, the HP t310 is a fully stateless device with no local storage. That means it has no operating system and no ability to store data that could become compromised. This makes the device a highly secure endpoint for public and private deployments that require rock-solid data security.

The HP t310 also includes protection against data loss with secure authentication and authorization of all USB peripheral devices. This capability allows an administrator to select the types of USB devices the client can recognize. In addition, administrators can disable USB capabilities altogether, so no USB peripheral devices can connect to the client device.



## Advanced display capabilities and more

Among other notable differentiators from competitive thin client offerings, the HP t310 offers native support for dual DVI outputs. These dual outputs can be channeled to a single display with a resolution up to 2560x1600<sup>1</sup> or to two displays with resolutions up to 1920x1200.

In addition, the HP t310 is part of a tightly integrated, end-to-end HP solution that spans from the servers in the data center to the client device.

<sup>1</sup> With custom single-to-dual DVI conversion cable, sold separately.

## Key takeaways

With the Tera2 processor, the HP t310 is the top-performing PCoIP client when compared with any thin client without the Tera2 chip. The entire system is built into a chip dedicated to the PCoIP protocol and optimized to deliver a desktop-like experience to the VDI client.

In addition, the HP t310 offers the advantages of simplified management and advanced security. With no operating system and no local storage, the device bypasses the need for updates to software drivers, antivirus programs, operating system patches, and application software updates. All of that work takes place on the backend server, under the watchful eyes of IT administrators.

Put it all together and you have a client endpoint that is ready for use cases that demand not just top performance but also stringent data security and simplified management.

### To learn more

For more information on the HP t310 Zero Client—visit [hp.com/go/thin](http://hp.com/go/thin).

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