WHITE PAPER

Thin Clients vs Conventional Desktop PCs: What Healthcare Providers Need To Know

AMD Embedded Solutions
From patient care to workflow efficiency and regulatory compliance, the important considerations to weigh when selecting a desktop computing solution.

Healthcare providers hold themselves to the highest standards of patient care, and are therefore acutely attuned to the technologies they use to improve the patient experience at every stage in the continuum of care. From admissions to the emergency room to outpatient care and rehabilitation, the technology that’s utilized can make a huge difference on patient outcomes, and can also have a significant impact on providers’ productivity and operational costs.

This holds especially true for the desktop computing infrastructure that’s ubiquitous across the healthcare domain. For decades, conventional desktop personal computers (PCs) have served as the primary interface between the caregiver and the data network, even as the network has largely evolved from onsite server-based to cloud-based infrastructure. Taking into account the myriad benefits that cloud computing provides today compared to legacy network models, it’s time to reassess the value and viability of legacy desktop PCs in light of the new generation of cloud-optimized thin clients.

**WORKFLOW EFFICIENCY**

Cloud computing and virtual desktop infrastructure (VDI) technology have fundamentally changed the way healthcare data is stored, managed and accessed. With the legacy desktop PC model, data and applications reside locally on individual PCs distributed across the network, often yielding a hodgepodge of individually configured and managed PCs – numbering from dozens to thousands – each of which is inputting and outputting sensitive patient data often with little to no parameter uniformity.

With thin clients, however, data and applications are remotely administered, stored, and centralized in the data center and/or cloud infrastructure – they are not physically hosted on the device. The thin client is simply the access portal, giving clinicians and administrators immediate access to their applications and patient data, as their credentials allow.

Leveraging single sign-on and user authentication technologies in a networked thin client environment, users can quickly and securely access the tools and information they need – regardless of the device they’re using. This unfettered “anytime, anywhere” access flexibility can improve workflows, accelerate response times, and enable on-the-go collaboration, which can then improve the quality and timeliness of patient care.

These core attributes of the cloud-enabled thin client computing model introduce similarly valuable efficiencies at the IT management layer. With thin clients, IT administrators are no longer burdened with the tedious and time-consuming task of configuring, managing and updating every individual PC on the network, accounting for each machine’s user-customized settings. OS and other updates are simply pushed in unison from the cloud datacenter to the thin clients. Centralized management also reduces demands on data storage resources, eliminating local, desktop-level file storage altogether and minimizing storage capacity consumption in the cloud datacenter via deduplication of redundant files.

**SECURITY & REGULATORY COMPLIANCE**

By the nature of their architecture, thin clients offer a host of security advantages to help ensure compliance with HIPAA and other healthcare regulations, while also minimizing exposure to security threats. Since patient data can’t be downloaded and/or saved directly to the thin client, and is instead securely stored in the cloud, there is no risk of data tampering, theft or errant propagation of patient data at the device level. Authorized user access to cloud-based data and applications is tightly controlled via user authentication and permissions verification. Smart cards, USB/port protections and fire-walls can further augment these security measures.

Thin clients are inherently easier than PCs to configure and update as government policies and regulatory mandates evolve, minimizing the risk of non-compliance while easing the burden on IT staffing resources. In a desktop PC environment, remotely administered patching and updating can require expensive utilities and complex scripting processes, and typically can only be administered if the end device is powered on. On the heels of this process, the IT staff must then verify that each PC was successfully updated. A single lapse anywhere in this workflow can leave the healthcare facility exposed for a noncompliance citation.

In a thin client environment, patches and updates are applied directly to the VDI and/or cloud server infrastructure, and automatically propagated centrally to every virtual desktop. Patient data integrity and confidentiality is inherently more secure with thin clients, as all data is centrally stored, protected and backed up.
RELIABILITY AND ENERGY EFFICIENCY

Reliable access to patient records is of course a paramount concern for healthcare providers. There can be zero tolerance for prolonged access interruptions or data loss. If a desktop system fails or a power failure strikes part of the facility, a clinician must have the ability to resume working immediately on a different device.

With VDI-based thin clients, automatic failover capability is built into the architecture, ensuring that data is accessible when and where doctors and clinicians need it. All data and applications are served from a secure and centralized location, enabling the user environment to be seamlessly portable from device to device. And there is no locally stored data to be lost during a power loss event or device failure.

On that last point: device failure. Thin clients provide yet another significant advantage over conventional desktop PCs, which typically need to be cooled by an onboard fan, and may also have a hard disk drive integrated within. Both of these components are comprised of moving parts, and are therefore subject to wear and tear, increasing the risk of failure and inviting additional hardware maintenance costs.

Thin clients forego both of these components and are therefore inherently less prone to failure, increasing the likelihood of system longevity. With no fan and therefore no intake and exhaust air vents, thin clients can help reduce the ingress of particulates and debris that might otherwise collect and incubate within the device, and subsequently be expelled into the air as infectious agents. This is a particularly valuable benefit in healthcare environments, particularly at the point of care, where bioburden and fouling are acute concerns, and devices with exposed moving parts will need to be cleaned in order to maintain hygienic conditions.

With fewer onboard components, and leveraging thin client-optimized processors, thin clients can be up to 7X more energy efficient than desktop PCs, conserving energy at the device-level and throughout the thin client network. The aggregate power savings that can be achieved can be significant, enabling a healthcare facility to shrink its environmental footprint while reducing its electricity costs.

THE AMD THIN CLIENT ADVANTAGE

Powering thin client solutions from industry leading providers including Dell, HP, IGEL and others, AMD Embedded G-Series and R-Series SOC s set new levels of performance and energy efficiency in healthcare applications. Healthcare facilities of all sizes and disciplines can take advantage of AMD-powered thin client solutions to improve patient care and workflow efficiency, while helping lower their operational costs.

AMD Embedded processors are available in a wide range of performance, power and security profiles, and are renowned for their graphics processing capabilities. Supporting multi-display configurability and 4K HD video, AMD-based thin client solutions equip healthcare providers with rich multimedia capabilities that can be used to help patients better visualize fitness and training exercises, rehabilitation routines, and more.

To learn more about AMD’s thin client solutions, visit http://subscriptions.amd.com/greatpower/industry/medical.html
To estimate the potential cost and energy savings that can be achieved with AMD-powered thin clients, visit http://www.amd.com/en-us/solutions/embedded/thin-client/tco-calculator

ABOUT AMD

AMD (NYSE: AMD) designs and integrates technology that powers millions of intelligent devices, including personal computers, tablets, game consoles, thin clients and cloud servers that define the new era of surround computing. AMD solutions enable people everywhere to realize the full potential of their favorite devices and applications to push the boundaries of what is possible.

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1. Assumes a typical thin client consumes an average of 8-20 watts compared to a 60-150 watt PC, for a calculated average of 7X lower wattage consumed by a typical thin client than a PC.

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