Lenovo
Health

the healthcare CIO's guide

to endpoint device selection

intel **vPro**® PLATFORM

Built for Business

Smarter technology for all

Lenovo

this year, healthcare IT budgets are forecasted to

outpace other industries

according to Gartner's *Healthcare IT Key Metrics Data* report, and fully 10% of budget growth is earmarked for end-user computing.[1] Most CIOs, then, will likely allocate time and resources to reviewing and mapping use-model requirements to available computer devices this year. Savvy IT teams will balance requirements from horsepower and security to workflow and mobility, mapping users and use cases to devices.

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matching use cases to users

A decade ago, determining how to allocate resources for clinical data access (endpoint devices) was fairly straightforward. As a 2009 study on clinician computing preferences demonstrated, the options were largely limited to a PC at a desk, a PC on wheels, or a tablet.[2] Today, new endpoint devices are needed to support rapidly emerging technologies from advanced cloud access points to augmented reality/virtual reality (AR/VR), IoT, and edge computing, as IDC estimates that $20 trillion will be spent in the next few years on healthcare's digital transformation.[3]

Computing devices are rising to the challenge. They are more flexible and offer increasingly expanding functionality. That's good news — CIOs can be assured that the newest devices can handle the demands of technologies such as VDI (virtual desktop infrastructure), AR/VR, and high-resolution imaging. However, new devices must also meet increasing regulatory compliance and requirements for secure, hack-resistant patient data access.

It's becoming increasingly difficult for IT teams to select and support the most appropriate device for clinicians when computing options are often endless and seem to overlap in features and functionality. Yet it has never been more important to arm healthcare clinicians, administrators, and executives with compute devices geared for today's modern care delivery environments. Whether tethered or designed for mobility, devices matched to appropriate workflows **help eliminate inefficiencies and build a more robust security perimeter.**

devices designed for healthcare

and the people who use them

Certain endpoint devices are uniquely suited to address specific healthcare needs and use cases. All PCs are not created equal.

This executive brief takes a closer look at device requirements for four specific healthcare roles. Recommendations are based on input from IT leaders and use-case analysis from leading healthcare industry journals.

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hospital-based physicians

Emergency department physicians and hospitalists are high-volume providers, in and out of different treatment rooms throughout the day, as well as in and out of the EHR during every patient encounter.

What They Need:

Hospital-based physicians must be able to badge in to the computer and authenticate to the network at the same time. Clinicians can waste as much as 45 minutes per shift logging in to the computer and the health system's EHR network.[4]

These physicians are e-prescribing medications, so they need DEA-approved biometric authentication.

Nurses assisting these physicians may also need to log in to the same devices, so quick authentication must accommodate multiple users.

EHR access at the point of care has been correlated to better patient outcomes. According to a national physician survey, 75% of providers say the EHR allows them to deliver better care.[5] A study of first-year residents demonstrated that EHR access on a laptop computer improved their ability to communicate with patients compared to using paper charts.[6]

Cleaning and Disinfection Considerations

Physicians engage with patients directly — and by default, so do their mobile computing devices. Laptops used in patient rooms are cleaned 15 to 20 times a day.[7] These devices must be able to withstand rigorous cleaning and must also include features that facilitate the cleaning process — including software that suspends user input for easy wipe-downs. Built-in antimicrobial surface treatments also help shield users and patients and promote a safer environment.

Devices Must Keep Pace with Healthcare

"Lightweight" and "rugged" are operative terms. A device for the hospital setting must be easy to carry throughout a long shift — and must stand up to the inevitable drops and spills. Look for devices that have passed a battery of MIL-SPEC tests to ensure durability.

Privacy filters and glance detection technology are essential in busy treatment centers where protecting patient privacy is paramount. Built-in user-controlled privacy screens detect prying eyes, keeping sensitive on-screen data safe.

Recommended Device

ThinkPad® T490 Healthcare Edition
RFID reader, FIPS 201-compliant fingerprint reader, antimicrobial surface treatment, PrivacyGuard with PrivacyAlert, Lenovo Quick Clean software application

Privacy Shields.
ThinkShutter completely covers the optional HD and IR cameras when not in use to guard against intrusion. Optional PrivacyGuard with PrivacyAlert filters the screen to prevent unauthorized peripheral viewing.

RFID Reader.
Certified by major single sign-on providers including Imprivata®. Supports both RFID and NFC technologies. Aligns computer access with facility access by enabling secure network authentication with the tap of a badge.

Lenovo Quick Clean Software Application.
Suspends user input for a customizable period of time to facilitate the periodic daily wipe-downs required in healthcare settings. Launches easily with a keyboard shortcut or the click of a mouse.

Antimicrobial Surface Treatment.
Meets the ISO 22196 standard, providing an additional layer of protection against exposure to microorganisms on the device's surface.

FIPS 201-Compliant Fingerprint Reader.
Exceeds DEA security requirements for Electronic Prescription of Controlled Substances (EPCS) with a 9-point fingerprint match and the ability to encrypt the fingerprint data for authentication over the network.

clinical specialists

Clinicians who work in radiology, cardiology, and all the "ologies" depend on high computing power to interact with medical research and imaging. These physicians and nurses deliver care and access patient data in a variety of settings.

What They Need:

Radiologists need superior graphics capabilities and the flexibility to support several independent monitors for extremely detailed diagnostic viewing. Space may be at a premium in a large radiology center, so desktop models must be streamlined and efficient.

Artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) are rapidly becoming critical tools for diagnostics, cancer screenings, radiology training,

clinical assistance during procedures, and much more.[8,9] AI applications alone have the potential to create $150 billion in annual savings for the US healthcare economy by 2026.[10] Physician and nurse specialists need the computing power to support these technologies.

Physician specialists consult with emergency departments and hospital physicians throughout the day. They may need a mobile workstation solution that offers the

computing power, graphics capabilities and portability to read medical imaging from various locations in the hospital, in the office, or even from home.

Connectivity ports are critical for specialists. External hard drives, specialized monitors, docking stations, and headsets for teleconferencing should all be extremely easy to attach and configure.

Recommended Devices
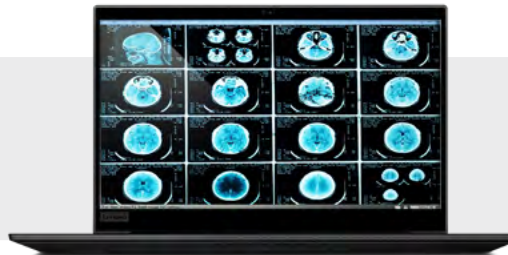
ThinkPad P1 Mobile Workstation
up to 10th Gen Intel® Core™ i7 vPro® processor, 4K OLED display, connectivity ports, NVIDIA® Quadro® T2000 graphics, touch fingerprint reader for match-on-chip authentication, certified with Barco® diagnostic viewers to support home reading

ThinkStation® P330 Tiny with ThinkVision® Monitors
up to 9th Gen Intel® Core™ i9-9900T vPro® processor, NVIDIA® Quadro® graphics, fully adjustable 4K monitors, connectivity ports, 96% smaller than traditional workstation

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Graphics Capabilities.
Delivers superior graphics capabilities and the flexibility to support several independent monitors for extremely detailed diagnostic viewing. Streamlined and efficient.
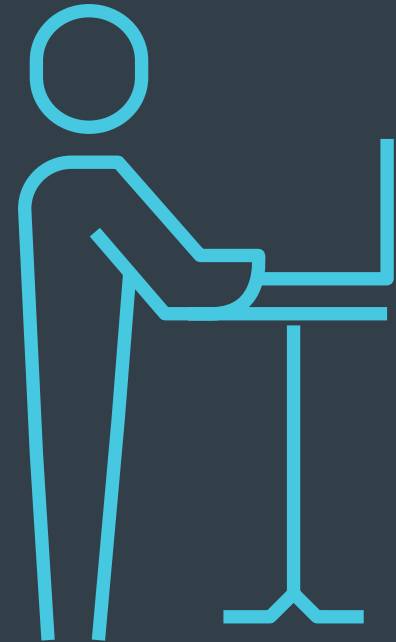
Artificial Intelligence.
Supports critical tools for diagnostics, cancer screenings, radiology training, and clinical assistance during procedures.
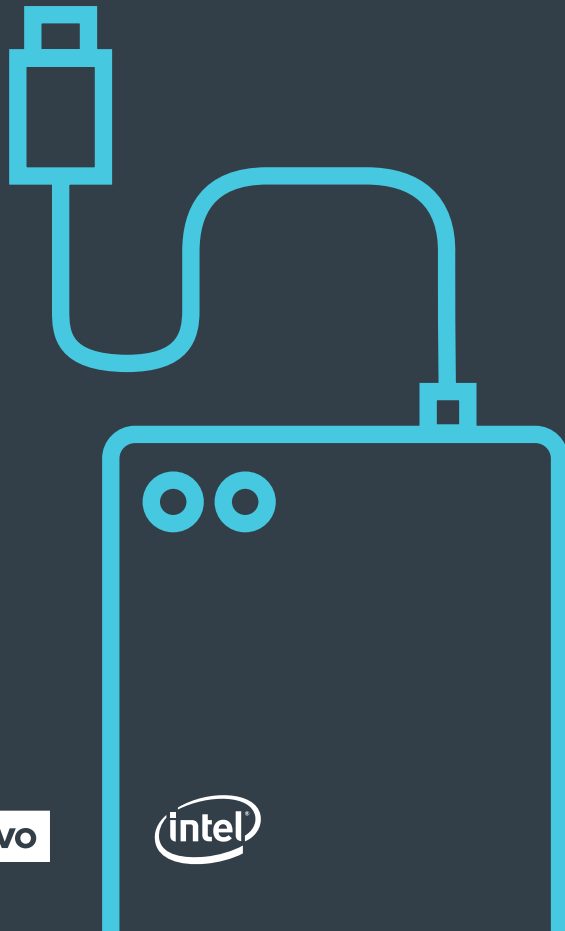
Connectivity Ports.
Easily attach and configure external hard drives, specialized monitors, docking stations, and headsets for teleconferencing.

Mobile Workstation.
Offers the computing power, graphics capabilities, and portability to read medical imaging from various locations in the hospital, in the office, or even from home.

nurses and therapists

On the floor, workflow is generally device-agnostic, with nurses and various care team therapists signing on to multiple PCs depending on shifts, locations, and patient assignments.

What They Need:

Although nurses are not typically assigned dedicated computer devices, they do need access to their patients' information. Virtual desktop infrastructure (VDI) maintains all data in the cloud, rather than on an individual endpoint device, so nurses can access their unique desktop information by logging in to the network from any computer. Their virtual desktops appear as they would on dedicated endpoint devices. VDI is gaining popularity in healthcare because it offers security, efficiency, and improved workflow.[11]

Nurses, physical therapists, nutritionists, etc. represent a diverse population, treating numerous types of patients and requiring access to distinct systems and services within a healthcare organization. VDI easily manages that access, connecting nurses to the exact information they need for their specific roles.

With shift changes and multiple devices in play, nurses must be able to sign in quickly and effortlessly. Tap-and-go single sign-on (SSO) saves critical time better spent on patient care. In a study published in the *International Journal of Medical Informatics,* CHRISTUS Health saved nearly 1,500 clinician hours and more than $92,000 per year, per facility, by implementing SSO. Further, SSO implementation was found to be most successful when it was paired with migration to a VDI-enabled thin client.[12]

Make Room!

Since nurses and therapists work in settings that are often space-challenged, space is a primary consideration. Small-footprint devices provide the versatility for use in nurse call centers, on carts in hospital wards, at nurses' stations, or at registration desks.

Depending upon location, some of the endpoint devices most frequently used by nursing staff may also be used for patient engagement, or for intake and registration.

Recommended Devices

ThinkCentre® M Series or Nano
up to 10th Gen Intel® Core™ i9 vPro® processor, configure-to-purpose, tap-and-go single sign-on, ports for keyboards and mice protected by Seal Shield™ for infection control, software to manage access at the admin level, MIL-SPEC tested for durability

Lenovo Tablet 10
match-on-host fingerprint reader, optional IP-certified case, stylus, and keyboard options

Virtual Desktop Infrastructure.
Maintains all data in the cloud, rather than on an individual endpoint device.

Tap-and-go Single Sign-on.
Sign in quickly and effortlessly. Saves critical time that can be better spent on patient care.

Antimicrobial Surface Treatment.
Meets the ISO 22196 standard, providing an additional layer of protection against the growth of microorganisms on the device's surface.

A rugged tablet with options for docking, external keyboard, and stylus can flex to accommodate the presentation of a patient educational video or enable the streamlined collection of patient history information.

Inpatient nurses and therapists will most certainly need a rugged, durable, secure device that can withstand frequent cleaning, drops, and spills.

ThinkPad Laptops
MIL-SPEC tested, rugged to withstand disinfection, lightweight and portable, multimode functionality for patient engagement (Yoga), performance keyboard

administration and support

Medical records management staff — billers and coders — represent a significant portion of this user group. These non-clinical team members are vital to the smooth operation of a healthcare organization and spend the greatest portion of the workday in front of a screen.

What They Need:

Comfort features and ergonomics dramatically improve the daily work experience for billers and coders. Tactile-feedback keyboards and monitors built to reduce eye strain are critical for admin end users. Employees using ergonomic equipment work more quickly, make fewer errors, and are more engaged with their organizations. Further, 40% of workplace injuries are sprains and strains from repetitive work.[13]

Coding books and other reference material may take up desktop space, along with multiple monitors, so the smallest possible endpoint devices should be employed in these settings. Ensure the devices feature adequate ports for monitors, as well.

The cloud-based VDI market is expected to reach $10 billion by 2023, and a recent report found healthcare to be its top industry.[14] VDI

capabilities can facilitate remote working arrangements, which liberate a health system from the traditional one-location, on-premise model. Billing and coding professionals can log in and access their desktops and software from anywhere, so satellite offices can easily be created for merged and acquired hospitals.

Recommended Devices

Lenovo Wireless Keyboard Mouse Combo
features a durable, water-resistant casing equipped to handle the occasional spill, island keys are designed to increase typing accuracy and comfort, accompanying wireless mouse has ambidextrous design and features a 1200 dpi optical sensor for accurate pointing
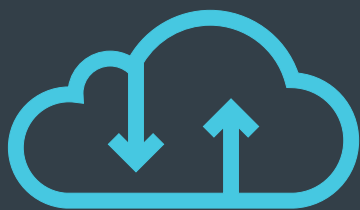
ThinkVision Monitors
advanced features allow seamless multitasking and collaboration, maximizing productivity

VDI ThinkCentre M Series
up to 10th Gen Intel® Core™ i9 vPro® processor, configure-to-purpose processing specs, tap-and-go single sign-on, ports for monitors, software to manage access at the admin level
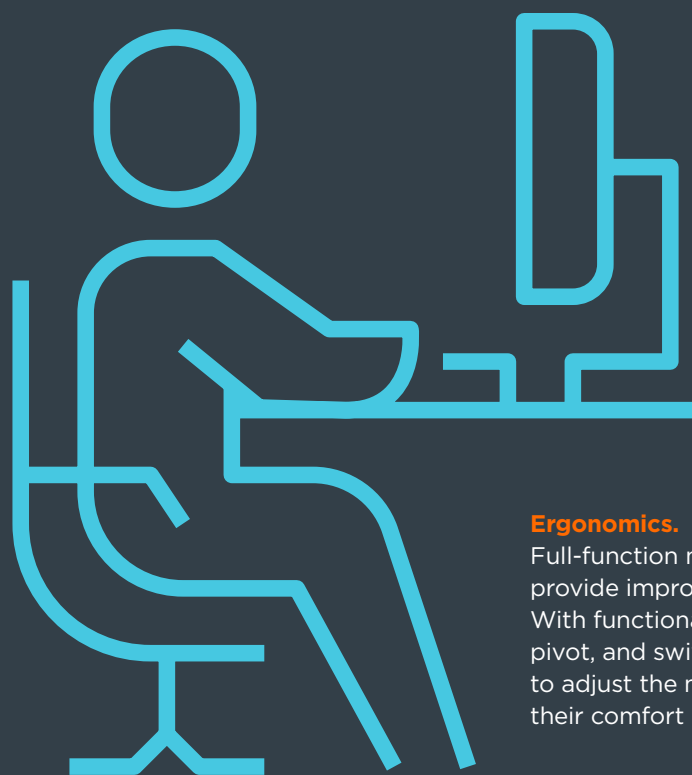
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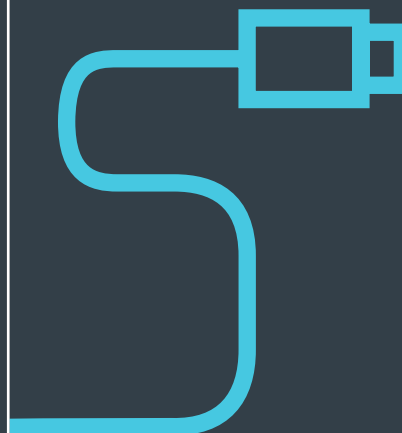
Comfort.
Keyboards designed for durability, typing comfort, and accuracy deliver comfort and productivity.

Ergonomics.
Full-function monitors and stands provide improved user comfort. With functionalities such as lift, tilt, pivot, and swivel, stands allow users to adjust the monitor according to their comfort level.

Connectivity Ports.
Easily attach and configure external hard drives, specialized monitors, docking stations, and headsets for teleconferencing.

security for all

With data breaches resulting in the exposure of more than 13 million healthcare records in 2018 alone,[15] security considerations span the entire computer ecosystem in a healthcare organization.

The following security protections are considered f*oundational* for secure endpoint deployment throughout the health system:

- **Multifactor identification capabilities** including fingerprint readers, IR cameras, smart card readers, RFID readers, and password and PIN interfaces

- **BIOS-based smart USB protection** to prevent unauthorized data downloads by blocking unsecured devices from connecting to USB ports

- **Endpoint management** to unify cloud and device security across multiple devices

- **Wi-Fi security** to detect threats and notify users before they connect to unsafe networks or release confidential information

- **Privacy screen filters and presence detection** to protect against visual hacking in busy or congested locations

- **Camera shutters** to prevent intrusion when built-in cameras are not in use

- **Secure recycling and hard drive retention programs** to manage and protect data at the end of a device's lifecycle

- **Persistent endpoint visibility** technology to help IT administrators secure endpoints and respond to security incidents remotely

- **Secure RFID and NFC technology** that supports secure SSO and aligns device security with facility security

Recommended Security Solution:

To protect you from the bad guys, security solutions must protect against innocent employee mistakes and malicious outsiders. A combination of security features that begin with device manufacturing and extend to networking solutions are required to deliver end-to-end breach protection.

The **ThinkShield** security portfolio, powered by the Intel vPro® platform, provides comprehensive protections for device, data, identity, and online personas. This solution delivers healthcare IT admins greater endpoint visibility, tracking, and access monitoring.

solutions.lenovo.com/thinkshield
www.intel.com/vPro

Sources 1. https://www.ravemobilesafety.com/blog/healthcare-it-budgets-forecasted-to-increase 2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2762853/ 3. https://www.healthcarefinancenews.com/news/follow-money-where-gartner-idc-and-himss-analytics-say-hospitals-will-invest-most-2018 4. Information provided by Imprivata during the Lenovo Security Webinar May 2019. 5. https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/improved-diagnostics-patient-outcomes 6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4433374/ 7. https://www.todayshospitalist.com/look-at-hospitalist-patient-volumes/ 8. https://www.radiologybusiness.com/topics/quality/virtual-reality-augmented-reality-radiology-imaging 9. https://healthitanalytics.com/news/top-5-use-cases-for-artificial-intelligence-in-medical-imaging 10. https://www.accenture.com/us-en/insight-artificial-intelligence-healthcare 11. https://hitinfrastructure.com/news/healthcare-virtual-desktop-deployments-on-the-rise 12. https://www.sciencedirect.com/science/article/pii/S1386505617300394 13. https://www.business.com/articles/5-ways-an-ergonomically-designed-workstation-can-improve-your-productivity/ 14. https://healthtechmagazine.net/article/2018/02/benefit-vs-cost-healthcare-vdi-deployments 15. https://www.hipaajournal.com/largest-healthcare-data-breaches-of-2018/

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with you in mind

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