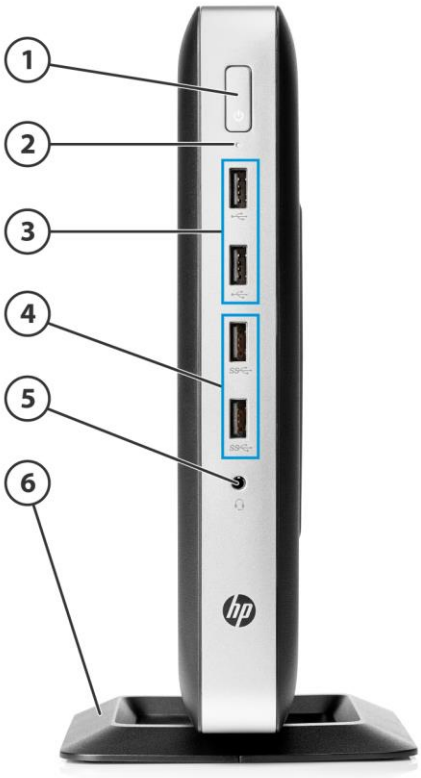
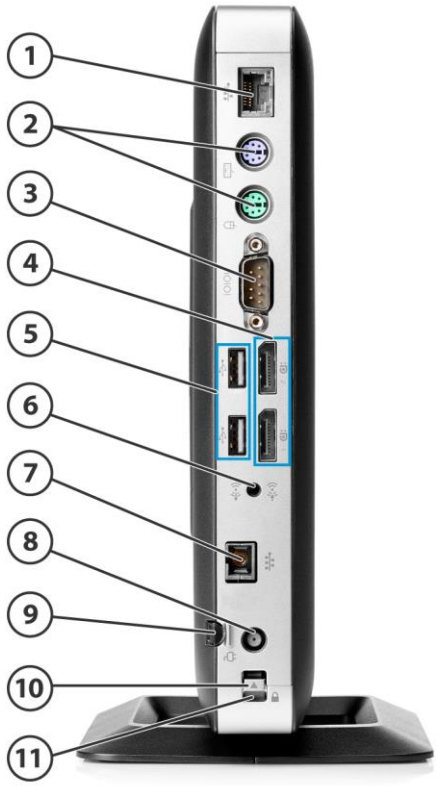
Overview

HP t630 Thin Client





FRONT

1. Power button (with integrated power indicator)
2. Flash memory activity indicator
3. (2) Hi-Speed USB 2.0 ports
4. (2) SuperSpeed USB 3.0 ports
5. 3.5 mm headset port
6. System stand

INTERNAL

(1) SuperSpeed USB 3.0 port secured inside chassis

BACK

1. RJ45 network interface connector
2. PS/2 ports for keyboard and mouse
3. Serial port
4. (2) DisplayPort™ 1.2 video outputs
5. (2) Hi-Speed USB 2.0 ports
6. 3.5 mm audio line-out/line-in port
7. Optional I/O Port (can be configured as: VGA output, 2nd serial port, external antenna or Fiber NIC interface)
8. +19V DC power input
9. Retractable power cord retention hook
10. Rear I/O cover removal latch
11. Cable lock slot

Overview

AT A GLANCE

- AMD GX-420GI SOC; 2.0 - 2.2 GHz quad-core with a Radeon R7E based graphics core
- DDR4 dual-channel SDRAM system memory; up to 1,866 MT/s transfer rate; two SODIMM slots; up to 32 GB supported[1]
- (2) DisplayPort™ 1.2 video outputs supporting up to Ultra High Definition (UHD)/4K (3840 x 2160) resolutions
- Solid-state flash memory storage; M.2 form factor modules; support for up to 2 modules for maximum local storage capacity and data management
- Active thermal management technology monitors component operating temperatures, throttles SOC operation if appropriate, and prevents unit thermal shutdown
- Gigabit Ethernet (GbE) network connection supported via an integrated Realtek GbE NIC module
- Optional Allied Telesis Fiber Optic NICs; Fast Ethernet (100 Mb/s) or Gigabit (1,000 Mb/s)
- Optional Wi-Fi/Bluetooth® adapters including antennas integrated internally in the chassis

  NOTE: Fiber optic and Wi-Fi NIC options cannot be supported together[2]
- (2) SuperSpeed USB 3.0 and (2) Hi-Speed USB 2.0 on front, (2) Hi-Speed USB 2.0 on rear and (1) SuperSpeed USB 3.0 inside the chassis.
- Legacy ports include PS/2 keyboard and mouse, up to (2) serial ports and up to (1) VGA video output
- Integrated PC speaker for basic audio playback; 3.5 mm headset audio port on front and 3.5 mm audio port on rear that can be configured as line in or line out supporting headphones, external speaker systems, or microphone
- TCG certified Trusted Platform Module (TPM) chipset; version 1.2 with HP ThinPro/Smart Zero Core and Windows Embedded Standard 7E models, version 2.0 with Windows 10 IoT Enterprise models; other security features include a system BIOS designed to address NIST SP 800-147 guidelines, cable lock slot, and power cord retention clip to prevent accidental disconnects; (1) internal SuperSpeed USB 3.0 port for securing USB flash drives inside the chassis
- ENERGY STAR® certified and EPEAT® Gold registered in the United States (except for some models configured with Fiber Optic NIC networking options). See http://www.epeat.net for registration status in other countries
- Post-consumer recycled plastics content greater than 25% total unit plastics (by weight)
- Low halogen[3] material content
- All models TAA compliant (in North America & EMEA); TAA models available in APJ by request

[1] If configured with a Windows Embedded 32-bit operating system, memory above 3.2 GB may not be available due to operating system limitations
[2] Wireless access point and Internet access is required; availability of public wireless access points is limited
[3] This product is low halogen except for power cords, cables and peripherals, as well as the optional Fiber Optic NIC module; service parts obtained aftermarket may not be low halogen

Warranty

HP Customer Support: limited three-year hardware limited warranty in most regions; HP Care Packs are extended service contracts that go beyond your standard limited warranties; for more details visit http://www.hp.com/go/cpc

Technical Specifications

OPERATING SYSTEMS

HP Smart Zero Core
HP ThinPro
Windows Embedded Standard 7E
Windows 10 IoT Enterprise

PROCESSOR

Model	CPU Frequency Max/Base	Cores	GPU CUs	TDP	L2 Cache	GPU	Memory
AMD GX-420GI	2.2/2.0 GHz	4	6	16.1 W	2 MB	626 MHz	DDR4

NOTE# 1: This HP version of AMD's 3rd Generation AMD Embedded G-Series SoC (GX-420GI) has enhanced features over the generic version (GX-417GI) documented on the AMD website (https://www.amd.com/Documents/I-Family-Product-Brief.pdf).
NOTE# 2: CPU Frequency Max is based on AMD Turbo Core Technology.

GRAPHICS

Number of displays supported: 2

Video outputs: (2) DisplayPort™ 1.2 (standard)
(1) VGA (optional)

NOTE: adding the optional VGA output does not increase the number of displays supported.

Maximum screen resolution: Supports 2 displays at 3840 x 2160 @ 60 Hz via the standard DisplayPort™ outputs
Supports 1 display at1920 x 1200 @ 60 Hz via the optional VGA output

NOTES:

- The system should be configured with dual channel memory (two SODIMMs) for optimal display resolution performance
- Dual channel memory (two SODIMMs) is required to achieve maximum resolution on dual UHD displays

MEMORY

Type: DDR4 dual channel SDRAM

Data Transfer Rate: Up to 1,866 MT/s

Peak Transfer Rate: 14,933 MB/s

Number of Slots 2 x SODIMM

Capacities: 4, 8, 16 and 32 GB

NOTE: WES 7E is a 32-bit operating system and only recognizes up to 3.2GB RAM

Reserved for Graphics: 256 MB, 512 MB (default) or 1 GB

Technical Specifications

NOTE: The system's Graphics Processing Unit (GPU) uses part of the total system memory. System memory dedicated to graphics performance is not available for use by other programs

BIOS

UEFI Specification Revision	2.3.1	
	Meets requirements for Common Criteria, an independent third-party certification of trustworthiness	
	Meets requirements for FIPS 140-2, a standard for cryptographic integrity	
Trusted Platform Module (TPM)	TPM 1.2	HP ThinPro/Smart Zero Core and Windows Embedded Standard 7E models
	TPM 2.0	Windows 10 IoT Enterprise and No OS models
Security features	System BIOS designed to address NIST SP 800-147 guidelines	
Other BIOS details	See t630 Thin Client Troubleshooting Guide	

STORAGE

Type: NAND flash memory; non-volatile

Number of Sockets: (2) M.2 designated as primary and secondary

Capacities:

Primary storage options:

- No OS, Smart Zero & ThinPro = 8, 16, 32, 64 and 128 GB
- WES 7E-32bit = 16, 32, 64 and 128 GB
- Win 10 IoT-64 bit = 32, 64 and 128 GB

NOTE: The primary socket supports M.2 flash up to size 2280 modules; the secondary socket accommodates up to size 2242 modules. The highest capacity offered in the secondary slot is 64 GB.

Secondary storage options:

- All configurations = 8, 16, 32 & 64 GB
- WES 7E-32bit restrictions for factory = The secondary drive must be equal to or greater than the capacity of the primary drive.

NOTE: Secondary SSD capacity restrictions are for factory only. Therefore, customer may change secondary storage to any capacity desired after received from factory.

Solid-state flash-based memory modules are the primary operating system storage media for thin clients supporting highly virtualized operating environments. Thin clients display a hosted session from a data center through standard IP networks which minimizes the required size of local flash-based storage. In a traditional thin client environment, data and application files are stored securely in the remote data center and not on the local storage device.

The HP t630 Thin Client uses three types of flash memory: MLC (2-bits per cell), Ultra MLC (2-bits per cell, but only 1 is utilized) and TLC (3-bits per cell). Because the classic thin client use cases seldom require writing to flash memory storage, a relatively low capacity MLC flash memory module is typically used to provide the best cost and performance. However, when the use case calls for writing to the local flash memory storage module careful consideration should be given to the selection of the proper storage module. A larger capacity and/or the use of Ultra MLC technology could be required to adequately support the usage being planned or expected from the thin client.

Flash Memory Specification	MLC (Multi-level Cell)	UMLC (Ultra MLC)	TLC (Triple-level Cell)
Bits per cell	2	2 (only 1 is used)	3
Terabytes Written (TBW) *	5 TBW* – 8GB 10 TBW* – 16GB 20 TBW* – 32GB	50 TBW* – 16GB 100 TBW* – 32GB	70 TBW* - 128GB

* Terabytes Written (TBW) calculated based on JESD-219 SSD Client workload

Input/Output

USB Interfaces:	(2) Hi-Speed USB 2.0 (front access) (2) Hi-Speed USB 2.0 (rear access) (2) SuperSpeed USB 3.0 (front access) (1) SuperSpeed USB 3.0 (inside chassis)
Video Outputs:	(2) DisplayPort™ 1.2 digital outputs (standard) (1) VGA analog output (optional) **NOTE:** the optional VGA output does not increase the number of displays supported.
I/O Interfaces:	(2) PS/2 keyboard/mouse ports (1) RJ45 network interface connector (1) Serial port (standard): can be configured to produce 5V of power (1) 2nd Serial port (optional)
Audio	(1) 3.5 mm headset port (front) (1) 3.5 mm audio combo line-out/ line-in port (rear) **NOTE:** A single position at the back of the system is utilized for one of four optional outputs. One of the following can be configured to any system: • Optional VGA video output • Optional 2nd serial port • Optional Fiber Optic NIC interface • Optional external Wi-Fi antenna

AUDIO/VIDEO

Audio Subsystem	• Internal amplified speaker system for basic audio playback • 3.5 mm headset socket (front access) • 3.5 mm combo line-out/ line-in socket (rear access)
Audio CODECs	• MP3 • AAC Stereo • HE AAC • Includes hardware acceleration support
Video CODECs	• MPEG-4 part 2 (DivX, Xvid) • MPEG-4 part 10 (H.264, AVC), Advanced Video Coding (AVC) (H.264 encode) • MPEG-H part 2, High Efficiency Video Coding (HEVC) (H.265 decode) • WMV 7/8/9 VC-1 & ASF Demuxer • Includes hardware acceleration support

NOTE 1: Playback of multiple 2160p videos on 4K displays nor stretching the playback of 2160p video across multiple 4K displays is not supported.
NOTE 2: Playback of multiple 1080p videos and stretching 1080p videos is supported above room temperature (ambient temperature of 25 degrees Celsius) as long as the resolution in the operating system is set to 2560 x 1600 or lower.

Technical Specifications

HARDWARE SECURITY

- Security lock slot (cable lock sold separately)
- Power cord retention clip
- Internal SuperSpeed USB 3.0 port
- Trusted Platform Module (version 1.2 or 2.0 depending upon the model's configured operating system)

NETWORKING

Hardware Networking:	• Realtek Gigabit Ethernet • Wake on LAN (WOL) • PXE • TCP/IP with DNS and DHCP • Secure Socket Tunneling Protocol (SSTP); supported with Windows OS
Wi-Fi Networking*	• Intel® Dual Band Wireless-AC 3168 Wi-Fi/Bluetooth® combo adapter • • Intel® Dual Band Wireless-AC 8260 Wi-Fi/Bluetooth® combo adapter

* Wireless access point and internet access required. Availability of public wireless access points limited.

NOTE: Wireless features, performance and support may vary depending on environmental variables such placement, settings and firmware of your access points. Please contact your wireless vendor for support of your wireless environment

FIBER OPTIC NETWORKING

Adapter Option:	**Allied Telesis AT-27M2/SC Fiber Fast Ethernet Network Interface**
Form Factor:	M.2
Connector:	SC; compliant with IEC 61754-4
Features:	• IEEE 802.1p priority encoding/tagging (QoS, CoS) • IEEE 802.1q VLAN tagging • IEEE 802.3x flow control • Buffer/FIFO: 2K transmit and 2K receive • Loopback mode • Descriptor-Based Buffer Management • Wake-on-LAN from S3 (Sleep) and S4 (Hibernate) not supported • Link Detection and PHY interface power; the PHY interface, Link detection and Link LED should be enabled by default at power-up
Performance:	• >= 85 Mbit/s receive, <= 30% CPU utilization • >= 85 Mbit/s transmit, <= 30% CPU utilization • >= 170 Mbit/s total bi-directional, <= 30% C:U utilization The minimum transfer size at 100 Mbit/s is 1 Gbps
External Interface:	Complies with IEEE 802.3 1000BASE-X operation
Power:	• Uses less than 1775 mW of power at full performance

	• Supports all PCI Express bus states L0, L0s, L1 and L2
Non-volatile Storage:	The MAC address is unique for each system; assigned from the board assembly manufacturer's IEEE registered allocation. The PCI subsystem ID is unique to HP and unique to each design to allow Windows Update to be finely controlled.

Technical Specifications

Adapter Option:	**Allied Telesis AT-29M2/SC or AT-29M2/LC Fiber Gigabit Network Interface**
Form Factor:	M.2
Connector:	SC; compliant with IEC 61754-4
Features:	• IEEE 802.1p priority encoding/tagging (QoS, CoS) • IEEE 802.1Q VLAN tagging • IEEE 802.3x flow control • Buffer/FIFO: 22K transmit and 40K receive • Loopback mode • Descriptor-Based Buffer Management • Wake-on-LAN from S3 (Sleep) and S4 (Hibernate) not supported • Link Detection and PHY interface power; the PHY interface, Link detection and Link LED should be enabled by default at power-up
Performance:	• >= 800 Mbit/s receive, <= 30% CPU utilization • >= 800 Mbit/s transmit, <= 30% CPU utilization • >= 1500 Mbit/s total bi-directional, <= 30% C:U utilization The minimum transfer size at 1000 Mbit/s is 1500 Gbps
External Interface:	Complies with IEEE 802.3 1000BASE-X operation
Power:	• Uses less than 2100 mW of power at full performance • Supports all PCI Express bus states L0, L0s, L1 and L2
Non-volatile Storage:	The MAC address is unique for each system; assigned from the board assembly manufacturer's IEEE registered allocation. The PCI subsystem ID is unique to HP and unique to each design to allow Windows Update to be finely controlled.

Technical Specifications

SOFTWARE SUPPORT

Host Environment	Protocol	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN 10 IoT
Microsoft Remote Desktop Services	Remote FX (RFX), RDP	√	√	√
Citrix®	ICA, HDX	√	√	√
VMware® Horizon	RDP, PCoIP	√	√	√

Protocol Clients	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN10 IoT
Citrix® Receiver	√	√	√
Microsoft Remote Desktop Client	N/A	√	√
VMware™ Horizon View™ Client	√	√	√
HP Remote Graphics Software (RGS)	via add-on	√	√
HP TeemTalk Terminal Emulator	√	via add-on	N/A
Free RDP	√	N/A	N/A

Browser Support	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN10 IoT
Mozilla Firefox	36	N/A	N/A
Internet Explorer	N/A	11	11

Security	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN10 IoT
Smart Card	√	√	√
Log-on Manager	√	√	√
Read only Operating System	√	√	√
802.1x	√	√	√
Operating System Write Filter	N/A	EWF, FBWF	UWF
Microsoft Firewall	N/A	√	√

Technical Specifications

Management Tools	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN10 IoT
HP Device Manager	√	√	√
HP ThinUpdate	N/A	√	√
HP Easy Tools	√	via add-on	N/A
HP Smart Zero Client Services	√	N/A	N/A
Microsoft SCCM/EDM agent	N/A	√	√

Additional Components	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN10 IoT
HP Velocity	√	√	√
HP Easy Shell	N/A	√	√
HP Universal Print Driver	N/A	√	√
Windows Media Player	N/A	12	12
Microsoft Direct Access	N/A	N/A	√
Microsoft BranchCache	N/A	N/A	√
Microsoft AppLocker	N/A	N/A	√
Microsoft Sideloading	N/A	N/A	√

NOTE: Other add-on software available (see: http://www.hp.com/support for latest list of available add-ons). Software performance and support may vary depending on customer environment and backend.

Audio/Video CODECs	HP ThinPro Smart Zero Core	Microsoft Windows Embedded WES 7E	Microsoft Windows Embedded WIN 10 IoT
MP3	√	√	√
WMA stereo	√	√	√
AAC stereo & HE AAC	√	N/A	N/A
Microsoft AC3 encoder	N/A	√	√
MPEG-1	√	N/A	N/A
MPEG-4 part 2 (DivX, Xvid, H.263)	√	√	√
MPEG-4 part 10 (H.264, AVC)	√	√	√
WMV 7/8/9/ VC-1 & ASF Demuxer	√	√	√

Technical Specifications

TEXT AND GRAPHICS TERMINAL EMULATIONS

(provided by HP TeemTalk 7 in HP ThinPro)

Emulation	Terminal ID
HP 700-92/96	70092, 70094, 70096, 2392A, 2622A
IBM3151	Mod11, Mod31
IBM3270	3278-2 (24x80), 3278-3 (32x80), 3278-4 (43x80), 3278-5 (27x132), 3278-2-E (24x80), 3278-3-E (32x80), 3278-4-E (43x80), 3278-5-E (27x132), 3279-2 (24x80), 3279-3 (32x80), 3279-4 (43x80), 3279-5 (27x132), 3287-1
IBM5250	5291-1, 5292-2, 5251-11, 3179-2, 3196-A1, 3180-2, 3477-FC (27x132), 3477-FG (24x80), 3486-BA, 3487-HA, 3487-HC, 3812-1
VT52, VT100, VT100+, VT500 (7- or 8-bit)	VT100, VT101, VT102, VT125, VT131, VT132, M2200, VT220, VT240, VT320, VT340, VT420, VT510, VT520, VT525
VT HP220, VT UTF8	VT100, VT101, VT102, VT125, VT220, VT240, VT320, VT340, VT420, VT131, VT132, M2200, VT510, VT520, VT525

WEIGHTS & DIMENSIONS

W x D x H: **(vertical orientation)**	With stand: 12 x 22 x 25.1 cm; 4.72 x 8.66 x 9.88 in Without stand: 4.2 x 22 x 24 cm; 1.65 x 8.66 x 9.45 in
Volume:	2.21liters; 74.73 fl oz
System Weight **(unit with stand)**	With stand =1.52kg; 3.35 lb Without stand = 1.45 kg; 3.20 lb
Shipping Weight	4.1kg; 9.04 lb

NOTE: All measurements are approximate; the addition of optional modules will increase the weight

EXTERNAL POWER SUPPLY

65W external power adapter

Worldwide auto-sensing 100-240 VAC, 50-60 Hz

Energy-saving automatic power-down

Surge-tolerant

External power adapters are sourced from a number of suppliers in order to ensure adequate supply and availability is maintained. The actual dimensions (cm) of the power brick will vary by supplier.

Chicony	12.6(L) x 5.0(W) x 3.0(H) cm
Delta	10.8(L) x 4.6(W) x 2.95(H) cm
LiteOn	11.35(L) x 5.5(W) x 3.0(H) cm

Technical Specifications

AGENCY COMPLIANCE

Accessibility:	Section 508 Accessibility & Twenty-First Century Communications and Video Accessibility Act (CVAA)
Environmental Stewardship:	Worldwide (ENERGY STAR, EPEAT, ROHS, ERP, TCO, MEPS, CECP, HP GSE, etc.)
Product Safety:	Worldwide (UL, CB, GS, CCC, etc.)
Electromagnetic Compliance (EMC):	Worldwide (FCC/ CISPR/ EN/ VCCI/ ICES/ AS/ NZS/ CNS/ KCC) "Class B" EMI regulations

ENVIRONMENTAL

Operating Temperature Range:	Standard 50° to 104° F (10° to 40° C) Using Quick Release with a flat panel monitor 50° to 95° F (10° to 35° C) **t630 with Fiber NIC:** 50° to 95° F (10° to 35° C)
Non-operating Temperature Range:	-22° to 140° F (-30° to 60° C)
Humidity:	Condensing: 20% to 80% Non-condensing: 10% to 90%

NOTE: Specifications are at sea level with altitude derating of 1° C/300m (1.8° F/1000ft) to a maximum of 3 Km (10,000 ft), with no direct, sustained sunlight. Upper limit may be limited by the type and number of options installed.

Basic Configuration (does not include a fiber optic NIC):

Energy Consumption: *(in accordance with US ENERGY STAR® test method)*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation: *(short idle)*	12.4	13.2	12.4
Normal Operation: *(long idle)*	10.9	11.5	11.2
Sleep	1.18	1.24	1.17
Off	0.2	0.25	0.2
Heat Dissipation	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation: *(short idle)*	42 BTU/hr	45 BTU/hr	42 BTU/hr
Normal Operation: *(long idle)*	37 BTU/hr	39 BTU/hr	38 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	0.7 BTU/hr	0.9 BTU/hr	0.7 BTU/hr

Technical Specifications

System configuration includes: Thin Pro - 64bit, 128 GB primary storage. 32 GB secondary storage, 32 GB of system memory, USB keyboard & USB mouse

Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Optional Configuration (includes a fiber optic NIC):

Energy Consumption: *(in accordance with US ENERGY STAR® test method)*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation: *(short idle)*	10.5	13.2	12.4
Normal Operation: *(long idle)*	10.9	11.5	11.2
Sleep	1.18	1.24	1.17
Off	0.2	0.25	0.2
Heat Dissipation	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation: *(short idle)*	36 BTU/hr	45 BTU/hr	42 BTU/hr
Normal Operation: *(long idle)*	37 BTU/hr	39 BTU/hr	38 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	0.7 BTU/hr	0.9 BTU/hr	0.7 BTU/hr

System configuration includes: WES 7E-32bit, 100 Mbps SC Fiber NIC, 128 GB primary storage. 32 GB secondary storage, 32 GB of system memory, USB keyboard & USB mouse

Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Summary of Changes

Date of change:	Version History:	Type of change	Description of change:
September 9, 2016	From v1 to v2	Added	Processor notes in Technical Specifications, Advanced Video Coding (AVC) in Audio/Video
		Change	Video CODECs, MPEG-H part 2 and notes in Audio and Video section, Regulatory Compliance to Agency Compliance section and content, HP Teem Talk support, Radeon R6E to R7E
		Remove	Wireless note in Text and Graphics section, “& WES 7 operating systems” in text and Graphics section