General Notes that apply to all Platforms

Purpose of the Linux Hardware Matrix

The HP Workstations Linux Hardware Matrix provides per-platform advisory information about the functionality of HP workstation desktops, and the hardware components applicable to them, under several Linux distributions such as Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Desktop (SLED), and Ubuntu LTS.

For similar information about Linux component support in older HP Workstations, please refer to the Archive Linux Hardware Matrix. You can find this by searching for the platform at www.hp.com/go/workstationsupport and choosing the User Guides content.

The Linux Hardware Matrix does not represent the issue support that you can expect from the Linux OS distributor. Please see the section below entitled "Important Information about OS Support."

About Linux OS Release Streams

As technology advances, newer releases of Linux distributions are more likely to have sufficient support for new hardware (processors and chipset architectures, storage controllers, etc.) than are older releases in the same streams.
The Linux Hardware Matrix shows information for releases that provide reasonably complete functionality for the platform and components, using drivers that are part of the distribution, unless noted to the contrary. The releases shown are typically the most current at the time that the platform was launched, but in some cases an already-existing release may provide good functionality.
It is advisable to apply the distributor's most recent maintenance updates in order to get defect and security fixes (and in some cases, additional hardware enablement).

Important Information about OS Support

Distributors of enterprise-class Linux releases have certification processes that verify that a particular platform is functional and supportable. Most distributors will not support issues that arise on non-certified platforms. Therefore, it is important that you consult the vendor's certification website to verify certification for the OS release you are planning to use. Here are the sites for distributions covered in this document:
SUSE: https://www.suse.com/yessearch/Search.jsp
Red Hat: https://access.redhat.com/ecosystem/search/#/ecosystem
Ubuntu: http://www.ubuntu.com/certification/desktop

How to Use this Document

Please remember that the general notes on this page apply to all platforms in this Linux Hardware Matrix. If you print out platform pages, be sure to print this one also.

The platform-specific pages in this matrix are formatted as follows:
* The platform is identified at the top of the page. For some platforms, the original releases on which the platform was certified by Linux distributors are noted. However, the Linux vendor certification site is always the authoritative source.
* Built-in (onboard) and optional components are listed in the left-hand column. This set of components initially represents what was listed as available at the time the platform was launched. The list may be updated periodically as new options are added. However, it is not an authoritative list of product options. Please see the platform specification (QuickSpecs), available at www.hp.com, for the most up-to-date list.
* One or more OS distribution columns are shown to the right of the components column. The headers of these columns identify the OSes for which functionality has been evaluated by HP. In some cases, these columns have been updated since the platform was launched. Component functionality is expected to be retained later in the same OS release stream, and some missing functionality might be added. For example, a component might be usable in RHEL 6.1 "or later," implying RHEL 6.2, 6.3, ... (See the note above entitled "About Linux OS Release Streams.")
* A solid circle in a cell represents usable functionality with the combination of OS release shown in the column header and the component, using drivers that are part of the distribution.
* A blank cell represents absence of functionality with default drivers. This does not mean that the component is necessarily useless--you may have to download and possibly build a driver from another source, such as the component manufacturer's website or an open source community site. Or, as mentioned, the support might have been added in a subsequent release in the same OS stream, or an available update.
* A number represents a reference to a footnote. Footnotes are located at the bottom of the page.

Ninth Edition: May 2019
Document part number: 862609-009

Linux Hardware Matrix for HP Workstations

HP Z440 Workstation

Certified with RHEL 6.5 and RHEL 7.0. Certified with Ubuntu 14.04 LTS (BIOS 1.25 required). Certified with SLED 11 SP3 and SLED 12 (NVIDIA graphics). Other certifications pending.

This page is not complete without the General Notes (first page of the matrix).

Product Items/Features (Blank box or unlisted -> component is NOT functional w/ as-is OS)	SLED11 SP3 or later (x86_64)	SLED12 or later (x86_64)	RHEL 6.5 or later (x86_64)	RHEL 7.0 or later (x86_64)	Ubuntu 14.04 LTS or later (x86_64)	Ubuntu 16.04 LTS or later (x86_64)
HP Workstation Base System						
Base system includes: Chassis, System Board, Power Supply, etc.	•	•	•	•	•	•
HP Localization Kit	1	1	1	1	1	1
All Supported Processors						
All supported v3 (Haswell) & v4 (Broadwell) E5-16xx Xeon® processors (see footnote 14)	•	•	•	•	•	•
Graphics Card (Video Card) (see footnote 15)						
No Graphics Card	•	•	•	•	•	•
AMD FirePro W2100	•	•	•	•	•	•
AMD FirePro W4300	•	•	•	•	•	•
AMD FirePro W5100	•	•	•	•	•	•
AMD FirePro W7100	•	•	•	•	•	•
AMD Radeon Pro WX 4100	11	11	11	11	11	11
AMD Radeon Pro WX 7100	11	11	11	11	11	11
NVIDIA NVS 310 512MB and 1GB	•	•	•	•	•	•
NVIDIA NVS 315 1GB	•	•	•	•	•	•
NVIDIA NVS 510 2GB	•	•	•	•	•	•
NVS Quadro K420 1GB and 2GB	•	•	•	•	•	•
NVIDIA Quadro K620 2GB	•	•	•	•	•	•
NVIDIA Quadro K2200 4GB	•	•	•	•	•	•
NVIDIA Quadro K4200 4GB	•	•	•	•	•	•
NVIDIA Quadro K5200 8GB	•	•	•	•	•	•
NVIDIA Quadro K6000 12GB	•	•	•	•	•	•
NVIDIA Quadro M2000 4GB	9	9	9	9	9	9
NVIDIA Quadro M4000 8GB	9	9	9	9	9	9
NVIDIA Quadro M5000 8GB	9	9	9	9	9	9
NVIDIA Quadro P400	9	9	9	9	9	9
NVIDIA Quadro P600	9	9	9	9	9	9
NVIDIA Quadro P1000	9	9	9	9	9	9
NVIDIA Quadro P2000	9	9	9	9	9	9
NVIDIA Quadro P4000	9	9	9	9	9	9
NVIDIA Quadro P6000	9	9	9	9	9	9
High Performance GPU Computing						
NVIDIA Tesla K40	8	8	8	8	8	8
System RAM						
Minimum (GB)	4GB	4GB	4GB	4GB	4GB	4GB
Maximum (GB)	128GB	128GB	128GB	128GB	128GB	128GB
Hard Disks						
All Supported SAS Disk Drives	2	2	2	2	2	2
All Supported Solid State Drives	•	•	•	•	•	•
All Supported SATA Disk Drives less than 3TB	•	•	•	•	•	•
Supported SATA Disk Drives 3TB and larger	3	3	3	3	3	3
All Supported USB Drive Keys	•	•	•	•	•	•
HP Z Turbo Drive and Z Turbo Drive Quad Pro PCIe-attached storage	4	4, 13	4	4, 13	4	4, 13
Intel 750 Series PCIe Storage	4	4	4	4	4	4
Network Cards (no modem support)						
Aquantia Nbase-T PCIe NIC		12		12	12	12
Intel Ethernet I210-T1 PCIe NIC	•	•	•	•	•	•
Intel I350-T2 Dual-Port I350-T4 Quad-Port 1GbE PCIe NIC	•	•	•	•	•	•
Intel X540 10GBase-T Dual Port Adapter (RJ45 -Copper)	•	•	•	•	•	•
Intel 361T 1GbE dual port PCI NIC	•	•	•	•	•	•
Intel Ethernet X520 10GbE dual port PCIe NIC	•	•	•	•	•	•
Intel 7260 802.11a/b/g/n PCIe WLAN NIC	•	•	•	•	•	•
Intel 8260 802.11 a/b/g/n/ac & Bluetooth PCIe	10	10	10	10	10	10
Onboard Components						
Integrated Intel SATA sSATA Controller	2	2	2	2	2	2
Wired LAN - Intel I218LM Gigabit Ethernet	7	7	•	•	•	•
Onboard Audio (Realtek ALC221 codec)	•	•	•	•	•	•
Onboard SATA RAID	2	2	2	2	2	2
Add Ons						
LSI 9217-4i4e 8-port SAS 6Gb/s RAID Controller	2	2	2	2	2	2
LSI 9270-8i 8-port SAS 6Gb/s ROC RAID Controller & iBBU9 battery backup unit	2	2	2	2	2	2
Thunderbolt™ PCIe card (see footnote 16)						
1394b Firewire PCIe card	•	•	•	•	•	•
Removable CD/DVD Media						
HP DVD-ROM Drive	•	•	•	•	•	•
HP DVD RW Supermulti Drive	5	5	5	5	5	5
HP BD-RE (Blu-Ray writer)	5	5	5	5	5	5
Input/Output Devices (no spaceball support)						
HP Scroll Mouse, USB	•	•	•	•	•	•
HP Standard Keyboard, USB	•	•	•	•	•	•
HP Keyboard and Mouse, PS/2	•	•	•	•	•	•
TPM Module/ Smart Card (see footnote 17)						
HP Media Card Reader	•	•	•	•	•	•
HP Printers	6	6	6	6	6	6
All Supported Monitors	•	•	•	•	•	•

footnote 1 - Typical Linux distributions support many possible localizations. If you're installing the OS yourself, you can make selections for language and keyboard layout during that process. For a pre-loaded Linux OS, similar choices can be made during the "firstboot" process. In some cases, extra font packages may be available.

footnote 2 - Hardware RAID is supported using the LSI 9217-4i4e (RAID 0/1/1E/10 SATA & SAS) and the LSI 9270-8i (RAID 0/1/5/6/10 SATA & SAS). SATA RAID is supported on sSATA ports(0/1/5/10 SATA only).

footnote 3 - In general, single drives or volumes larger than 2.2 TB can only be fully accessed using GPT formatting. OSes listed can format GPT for the boot drive or volume but may require installation of UEFI boot support, and can access GPT-formatted data volumes.

footnote 4 - The Z Turbo Drive PCIe-attached storage device has its own controller and is supported by the standard ahci kernel module in supported OSes. Z Turbo Drive G2 is an NVME device and is supported by the kernel NVME module. Z Turbo Drive Quad Pro is an enclosure for several NVME devices. Updates are needed for SLED11 SP4 and SLED12 SP1 to operate with these NVME devices. Other NVME storage devices have similar requirements.

footnote 5 - Linux growisofs supports DVD+RW and Blu-ray media on the listed OSes.

footnote 6 - For more info about Linux driver support for HP printers, go to http://www.hplip.net.

footnote 7 - SLED 11/SP3 requires an update kernel to operate this on-board network interface properly. Please check with SUSE support for the appropriate update.

footnote 8 - The NVIDIA K40 is a GPU-compute device without graphics. The base OS will more or less ignore it. To make use of this device, the proprietary driver must be installed. The minimum driver version for support of K40 is 319.72.

footnote 9 - HP recommends the following minimum NVIDIA driver versions for M4000 and M5000 (352.41); M2000 (361.45.11); P400, P600, P1000, P2000, and P4000 (375.39); and P6000 (367.57).

footnote 10 - As of this edition of the table, only a few enterprise distributions have support for the Intel 8260 WLAN/BT combo device. Look for updates from the distributors.

footnote 11 - AMD Radeon Pro graphics cards are supported by the newer amdgpu-pro vendor driver. OS streams are supported at specific release version levels, starting with these: SLED 12 SP2; RHEL 6.8; RHEL 7.3; Ubuntu 14.04.5; Ubuntu 16.04.1. There is no amdgpu-pro driver for SLED 11.

footnote 12 -The driver for the Aquantia Nbase-T AQN-108 aftermarket NIC is not in-box for most of the listed Linux streams. Driver source can be found at the Aquantia site www.aquantia.com/driver-download/.

footnote 13 - There are currently issues installing enterprise Linux distributions on M.2 and Z Turbo Drive options when the operating system is booted by legacy BIOS method. HP recommends installing the system in UEFI boot setup when using these storage devices.

footnote 14 - Correct operation with the "Broadwell" family of processors may require a later release of OS stream than the "Haswell" family. The following OS releases are known to be capable: SLED11 SP4, SLED12 SP1, RHEL 6.8, RHEL 7.2.

footnote 15 - Get the latest drivers: "HP Installer Kit for Linux - HP Driver CD (or DVD) for Linux-distribution-name" ISO images from http://www.hp.com/support/z440. Under Download options, select Get drivers, software & firmware. HP Workstations can be ordered with a variety of localization options that may vary by platform. The default in-box graphics drivers (e.g., nouveau and radeon) may not always handle newer graphics cards correctly. In some cases, even OS installation must be done using a "basic mode" or by specifying a frame-buffer driver (e.g., "xdriver=fbdev").

footnote 16 - Newer Linux kernels may provide device functionality through the Thunderbolt module. Such kernels are likely to be available in leading-edge distributions, but inclusion of the support with any Enterprise Linux distribution is at the distributor's discretion. For example, RHEL 7.2 is more capable than RHEL 7.1.

footnote 17 - The TPM and Smartcard readers can be used with the addition of extra software packages which support operation of these devices.