



SCO OpenServer[®] 6 Definitive 2018 Getting Started Guide/Release Notes Supplement

About this Document

XinuOS continues to enhance your SCO OpenServer[®] 6 Definitive 2018 operating system. This document describes:

- The OpenServer 6 Definitive 2018 and MP1/UP1 ISO image to enable easy installation, including now running on various Linux platforms under the Kernel-based Virtual Machine (KVM) virtualization environment such as Proxmox. In this document, the new installation DVD ISO image is called the **6D ISO**.
- New and updated packages that, collectively, provide new features, security updates, and bug fixes. These packages can be installed from the new ISO, or by running **patchck** on networked computers.

This document supplements and is in addition to, not a replacement of, the original documents provided with OpenServer Definitive 2018:

- [SCO OpenServer 6 Definitive 2018 GETTING STARTED GUIDE](#)
- [SCO OpenServer 6 Definitive 2018 RELEASE NOTES](#)

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Typographical Conventions

This document follows these conventions

| Convention | Usage | Examples |
|---------------------|--|--|
| NOTE: | Important additional information or further explanation of a topic. | Note: A weekly backup is recommended. |
| WARNING! | The task or operation might have serious consequences if conducted incorrectly or without appropriate safeguards. | WARNING! Do not change configuration parameters. |
| Bold | A command, package, or system input that you type, or text or a button you select on a screen. | Click HELP for details on disaster recovery. |
| <i>Italic</i> | Italic font indicates any of the following: A <i>term with a specific meaning</i> in the context of this document. <i>Emphasis</i> on specific information. <i>Reference</i> to another document. <i>Variables</i> in a syntax statement for which values are substituted. | Detailed information on <i>disaster recovery</i> methods is available in the <i>Administrator Guide</i> . tar x[zv]f file*.tgz |
| Courier | System output, file names or path names. | > Recovery in progress |
| Bold Courier | Bold Courier for commands typed by user. | tar cvf tarfile *.cc |
| Angle <> Brackets | A required entry or parameter | installer-<version#>.run |
| Square [] Brackets | An optional entry or parameter. | tar x[zv]f file.tgz |
| Curly { } Brackets | A list of choices separated by a vertical bar from which one must be selected. | Click { OK Cancel }. |

Overview

Revised Media Kit for New Installations

The OpenServer 6 Definitive 2018 ISO image is available for download at <https://www.xinuos.com/product/sco-openserver-6-definitive-2018>; a free Xinuos login is required.

This ISO has been revised to add Kernel-based Virtual Machine (KVM) support; enhances installation performance on newer hardware; provides recent fixes; include Maintenance Pack 1 (MP1); and provides the separately licensed Update Pack 1 (UP1).

Please note:

- If running on Proxmox, see [Technical Article #128147: How to create an Openserver6D2018 or Unixware7D2018 Virtual Machine on Proxmox](#).
- If running on KVM, see [Technical Article #128041: Which Linux distributions and KVM hypervisors are known to work with UnixWare7 or OpenServer6 Definitive?](#) for a listing of the supported Linux distributions, and [Technical Article #128003: How to install UnixWare7D or OpenServer6D on linux KVM](#)
- If running on KVM or Proxmox, you will need a Xinuos platform license for this platform in addition to the Xinuos OpenServer 6 2018 Definitive license. See the [Licensing](#) section below for details.

Update Installed Systems via Patchck

patchck is improved and streamlined to facilitate easy installation of these offerings on top of your already installed and licensed OpenServer 6 Definitive 2018 system. See the [Installing/Upgrading to OpenServer 6 Definitive 2018 and MP1/UP1](#) section below to use **patchck** to install the required MP1 and, optionally, the separately licensed UP1. Alternatively, you can install MP1 and UP1 using the new media kit described in the previous section.

Maintenance Pack 1 and Update Pack 1

The OpenServer 6 Definitive 2018 Maintenance Pack 1 (MP1) and Update Pack 1 (UP1) offerings enhance OpenServer 6 Definitive 2018 with security and bug fixes as well as new features.

MP1 and UP1 consist of:

1. The new OpenServer 6 Definitive 2018 Maintenance Pack 1 (**MP1**), which features Python 3.10.12 and numerous additional open source packages.

These are operating system **core** packages and they are **required** for OpenServer 6 Definitive 2018 support, maintaining a secure open source environment, and enablers for newer features, such as those in Update Pack 1. See [Appendix A: Maintenance Pack 1 Packages](#) for a complete listing of the MP1 packages. Maintenance Pack 1 is cumulative and will be updated over time with newer versions and perhaps additional packages.

2. Update Pack 1 (**UP1**), the first update pack for OpenServer 6 Definitive 2018, provides new packages including Perl version 5.34.0, Sendmail version 8.17.2, and Samba version 4.10.16. See [Appendix B: Update Pack 1 Packages](#) for a complete listing of the UP1 packages.

Prerequisites

The base OpenServer 6 Definitive 2018 operating system has updated packages and patches to enable installation of open source packages in MP1 and UP1. These items must be installed before installing Maintenance Pack 1. Installing Maintenance Pack 1 is required before installing Update Pack 1.

MP1 Prerequisites

These updated packages and patches are **required** to install both MP1 and UP1 using **patchck**:

- **Xinuoscurl**, version 7.58.0 or later.
- **xz**, version 5.2.5 or later.
- **Xinuoslibconv**, version 1.15b or later.
- **Xinuosreadline**, version 7.0p3a or later.
- **OSS727A** or later **OSS727** version. For a list of features and fixes in OSS727A, see the [OSS727A cover letter](#).
- **OSS726I** or later **OSS726** version.

For a list of features and fixes in OSS726I, please see: [Technical Article #128145: What is Support Level Supplement \(SLS\) OSS726I, the OpenServer 6 Definitive \(D2M1\) Supplement 2?](#)

For KVM/Proxmox customers:

- **nd** version 8.0.6p or later.

For a list of features and fixes in this **nd** package, please see [Technical Article #128146: What is the Network Device Drivers Package - nd Package Version 8.0.6p?](#) The `OpenServer6D2M2-DVD.iso` ISL will install this package. Also, **patchck** will install this package after installing MP1. This package should only be installed after installing **OSS726** and rebooting.

Installing **OSS726** through the **patchck** menus will determine and install all of these prerequisites, except for the **nd** package. The **nd** package is installed with MP1.

OSS726 provides numerous bug fixes and operating system enablers for newer open source ports. These patches are cumulative, with each version including all the fixes in prior versions of the patch. A list of all bug fixes is provided in the technical articles for the latest version of these packages. **Xinuoscurl** is used to download the packages; the **xz** package's **xzcat** command, along with base **gzcat** command, are used to unwind MP1/UP1 package archives. The latest versions of **Xinuolibiconv** and **Xinuosreadline** will be installed by MP1 but these packages are also needed by **patchck** to install MP1.

NOTE: This document uses the phrase **or later** to indicate that these packages will likely be updated in the future to provide new features, enablers for other software, and/or bug fixes. **patchck** will be updated to always install the latest version. Periodically running **patchck** allows you to stay up-to-date with Xinuos software updates.

UP1 Prerequisite

UP1 requires that MP1 be installed.

Licensing

This re-release of OpenServer 6 Definitive 2018 uses the same **operating system** licenses as the original media did. The same licenses, both subscription and perpetual use, are valid whether installing from the original OpenServer 6 Definitive 2018 media or the revised media. **You must register your system within fourteen days after applying a non-evaluation OpenServer 6 Definitive 2018 license. Otherwise your system will only operate in single-user mode without networking.**

In addition:

1. To run on KVM/Proxmox, you need a platform-specific license for this platform. During ISL installation with the revised media, a thirty-day evaluation license is provided. Post ISL you can install and register your platform license. **Registration is required.**
2. As a convenience, if you install both the operating system and platform license at the same time, you can register them together with a single registration key. To do so, install both licenses and then proceed to register the **platform** license.
3. Support for VMware and on bare metal is provided with the OpenServer 6 Definitive 2018 license and a separate platform license is not required.
4. All OpenServer 6 Definitive 2018 Maintenance Pack 1 packages, and their prerequisites, are available for installation on your licensed OpenServer 6 Definitive 2018 system with no additional fee.
5. The OpenServer 6 Definitive 2018 Update Pack 1 requires a separate update pack license.
 - **Install and register your operating system and platform licenses before registering your Update Pack 1 license.**
 - **You must install and register your OpenServer 6 Definitive 2018 Update Pack 1 license before patchck and the ISO upgrade.sh script will offer you the option to install Update Pack 1.**

WARNING! Both your Definitive 2018 operating system and, for KVM/Proxmox, your platform license must be registered within **fourteen** days. System services will cease running after the evaluation license expires, or if you do not register your system. If you do not install a new license prior to when your evaluation license expires, or if you do not register the new license within fourteen days after installing it, then you will need to log into the console and install/register your licenses.

If your licenses expire or are not registered within fourteen days, your system will be in single-user mode and you will not be able to establish a new network connection. To restore full functionality, you will need to log into the console and register both licenses.

Please contact Xinuos sales, or your Xinuos reseller, to purchase licenses or if you have pricing questions.

Maintenance Pack 1 and Update Pack 1 are Non-Removable

WARNING! Installing MP1 and UP1 are each one-way upgrades. MP1 provides core packages that are **required** to have a **supported system**. UP1 provides new features, including the **sendmail** package. If you remove this package, basic mail will not work until you reinstall the UP1 **sendmail** package.

Enhancements and Bug Fixes

This revised OpenServer 6 Definitive 2018 media includes:

- support for the KVM platform under several popular Linux distributions and Proxmox;
- PAM support;
- an improved Kernel Memory Debugging Tool (**kmdt**) is now integrated with the kernel;
- Additional utilities made Large File Aware
- all the bug fixes provided by OSS726 (version I), the OpenServer 6 Definitive 2018 Supplement;
- the *ahci* device driver (version 2.0b),
- the *vtblk* device driver (version 1.0a),
- an updated version of libc (part of OSS726I and later OSS726 versions) to support new open source ports; and
- a new mini-kernel that supports installing on KVM/Proxmox.

PAM Support

OpenServer 6 Definitive 2018 now provides PAM support. Currently, the only PAM-enabled tool is the new UP1 Samba and **Xinuoss-pam-ldapd** (used to authentic to an LDAP server) packages. Additional tools, such as **ssh**, will follow in future releases. A technical article will follow for developers with guidance to PAM enable your own software. Recommendations/requests for additional PAM-enabled tools are welcome. Email feedback@xinuos.com.

KVM/Proxmox Platform Support

OpenServer 6 Definitive 2018 can now be run as a virtual machine inside the KVM/Proxmox hypervisor running on several popular Linux distribution. See for a listing of supported distributions at: [Technical Article #128041: Which Linux distributions and KVM hypervisors are known to work with UnixWare7 or OpenServer6 Definitive?](#)

Kernel Memory Debugging Tool (kmdt)

The advanced OpenServer 6 Definitive 2018 Kernel Memory Debugging Tool (**kmdt**) is now integrated into the kernel but must be enabled before use. A revised **crash** utility is also provided to utilize the **kmdt** debugging capabilities. These tools are intended for developers to debug kernel performance issues.

The **kmdt** tool supports debugging levels **0** through **6**, as described in [Appendix C: kmdt Instrumentation Levels](#) to this document. As the levels are increased, more compute (physical and virtual memory) resources are consumed. This may change the timing of the application or kernel conditions causing the panic. **0** is the default and means no extra debugging capabilities.

To change the debugging level, set the **KMDT_INSTR_LEVEL** variable in the **/stand/boot** file and reboot. Or reboot, press space at the splash screen, and set the instrumentation level like in this example:

```
[boot] KMDT_INSTR_LEVEL=3
[boot] boot
```

Remember, set to **0** (the default) for no instrumentation.

Enhanced libc Support

The OpenServer 6 Definitive 2018 *libc* library has been updated as follows:

- The run-time linker now supports **LD_PRELOAD**.
- *libc* now supports **setprogname/getprogname**.
- Improve `mktemp()` and `mkstemp()`.
- Add `mkdtemp()`, `mkostemp()`, `mkostemps()`, `mkstemps()`, `arc4random()`, `arc4random_buf()`, `arc4random_uniform()`, `getentropy`, and `explicit_bzero()`.
- Add `_SC_LOGIN_NAME_MAX` and `_SC_HOST_NAME_MAX`, `_SC_TTY_NAME_MAX`, to `sysconf()`.
- Add `_SC_GETGR_R_SIZE_MAX`, and `_SC_GETPW_R_SIZE_MAX` to `sysconf()`.
- Add hooks to `clock_getres()`, `clock_gettime()`, `clock_settime()`, and `clock_nanosleep()` syscalls.
- Add `nanosleep()`.
- Add `clock_gettime()` using interpolate like `gettimeofday()`.
- Enhance `realpath()` and add `canonicalize_file_name()`.
- Update `sysconf` for `TTY_NAME_MAX`, add `posix_memalign()` and `memmem()`
- Add `getopt_long()`, `getopt_long_only()`, `err()`, `err_set_exit()`, `err_set_file()`, `errc()`, `errx()`, `verr()`, `verrc()`, `verrx()`, `vwarn()`, `vwarnc()`, `vwarnx()`, `warn()`, `warnc()`, `warnx()`.
- Keep `setlocale()` from core dumping when passed a category greater than `LC_ALL`.

- Add `dirfd()`, `strsep()`, `execvpe()`, `posix_spawn()`, `posix_spawnnp()`, `posix_spawn_file_actions_init()`, `posix_spawn_file_actions_destroy()`, `posix_spawn_file_actions_addopen()`, `posix_spawn_file_actions_adddup2()`, `posix_spawn_file_actions_addclose()`, `posix_spawnattr_init()`, `posix_spawnattr_destroy()`, `posix_spawnattr_getflags()`, `posix_spawnattr_getpgroup()`, `posix_spawnattr_getschedparam()`, `posix_spawnattr_getschedpolicy()`, `posix_spawnattr_getsigdefault()`, `posix_spawnattr_getsigmask()`, `posix_spawnattr_setflags()`, `posix_spawnattr_setpgroup()`, `posix_spawnattr_setschedparam()`, `posix_spawnattr_setschedpolicy()`, `posix_spawnattr_setsigdefault()`, `posix_spawnattr_setsigmask()`, and `fdopendir()`.
- Add `getdelim()`, and `getline()`.
- Various header file improvements to maintain compatibility while enabling additional open source ports.

Maintenance Pack 1 and Update Pack 1

[Appendix A](#) and [Appendix B](#) list the open source packages provided in Maintenance Pack 1 and Update Pack 1, respectively. See the documentation provided with each package for more information.

There are also various third-party books and web pages about many of the open source packages provided in the MP1 and UP1. Here are a few references:

- For information about Python 3 (MP1 provides Python 3):
 - <https://docs.python.org/3.10/>
 - <https://www.python.org/about/gettingstarted/>
 - <https://docs.python-guide.org/intro/learning/>
- For information about Perl (UP1 provides Perl):
 - <https://www.perltutorial.org/>
 - <https://www.perl.org/books/library.html>
 - After installing UP1, some **Python 3** documentation is available on your installed system at:
 - `/opt/xinuos/share/doc/packages/python3/html`
 - `/opt/xinuos/share/doc/packages/python3/pdf`
 - `/opt/xinuos/share/doc/packages/python3/text`
 and at: **<https://<your-host>/Xinuos-packages/python3/>**
- For information about Samba (UP1 provides Samba):
 - Configuration notes are provided below in the [Samba Set-up Notes](#) section of this document and in this technical article: [Technical Article #128085: How to get started with samba4 on UnixWare 7 or OpenServer 6 Definitive using Windows Domain Integration](#).
 - https://wiki.samba.org/index.php/Main_Page
 - https://wiki.samba.org/index.php/Setting_up_Samba_as_a_Domain_Member

- For information about Sendmail (UP1 provides Sendmail):
 - Configuration notes are provided below in the [Sendmail Notes](#) section of this document and in this technical article: [Technical Article #128086: How to get started with Sendmail, SPF, libspf, and spfmlter on UnixWare7 or OpenServer6 Definitive 2018?](#).
 - <https://www.proofpoint.com/us/sendmail/faq>
 - <https://linuxconfig.org/configuring-gmail-as-sendmail-email-relay> This link is for reference as many of the steps have been incorporated into the UP1 **sendmail** package.
 - After installing UP1, this **sendmail** documentation is available on your system:
 - `/opt/xinuos/share/doc/packages/sendmail/op.pdf`
 - `/opt/xinuos/share/doc/packages/sendmail/op.ps`
 - `/opt/xinuos/share/doc/packages/sendmail/op.txt`

Installing/Upgrading to OpenServer 6 Definitive 2018 and MP1/UP1

The **6D** `openServer6D2M2-DVD.iso` image can be used to:

- To install OpenServer 6 Definitive 2018, including the super patch **OSS726I**, in a new KVM/Proxmox/VMware virtual machine, or on a bare metal system;
- To upgrade any OpenServer 6.0.0 MP4 or later system, including a 6V or earlier Definitive release, to OpenServer 6 Definitive 2018 with **OSS726I**; and
- To install MP1, and optionally UP1, on an OpenServer 6 Definitive 2018 system.

Once OpenServer 6 Definitive 2018 is installed, the **6D** `openServer6D2M2-DVD.iso` image's **upgrade.sh** script can be used to install MP1 and, optionally, UP1. Alternatively, MP1 and UP1 can be installed by **patchck**.

NOTE: Installing MP1 is required to have a supported system.

To install OpenServer 6 Definitive 2018, use the appropriate procedure for your hardware setup:

- [Installing OpenServer 6 Definitive 2018 on Proxmox](#)
- [Installing OpenServer 6 Definitive 2018 on Linux Under KVM](#)
- [Installing OpenServer 6 Definitive 2018 on VMware or Bare Metal](#)
- [Upgrading From an Earlier Release to OpenServer 6 Definitive 2018](#)
- [Upgrading From an Earlier OpenServer 6 Definitive 2018 Instance](#)

Then install MP1 and UP1, and configure your system, by following these procedures:

- [Installing MP1 and UP1](#)
- [Configuration Notes](#)

Installing OpenServer 6 Definitive 2018 on Proxmox

To setup Proxmox and install OpenServer 6 Definitive 2018:

1. Place the OpenServer6D `openServer6D2M2-DVD.iso` image in the `/var/lib/vz/template/iso/` directory on your Proxmox server.
2. In the Proxmox GUI, click the **Create VM** button.
3. At the **General** tab, enter your new virtual machine name and then press the **Next** button.
4. At the **OS** tab, select the OpenServer ISO image from the pull-down menu.
5. Set the **Guest OS type** to **Other** and then press the **Next** button.
6. At the **System** tab, check that the **SCSI Controller** is set to **VirtIO SCSI single** and then press the **Next** button.
7. In the **Disks** tab, set the **Disk Bus/Device** to **VirtIO-Block**

8. Set the root **Disk** size as needed (default is 32GiB) and then press the **Next** button.
9. At the **CPU** tab, select the number of **CPU Sockets and Cores** needed for your VM and then press the **Next** button.
10. At the **Memory** tab, select the **Memory size** needed for your VM and then press the **Next** button.
11. At the **Network** tab, select the Network Bridge you want you to use for your networking from the pull-down menu (defaults to **vmbr0**).
12. Set the **Network Card Model** from the pull-down menu to **VirtIO(paravirtualized)** and then press the **Next** button.
13. Click **Finish** to create the VM.
14. Now you can start the VM by selecting the created VM name => console => Start VM
The virtual machine will boot from the OpenServer 6 Definitive 2018 ISO image for installation of the operating system. You can install OpenServer 6 Definitive 2018 using the default loaded **vtblk** disk HBA and the **vtnet** network device driver.
15. Reboot after the operating system installation; the system will boot from the hard disk.
16. We recommend purchasing, installing, and registering an OpenServer 6 Definitive 2018 Update Pack 1 license.
17. Install MP1 and, if installed and registered, UP1 by following the instructions in the section [Installing MP1 and UP1](#).

NOTE: Installing MP1 is required to have a supported system.

18. After installing MP1 (and optionally UP1), follow the instructions in the [Configuration Notes](#) section below.
19. Later improvements after the 6D ISO was published will be available by running the **patchck** tool. In general, running **patchck** periodically is highly recommended to ensure your system is current.
20. For more info, please read the following technical article about OpenServer 6 Definitive 2018 on Proxmox: [Technical Article #128147: How to create an Openserver6D2018 or Unixware7D2018 Virtual Machine on Proxmox](#) This Technical Article will be updated as Proxmox evolves.

Installing OpenServer 6 Definitive 2018 on Linux Under KVM

This section outlines the steps to set-up Linux and KVM, and then to install OpenServer 6 Definitive 2018 under KVM. See the previous section if your KVM system is a Proxmox system.

1. Configure your Linux system as follows:
 - o Use hardware that support KVM virtualization extensions. You can test whether your Linux hardware supports KVM/Proxmox virtualization by entering: `grep -E "vmx|svm" /proc/cpuinfo`

If this command provides any output, then virtualization is supported.

For more information, see [Technical Article #128002: How to setup a linux system for KVM](#)

- When installing a new Linux system partition, your Linux disk for the root (/) filesystem should be at least 20 GB. Also, the /var filesystem should be at least 20 GB plus enough space for your planned virtual disk environment.
- On an already installed system, make sure you have enough space in the /var/lib/libvirt/images directory to store the new OpenServer 6 Definitive 2018 virtual machine(s).
- Optionally, you can make a soft link to another filesystem having more space available for the virtual machine. The virtual machine can then be created there:

```
mv /var/lib/libvirt/images /<mountpoint of filesystem>/images
ln -s /<mountpoint of filesystem>/images /var/lib/libvirt/images
```

- Check if your Linux system has an unconfigured network interface. For example, this Linux command will list the unconfigured network interfaces, if any exist:

```
nmcli device | grep ethernet | grep disconnected
```

If any interfaces are listed, one of them can be used as a dedicated interface for your OpenServer 6 Definitive 2018 virtual machines.

During the VM configuration below, set the VM NIC interface as "**macvtap**" (network source) and set the unconfigured Linux network card as "**VEPA**".

- If no dedicated second network interface is available, then a network "bridge" is needed. Some Linux distributions configure a network bridge as part of the virtualization installation. A network bridge can also be created via Linux administrations tools or a shell script. Here is an example shell script to do so.

```
#!/bin/sh
#Find Ethernet device
DEV=`nmcli device| grep -i ethernet |head -n1| awk '{print $1}'`
nmcli connection down "$DEV"
nmcli connection delete "$DEV"
nmcli connection add type bridge autoconnect yes con-name br0
ifname br0
nmcli connection modify br0 ipv4.method auto
nmcli connection add type bridge-slave autoconnect yes con-name
$DEV ifname $DEV master br0
nmcli connection up br0
```

2. Install KVM/Proxmox so that it can be used to install OpenServer 6 Definitive 2018 virtual machine:

- You can test whether your Linux system is configured for KVM/Proxmox by running:

```
grep -E "vmx|svm" /proc/cpuinfo
```

If this command provides any output, then KVM/Proxmox virtualization is enabled.

- If KVM/Proxmox is not enabled, install the (KVM) "Virtualization Host" software. For example, on Red Hat use **dnf** and on SUSE use **zypper**.
- Then proceed to the next step to install OpenServer 6 Definitive 2018 virtual machines.

- More information on configuring KVM is available from the Linux software vendors. For example; https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8/html/configuring_and_managing_virtualization/index and <https://documentation.suse.com/sles/15/html/SLES-all/book-virtualization.html>
- 3. Place the `OpenServer6D2M2-DVD.iso` image into the `/var/lib/libvirt/images` directory.
- 4. Mount the OpenServer 6 Definitive 2018 ISO and install the `osinfo-db` RPM:

```
mount -o loop /var/lib/libvirt/images/OpenServer6D2M2-DVD.iso /mnt
rpm -iv /mnt/.venv/osinfo-db-xinuos-20200730-1.noarch.rpm
```

- 5. Start the **virt-manager** GUI and create a new Virtual Machine:
 - Choose "Local Installation Media" and select the **OpenServer6D2M2-DVD.iso** image. The OpenServer6D2M1 profile will be automatically detected with a sufficient minimum hardware resources set as defaults:
 - 1 GB of RAM,
 - 2 CPUs,
 - 30 GB *vtblk* hard disk,
 - IDE dvd/cdrom, and
 - a *virtio* network card.
 - Change the network selection from NAT to the "**macvtap**" (network source) and "**VEPA**" (source mode) of the additional Linux network card.
 - Check the "**Customize configuration before installation**" box and select "**Finish**".
 - Change the CD device driver: Select '**IDE CDRROM**', navigate to '**Advanced options**' and select **Disk-bus:SATA**. Apply to save.
 - Change any other details as desired, then choose "**Begin Installation**"
 - For information on answering the OpenServer 6 Definitive 2018 ISL prompts, see the [OpenServer 6 Definitive 2018 Getting Started Guide](#) (GSG). Note:
 - You will need a KVM license.
 - You cannot use the original OpenServer 6 Definitive 2018 ISO image, `OpenServer6D2M1-DVD.iso`; instead, use the revised **6D** `OpenServer6D2M2-DVD.iso` image.
 - This document uses the KVM acronym to mean "Kernel-Based Virtual Machine." The GSG uses the KVM acronym to mean "Keyboard/Video/Mouse."
 - When the cdrom installation is completed, you will be asked to remove the CDRROM. Move to the "Hardware details tab" select CDRROM and press the cross behind the ISO name to delete the name. Press '**Apply**' to apply the change.
- 6. Then move to the virt-manager's 'Graphical Console' again and press **<Return>** to shutdown and restart to finish the installation.
- 7. After installing OpenServer 6 Definitive 2018, log into your virtual machine, start the Software Manager, and apply **both** your operating system (if not applied during ISL) and your platform licenses. Then register both licenses. After applying both licenses, you can register both licenses at one time by registering the platform license.
- 8. We recommend purchasing, installing, and registering an OpenServer 6 Definitive 2018 Update Pack 1 license.

9. Install MP1 and, if installed and registered, UP1 by following the instructions in the section [Installing MP1 and UP1](#).
-

NOTE: Installing MP1 is required to have a supported system.

10. After installing MP1 (and optionally UP1), follow the instructions in the [Configuration Notes](#) section below.
11. Later improvements after the 6D ISO was published will be available by running the **patchck** tool. In general, running **patchck** periodically is highly recommended to ensure your system is current.
12. For more info, please read the following technical article about OpenServer 6 Definitive 2018 on KVM: [Technical Article #128003: How to install UnixWare7D or OpenServer6D on linux KVM](#)
This Technical Article will be updated as KVM evolves.

Installing OpenServer 6 Definitive 2018 on VMware or Bare Metal

This section assumes your virtual machine or hardware is properly configured.

To install or upgrade to OpenServer 6 Definitive 2018 with **OSS726I**, do the following:

1. Obtain the revised installation **6D ISO** image, `openServer6D2M2-DVD.iso`, available on the Xinuos public web site at: [SCO OpenServer 6 Definitive 2018 - Xinuos](#).
 2. Follow the instructions in the [SCO OpenServer 6 Definitive 2018 GETTING STARTED GUIDE](#) (GSG). Note the following updates to the GSG instructions:
 - New installations on Virtual Box are not supported. If you need to reinstall a prior Virtual Box system, first contact Xinuos or your reseller for a replacement operating system license on a supported platform. A platform license is also needed if installing on KVM or Proxmox. Then install using the evaluation license. Post installation apply your new license(s).
 - This document uses the KVM acronym KVM to mean "Kernel-Based Virtual Machine." The GSG uses the KVM acronym to mean "Keyboard/Video/Mouse."
 3. After the ISL completes, remove the DVD and reboot your system.
 4. Install any needed licenses:
 - If you installed your system with an evaluation license, then install the operating system license.
 - If you want to install UP1, install and register your UP1 license. You can do this later and run your system with just MP1. However, you will need to repeat the next step after installing and registering your UP1 license.
 5. See the section [Installing MP1 and UP1](#) to install MP1 and, optionally, UP1.
-

NOTE: Installing MP1 is required to have a supported system.

6. After installing MP1 (and optionally UP1), follow the instructions in the [Configuration Notes](#) section below.
7. Later improvements after the **6D ISO** was published will be available by running the **patchck** tool. In general, running **patchck** periodically is highly recommended to ensure your system is current.

Upgrading From an Earlier Release to OpenServer 6 Definitive 2018

As described in the [SCO OpenServer 6 Definitive 2018 GETTING STARTED GUIDE](#), you can upgrade from a prior release to OpenServer 6 Definitive 2018 by running the **upgrade.sh** shell script on the `openServer6D2M2-DVD.iso` ISO. **upgrade.sh** now also installs **OSS726I**. When prompted to reboot, reboot and continue the installation by following the steps in the [Installing MP1 and UP1](#) section.

WARNING! It is essential that you reboot your system after **upgrade.sh** installs **OSS726I**. Otherwise your system will be unstable, will behave erratically, and may panic.

NOTE: Installing MP1 is required to have a supported system.

Upgrading From an Earlier OpenServer 6 Definitive 2018 Instance

If you previously installed OpenServer 6 Definitive 2018, you need to install the MP1 prerequisites, reboot, install MP1 and, optionally, UP1. This procedure is described in the [Installing MP1 and UP1](#) section. In this scenario, using **patchck** instead of **upgrade.sh** is preferred since **patchck** installs any package updates posted after the `openServer6D2M2-DVD.iso` ISO was published.

Installing MP1 and UP1

The **upgrade.sh** script now installs MP1 in addition to the OpenServer 6 Definitive 2018 software described in the GSG. After you install and register a UP1 license, **upgrade.sh** or **patchck** can be used to install UP1. **upgrade.sh** install the initial UP1 packages from the ISO image; **patchck** will download and install the latest versions of these packages.

Summary

The basic installation steps are:

1. If you just installed OpenServer 6 Definitive 2018 from the new `OpenServer6D2M2-DVD.iso` ISO, then the prerequisite package **OSS726I** is already installed. Reboot your system and go to Step 5.
2. Since the upgrades to Maintenance Pack 1 and Update Pack 1 are each one way (see [Maintenance Pack 1 and Update Pack 1 are Non-Removable](#)), create a full system backup or snapshot of your virtual machine before proceeding to install these updates and their prerequisites.
3. Run **patchck** to install the MP1 prerequisite packages **Xinuoscurl**, **xz**, **Xinuoslibiconv**, **Xinuosreadline**, **OSS727**, and **OSS726**. It is essential that you then immediately run the next step.

WARNING! Virtual Box is not supported. Contact Xinuos sales for license(s) on a supported platform.

4. Reboot your system.
5. If you want to access UP1 functionality, install your OpenServer 6 Definitive 2018 Update Pack 1 license and **register** the license.
6. Install MP1 and, optionally, UP1. You can install MP1 and UP1 by using the `OpenServer6D2M2-DVD.iso` ISO or by running **patchck**: Either:
 - Run the 6D `OpenServer6D2M2-DVD.iso` ISO **upgrade.sh** script:
 - After your system reboots, insert the DVD or connect the virtual DVD drive to your virtual machine.
 - Mount the ISO on your mount point. For example, if your mount point is `/mnt`:

```
mount -o ro /dev/cd0 /mnt
```
 - Run **upgrade.sh** to install MP1 and UP1:

```
/mnt/upgrade.sh
```
 - Reboot your system.

Or:

- Run **patchck** again. With **OSS726I** installed, **patchck** displays options to install the entire MP1 and, if you have an installed and registered Update Pack 1 license, UP1. Answer the prompts to install these items. When all the MP1/UP1 packages are installed, reboot your system.
7. Run the appropriate open source configuration scripts. You can also install additional packages by running **patchck -dev** (for development tools) or **patchck -o** to see optional packages. If you run **patchck** at a later date, the latest updates to the MP1 packages and security updates to the UP packages will be offered.

Details

Given the many packages that comprise the MP1 and UP1, **patchck** has been updated to simplify the process. Follow these steps to install the latest OpenServer 6 Definitive 2018 packages:

1. This step is not needed if you just installed your virtual machine using the new `openServer6D2M2-DVD.iso` ISO. Create a system backup of your OpenServer 6 Definitive 2018 system, or snapshot your virtual machine. Installing MP1's prerequisites and MP1 is a major system update, as is installing UP1. Once MP1 and/or UP1 are installed, neither can be removed, as described in [Maintenance Pack 1 and Update Pack 1 are Non-Removable](#).
2. Log into your OpenServer 6 Definitive 2018 system as **root**.
3. If you installed your system using the `openServer6D2M2-DVD.iso` ISO, then go to Step 5. Otherwise:
 - If you have not previously installed **Xinuoscurl**, run **patchck** and select **Xinuoscurl**. Select to allow **patchck** to install **Xinuoscurl** and, if displayed, its two prerequisites. When prompted after the packages are installed, select to clean-up the downloaded images. Not doing so can cause errors with later **patchck** runs.

The first time you run **patchck** after installing a new OpenServer 6 Definitive 2018 system, you may see the following messages which can be ignored:

```
UX:sh (patchck): ERROR: curl: Not found
UX:sh (patchck): ERROR: curl: Not found
UX:sum: ERROR: Cannot open patchck.tar.Z: No such file or directory
Updating patchck to version ...
```

- Run **patchck** and, from the displayed menu, select the **OSS726I** package. Selecting **OSS726I** will select all its prerequisites (**Xinuoscurl**, **xz**, **Xinuosreadline**, **Xinuosiconv**, and **OSS727**), if the latest versions were not already installed.
 - Reboot your system.
4. If you are using your system as an LDAP server running **Xinuosopenldap** version 2.4.x, and if you have configured it to use default Berkeley database format (**bdb**), then you need to export your OpenLDAP data before installing MP1, and import your OpenLDAP data after installing MP1. See the [OpenLDAP Configuration Notes](#) section below for details.
 5. Install and register your update pack license at <https://www.xinuos.com/licensing-registration>.

6. If the system is not going to be used for software development, you can skip this step and the default **INSTALLDEV=N** value will be used.

If your system is going to be used for developing software:

- If the **/usr/lib/patchck.d/<system_name>.patchck.conf** file does not already exist, enter on one line:

```
cp /usr/lib/patchck.d/sample.patchck.conf \  
/usr/lib/patchck.d/<system_name>.patchck.conf
```

- Edit **/usr/lib/patchck.d/<system_name>.patchck.conf** and set **INSTALLDEV=Y**, if it is not already set to **Y**. The next step will then install development-specific packages, in addition to MP1 and/or UP1.
- In the next step, use **patchck** to install MP1, UP1 (if licensed and registered), and their sibling development packages. **upgrade.sh** does not install development packages.

7. Either:

- Run the 6D **OpenServer6D2M2-DVD.iso** ISO **upgrade.sh** script to install MP1 and, if licensed, UP1:
 - After your system reboots, insert the DVD or connect the virtual DVD drive to your virtual machine.
 - Mount the ISO on your mount point. For example, if your mount point is **/mnt**:

```
mount -o ro /dev/cd0 /mnt
```
 - Run **upgrade.sh** to install MP1 and UP1:

```
/mnt/upgrade.sh
```

Or:

- Run **patchck** to install MP1 and, if licensed, UP1. Follow the installation prompts. **patchck** will download all MP1 and UP1 packages; use the downloads to check whether your system already has that version installed; and install/update those packages which are missing or for which the MP/UP has a newer version. Development-specific packages will also be installed if **INSTALLDEV=Y** is set.

Then go to the next step.

8. Reboot your system.

9. Periodically run **patchck** to get later updates and bug fixes for your OpenServer 6 Definitive 2018 system. **patchck** also provides:
- Platform-specific packages, including updated device drivers, that are of value for some usages and hardware configuration but may not be of general interest.
 - Additional optional packages, which are displayed if you run **patchck -o** (or setting `INSTALLOPT=Y` in the `/usr/lib/patchck.d/<system_name>.patchck.conf` file).
 - The previously released UnixWare/OpenServer 6 Definitive 2018 extended development system can also be installed by **patchck**. This development system provides new GNU C and GNU C++ compilers; linker; debugger; and **binutils**. It is only needed to develop applications. Applications developed with this development system do not need the compiler, linker, or debugger to run. For more information, see the [Technical Article #128108, What is the UnixWare 7 Definitive 2018/OpenServer 6 Definitive 2018 Extended Development System \(XDEV\)](#). To view these packages, run **patchck -dev** or set `INSTALLDEV` to **Y** in the `/usr/lib/patchck.d/<system_name>.patchck.conf` file.
10. To use the new OpenServer 6 Definitive 2018 **MP1** and **UP1** open source ports, your `PATH` may need to be updated to include `/opt/xinuos/bin` and perhaps `/opt/xinuos/sbin`.
- Run these two commands to see how these variables are currently set for regular users and **root**, respectively:

```
/sbin/defadm login PATH
/sbin/defadm login SUPATH
```

To add `/opt/xinuos/bin` and/or `/opt/xinuos/sbin` to the path, edit `/etc/default/login` and change the `PATH` and `SUPATH` lines appropriate for your system.

Additionally, `/opt/xinuos/man` should be added to `MANPATH` in the `/etc/default/man` file if it is not already there.

System administrators must set these paths based on what is best for their system.

The updated OpenServer 6 Definitive 2018 media kit sets paths to include these directories, as shown here:

```
# since this is an ISL, set up appropriate paths
# adhering to the principal of least surprise, we leave old paths first
egrep -v '^SUPATH=|^PATH=' /etc/default/login >/tmp/$$login
cat >> /tmp/$$login << DL_EOF
SUPATH=/usr/bin:/etc/tcb/bin:/usr/sbin:/sbin:/opt/xinuos/sbin:/opt/sbin:/opt
/xinuos/bin:/opt/bin
PATH=/usr/bin:/opt/xinuos/bin:/opt/bin
DL_EOF
cmp -s /tmp/$$login /etc/default/login || {
    cp /tmp/$$login /etc/default/login
    rm -f /tmp/$$login
}
/sbin/defadm man MANPATH | grep -q "/opt/xinuos/man:"
[ $? -ne 0 ] && ed /etc/default/man <<EOF
g|^MANPATH=|s|:/usr/man:|:/usr/man:/opt/xinuos/man:|
w
q
EOF
/sbin/defadm man MANPATH | grep -q "/opt/man:"
[ $? -ne 0 ] && ed /etc/default/man <<EOF
g|^MANPATH=|s|:/opt/xinuos/man:|:/opt/xinuos/man:/opt/man:|
w
q
EOF
```

If you installed with the earlier media kit, and have not modified these paths before, you can run the above script to get the new Xinuos defaults.

11. If using your own SSL certificates, please set them up before configuring new Maintenance Pack 1 and Update Pack 1 open source packages.

For the packages that use certificates, Xinuos provides **/etc/ssl/certs/xinuos-ca-bundle.crt**, which is copied to **/etc/ssl/certs/ca-bundle.crt** if it does not exist. **/etc/ssl/certs/ca-bundle.crt** is the file the packages will use. From time to time an updated package may provide a newer **xinuos-ca-bundle.crt** but it is the system administrator's responsibility to keep **ca-bundle.crt** up to date.

For the packages that use certificates, the **/opt/xinuos/sbin/setup-<package_name>.sh** programs have hooks in them to use a real certificate and key if you have one.

If it finds files (or symbolic links) named **/etc/ssl/certs/hostcert.pem** and **/etc/ssl/private/hostkey.pem**, it will configure the package to use those, otherwise it will generate a self-signed certificate.

12. Run the appropriate set-up scripts for your system. For example, **/opt/xinuos/sbin/setup-sendmail.sh** and **/opt/xinuos/sbin/setup-samba.sh**. Which set-up scripts to run depends on the features you will use, and the needs of your environment. In particular, you need to run the **setup-sendmail.sh** script if you intend to use the new **sendmail** features, or if you **receive mail on this server**. See the [Configuration Notes](#) section below for more information.

13. The following precautions should be taken in case your system later encounters a hardware problem or software/user data lost:

- Make a copy of the installed kernel. After the system reboots for the first time, run:

```
cd /stand
cp unix unix.good
cp resmgr resmgr.good
```

- This kernel can be used in the event that successive kernel relinks produce kernels that do not boot.
- After installing, licensing, and configuring your system, create a complete system backup. Also, implementing a regular backup schedule is recommended.
- Use the **/sbin/emergency_disk** utility to create an emergency recovery DVD that can be used if your system later develops a problem that prevents it from booting.

Configuration Notes

New Reboot Parameter After Panic

The updated OpenServer 6 Definitive 2018 media includes OSS726I. Starting with OSS726D,; XinuOS provides a new boot parameter, **PANICHALT**. When set to **Y** the system halts on panic and requires hard reboot instead of automatically shutting down or rebooting. The default is **Y**. If set to **N** in **/stand/boot** then the system behaves as per the **PANICBOOT** settings. If you prefer that the system either shuts down or reboots on panic, set the new **PANICHALT** variable to **N** and set **PANICBOOT** accordingly.

Configuring Open Source Applications

XinuOS provides technical articles about UnixWare products and packages here: [SCO Knowledge Center \(xinuos.com\)](https://www.xinuos.com/SCO-Knowledge-Center). To query this database, enter search keywords and select **SCO OpenServer Release 6**.

Many open source packages have README files on the XinuOS download site. For both MP1 and UP1, these READMEs are in subdirectories under [Index of /openserver6D/D2M1 \(xinuos.com\)](https://www.xinuos.com/index-of/openserver6D/D2M1).

As described next, the **openssl** (MP1), **httpd** (MP1), **Samba** (UP1), and **Sendmail** (UP1) utilities should be configured after installing MP1 and UP1, respectively, to use those features.

OpenSSL Configuration Notes

If an **/etc/ssl/certs/ca-bundle.crt** exists on your system, when a new **xinuOS-ca-bundle.crt** bundle is available, you can replace the old root certificates, with:

```
copy -m /etc/ssl/certs/ca-bundle.crt /etc/ssl/certs/ca-bundle.crt.orig
copy -m /etc/ssl/certs/xinuOS-ca-bundle.crt /etc/ssl/certs/ca-bundle.crt
```

OpenLDAP Configuration Notes

If your system was not configured to use OpenLDAP before upgrading to MP1 and you do not use the **openldap** utilities to query another ldap database, then there is no need to run **/opt/xinuOS/sbin/setup-openldap.sh [-client]**.

However, if you were using OpenLDAP before upgrading to MP1, you should export your OpenLDAP data and then import it after installing MP1. See the [OpenLDAP Upgrade Notes](#) subsection below.

OpenLDAP Upgrade Notes

WARNING! MP1's **Xinuosopenldap** version 2.5.17 does not support the 2.4.x default Berkeley database (**bdb**). Prior to installing MP1, if you are running **Xinuosopenldap** version 2.4.x; using your system as an LDAP server; and you are using the default Berkeley database format (**bdb**), the database should be exported before installing MP1 and then imported after installing MP1. Otherwise any existing OpenLDAP database data will no longer be accessible.

Before Installing MP1

The following procedure can be used to export an existing OpenLDAP database and prepare for the new version:

1. Log in as **root**.
2. Stop the **slapd** daemon, if running, to ensure a consistent export:

```
/etc/init.d/openldap-xinuos stop
```

3. Create an ***.ldif export** file; for example, named **2.4.ldif**:

```
/opt/xinuos/sbin/slapcat \  
-F /etc/opt/xinuos/openldap/slapd.d \  
-l /var/opt/xinuos/openldap/openldap-data/2.4.ldif
```

4. Backup the old configuration and data files:

```
sh /var/sadm/pkg/xinuosopenldap/install/preremove
```

5. Unconfigure OpenLDAP:

```
/opt/xinuos/sbin/setup-openldap.sh -u  
rm -fr /etc/opt/xinuos/openldap/slapd.d/cn=*
```

During the MP1 installation, OpenLDAP will be upgraded by the **Xinuosopenldap** package.

After Installing MP1

After installing MP1, the OpenLDAP database backup can be restored using the following procedure:

1. Log in as **root**.
2. Configure OpenLDAP:

```
/opt/xinuos/sbin/setup-openldap.sh
```

3. Restore the old configuration files in a temporary area such as **/tmp**:

```
cd /tmp
tar xvf /var/opt/xinuos/saved-configs/xinuosopenldap-2.4.59-config.tar
```

4. Compare the old files in **/tmp/openldap** with the files in **/etc/opt/xinuos/openldap** and integrate any appropriate changes made to your old configuration files. Like the **rootpw** line in the **slapd.conf** file.

NOTE: Many of the OpenLDAP schema files have been updated in the 2.5 series.

5. Once all configuration file changes are in place, make sure **openldap** will start:

```
/etc/init.d/openldap-xinuos start
ps -ef | grep slap
```

You should see a line like this.

```
ldap 1637 1 TS 2 0 Jan 20 ? 4:43
/opt/xinuos/libexec/slapd -u ldap -f /etc/opt/xinuos/openldap/slapd-tls.conf
-h
```

6. Import the **ldif export** file:

```
/etc/init.d/openldap-xinuos stop
/opt/xinuos/sbin/slapadd -l /var/opt/xinuos/openldap/openldap-data/2.4.ldif
/etc/init.d/openldap-xinuos start
```

HTTPD Configuration Notes

This **Xinuoshttpd** release is a bare bones base Apache without any add-on modules. It can be configured as:

1. A reverse proxy with TLS 1.2 to older Apache systems and/or
2. An up-to-date web server for basic HTML web pages (no PHP, no DB connectivity, and so on).

Run **/opt/xinuos/sbin/setup-httpd.sh** to get a basic HTTPD setup. The configuration files will be in **/etc/opt/xinuos/httpd**. If you use **vhosts**, your **vhosts** configuration files should be placed in **/etc/opt/xinuos/httpd/vhosts**.

The default configurations expect your web pages to go in **/var/opt/xinuos/httpd/htdocs**.

By default, the latest version of Apache is disabled in **/etc/opt/xinuos/httpd/httpd.options** (ONBOOT="no"). However if you change this setting to **yes** and the ISL release of Apache is already enabled, the new **httpd** will not start. Even with a reboot, the ISL release always starts before this **httpd** release. To use the new **httpd** in this scenario, disable the ISL release with **/etc/init.d/apache disable** and, if needed, move your web pages from **/usr/lib/apache** to **/opt/xinuos**.

Once you have completed configuring **httpd**, run **/etc/init.d/httpd start** to start **httpd**.

Samba Set-up Notes

Earlier OpenServer 6 Definitive 2018 installations had Samba 3.0.23Ca installed. After installing UP1, which includes **Xinuossamba** version 4.10.16l, the prior Samba 3 package should be removed:

1. Run **/opt/xinuos/sbin/setup-samba.sh -r** to remove Samba 3. This script will back up your Samba 3 configuration of the **/etc/samba** directory into a **tar** file under **/var/opt/xinuos/saved-configs**. The **setup-samba.sh** script will display the **tar** file name.
2. The Samba 3 configuration is not automatically migrated to Samba 4. After executing the **setup-samba.sh** command, you may need to modify your new **/etc/opt/xinuos/samba/smb.conf** file with data from the Samba 3 files saved to the tar archive.

If this system is going to be used for an Active Directory member:

1. Samba Active Directory (AD) authentication requires that time be synchronized on all domain members. Thus it is recommended to set up an NTP client. For further details, see Technical Article #111921, [How to configure NTP to synchronize correctly?](#).
2. In the background, AD uses DNS to locate other Domain Controllers (DCs) and services, such as Kerberos. So AD domain members and servers must be able to resolve the AD DNS zones. Set the DNS server IP and AD DNS domain in your **/etc/resolv.conf** configuration file. For example:

```
nameserver 10.99.0.1
search s4addom16.test.xinuos.com
```

Make sure the Samba server's IP address is added into DNS, both forward and reverse:

```
#host <server name>
#host <samba server IP>
```

Both should return the correct IP address and server name.

3. Run the OpenServer 6 Definitive 2018 Update Pack 1 Samba configuration script and answer the prompts to configure Samba for this system:

/opt/xinuos/sbin/setup-samba.sh

Here is an example of the prompts and possible responses:

```
osr6d2m2:/ # /opt/xinuos/sbin/setup-samba.sh
Installing smb.conf

a) Stand Alone Server
d) Active Directory Domain Member

which one? d
Enter Machine name: [osr6d2m2]
Machine name set to "osr6d2m2".

Installing krb5.conf
```

```
Installing user.map
Enable starting Samba daemons at boot time? (recommended) [Yes]

Start Samba daemons now? (recommended) [Yes] No
osr6d2m2:/ #
```

- The resulting configuration files are in **/etc/opt/xinuos/samba**. These files are well commented in case you want to further tweak your configuration. Make sure **/etc/opt/xinuos/samba/smb.conf** is configured like you want it.
- Reboot your system or run: **/etc/init.d/samba-xinuos start**
- If you chose "d) Active Directory Domain Member" when running **setup-samba.sh** above, then please note the following:

- To join an AD domain, run:

```
net ads join -U <AD Admin Username>
```

<AD Admin Username> should be a AD user having administrator rights. The command asks for the AD user password to complete the AD join.

- Restart Samba:

```
#!/etc/init.d/samba-xinuos restart
Stopping samba: UX:kill (samba-xinuos): ERROR: No such process
UX:kill (samba-xinuos): ERROR: No such process
```

Or reboot your system.

- After the above, Samba can be tested using the **smbclient** tool:

```
# smbclient //<samba_server_IP>/tmp -U <AD_Username>
Enter S4ADDOM16\<AD_User>'s password:*****
Try "help" to get a list of possible commands.
smb: \>
```

- If you need to reconfigure the Samba environment, you can execute the **setup-samba.sh -u** command. This will remove all created configuration files, so you can start configuring Samba all over again.
- For additional information, please see this technical article: [Technical Article #128085: How to get started with samba4 on UnixWare 7 or OpenServer 6 Definitive using Windows Domain Integration.](#)

Sendmail Notes

To use the Update Pack 1 **sendmail**:

1. Note the certificates discussion in the earlier installation [Details](#) section.
2. **IMPORTANT:** This is required if you want to use **sendmail**'s new features, or if you are receiving mail from other machines on this systems. Otherwise this step is optional.

Run this script and please pay attention to what it tells you at the end:

/opt/xinuos/sbin/setup-sendmail.sh

This script will configure **sendmail** and place the configuration files in **/etc/mail**. There may be multiple configuration files; for example, in case you have multiple networking cards The **sendmail** configuration files are well commented.

3. If you decide to modify any of the source configuration files, run **./make all** to process them.
4. Note that this system also includes **spfmlter**. Uncomment the **ONBOOT=yes** line in **/etc/mail/spfmlter.options** to have it start on boot.
5. For additional information, please see [Technical Article #128086: How to get started with Sendmail, SPF, libspf, and spfmlter on UnixWare7 or OpenServer6 Definitive?](#)

More Information

If you have questions regarding this supplement, or the product on which it is installed, contact your software supplier or support representative.

Limitations and Known Problems

Remote Login does not work if KVM License is Installed on VMware

KVM licenses should only be used on KVM systems, or added as the last step before migrating a VMware virtual machine to KVM. If installed on a VMware virtual box, remote logins will not work. One either needs to use the console login only, or remove the KVM license after logging onto the console. If you remove the KVM license, then either reboot or, as **root**, run **/etc/sco_pmd -k**.

upgrade.sh Displays a Black Screen if Network is Misconfigured

upgrade.sh can be run in multi-user mode. However, if your system networking is not properly configured, **upgrade.sh** may fail displaying a black screen. Press **Ctrl-C** to continue, you may have to do this multiple times. Then reboot to single-user mode and run **upgrade.sh** again.

Samba 4.10.16 for Active Directory Service (ADS)

ADS clients are only supported in environments with a single domain controller.

Software Manager Does Not Display MP1 and UP1

MP1 and UP1 are provided by **pkgadd** packages instead of **custom** components. This enables common packaging on OpenServer 6 and UnixWare 7 and, going forward, enables quicker deployment of new and updated software. It is also more efficient to update systems.

The downside is that MP1 and UP1 do not show up in the Software Manager. In prior releases, we sometimes provided **custom** wrappers to **pkgadd** items to appear in the Software Manager. But this made keeping the system current with the latest updates problematic.

KVM Tools Are Not Available for OpenServer 6 Definitive 2018

(ID: UW7-160)

OpenServer 6 Definitive 2018 is currently missing the utilities which support interactions between the Linux KVM host operating system and the KVM virtual machine. For Linux VMs, these features are provided by the *libvirt-client* package. There is no equivalent package for OpenServer 6 Definitive 2018 VMs. As a result, the shutdown and restart options in *KVM/QEMU*, *Virt-Manager* and *virsh*, do not work.

For more information, please see this related technical article [Technical Article #128004: Using virt-manager to shutdown my KVM virtual machine does not work.](#)

KVM OpenServer 6 Definitive 2018 Virtual Machine Configured With an IDE CD-ROM May Hang

(ID: UW7-164)

Some KVM VMs configured with an IDE CD-ROM device driver may hang sometime after accessing the CD-ROM. Configuring the VM to use a SATA CD-ROM avoids this problem.

For more information, please see related technical article [Technical Article #128005: How can I change my UW7D or OSR6D Definitive 2018 KVM Virtual Machine to use a SATA CD-ROM device instead of the IDE CD-ROM to prevent system hangs?](#)

SATA CD-ROM Is Not Detected by OpenServer 6 Definitive 2018 Under KVM on CentOS 7 and Red Hat Enterprise Linux 7

(ID: UW7-165)

Installing OpenServer 6 Definitive 2018 under KVM on CentOS 7 or Red Hat Enterprise Linux 7 is **not** supported. We strongly recommend that you upgrade to Rocky 8 or Red Hat Enterprise Linux 8. Please see [Technical Article #128041: Which Linux distributions and KVM hypervisors are known to work with UnixWare7 or OpenServer6 Definitive?](#) for a listing of the supported Linux distributions.

Installation with an IDE CD-ROM can workaround this issue, however, further use of the IDE CD-ROM could result in the issue described by UW7-164 (previous section), where the system hangs after accessing the CD-ROM. Using a SATA CD-ROM as a workaround to UW7-164 will not work on CentOS 7 or Red Hat Enterprise Linux 7.

"WARNING: Cannot Find IRQ Routing Info on CG 0" Is Displayed During ISL

(ID: UW7-166)

This message can be displayed if the PCI device driver issues a 32-bit BIOS call; these are disabled by default. Although the system will boot, you can avoid this message by setting the boot parameter:

```
ENABLE_PCI32=Y
```

Keep -dev Packages Synchronized with Runtime Versions

Developers need to keep their **-dev** packages (for example, **Xinuoslibiconv-dev** and **zlib-dev**) synchronized with the latest runtime packages. To check that this is the case, run **patchck** with the **-dev** option, or set **INSTALLDEV** to **Y** in the **/usr/lib/patchck.d/<system_name>.patchck.conf** file. Select and install/upgrade any displayed **-dev** sibling package if the sibling is already installed, or if this is a package you also want to add to your system.

ISL Screens Not Displayed When Accessing via a vSphere Web Console

Sometimes the ISL screen goes blank when running the OpenServer 6 Definitive 2018 ISL using a vSphere web console on an additional monitor, and using a Keyboard/Video/Mouse switch. In such cases, temporarily disconnect the HDMI cable from your local switch. The ISL screen should then display on your main display. Once the installation completes, you can reconnect the cable and use your switch as normal.

patchck pkgname is Broken

To install packages and patches with **patchck**, enter **patchck** and choose the package(s) of interest. **patchck** will automatically identify any needed prerequisites and install them. Do not use **patchck pkgname** as that functionality does not currently work.

Python 2 is Deprecated

Modern applications use Python 3 and it is highly recommended. If your system had Python 2 installed before installing Maintenance Pack 1, then Maintenance Pack 1 updates Python 2 to a version that is compatible with the new Maintenance Pack libraries. This is in addition to installing Python 3. Although Python 3 is more modern, Python 2 may be needed for maintaining old Python 2 applications that have not been ported to Python 3.

If you did not install Python 2 before installing Maintenance Pack 1, you can separately download and install Python 2 (the **Xinuospython** package) from:

<https://download.xinuos.com/openserver6D/D2M1MP>

WARNING! Python 2 is deprecated and is no longer supported. Xinuos will not provide additional updates to the **Xinuospython** (Python 2) package. Specifically, Xinuos will not provide additional/future security updates.

Appendix A: Maintenance Pack 1 Packages

The Maintenance Pack 1 package versions listed below are included in the initial Maintenance Pack 1 release. These packages are available with your OpenServer 6 Definitive 2018 license and do not require a separate Update Pack license.

You can install the latest current XinuOS versions of these packages using **patchck** or the revised 6D ISO **upgrade.sh** shell script. Additional packages will be added to Maintenance Pack 1 later and will also be available by running **patchck**. We recommend that you periodically run **patchck** to identify new updates as they become available.

The packages in Maintenance Pack 1 are:

- **bzip2**: bzip2 1.0.8 for Definitive (version 1.0.8a)
- **openssl**: OpenSSL 3.0.13 for Definitive (version 3.0.13)
- **pam**: Pluggable Authentication Modules (version 0.77e)
- **xz**: XZ Utils 5.4.6 for Definitive (version 5.4.6)
- **zlib**: ZLIB DATA COMPRESSION LIBRARY 1.3.1 for Definitive (version 1.3.1)
- **XinuOSapr**: Apache Portable Runtime Library (APR) 1.6.5 for Definitive (version 1.6.5b)
- **XinuOSapr-util**: Apache Portable Utility Library (APR) 1.6.1 for Definitive (version 1.6.1a)
- **XinuOSatf**: The Automated Testing Framework (ATF) 0.22pre for Definitive (version 0.22pre)
- **XinuOSbison**: GNU Bison 3.8.2 for Definitive (version 3.8.2)
- **XinuOSc-ares**: c-ares 1.17.2 for Definitive (version 1.17.2)
- **XinuOScurl**: Curl 7.58.0 for Definitive (version 7.58.0)
- **XinuOSdb53**: Berkeley DB 5.3.28 for Definitive (version 5.3.28c)
- **XinuOSdejagnum**: DejaGnu 1.6.3 for Definitive (version 1.6.3)
- **XinuOSdiffutils**: GNU Diffutils 3.7 for Definitive (version 3.7)
- **XinuOSexpat**: Expat 2.5.0 for Definitive (version 2.5.0)
- **XinuOSexpect**: Expect 5.45.4 for Definitive (version 5.45.4b)
- **XinuOSfindutils**: GNU findutils 4.9.0 for Definitive (version 4.9.0)
- **XinuOSflex**: flex 2.6.4 for Definitive (version 2.6.4)
- **XinuOSgawk**: GNU Awk 3.1.8 for Definitive (version 3.1.8)
- **XinuOSgcc-rtlibs**: GNU Compiler Collection (XinuOS GCC) 7.3.0 Runtime Libraries for Definitive (version 7.3.0g)
- **XinuOSgdb**: GDB 8.1 for Definitive (version 8.1a)
- **XinuOSgdbm**: GNU dbm 1.19 for Definitive (version 1.19)
- **XinuOSgettext**: GNU Gettext Package 0.21 for Definitive (version 0.21a)
- **XinuOSgmake**: GNU Make 4.2.1 for Definitive (version 4.2.1a)
- **XinuOSgmp**: GNU MP Library 6.2.1 for Definitive (version 6.2.1a)
- **XinuOSgnum4**: GNU m4 1.4.19 for Definitive (version 1.4.19)
- **XinuOSgpgme**: GPGME - GnuPG Made Easy 1.16.0 for Definitive (version 1.16.0)
- **XinuOSgrep**: GNU grep 3.6 for Definitive (version 3.6)

- **Xinuostar:** GNU tar 1.30 for Definitive (version 1.30)
- **Xinuosttpd:** Apache HTTP Server 2.4.58 for Definitive (version 2.4.58)
- **Xinuosisl:** isl 0.18 for Definitive (version 0.18)
- **Xinuoslibassuan:** Libassuan 2.5.5 for Definitive (version 2.5.5)
- **Xinuoslibffi:** libffi (Foreign Function Interface) 3.0.13 for Definitive (version 3.0.13)
- **Xinuoslibgpg-error:** Libgpg-error 1.43 for Definitive (version 1.43)
- **Xinuoslibiconv:** GNU LIBICONV - character set conversion library 1.16 for Definitive (version 1.16)
- **Xinuoslibksba:** LIBKSBA 1.6.0 for Definitive (version 1.6.0a)
- **Xinuoslibsasl:** Cyrus SASL API implementation 2.1.28 for Definitive (version 2.1.28a)
- **Xinuoslibssh2:** libssh2 - SSH2 library 1.8.0 for Definitive (version 1.8.0b)
- **Xinuoslibxml2:** libxml2 2.9.4 for Definitive (version 2.9.4b)
- **Xinuoslua:** Lua 5.4.3 for Definitive (version 5.4.3)
- **Xinuoslynx:** Lynx 2.8.9rel.1 for Definitive (version 2.8.9rel.1a)
- **Xinuoslz4:** LZ4 - Extremely fast compression 1.9.3 for Definitive (version 1.9.3a)
- **Xinuoslzip:** Lzip 1.23 for Definitive (version 1.23)
- **Xinuoslzo2:** LZO -- a real-time data compression library 2.10 for Definitive (version 2.10a)
- **Xinuosmpc:** GNU MPC 1.1.0 for Definitive (version 1.1.0)
- **Xinuosmpfr:** GNU MPFR Library 4.0.2 for Definitive (version 4.0.2a)
- **Xinuosopenldap:** OpenLDAP 2.5.17 for Definitive (version 2.5.17)
- **Xinuospcre:** PCRE (Perl-compatible regular expression library) 8.45 for Definitive (version 8.45)
- **Xinuospcre2:** PCRE2 (Perl-compatible regular expression library) 10.37 for Definitive (version 10.37)
- **Xinuospkg-config:** pkg-config 0.29.2 for Definitive (version 0.29.2)
- **Xinuospython:** Python 2.7.18 for Definitive (version 2.7.18a)
- **Xinuospython3:** Python 3.10.12 for Definitive (version 3.10.12a)
- **Xinuospython3-modules:** python3 modules 1.1 for Definitive (version 1.1)
- **Xinuosreadline:** Gnu Readline library, version 8.1 for Definitive (version 8.1p2)
- **Xinuossed:** GNU sed 4.8 for Definitive (version 4.8)
- **Xinuossqlite:** SQLite 3.20.1 for Definitive (version 3.20.1)
- **Xinuossudo:** Sudo 1.9.15p5 for Definitive (version 1.9.15p5)
- **Xinuostcl:** Tcl 8.6 for Definitive (version 8.6.12)
- **Xinuostexi2html:** texi2html 1.82 for Definitive (version 1.82a)
- **Xinuostexinfo:** Texinfo 4.13 for Definitive (version 4.13)
- **Xinuostk:** Tk 8.6 for Definitive (version 8.6.12)
- **Xinuostre:** TRE 0.8.0 for Definitive (version 0.8.0)
- **Xinuosuuid:** OSSP uuid - Universally Unique Identifier 1.6.2 (04-Jul-2008) for Definitive (version 1.6.2b)

- **Xinuoswget:** GNU Wget 1.20 for Definitive (version 1.20)
- **osr6d2m1mp1:** OpenServer 6 Definitive 2018 Maintenance Pack 1 (version 1.0)

Appendix B: Update Pack 1 Packages

The Update Pack 1 package versions listed below are included in the initial Update Pack 1 release. They require a OpenServer 6 Definitive 2018 Update Pack 1 license.

patchck allows you to always install the latest current security updates of these packages. We recommend that you periodically run **patchck** to identify new updates as they become available. Future first and/or second digit updates may be provided in subsequent update packs, with a separate license.

The packages in Update Pack 1 are:

- **sendmail**: Sendmail 8.17.2 for Definitive (version 8.17.2f)
- **Xinuosalpine**: Alpine/Pico/Pilot/Web Alpine/Imapd Distribution 2.26 for Definitive (version 2.26a)
- **Xinuosgnutls**: GnuTLS 3.6.16 for Definitive (version 3.6.16)
- **Xinuosheimdal**: Heimdal 7.8.0 for Definitive (version 7.8.0)
- **Xinuoshelp2man**: GNU help2man 1.48.5 for Definitive (version 1.48.5)
- **Xinuosjansson**: Jansson 2.14 for Definitive (version 2.14)
- **Xinuoslibarchive**: libarchive 3.5.2 for Definitive (version 3.5.2a)
- **Xinuoslibcrypt**: Libgcrypt - The GNU Crypto Library 1.8.8 for Definitive (version 1.8.8)
- **Xinuoslibidn2**: Libidn2 2.3.2 for Definitive (version 2.3.2a)
- **Xinuoslibspf**: libspf 1.0.0-p6 for Definitive (version 1.0.0-p6)
- **Xinuoslibtasn1**: GNU Libtasn1 4.18.0 for Definitive (version 4.18.0a)
- **Xinuoslibunistring**: GNU LIBUNISTRING - Unicode string library 0.9.10 for Definitive (version 0.9.10a)
- **Xinuosmutt**: Mutt 2.2.13 for Definitive (version 2.2.13)
- **Xinuosnettle**: Nettle 3.7.3 for Definitive (version 3.7.3a)
- **Xinuosnss-pam-ldapd**: nss-pam-ldapd 0.9.12 for Definitive (version 0.9.12b)
- **Xinuososr6d**: OpenServer 6 Definitive Open Source Extensions Base (version 1.2)
- **Xinuosperl**: Perl 5.34.0 for Definitive (version 5.34.0)
- **Xinuosperlmod**: Perl Modules 5.34.0 for Definitive (version 5.34.0-20230616)
- **Xinuossamba**: Samba 4.10.16 for Definitive (version 4.10.16l)
- **Xinuosspfmliter**: spfmliter 2.001 for Definitive (version 2.001b)
- **osr6d2m1up1**: OpenServer 6 Definitive 2018 Update Pack 1 (version 1.0)

Appendix C: kmdt Instrumentation Levels

This appendix explains the **kmdt** parameter settings when debugging kernel memory issues. In general the default value of **0** should be used. The higher values are used when investigating issues where more debugging information is needed.

To use the **kmdt**, set the **KMDT_INSTR_LEVEL** in **/stand/boot**, or at the start-up `[boot]` prompt, as described earlier. The following describes the different settings available:

1. The **kma** device driver provides the new **kmdt** and supports the following levels of instrumentation (debugging levels):

| Level | Instrumentation |
|-------|--|
| 0 | Default (no instrumentation) |
| 1 | KMDT_STATS |
| 2 | KMDT_HIST KMDT_STATS |
| 3 | KMDT_PARANOID KMDT_HIST KMDT_STATS |
| 4 | KMDT_POISON KMDT_PARANOID KMDT_HIST KMDT_STATS |
| 5 | KMDT_EXTREME_PARANOID KMDT_HIST KMDT_STATS |
| 6 | KMDT_EXTREME_PARANOID KMDT_POISON KMDT_HIST KMDT_STATS |

2. Each level above is a combination of a particular **KMDT** functionality to debug a certain type of memory related issues. Each increasing level is going to stress the system more in terms of physical and virtual memory resources. This may change the timing of the application or kernel conditions causing the panic.

3. The KMDT functionality values in #1 are defined as follows:

| Instrumentation | Definition |
|-------------------|--|
| KMEM_STATS | <p>KMA statistical information is organized into two tables.</p> <p>The SIZES table holds the number of bytes "owned" (allocated but not freed) for each size.</p> <p>The INVOCATIONS table holds the number of invocations of kma_alloc or kma_free for each size and for each invocation point, where an invocation point is a return address from where kma_alloc or kma_free is called. Each entry in the SIZES table is linked to the chain of corresponding INVOCATIONS entries.</p> |

| Instrumentation | Definition |
|--|--|
| <p>KMEM_STATS</p> | <p>KMA statistical information is organized into two tables.</p> <p>The SIZES table holds the number of bytes "owned" (allocated but not freed) for each size.</p> <p>The INVOCATIONS table holds the number of invocations of kma_alloc or kma_free for each size and for each invocation point, where an invocation point is a return address from where kma_alloc or kma_free is called. Each entry in the SIZES table is linked to the chain of corresponding INVOCATIONS entries.</p> |
| <p>KMEM_HIST</p> | <p>KMA history information is gathered primarily for the purpose of finding undisciplined users of kmem_alloc/kmem_free. The last KMA_HIST_MAX calls to kmem_alloc/kmem_zalloc, and kmem_free are recorded in the kma_hist_buffer.</p> |
| <p>KMDT_PARANOID</p> | <p>This is the basic functionality to catch memory corruption. This writes MAGIC at the beginning of the freed memory and TMAGIC to the tail of allocated memory and checks if the same has been corrupted at time of free or re-allocation.</p> |
| <p>KMA_EXTREME_PARANOID, kma_xminbufsz, kma_xmaxbufsz</p> | <p>The kma_xminbufsz controls the minimum (or start) buffer size and kma_xmaxbufsz controls the maximum (or end) buffer size to be tracked for memory corruption.</p> <p>Any buffer size requested within the range is allocated in unit of a page. The page is freed when the buffer is released. This enables us to track memory corruption within a buffer after it is released. If a fixed size buffer needs to be tracked, set kma_xminbufsz to kma_xmaxbufsz.</p> <p>The kma_xminbufsz and kma_xmaxbufsz should not be greater than MAXBUF SZ ; that is, 8192 bytes.</p> <p>Please note that the default value of kma_xminbufsz and kma_xmaxbufsz are 0 which means KMA_EXTREME_PARANOID has no effect. So, if you want to enable KMA_EXTREME_PARANOID via level 5 or 6, then we need to set these two values.</p> |

| Instrumentation | Definition |
|-------------------|---|
| KMA_POISON | <p>As you can see from above instrumentation levels in #1, KMA_POISON is only enabled with either KMA_PARANOID or KMA_EXTREME_PARANOID.</p> <p>With KMA_PARANOID, this KMA_POISON write MAGIC and TMAGIC to all memory except of few bytes, as in case if only KMA_PARANOID is enabled. At the time of allocation or free, the unused buffer space is checked for the MAGIC string. This considerably slows down memory allocations and frees and may disrupt timing of the problem being investigated.</p> <p>With KMA_EXTREME_PARANOID, an extra virtual page is allocated to track out-of-bound memory access.</p> |

4. An enhanced **crash** utility to utilize the **kmdt** functionality is also provided. Useful **crash** commands include **kmastat** and **kmahist**.

5. There are three new tuneables which are defined in **/etc/conf/pack.d/kma/space.c**:

- **kma_sizes**
- **kma_hist_max**
- **kma_invocs**

Please note that the default values for these tuneables in **space.c** is **0** because the **kma** device driver code during initialization will allocate a certain amount of memory for each of the tables/buffer. If you need to overwrite, then please update these variables, rebuild the kernel, and reboot.

The default sizes are:

- **14983** entries for the size table;
- **29989** entries for the invocation table; and
- **100000** entries for the history log buffer.

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