# Quick Reference: Pre-Installation Requirements for Opsware SAS 7.0

This reference document is intended to quickly familiarize you with the basic requirements for installing Opsware SAS, including the supported operating systems and their required packages, supported versions of Oracle, network requirements, and time and locale requirements.

This document discusses the following topics:

- Hardware Requirements for Opsware Core Servers
- Supported Operating Systems
- Supported Oracle Versions
- SAS Core Server Package Requirements
- Network Requirements
- Core Time Requirements

For more detailed documentation about any of these topics, see the *Opsware® SAS Planning and Installation Guide*.

## Hardware Requirements for Opsware Core Servers

An Opsware core server is a computer running one or more Opsware core components. You can install all of the Opsware core components on a single server or you can distribute the components across multiple servers. This section describes the hardware requirements for Opsware core servers.

### Disk Space Requirements

On each core server, the root directory must have at least 72 GB of hard disk space. Opsware components are installed in the `/opt/opsware` directory.

Table 1-1 lists the recommended disk space requirements for installing and running Opsware components. These sizes are recommended for the primary production data. Additional storage for backups should be calculated separately.

*Table 1-1: Opsware Disk Space Requirements*

| OPSWARE COMPONENT DIRECTORY | RECOMMENDED DISK SPACE | REQUIREMENT ORIGIN |
|---|---|---|
| /etc/opt/opsware | 50 MB | Configuration information for all Opsware core services. (Fixed disk usage) |
| /media* | 15 GB | The media directory holds the OS installation media that is shared over NFS or CIFS. The initial size for this directory depends on the total size of all OS installation media sets that you plan on provisioning, such as Windows 2003 CD (700mb), Redhat AS3 CDs (2GB), and Suse 9 SP3 (10GB). The network OS install shares do not need to reside on Opsware core systems and are typically dispersed across multiple servers as the Opsware mesh grows. (Bounded disk usage that grows quickly in large increments) |
| /opt/opsware | 15 GB | The base directory for all Opsware core services. (Fixed disk usage) |

 

*Table 1-1: Opsware Disk Space Requirements (continued)*

| OPSWARE COMPONENT DIRECTORY | RECOMMENDED DISK SPACE | REQUIREMENT ORIGIN |
|---|---|---|
| /u01/oradata* | 20 GB | The Oracle tablespace directory that contains all model and job history information. Known sizes range from 5GB to 50GB of space, depending on the frequency and type of work, the amount of software and servers managed, and the garbage collection frequency settings. (Bounded disk usage that grows slowly in small increments) |
| /var/log/opsware | 10 GB | The total log space used by all Opsware components. (Fixed disk usage) |
| /var/opt/opsware | 10 GB | The total run space used by all Opsware components, including instances, pid files, lock files, and so on. (Fixed disk usage) |
| /var/opt/opsware/word* | 80 GB | The total disk space used by software that is imported into Opsware. Theoretically, this is infinite disk usage depending on how much software you import. Initial size calculation is based on the total size of all packages and patches that you want managed by Opsware. Known sizes range from 10GB to 250GB. |
| /var/opt/opsware/ogfs/mnt | 20 GB | The home directory for Global Shell enabled Opsware user accounts. |

## Opsware Core Scalability for Performance

You can scale the Opsware SAS core components vertically, by adding additional CPUs and memory, or horizontally, by distributing the components on multiple servers.

### CPU Requirements

The CPU for core servers has the following requirements:

- Single-server: 4 dual-core CPUs (or equivalent)
- Multiple-server: 2 dual-core CPUs (or equivalent)

### Memory Requirements

The memory for core servers has the following requirements:

- Single-server: 8 GB RAM (1 GB per CPU core)
- Multiple-server: 4 GB RAM (1 GB per CPU core)

## Supported Operating Systems

Table 1-2 lists the platform-specific requirements for installing Opsware SAS.

*Table 1-2: Opsware Core Supported Operating Systems*

| SUPPORTED OS FOR OPSWARE CORE | VERSION | ARCHITECTURE | OPSWARE COMPONENTS |
|---|---|---|---|
| Sun Solaris | Solaris 9 *(Deprecated**)* | Sun SPARC | All components |
| Sun Solaris | Solaris 10 | Sun SPARC, Niagara | All components |
| Red Hat Linux | Red Hat Enterprise Linux 3 AS | 32 bit x86 | All components |
| Red Hat Linux | Red Hat Enterprise Linux 4 AS | 64 bit x86 | All components |

**Solaris 9 is currently supported, but is being phased out and will not be supported in a future major release.

 

A guest OS (virtual machine) of a VMware ESX server is not supported as an Opsware Core Server.

## Supported Oracle Versions

Support for the Model Repository (truth) is limited to certain versions of Oracle running on certain versions of operating systems. Table 1-3 lists the supported Oracle versions.

*Table 1-3: Supported Oracle Versions for the Model Repository*

| ORACLE EDITION | ORACLE VERSION |
|---|---|
| Oracle Standard Edition | 9.2.0.8<br>10.2.0.2 |
| Oracle Standard Edition One | 10.2.0.2 |
| Oracle Enterprise Edition | 9.2.0.8<br>10.2.0.2 |

# SAS Core Server Package Requirements

## Solaris Requirements

For Solaris, the Opsware core servers must meet the requirements listed in Table 1-1, Table 1-2, and Table 1-3.

*Table 1-1: Packages Required for Solaris*

| REQUIRED PACKAGES FOR SOLARIS | | |
|---|---|---|
| SUNWCreq (cluster) | SUNWeurf | SUNWeudiv |
| SUNWadmap | SUNWi2rf | SUNWeudlg |
| SUNWadmc | SUNWi4rf | SUNWeudmg |
| SUNWdoc | SUNWi5rf | SUNWeuezt |
| SUNWesu | SUNWi7rf | SUNWeuhed |
| SUNWman | SUNWi8rf | SUNWeuluf |
| SUNWmkcdS | SUNWi9rf | SUNWeulux |
| SUNWswmt | SUNWi13rf | SUNWeuodf |
| SUNWtoo | SUNWi15rf | SUNWeuxwe |
| SUNWtoox** | SUNWtxfnt | SUNWuiu8 |
| SUNWadmfw | SUNWinttf | SUNWuiu8x |
| SUNWlibC | SUNW5xmft | SUNWulcf |
| SUNWlibCx** | SUNWcxmft | SUNWulcfx |
| SUNWinst | SUNWjxmft | SUNWulocf |
| SUNWucbt | SUNWkxmft | SUNWuxlcf |
| SUNWucbtx** | SUNWeu8df | SUNWuxlcx |
| SUNWscpu | SUNWeu8os | SUNWeudbd |
| SUNWscpux** | SUNWeu8ox | SUNWeudhs |
| SUNWtcsh | SUNWeudba | SUNWeusru |
| SUNWsacom | SUNWeudda | SUNWuium |
| SUNWntpr | SUNWeudhr | NSCPeu8cm |
| SUNWntpu | SUNWeudis | |
| SUNWarrf | | |

** These packages are required only for Solaris 8 and Solaris 9.

 

*Table 1-2: Packages Recommended for Solaris 8 and 9*

| RECOMMENDED PACKAGES FOR SOLARIS | | |
|---|---|---|
| SUNWisolc | SUNWi1of | SUNWiniu8 |
| SUNWisolx | SUNWjiu8 | SUNWiniu8x |
| SUNWislcc | SUNWjiu8 | |
| SUNWislcx | SUNWkiu8 | |
| SUNWciu8 | SUNWkiu8x | |
| SUNWciu8x | SUNWtiu8 | |
| SUNWhiu8 | SUNWtiu8x | |
| SUNWhiu8x | | |

*Table 1-3: Packages That Must Be Removed from Solaris*

| PACKAGES THAT MUST BE REMOVED FROM SOLARIS |
|---|
| SUNWCpm |

### *Other Solaris Requirements*

The Opsware Core Server must also meet the following requirements:

- On the server where you will install the SAS Web Client component, you must install the J2SE Cluster Patches for Solaris. To download these patches, search for "J2SE Cluster Patches" for your version of Solaris at `http://www.sun.com/`.
- On all core servers, verify that the Network File System (NFS) is configured and running.
- For Daylight Saving Time (DST) on Solaris 9 servers, you must install the time zone patch 113225-07 or later, and libc patch 112874-33 or later. To download these patches, search for the patch ID at `http://www.sun.com/`.
- For Daylight Saving Time (DST) on Solaris 10 servers, you must install the time zone patch 122032-03 or later, and libc patch 119689-07 or later. To download these patches, search for the patch ID at `http://www.sun.com/`.

  For more information about DST changes, search for "Daylight Saving Time (DST)" at `http://www.sun.com/`.

If you attempt to download any of these files and receive an error page indicating that the file was not found, make sure you are using the correct URL. For the correct URL, check the Opsware Technical Support web site at https://download.opsware.com. For instructions, contact support@opsware.com.

**Linux Requirements**

For Linux AS3 32-bit x86, an Opsware Core Server must have the packages listed in Table 1-4 installed. For Linux AS4 64-bit x86, an Opsware Core Server must have the packages listed in Table 1-5 installed. For both and Linux AS4 32-bit x86 and Linux AS4 64-bit x86, the packages listed in Table 1-6 must *not* be installed.

Due to a known Linux AS4 64-bit x86 kernel bug, you must have Update 5 or later installed on all servers that will host an Opsware Core.

*Table 1-4: Packages Required for Linux AS3 32-bit x86*

| REQUIRED PACKAGES FOR LINUX AS3 32-BIT X86 | | |
|---|---|---|
| at | iptables | patch |
| compat-db | kernel-source | patchutils |
| compat-libstdc++ | libcap | sharutils |
| coreutils | libxml2-python | strace |
| cpp | libstdc++ | unzip |
| expat | libstdc++-devel ** | XFree86-libs |
| gcc | mkisofs * | XFree86-libs-data |
| glibc-devel | ncompress (contains | XFree86-Mesa-libGL |
| glibc-headers | uncompress utility) | xinetd |
| glibc-kernheaders | nfs-utils | zip |
| | ntp | |
| * mkisofs is used for premastering ISO 9660 file systems used on CD-ROMs. It is open source and available at *http://freshmeat.net,* search for "mkisofs". | | |
| ** Required for Oracle database (Model Repository) | | |

 

*Table 1-5: Packages Required for Linux AS4 64-bit x86*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
|---|
| binutils-2.15.92.0.2-13.0.0.0.2.x86_64.rpm |
| chkfontpath-1.10.0-2.x86_64.rpm |
| compat-db-4.1.25-9.i386.rpm |
| compat-db-4.1.25-9.x86_64.rpm |
| cpp-3.4.6-3.x86_64.rpm |
| desktop-file-utils-0.9-2.x86_64.rpm |
| expat-1.95.7-4.i386.rpm |
| expat-1.95.7-4.x86_64.rpm |
| expat-devel-1.95.7-4.x86_64.rpm |
| gcc-3.4.3-22.1.x86_64.rpm |
| gcc-c++-3.4.6-3.x86_64.rpm |
| glibc-2.3.4-2.9.i686.rpm |
| glibc-2.3.4-2.25.x86_64.rpm |
| glibc-common-2.3.4-2.9.x86_64.rpm |
| glibc-devel-2.3.4-2.9.i386.rpm |
| glibc-devel-2.3.4-2.9.x86_64.rpm |
| glibc-headers-2.3.4-2.9.x86_64.rpm |
| glibc-kernheaders-2.4-9.1.87.EL.x86_64.rpm |
| iptables-1.2.11-3.1.x86_64.rpm |
| kernel-smp-2.6.9-55.EL.x86_64.rpm |
| kernel-smp-devel-2.6.9-55.EL.x86_64.rpm |
| libaio-0.3.103-3.i386.rpm |
| libaio-0.3.103-3.x86_64.rpm |
| libcap-1.10-20.i386.rpm |
| libcap-1.10-20.x86_64.rpm |
| libgcc-3.4.3-22.1.i386.rpm |
| libgcc-3.4.3-22.1.x86_64.rpm |
| libpng-1.2.7-1.el4.2.i386.rpm |
| libpng-1.2.7-1.el4.2.x86_64.rpm |
| libpng10-1.0.16-1.i386.rpm |
| libpng10-1.0.16-1.x86_64.rpm |
| libstdc++-3.4.3-22.1.i386.rpm |
| libstdc++-3.4.3-22.1.x86_64.rpm |
| libtermcap-2.0.8-39.i386.rpm |
| libtermcap-2.0.8-39.x86_64.rpm |

*Table 1-5: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
|---|
| libxml2-2.6.16-6.i386.rpm |
| libxml2-2.6.16-6.x86_64.rpm |
| libxml2-python-2.6.16-6.x86_64.rpm |
| make-3.80-5.EL4.x86_64.rpm |
| mkisofs-2.01.1-5.x86_64.rpm |
| ncompress-4.2.4-41.rhel4.x86_64.rpm |
| nfs-utils-1.0.6-70.EL4.x86_64.rpm |
| ntp-4.2.0.a.20040617-4.EL4.1.x86_64.rpm |
| openmotif21-2.1.30-11.RHEL4.6.i386.rpm |
| patch-2.5.4-20.x86_64.rpm |
| patchutils-0.2.30-1.x86_64.rpm |
| pdksh-5.2.14-30.3.x86_64.rpm |
| popt-1.9.1-18_nonptl.i386.rpm |
| popt-1.9.1-18_nonptl.x86_64.rpm |
| readline-4.3-13.i386.rpm |
| readline-4.3-13.x86_64.rpm |
| rpm-build-4.3.3-18_nonptl.x86_64.rpm |
| sharutils-4.2.1-22.2.x86_64.rpm |
| strace-4.5.14-0.EL4.1.x86_64.rpm |
| sysstat-5.0.5-1.rhel4.x86_64.rpm |
| tcp_wrappers-7.6-37.2.i386.rpm |
| tcp_wrappers-7.6-37.2.x86_64.rpm |
| ttmkfdir-3.0.9-14.1.EL.x86_64.rpm |
| unzip-5.51-7.x86_64.rpm |
| vim-enhanced-6.3.046-0.40E.7.x86_64.rpm |
| vnc-4.0-8.1.x86_64.rpm |
| vnc-server-4.0-8.1.x86_64.rpm |
| xinetd-2.3.13-4.4E.1.x86_64.rpm |
| xinitrc-4.0.14.3-1.noarch.rpm |

 

*Table 1-5: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
|---|
| xorg-x11-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-Mesa-libGL-6.8.2-1.EL.13.36.i386.rpm |
| xorg-x11-Mesa-libGL-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-Mesa-libGLU-6.8.2-1.EL.13.36.i386.rpm |
| xorg-x11-Mesa-libGLU-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-Xvfb-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-deprecated-libs-6.8.2-1.EL.13.36.i386.rpm |
| xorg-x11-deprecated-libs-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-font-utils-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-libs-6.8.2-1.EL.13.36.i386.rpm |
| xorg-x11-libs-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-xauth-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-xfs-6.8.2-1.EL.13.36.x86_64.rpm |
| xterm-192-4.EL4.x86_64.rpm |
| zip-2.3-27.x86_64.rpm |
| zlib-1.2.1.2-1.2.i386.rpm |
| zlib-1.2.1.2-1.2.x86_64.rpm |

*Table 1-6: Packages That Must Be Removed for Linux*

| PACKAGES THAT MUST BE REMOVED FROM LINUX | | |
|---|---|---|
| samba | rsync | tftp** |
| apache | httpd | dhcp** |

** Existing versions of the `tftp` and `dhcp` packages cannot reside on the same server as the OS Provisioning Boot Server component; however, they can reside on Opsware core servers that do not have the OS Provisioning Boot Server component

To verify that the `samba` package, for example, is installed, enter the following command:

```
rpm -qa | grep samba
```

You can obtain the latest versions of these packages from the Red Hat errata web site.

To remove packages, enter the following command:

```
rpm -e package_name
```

Some packages in this list may be depended on by other packages that are installed on your system. For example, the default Red Hat installation includes `mod_python` and `mod_perl` that depend on `httpd` being installed. In order to remove packages that fulfill dependencies, you must simultaneously remove the packages that create the dependencies. In this example, you would need to enter the following command:

```
rpm -e httpd mod_python mod_perl
```

If `rpm` identifies an additional dependency, it will note which packages have dependencies on the components to be removed and fail. These packages must be added to the uninstall command line. If the chain of dependencies cannot be suitably resolved, enter the `rpm -e --nodeps` command to remove the desired packages without considering dependencies.

## Network Requirements

This section discusses the following network requirements within a facility, open ports required for core components, and name resolution requirements. These requirements must be met for both standalone and multimaster cores.

### Network Requirements within a Facility

Before running the Opsware Installer, your network environment must meet the following requirements:

- All Opsware Core Servers must be on the same Local Area Network (LAN or VLAN).
- There must be full network connectivity between all Opsware Core Servers and the servers that the Opsware Core will manage.
- Opsware Core Servers expect user accounts to be managed locally and cannot use the Network Information Service (NIS) directory to retrieve password and group information. During installation of the Opsware Core Components, the installer checks for the existence of certain target accounts before creating them. If you are using NIS, this check will fail.

 

- If you plan to use network storage for Opsware Core Components, such as the Software Repository or OS Provisioning Media Server, you must ensure that the `root` user has write access over NFS to the directories where the components will be installed.
- The speed and duplex mode of the Opsware Core's and Managed Servers' NIC adapters must match the switch they are connected to. A mismatch will cause poor network performance between the Core and Managed Servers.

### Open Ports

You must configure any firewalls protecting your Core Servers to allow the ports shown in Table 1-7 to be open. Note that the ports numbers listed in the table are the default values which can be changed during the installation, so ensure you are leaving the correct ports open.

*Table 1-7: Open Ports on a Firewall Protecting an Opsware Core*

| PORT | COMPONENT | PURPOSE |
|---|---|---|
| 80 (TCP) | Opsware Command Center | HTTP redirector |
| 443 (TCP) | Opsware Command Center | HTTPS Proxy for SAS Web Client UI, SAS Client, Opsware Web Services (2.2) |
| 2001 (TCP) | Core Gateway | Inbound tunnels from other Gateways |
| 2222 (TCP) | Opsware Global File System | Global shell session from an SSH client |
| 3001 (TCP) | Agent Gateway | Inbound Agent connections |
| 7580, 7581 (TCP) | Model Repository Multimaster Component | TIBCO Rendezvous web client |
| 8017 (UDP, TCP) | Agent Gateway | Interface to the Build Manager |
| 8080 (TCP) | Opsware Command Center | Load Balancing Gateway for the SAS Client |

Table 1-8 shows the ports used by the OS Provisioning components that are accessed by servers during the provisioning process. (In Opsware SAS, provisioning refers to the installation of an operating system on a server.)

*Table 1-8: Open Ports for the OS Provisioning Components*

| PORT | COMPONENT | SERVICE |
|---|---|---|
| 67 (UDP) | Boot Server | DHCP |
| 69 (UDP) | Boot Server | TFTP |
| 111 (UDP, TCP) | Boot Server, Media Server | RPC (`portmapper`), required for NFS |
| Dynamic * | Boot Server, Media Server | `rpc.mountd`, required for NFS |
| 2049 (UDP, TCP) | Boot Server, Media Server | NFS |

* The `rpc.mountd` process runs on a dynamic port and is not fixed. Therefore, if you are using a firewall, it must be an application layer firewall that can understand the RPC request that the client uses to locate the port for `mountd`. The firewall must dynamically open that port.

The OS Provisioning Boot Server and Media Server run various services (such as `portmapper` and rpc.mountd) that could be susceptible to network attacks. Opsware Inc. recommends that you segregrate the OS Provisioning Boot Server and Media Server components onto their own DMZ network. When you segregate these components, the ports listed in Table 1-8 should be opened to the DMZ network from the installation client network. Additionally, the Boot Server and Media Server should have all vendor-recommended security patches applied.

Table 1-9 shows the Managed Server port that must be open for Opsware Core Server connections.

*Table 1-9: Open Ports on Managed Servers*

| PORT | COMPONENT |
|---|---|
| 1002 (TCP) | Opsware Agent |

 

### OS Provisioning: DHCP Proxying

If you plan to install your OS Provisioning components on a separate network from the Opsware Core Components, you must set up DHCP proxying to the DHCP server (for example, using Cisco IP Helper). If you use DHCP proxying, the server/router performing the DHCP proxying must also be the network router so that PXE can function correctly.

The Opsware OS Provisioning Boot Server component provides a DHCP server, but does not include a DHCP proxy. For DHCP server configuration information, see "DHCP Configuration for OS Provisioning" on page 165.

## Time and Locale Requirements

This section discusses the time and locale requirements for Opsware Core Servers.

### Core Time Requirements

Opsware Core Servers (either Single Core or Multimaster) and Opsware Satellite Core Servers must meet the following requirements. These time requirements do not apply to Managed Servers.

- All Opsware Core Servers must have their time zone set to Coordinated Universal Time (UTC).
- All Opsware Core Servers must maintain synchronized system clocks. Typically, you will synchronize the system clocks through an external server that uses NTP (Network Time Protocol) services.

*Linux Time Configuration*

To configure the time zone on a Linux server, perform the following tasks:

1. Copy or link

   `/usr/share/zoneinfo/UTC`

   to

   `/etc/localtime`.

2. Ensure that the `/etc/sysconfig/clock` file contains the following lines:

```
ZONE="UTC"
UTC=true
```

*Solaris Time Configuration*

To configure the time zone on a Solaris server, verify that the `/etc/TIMEZONE` file contains the following line:

```
TZ=UTC.
```

## Locale Requirements

The servers hosting the Model Repository and the Software Repository must have the `en_US.UTF-8` locale installed.

To display data from Managed Servers using various locales, the server hosting the Opsware Global File System (OGFS) must also have all the locales installed.

To enable non-English locales for Windows patching, follow the instructions in "Locales for Windows Patching" in the *Opsware® SAS User's Guide: Application Automation*.

To verify whether the `en_US.UTF-8` locale is installed on a server, enter the following command:

```
echo $LANG
```

To define or modify the locale, enter the following values in the `/etc/sysconfig/i18n` file:

```
LANG="en_US.UTF-8"
SUPPORTED="en_US.UTF-8:en_US:en"
```

 