# Quick Reference: Pre-Installation Requirements for Opsware SAS 6.5.1

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

    - Solaris Requirements

    - Linux Requirements

- Network Requirements

    - Network Requirements Within a Facility

    - Open Ports

- 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 8 | Sun SPARC | All components, *excluding* the Opsware Global File System Server (OGFS) component |
| Sun Solaris | Solaris 9 | Sun SPARC | All components |
| Sun Solaris | Solaris 10 | Sun SPARC, Niagara | All components |
| Red Hat Linux | Red Hat Enterprise Linux 4 AS | 64 bit x86 | All components |
| Red Hat Linux | Red Hat Enterprise Linux 3 AS | 32 bit x86 | All components |

## 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 | 9.2.0.4<br>9.2.0.6<br>9.2.0.7<br>9.2.0.8<br>10.2.0.2 |
| Oracle Standard Edition One | 10.2.0.2 |
| Oracle Enterprise Edition | 9.2.0.4<br>9.2.0.6<br>9.2.0.7<br>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 1-4, Table 1-5, and Table 1-6.

*Table 1-4: 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 1-5: Packages Recommended for Solaris*

| RECOMMENDED PACKAGES FOR SOLARIS | | |
|---|---|---|
| SUNWisolc | SUNWjiu8 | SUNWkiu8x |
| SUNWisolx | SUNWkiu8 | SUNWtiu8x |
| SUNWislcc | SUNWtiu8 | SUNWi1of |
| SUNWislcx | SUNWciu8x | SUNWiniu8 |
| SUNWciu8 | SUNWhiu8x | SUNWiniu8x |
| SUNWhiu8 | SUNWjiu8x | |

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

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

## Other Solaris Requirements

For Solaris, the Opsware core servers 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/`.

## Linux Requirements

For Linux, the Opsware core servers must meet the requirements listed in Table 1-7, Table 1-8, and Table 1-9.

*Table 1-7: 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++ | tcl |
| expat | libstdc++-devel | unzip |
| gcc | mkisofs | XFree86-libs |
| glibc-devel | ncompress (contains | XFree86-libs-data |
| glibc-headers | uncompress utility) | XFree86-Mesa-libGL |
| glibc-kernheaders | nfs-utils | xinetd |
| | ntp | zip |

*Table 1-8:  Packages Required for Linux AS4 64-bit x86*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
|---|
| binutils-2.15.92.0.2-21.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 |
| compat-libstdc++-33-3.2.3-47.3.i386.rpm |
| compat-libstdc++-33-3.2.3-47.3.x86_64.rpm |
| control-center-2.8.0-12.rhel4.5.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 |
| gamin-0.1.1-4.EL4.i386.rpm |
| gamin-0.1.1-4.EL4.x86_64.rpm |
| gamin-devel-0.1.1-4.EL4.x86_64.rpm |
| gamin-python-0.1.1-4.EL4.x86_64.rpm |
| gamin-devel-0.1.1-4.EL4.x86_64.rpm |
| gcc-3.4.6-3.x86_64.rpm |
| gcc-c++-3.4.6-3.x86_64.rpm |
| gcc-g77-3.4.6-3.x86_64.rpm |
| gcc-gnat-3.4.6-3.x86_64.rpm |
| gcc-java-3.4.6-3.x86_64.rpm |
| gcc-objc-3.4.6-3.x86_64.rpm |
| gcc4-4.1.0-18.EL4.x86_64.rpm |
| gcc4-c++-4.1.0-18.EL4.x86_64.rpm |
| gcc4-gfortran-4.1.0-18.EL4.x86_64.rpm |
| gcc4-java-4.1.0-18.EL4.x86_64.rpm |
| gcc-c++-3.4.6-3.x86_64.rpm |
| glibc-2.3.4-2.25.i686.rpm |
| glibc-2.3.4-2.25.x86_64.rpm |
| glibc-common-2.3.4-2.25.x86_64.rpm |
| glibc-devel-2.3.4-2.25.i386.rpm |
| glibc-devel-2.3.4-2.25.x86_64.rpm |
| glibc-headers-2.3.4-2.25.x86_64.rpm |
| glibc-kernheaders-2.4-9.1.98.EL.x86_64.rpm |

*Table 1-8: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
| --- |
| glibc-profile-2.3.4-2.25.x86_64.rpm |
| glibc-utils-2.3.4-2.25.x86_64.rpm |
| glibc-common-2.3.4-2.25.x86_64.rpm |
| glibc-devel-2.3.4-2.25.i386.rpm |
| glibc-devel-2.3.4-2.25.x86_64.rpm |
| glibc-headers-2.3.4-2.25.x86_64.rpm |
| glibc-kernheaders-2.4-9.1.98.EL.x86_64.rpm |
| gnome-libs-1.4.1.2.90-44.1.x86_64.rpm |
| gnome-libs-devel-1.4.1.2.90-44.1.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-0.3.105-2.i386.rpm |
| libaio-0.3.105-2.x86_64.rpm |
| libaio-devel-0.3.105-2.x86_64.rpm |
| libcap-1.10-20.i386.rpm |
| libcap-1.10-20.x86_64.rpm |
| libcap-devel-1.10-20.x86_64.rpm |
| libgcc-3.4.6-3.i386.rpm |
| libgcc-3.4.6-3.x86_64.rpm |
| libpng-1.2.7-1.el4.2.i386.rpm |
| libpng-1.2.7-1.el4.2.x86_64.rpm |
| libpng-devel-1.2.7-1.el4.2.x86_64.rpm |
| libpng10-1.0.16-1.i386.rpm |
| libpng10-1.0.16-1.x86_64.rpm |
| libpng10-devel-1.0.16-1.x86_64.rpm |
| libstdc++-3.4.6-3.i386.rpm |
| libstdc++-3.4.6-3.x86_64.rpm |
| libstdc++-devel-3.4.6-3.i386.rpm |
| libstdc++-devel-3.4.6-3.x86_64.rpm |
| libstdc++-devel-3.4.6-3.i386.rpm |
| libstdc++-devel-3.4.6-3.x86_64.rpm |
| libtermcap-2.0.8-39.i386.rpm |
| libtermcap-2.0.8-39.x86_64.rpm |

*Table 1-8: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
|---|
| libtermcap-devel-2.0.8-39.x86_64.rpm |
| libxml2-2.6.16-6.i386.rpm |
| libxml2-2.6.16-6.x86_64.rpm |
| libxml2-devel-2.6.16-6.x86_64.rpm |
| libxml2-python-2.6.16-6.x86_64.rpm |
| make-3.80-6.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 |
| nfs-utils-lib-1.0.6-3.x86_64.rpm |
| nfs-utils-lib-devel-1.0.6-3.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 |
| readline-devel-4.3-13.x86_64.rpm |
| rpm-build-4.3.3-18_nonptl.x86_64.rpm |
| screen-4.0.2-5.x86_64.rpm |
| sharutils-4.2.1-22.2.x86_64.rpm |
| strace-4.5.14-0.EL4.1.x86_64.rpm |
| switchdesk-4.0.6-3.noarch.rpm |
| switchdesk-gui-4.0.6-3.noarch.rpm |
| sysstat-5.0.5-11.rhel4.x86_64.rpm |
| tcl-8.4.7-2.i386.rpm |
| tcl-8.4.7-2.x86_64.rpm |
| tcl-devel-8.4.7-2.x86_64.rpm |
| tcl-html-8.4.7-2.x86_64.rpm |
| tclx-8.3.5-4.i386.rpm |
| tclx-8.3.5-4.x86_64.rpm |
| tclx-devel-8.3.5-4.x86_64.rpm |

*Table 1-8: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
| --- |
| tclx-doc-8.3.5-4.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 |
| 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-Xdmx-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-Xnest-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-deprecated-libs-devel-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-devel-6.8.2-1.EL.13.36.i386.rpm |
| xorg-x11-devel-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-doc-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-sdk-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-tools-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-twm-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-xdm-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-xfs-6.8.2-1.EL.13.36.x86_64.rpm |
| xorg-x11-Mesa-libGL-6.8.2-1.EL.13.36.i386.rpm |

*Table 1-8: Packages Required for Linux AS4 64-bit x86 (continued)*

| REQUIRED PACKAGES FOR LINUX AS4 64-BIT X86 |
| --- |
| 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-deprecated-libs-devel-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-twm-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 |
| xscreensaver-4.18-5.rhel4.11.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 |
| zlib-devel-1.2.1.2-1.2.i386.rpm |
| zlib-devel-1.2.1.2-1.2.x86_64.rpm |

*Table 1-9: Packages That Must Be Removed for Linux*

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

## 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 environment must meet the following network requirements:

• The Opsware core servers must be on the same Local Area Network (LAN or VLAN).

• The Opsware core servers must have network connectivity to the servers that the Opsware core manages, and vice versa.

• The Opsware core servers cannot use the Network Information Service (NIS) for password and group databases. The Opsware components check for the existence of certain target accounts before creating them during installation.

• When using network storage for Opsware components, such as the Software Repository or Media Server, the network storage configuration must allow the root user to have write access over NFS to the directories where the components are to be installed.

• The speed and duplex mode of the NIC adapters of the Opsware core and managed servers must match the switch they are connected to. A mismatch causes poor network performance between the core and managed servers, making Opsware SAS unusable.

### Open Ports

Table 1-10 shows the ports that must be open on firewalls that protect the Opsware core components. The Gateway ports listed are the default values, which can be changed during the installation.

*Table 1-10: 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) |

*Table 1-10: Open Ports on a Firewall Protecting an Opsware Core (continued)*

| PORT | COMPONENT | PURPOSE |
|---|---|---|
| 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 1-11 shows the ports for 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 1-11: 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 a firewall is in place, 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.

Table 1-12 shows the ports that must be open on managed servers so that Opsware core servers can connect to managed servers.

*Table 1-12: Open Ports on Managed Servers*

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

### DHCP Proxying

If network provisioning occurs on a separate network from the Opsware core components, you must set up DHCP proxying (for example, with Cisco IP Helper) to the DHCP server. If you set up DHCP proxying, the server/router performing the DHCP proxying must be the router for the network so that PXE will function correctly in the Opsware OS Provisioning Feature.

The Opsware Boot Server component includes a DHCP server, but does not include a DHCP proxy. You configure the DHCP server after installation by using the Opsware DHCP Network Configuration Tool.

### DMZ Network

The Boot Server and Media Server run various services (such as portmapper and rpc.mountd) that have been 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 previously) 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.

## Core Time Requirements

Opsware core servers (either standalone or multimaster) and Opsware Satellite servers must meet the following requirements. These time requirements do not apply to managed servers (that is, servers with Opsware Agents).

• Opsware core servers must maintain synchronized clocks. For example, you can synchronize the system clocks with an external server that uses NTP (Network Time Protocol) services.

- Opsware core servers must have their time zone set to Coordinated Universal Time (UTC).

### Linux

To configure the time zone on Linux servers, perform the following steps:

- Copy or link `/usr/share/zoneinfo/UTC` to `/etc/localtime`.

- Make sure that `/etc/sysconfig/clock` contains the following lines:

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

### Solaris

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

```
TZ=UTC
```