



BSM 1.3

Installation Guide

NOVASCALÉ
& ESCALÁ



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NOVASCALE & ESCALA

BSM 1.3

Installation Guide

Software

August 2010

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Preface

Scope and Audience of this Manual

This manual, intended for Administrators, describes how to install the **Bull System Manager** solution for managing Bull NovaScale and Escala Evolutive Line systems.

The solution includes Bull System Manager and additional tools.

Highlighting

The following highlighting conventions are used in this manual:

Bold	Identifies commands, keywords, files, structures, directories, and other items predefined by the system. Also identifies graphical objects such as buttons, labels and icons that the user selects.
<i>Italic</i>	Identifies chapters, sections, paragraphs and manual names to which the reader must refer for more information.
Monospace	Identifies examples of specific data values, examples of text similar to what you might see displayed, messages from the system, or information you should actually type.

Note	Important information
-------------	-----------------------

Related Publications

- *Bull System Manager Administrator's Guide* (Ref. 86 A2 56FA)
- *Bull System Manager User's Guide* (Ref. 86 A2 55FA)
- *Remote Hardware Management CLI Reference Manual* (Ref. 86 A2 58FA)
- *Bull System Manager Server Add-ons Installation and Administrator's Guide* (Ref. 86 A2 59FA)

Overview

Bull System Manager

Bull System Manager, a tool for monitoring and managing Bull NovaScale, Express 5800 and Evolutive Line Blade systems, consists of three main components that can be deployed on Windows and Linux systems:

- Management Server
- Management Console
- Management Agent

Management Server

Provides the infrastructure and services responsible for the collection and utilization of operation data. Management Server must be installed on the server dedicated to management.

Management Console

Provides third-party management tools for the end-user station running the Bull System Manager console Web GUI.

Management Agent

Provides instrumentation and administration tools for monitored servers. Management Agent must be installed on each server that you want to monitor.

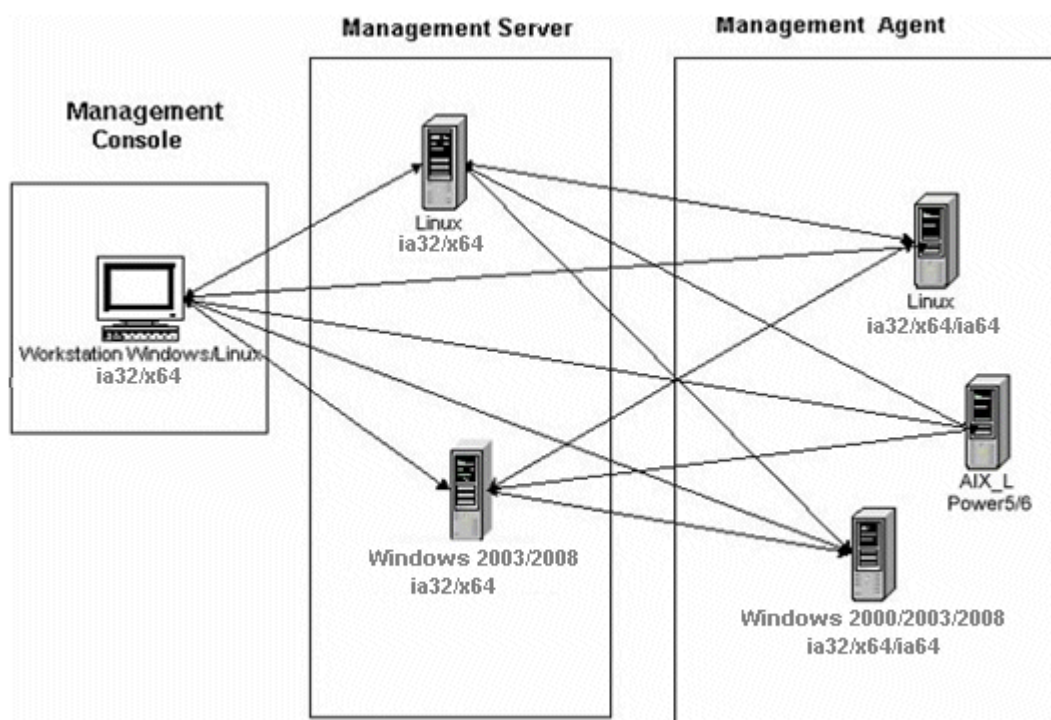


Figure 1-1. Bull System Manager architecture

Note: Bull System Manager server for Windows and Linux are distributed on the same CD-ROM.

Additional Tools

Bull System Manager delivers optional tools for scripting applications.

The **Remote Hardware Management Command Line Interface (CLI) for Linux** can be used for remote hardware management such as powering on/off and getting the power status of a server.

These additional tools are included on the Bull System Manager CD-ROM.

Distributed solution

You can set a distributed solution by joining multiple Bull System Manager Servers using the database provided by the NDOutils extension to allow them to share information, available through a Global Console.

To set a distributed solution, you have to install the NDOutils extension on each server, then choose one of them, identified as the central node, to host the centralized database and configure the others, the secondary nodes, to link the remote database.



CAUTION:

Solution with more than one central node is not supported.

Chapter 1. General Installation Requirements

Before you install Bull System Manager, check that your environment meets the software and hardware requirements described below.

1.1 Supported Operating Systems

Bull System Manager components operate on **Linux** and **Windows** Operating Systems. Requirements differ according to the Bull System Manager component installed (Management Server, Management Console or Management Agent).

Operating System	Supported Version	Comments
Linux	RedHat EL 5.x SuSE 10 / 11	ia32/x64
Windows	2003/2008	ia32/x64

Table 1-1. Management Server - Supported OS Versions

Operating System	Supported Version	Comments
Linux	RedHat AS, ES or WS 3.0 / 4.0 / EL 5.x	ia32/x64
Linux	SuSE Enterprise Server 9 / 10 / 11	ia32/x64
Windows	XP,2000,2003,2008	ia32/x64

Table 1-2. Management Console - Supported OS Versions

Operating System	Supported Version	Comments
Linux	RedHat AS, ES or WS 3.0 / 4.0 / EL 5.x	ia32/x64 and ia64
Linux	SuSE Enterprise Server 9 / 10 / 11	ia32/x64 and ia64
Linux	Linux Bull AS 3 / 4 / 5	ia32/x64 and ia64
Windows	2000	ia32
Windows	2003/2008	ia32/x64 and ia64
AIX	5.3 / 6.1	Power5, Power6

Table 1-3. Management Agent - Supported OS Versions

Operating System	Supported Version	Comments
Linux	RedHat AS, ES or WS 4.0 / EL 5.x	ia32/x64 and ia64
Linux	SuSE Enterprise Server 10 / 11	ia32/x64 and ia64
Linux	Linux Bull AS 4 / 5	ia32/x64 and ia64

Table 1-4. Additional Tools - Supported OS Versions

Note **x64**: OS environment on 32 bit processors with the extended 64 bit addressing technology. Example: Xeon EM64T on Express 5800, on NovaScale Blade 2021 Series or on NovaScale T800 & R400 Series.

1.2 Required Disk Space

The following table indicates the required disk space for **Management Server**, **Management Console** and **Management Agent**.

Bull System Manager Components	Windows	Linux	AIX
Management Server	650MB	600MB	-
Management Console	60MB	60MB	-
Management Agent	6MB	6MB	6MB

Table 1-5. Bull System Manager - Required Disk Space

Additional Tools	Linux
Remote Hardware Management CLI	5MB

Table 1-6. Additional Tools - Required Disk Space

1.3 Required Memory

The following table indicates the memory required for the **Management Server** and **Management Console** components.

Bull System Manager Components	Memory
Management Server	1GB
Management Console	512MB

Table 1-7. Bull System Manager - Required Memory

1.4 Management Server Installation and Operational Requirements

1.4.1 Windows

Operating System	Component	Use
Windows 2003/2008	SNMP service	Trap reception

Table 1-8. Management Server Installation Requirements - Windows

1.4.2 Linux

Operating System	Component
Linux	Apache or httpd Php Mysql

Table 1-9. Management Server Installation Requirements – Linux

Package	Use	CD-ROM
RedHat EL 5.x		
net-snmp-utils	Trap emission	Linux
net-snmp	Trap reception and reporting	Linux
nmap	Host discovery	Linux
php	WEB applications	Linux
php-gd	WEB applications	Linux
httpd	WEB Server	Linux
perl-HTML-Parser	Hardware monitoring and management	Linux
perl-HTML-Tagset	Hardware monitoring and management	Linux
perl-Config-IniFiles	Trap reception	BSM
perl-Net-SNMP	Trap emission	BSM
libtool-ltdl ⁽¹⁾	Nagios	Linux
mysql	Inventory	Linux
mysql-server	Inventory	Linux
php-mysql	Inventory	Linux
php-pdo	Inventory	Linux
compat-libstdc++-33	Nagios	Linux
mod_perl	Inventory	Linux
perl-DBI	Inventory	Linux

Package	Use	CD-ROM
perl-XML-Parser	Inventory	Linux
perl-XML-Simple	Inventory	Linux
perl-DBD-MySQL	Inventory	Linux
perl-Digest-SHA1	Inventory	Linux
perl-Apache-DBI	Inventory	BSM
perl-Net-IP	Inventory	Linux
ftp	Autocall notification	Linux
vixie-cron	Periodic tasks	Linux
SuSE SLES 10 / 11		
nmap	Host discovery	Linux
php5	WEB applications	Linux
php5-gd	WEB applications	Linux
php5-snmp	Reporting and storage configuration	Linux
apache2	WEB applications	Linux
apache2-mod_php5	WEB applications	Linux
apache2-mod_perl	Inventory	Linux
mysql	Inventory	Linux
mysql-shared ⁽²⁾	Inventory	Linux
php5-mysql	Inventory	Linux
perl-Tie-IxHash	Inventory	Linux
perl-libwww-perl	Inventory	Linux
perl-DBI	Inventory	Linux
Perl-DBD-MySQL	Inventory	Linux
perl-Digest-SHA1	Inventory	Linux
perl-Net-IP	Inventory	Linux
perl-Apache-DBI	Inventory	BSM
perl-HTML-Parser	Hardware monitoring and management	Linux
perl-HTML-Tagset	Hardware monitoring and management	Linux
perl-Config-IniFiles	Trap reception	BSM
perl-Net-SNMP	Trap emission	BSM
net-snmp	Trap reception and reporting	Linux
lukemftp	Autocall notification	Linux
cron	Periodic tasks	Linux
libltdl3 ⁽³⁾	Nagios	Linux

(1) On the x86_64 architecture, the libtool-ltdl package must be an ia32 package.

(2) Only for SuSE 10

(3) Only for SuSE 11

Table 1-10. Management Server Operational Requirements – Linux

-
- Notes**
- You can check whether or not the required packages has been installed by launching:


```
cd <CD-ROM mount point>
./checkEnv.sh
```
 - The RPM packages listed above may have their own dependencies and require other RPM packages.
-

Package	Use	CD-ROM
RedHat EL 5.x		
tcp-wrappers	NSCA reception	Linux
SuSE SLES 10		
tcpd	NSCA reception	Linux

Note : On the x86_64 architecture, the tcp-wrappers and tcpd packages must be an ia32 package

Table 1-11 NSCA server extension requirements

1.5 Management Agent Installation and Operational Requirements

1.5.1 AIX and Linux

Operating System	Component	Package
AIX 5.3/6.1	GNU features on <i>AIX Toolbox for Linux</i> CD-ROM	/ezinstall/ppc/base/*.rpm
Linux RedHat EL 5.x (Arch Intel)	dmidecode	dmidecode.rpm
AIX and Linux	sudo	According to Operating System
	xinetd or inetd	According to Operating System
	iostat	According to Operating System

Table 1-12. Operational Requirements for the Management Agent Component

Notes

- The RPM packages listed above may have their own dependencies and require other RPM packages
- For AIX, you will find the RPM packages listed above on the *AIX Toolbox for Linux* CD-ROM
- Do not forget to start **xinetd** or **inetd** after having installed the RPM package

Package	Use	CD-ROM
RedHat EL 5.x		
syslog-ng-3.0.1		BSM
net-snmp-utils	Trap emission	Linux
net-snmp	Trap reception	Linux
openssl	Secure Sockets Layer	Linux
smartmontools	Smartctl monitoring	Linux
SuSE SLES 10 & 11		
syslog-ng-3.0.1		BSM
net-snmp	Trap emission	Linux
openssl	Secure Sockets Layer	Linux
AIX 5.x		
net-snmp-utils	Trap emission	BSM
net-snmp	Trap reception	BSM
openssl	Secure Sockets Layer	BSM
smartmontools	Smartctl monitoring	Linux

Table 1-13. Management Agent System Log Requirements – Linux and AIX

1.6 Web GUI Operational Requirements

Browser	Supported Version	Operating System
Mozilla Firefox	>= 3	Linux / Windows
Internet Explorer	>= 6	Windows

Table 1-14. Operational Requirements for the Bull System Manager web GUI

1.7 Additional Tools

1.7.1 Hardware Management Command Line Interface (CLI)

Package	Use	CD-ROM
RedHat EL 5.x		
net-snmp-utils	SNMP requests to PDU SNMP agent	Linux

1.8 Restrictions

1.8.1 Windows

Do not install **Cygwin**, or applications based on Cygwin, on Bull System Manager servers.

Avoid running applications or services that use ports required by the Bull System Manager components. See *Appendix A. Bull System Manager Port Numbers*, on page 53 for a list of the ports used by Bull System Manager.

1.8.2 Linux

Avoid running applications or services that use ports required by the Bull System Manager components. See *Appendix A. Bull System Manager Port Numbers*, on page 53 for a list of the ports used by Bull System Manager.

Chapter 2. Installing Bull System Manager for Windows

2.1 Prerequisites

To install **Bull System Manager** for Windows:

- You must be a member of an **Administrators** group. The default administrator login is **Administrator**.
- The installation program requires the **Internet Explorer** web browser. Other browsers, such as **Netscape** or **Mozilla**, cannot be used to install Bull System Manager on Windows systems.
- **Management Server** and **Management Server Add-Ons** must be installed on the server dedicated to management.
Management Server and **Management Server Add-Ons** can only be installed from the CD-ROM.
See *Installing Management Server*, on page 10. To install Management Server Add-Ons refer to the *Bull System Manager Add-Ons Installation and Administration Guide*.
- **Management Console** must be installed on each end-user station.
- **Management Agent** must be installed on each server that you want to monitor and manage.
Management Console and **Management Agent** can be installed either from the CD-ROM or from the Bull System Manager WEB Server.
See *Installing Management Console*, on page 13 and *Installing Management Agent*, on page 15.
- **Acrobat Reader** is required to view PDF versions of the Bull System Manager documentation.

2.2 Installing Management Server

Management Server, installed on the server dedicated to management, requires the components indicated in *Management Server Installation and Operational Requirements (Windows)*, on page 3, and must be installed from the CD-ROM.

To install **Management** Server from the CD-ROM:

1. From the dedicated server, launch the installation program.
2. Log on as **Administrator**.
3. Insert the Bull System Manager CD-ROM in the drive.
The installation program launches automatically and the **Welcome** page opens.

Note If installation does not start automatically, double-click <CD-ROM drive>/setup.exe.

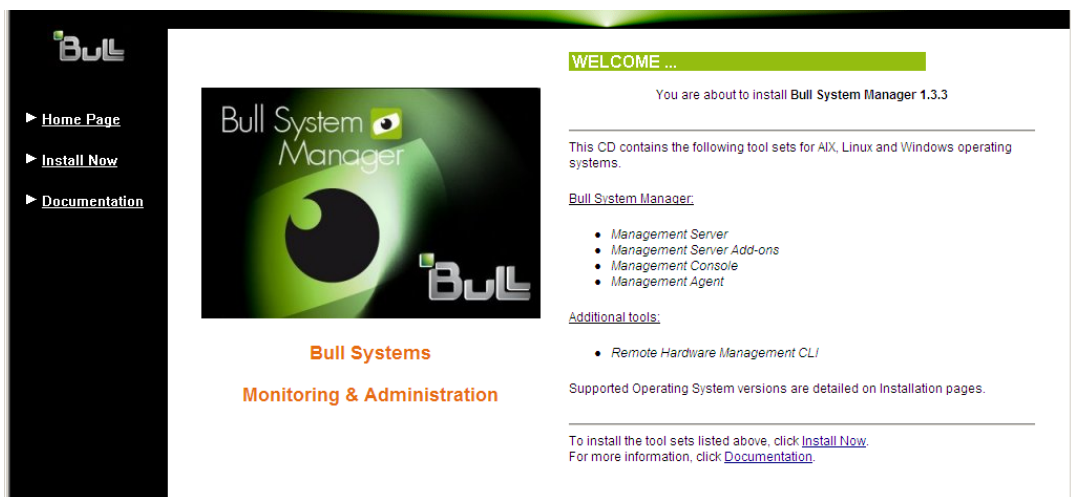


Figure 2-1. Windows Installation - Bull System Manager Welcome Page

4. Click **Install Now** to open the **Install** page, which allows you to select the required Bull System Manager component:
 - Management Server
 - Management Server Add-Ons
(refer to the *Bull System Manager Add-Ons Installation and Administration Guide*)
 - Management Console
 - Management Agent

and provides the following information:

- What to install?
- What to do now?
- What to do next?

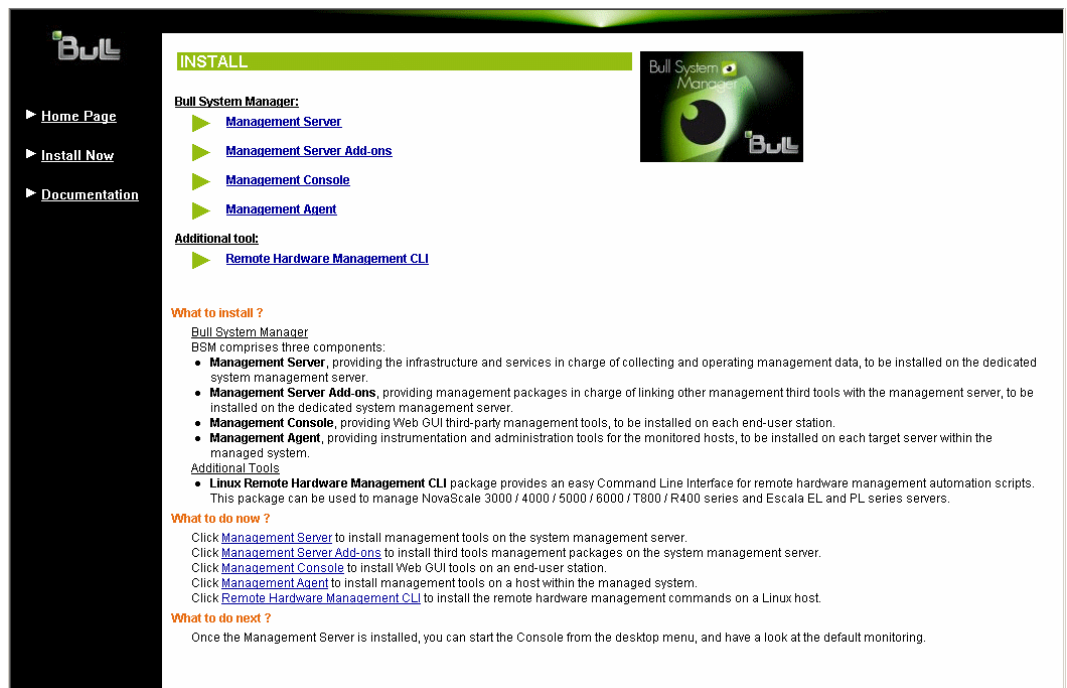


Figure 2-2. Windows Installation - Selecting Bull System Manager Component

5. Select **Install Management Server** and **Windows 32 bits** operating system.
6. Click the Java Runtime Environment **Install Now** link to install the **Java Runtime Environment** package required by the Bull System Manager infrastructure. The wizard prompts you for a destination folder.
The default value can be changed if required.
7. Click the Bull System Manager Server **Install Now** link to install the **Bull System Manager Server** package containing the infrastructure and services responsible for the collection and utilization of operation data. The wizard prompts you for a destination folder. The default value can be changed, if required.
At the end of the installation process, the **Management Server** components are automatically started and are operational.

Note It is recommended to keep **Bull System Manager Server** in the destination folder.

8. Click the Bull System Manager Webinstall **Install Now** link to install the **Bull System Manager Webinstall** package, containing the Bull System Manager **Management Console** and **Management Agent** components required to allow the download from the Bull System Manager web Server.

Bull System Manager Webinstall is installed in the Bull System Manager Server installation folder.

9. Click the Bull System Manager **NDOutils Install Now** link to install the package containing NDOutils.

This package is optional

NDOutils is a server extension that allows you to store all the Nagios status information in a MySQL database. This enables easier retrieval of the Nagios data. This package can be used in the case of a distributed Bull System Manager architecture .

10. Click the Bull System Manager **NSCA Install Now** link to install the package containing NSCA.

This package is optional.

The NSCA package is a server extension for processing passive checks results. It contains the `send_nsca` utility and NSCA daemon.

The `send_nsca` utility is used to send check results to the NSCA daemon. The `nsca` daemon is used to send check results to Nagios.

2.3 Installing Management Console

Management Console, this is installed on each end-user station, and can be installed either from the CD-ROM, or from the Bull System Manager Web Server.

Management Console includes the Java Runtime Environment package, required for certain Bull System Manager Console features.

Note The Java Runtime Environment is only used for launching a local application.

2.3.1 Installing Management Console from the CD-ROM

To install **Management Console** from the CD-ROM:

1. Select the Windows 32 bits operating system.
2. Install the **Java Runtime Environment** package by clicking the **Java Runtime Environment Install Now** link. The Java Runtime Environment wizard prompts you for a destination folder. The default value can be changed if required.

2.3.2 Installing Management Console from the Web Server

Note Bull System Manager Management Server must be installed before **Management Console** can be downloaded from the Web server.

To install **Management Console** from the Web Server:

1. Launch the Bull System Manager home page:
`http://<Bull System Manager server>:<port number>/BSM/`
2. Click **Download**.
3. Select **Management Console**.

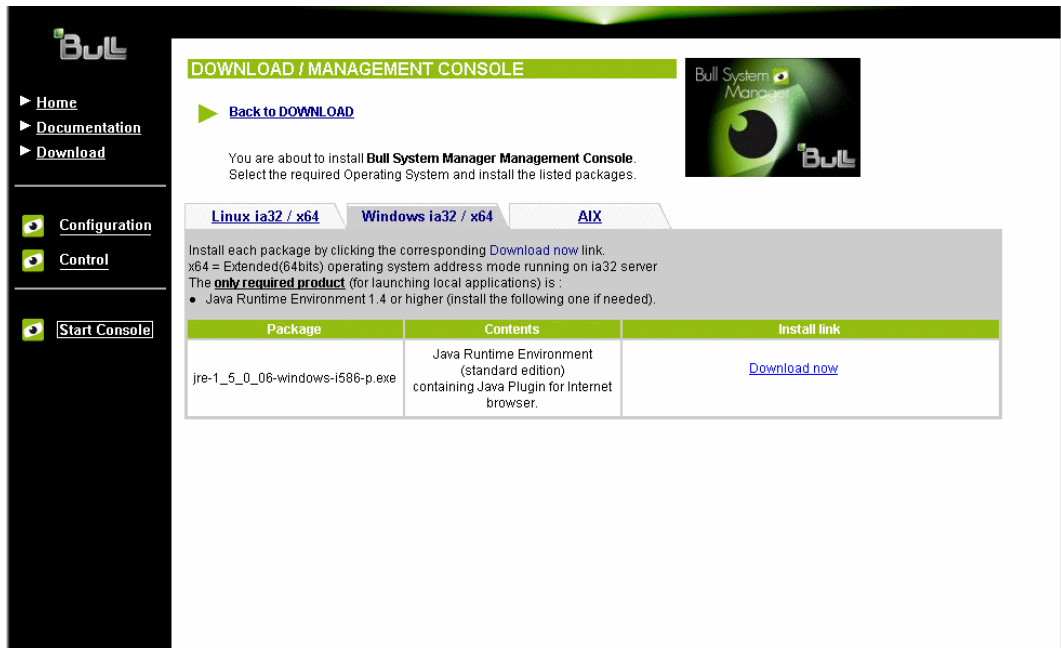


Figure 2-3. Windows Installation - Downloading Management Console

4. Select the **Windows ia32** operating system.
5. Click the corresponding **Download now** link.

The package can either be downloaded to a temporary folder, or installed directly from the Web server.

2.4 Installing Management Agent

Management Agent is installed on each server you want to monitor and manage, and can be installed either from the CD-ROM, or from the Bull System Manager Web Server.

2.4.1 Installing Management Agent from CD-ROM

To install **Management Agent** from the CD-ROM:

1. Select the **Windows 32 bit** or **Windows 64 bit** Operating System according to server type.
2. Click the Bull System Manager Agent **Install Now** link to install the **Bull System Manager Agent** package responsible for the collection of the data to be monitored (CPU load, memory, etc.) and the inventory information (host information, processes running, users, file systems, etc.).

The Bull System Manager Agent wizard prompts you for a destination folder. The default value can be changed if required.

-
- Notes**
- It is recommended that **Bull System Manager Agent** is kept in the destination folder.
 - The **Bull System Manager Agent** package installs the **bsmmon.ini** and **bsmman.ini** initialization files in the directory defined by the **windir** environment variable, and the **exclude_eventID_file.txt.tmpl** file as a template for the optional **exclude_eventID_file.txt** file. This file is used to define the events (using Category, Source, and eventID) to be excluded from the retrieved events list.
-

At the end of the installation process, Bull System Manager Agent is automatically started and is operational.


3. Install **Virtual Network Computing UltraVNC** allowing full, remote, system control via a web browser <http://<target>:5800>.
See *Appendix B. Installing and Configuring the UltraVNC Server for Windows*, on page 55.

2.4.2 Installing Management Agent from the Web Server

Note Bull System Manager Management Server must be installed before **Management Agent** can be downloaded from the web server.

To install **Management Agent** from the web server:

1. Launch the Bull System Manager **home page**:
`http://<Bull System Manager server>:<port number>/BSM/`
2. Click **Download**.
3. Select **Management Agent**.



DOWNLOAD / MANAGEMENT AGENT

[Back to DOWNLOAD](#)

You are about to install **Bull System Manager Management Agent**.
Select the required Operating System and install the listed packages.

[Linux ia32 / x64](#) | [Linux ia64](#) | [Windows ia32 / x64](#) | [Windows ia64](#) | [AIX](#)

Install each package by clicking the corresponding [Download now](#) link.
x64 = Extended(64bits) operating system address mode running on ia32 server

Package	Contents	Install link
BSMAGENT-1.1-1.Bull.exe	Bull System Manager Monitoring & Information Agent for Windows	Download now.
UltraVNC-102-Setup.exe	this VNC server part allows to take the control of the system from a remote console (OpenSource)	Download now. We recommended to install it as a Windows service. During or after the installation, you must configure a password for the VNC server. All VNC viewers that further ask for a connection to this server, will have to enter this password. - To Update Properties after installation: click on system menu: Start/All Programs/UltraVNC/UltraVNC Server/Show default Settings

Figure 2-4. Windows Installation - Downloading Management Agent

4. Select either the **Windows 32 bits** or **Windows 64 bits** Operating System, according to server type.
5. Click the corresponding **Download Now** link.

The package can either be downloaded to a temporary folder and installed later or installed directly from the web server.

2.5 Uninstalling Bull System Manager Components

Notes Uninstallation operations must be launched locally. Launching the uninstallation program stops Bull System Manager services and removes all files and folders.

Bull System Manager Webinstall must be uninstalled before Bull System Manager Management Server.

To uninstall Bull System Manager components:

1. From the Control Panel, launch **Add/Remove Programs**.
2. Select the required Bull System Manager components and click **Remove**.

2.6 Upgrading to a New Bull System Manager Version

When you upgrade to a new version of Bull System Manager, the existing Bull System Manager environment, that you may have customized, is retained.

Bull System Manager is upgraded via the standard installation program.

- Notes**
- See the *Release Notes* supplied with Bull System Manager for further details and special cases.
 - If you have installed Bull System Manager Server Add-ons from the previous release, you must upgrade Bull System Manager Server first, and then upgrade all the Server Add-ons.
-

Chapter 3. Installing Bull System Manager for Linux

3.1 Prerequisites

To install **Bull System Manager** for Linux:

- You must be logged on as root.
- **Management Server** and **Management Server Add-Ons** must be installed on the server dedicated to management.
Management Server and **Management Server Add-Ons** can only be installed from the CD-ROM. See *Installing Management Server*, on page 20.
- **Management Console** is installed on each end-user station.
- **Management Agent** is installed on each server that you want to monitor and manage.
Management Console and **Management Agent** can be installed either from the CD-ROM or from the Bull System Manager WEB Server (**Mozilla** or **Firefox** required).
See *Installing Management Console*, on page 25 and *Installing Management Agent*, on page 27.
- **Acrobat Reader** is required to view the PDF versions of Bull System Manager documentation.

Note See the *Release Notes* supplied with Bull System Manager for further details about the Bull Linux AS distribution.

3.2 Installing Management Server

Management Server must be installed on the server dedicated to the management, and requires the components indicated in *Management Server Installation and Operational Requirements (Linux)*, on page 3. This must be installed from the CD-ROM.

To install **Management Server** from the CD-ROM:

1. From the dedicated server, launch the installation program.
2. Log on as **root**.
3. Insert the Bull System Manager CD-ROM in the drive.
The CD-ROM file system is automatically mounted using one of the following directories:
`/mnt/cdrom` (RedHat and Advanced Server distributions)
`/media/cdrom` (SuSE distribution).
4. Launch the following commands:
`cd <CD-ROM mount point>`
`./install.sh`
The `install.sh` script automatically launches the **Mozilla Firefox** browser and opens the **Welcome** page.



Figure 3-1. Linux Installation - Bull System Manager Welcome Page

5. Click **Install Now** to open the **Install** page, which allows you to select the Bull System Manager components required:
 - Management Server
 - Management Server Add-Ons.
(Refer to Bull System Manager Add-Ons Installation and the Administration Guide for installing Management Server Add-Ons).
 - Management Console
 - Management Agentand provides the following information:

- What to install?
- What to do now?
- What to do next?

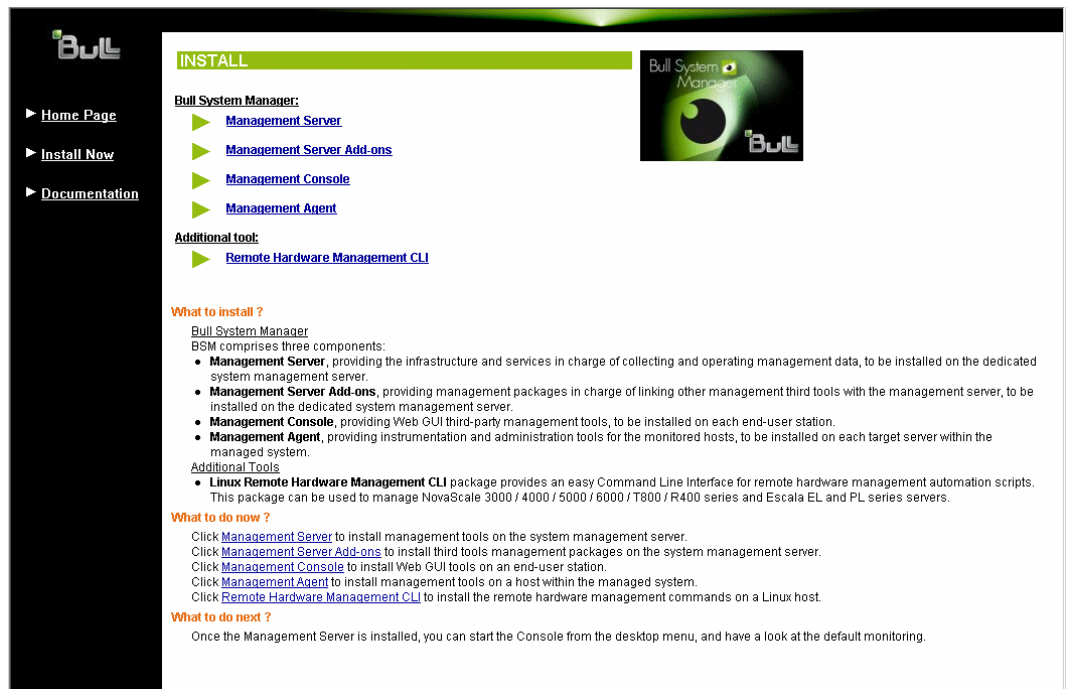


Figure 3-2. Linux Installation - Selecting Bull System Manager Components

6. Select Install Management Server.

3.2.1 Installing Java Runtime Environment, Bull System Manager Server and Bull System Manager Webinstall Packages

Three packages must be installed to complete Management Server installation:

- **Java Runtime Environment** package, required by the Bull System Manager Server infrastructure.
- **Bull System Manager Server** package, containing the infrastructure and services responsible for the collection of management data.
- **Bull System Manager Webinstall** package, containing the Bull System Manager **Management Console** and **Management Agent** components. This can be downloaded from the Bull System Manager web server.

To install all three packages:

1. Check the installation and operational requirements by launching the following commands:

```
cd <CD-ROM mount point>
./checkEnv.sh
```

2. Log on as **root**.

3. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server.sh -a`

Note The `checkEnv.sh` command can also be used to display information regarding the packages installed. This is launched from the installation directory, once the installation has finished:
`/opt/BSMServer/engine/bin/checkEnv.sh`

For further details about the requirements, see *Management Server Installation and Operational Requirements (Linux)*, on page 3.

Install each package separately, as follows:

3.2.1.1 Installing Java Runtime Environment

Note Java Runtime Environment is provided for Linux 32 bits.

To install Java Runtime Environment (Linux 32 bits):

1. Log on as `root`.
2. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server.sh -p jre`

3.2.1.2 Installing Bull System Manager Server

To install Bull System Manager Server:

1. Log on as `root`.
2. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server.sh -p server`

Bull System Manager Server is installed in the `/opt/BSMServer` directory. The `bsmuser` user and the `bsmgroup` group are created by the installation program.

When the installation is complete, **Apache Server**, which is fully configured for Bull System Manage, is automatically started or restarted; Management Server is also started and will be operational.

3.2.1.3 Installing Bull System Manager Webinstall

To install Bull System Manager Webinstall:

1. Log on as **root**
2. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server.sh -p webinstall`

Bull System Manager Webinstall is installed in the Bull System Manager Server installation directory.

3.2.2 Installing Bull System Manager server extensions

3.2.2.1 Installing Bull System Manager NDOutils

This package is optional

NDOutils is a server extension that allows you to store all the **Nagios** status information in a **MySQL** database. This enables easier retrieval of the Nagios data. This package can be used in the case of a distributed Bull System Manager architecture .

To install Bull System Manager **NDOutils**:

1. Log on as **root**.
2. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server-extensions.sh -p NDOutils`

Note MySQL Pre-requisite :The user `root@localhost` must not have a password

3.2.2.2 Installing Bull System Manager server NSCA

This package is optional.

The NSCA package is a server extension for processing passive checks results. It contains the `send_nsca` utility and NSCA daemon.

The `send_nsca` utility is used to send check results to the NSCA daemon. The `nsca` daemon is used to send check results to Nagios.

To install Bull System Manager NSCA:

1. Log on as **root**.
2. Launch the following commands:
`cd <CD-ROM mount point>`
`./install_server-extensions.sh -p NSCA`

3.3 Installing Management Console

Management Console is installed on each end-user station, and can be installed either from the CD-ROM or from the **Bull System Manager** web server.

Management Console includes the **Java Runtime Environment** package, which is required for some of the **Bull System Manager** console features.

Note The **Java Runtime Environment** is used for launching local applications.

3.3.1 Installing Management Console from the CD-ROM

3.3.1.1 Installing Java Runtime Environment

Note Only install the **Java Runtime Environment** delivered with **Bull System Manager** if no other version of **JRE** is in place.

To install **Java Runtime Environment** (Linux 32 bits):

1. Select the **Linux 32 bits** operating system.
2. Log on as **root**.
3. Launch the following commands:

```
cd <CD-ROM mount point>/product/java/linux  
rpm -Uvh jre-1_5_0_06-linux-i586.rpm
```
4. Configure the browser to locate the Java plugin:

```
cd <Firefox directory>/plugins  
ln -s /usr/java/jre1.5.0_06/plugin/i386/ns610-gcc32/libjavaplugin_oji.so  
libjavaplugin_oji.so
```

Note If **Mozilla** was installed from a **RPM** package then use the following command to retrieve the **Mozilla** plugins directory:

```
rpm -ql firefox | grep plugins
```

3.3.2 Installing Management Console from the WEB Server

Note Bull System Manager Server must be installed before Management Console can be downloaded from the web server.

To download and install **Management Console**:

1. Launch the Bull System Manager home page
`http://<Bull System Manager server>:<port number>/BSM/`
2. Click **Download**.
3. Select **Management Console**.



The screenshot shows the Bull System Manager Management Console download page. The page has a dark sidebar on the left with navigation links: Home, Documentation, Download, Configuration, Control, and Start Console. The main content area is titled "DOWNLOAD / MANAGEMENT CONSOLE" and features a "Back to DOWNLOAD" link. Below this, there is a message: "You are about to install Bull System Manager Management Console. Select the required Operating System and install the listed packages." There are three tabs for operating systems: Linux ia32 / x64 (selected), Windows ia32 / x64, and AIX. A note states: "All the products must be installed manually by the root user from a shell session. Click on Download now and follow the instructions in the last cell. The only required product (for launching local applications) is : • Java Runtime Environment 1.4 or higher (install the following one if needed)". A table lists the package details:

Package	Contents	Download
jre-1_5_0_06-linux-i586.rpm	Java Runtime Environment (standard edition) containing Java Plugin for Internet browser.	Download now <code>rpm -Uvh jre-1_5_0_06-linux-i586.rpm</code>

A note at the bottom provides instructions for creating a symbolic link in the Mozilla plugins directory:

```
cd <Mozilla directory>/plugins
ln -s <JRE>/plugin/i386/ns7libjavaplugin_oji.so libjavaplugin_oji.so
```

Figure 3-3. Linux Installation: Downloading Management Console

4. Select **Linux 32 bits** operating system.
5. Click **Download Now** to download the package to a temporary directory.
6. Install **Java Runtime Environment (Linux 32 bits)** as described in *Installing Java Runtime Environment*, on page 22, replacing the CD-ROM directory by the temporary directory.

3.4 Installing Management Agent

Management Agent includes two packages:

- **Bull System Manager Agent**, used to collect monitoring information (CPU load, memory, etc.) and inventory information (host information, running processes, users, file systems, etc.).
- **Webmin**, a Linux administration tool.

When the installation is finished, **Management Agent** components start automatically and are operational.

To install both packages, log on as root and launch the following command:

```
install_agent.sh -a
```

3.4.1 Installing Management Agent from the CD-ROM

3.4.1.1 Installing Bull System Manager Agent

To install **Bull System Manager Agent**:

1. Log on as **root**
2. Launch the following commands:

```
./install_agent.sh -p agent
```

The **install_agent.sh** command installs the agent according to the architecture (**ia32** or **ia64**) of the target and the **Linux** kernel. If the **Linux** kernel is not supported, **install_agent.sh** will install the source package of the agent, compile it and install the package generated.

3.4.1.2 Installing Webmin

To install **Webmin**:

1. Log on as **root**.
2. Launch the following commands:

```
cd <CD-ROM mount point>/product/agents/linux  
rpm -Uvh webmin-1.320-1.noarch.rpm
```

Webmin creates a Webmin user called **root**.

The Webmin **root** user password is the same as the Linux **root** user password.

The **root** user is allowed to access all the **Webmin** modules (file system, processes, users, network, etc.) and is configured to use the standard theme for Webmin's page appearance.

3.4.2 Installing Management Agent from the Web Server

Note Bull System Manager Server must be installed before Management Agent can be downloaded from the web server.

To download and install **Management Agent**:

1. Launch the Bull System Manager home page
`http://<Bull System Manager server>:<port number>/BSM/`
2. Click **Download**.
3. Select **Management Agent**.
4. Select **Linux 32 bits** or **Linux 64 bits** operating system, according to server type.
5. Click **Download Now** to download the package to a temporary directory.

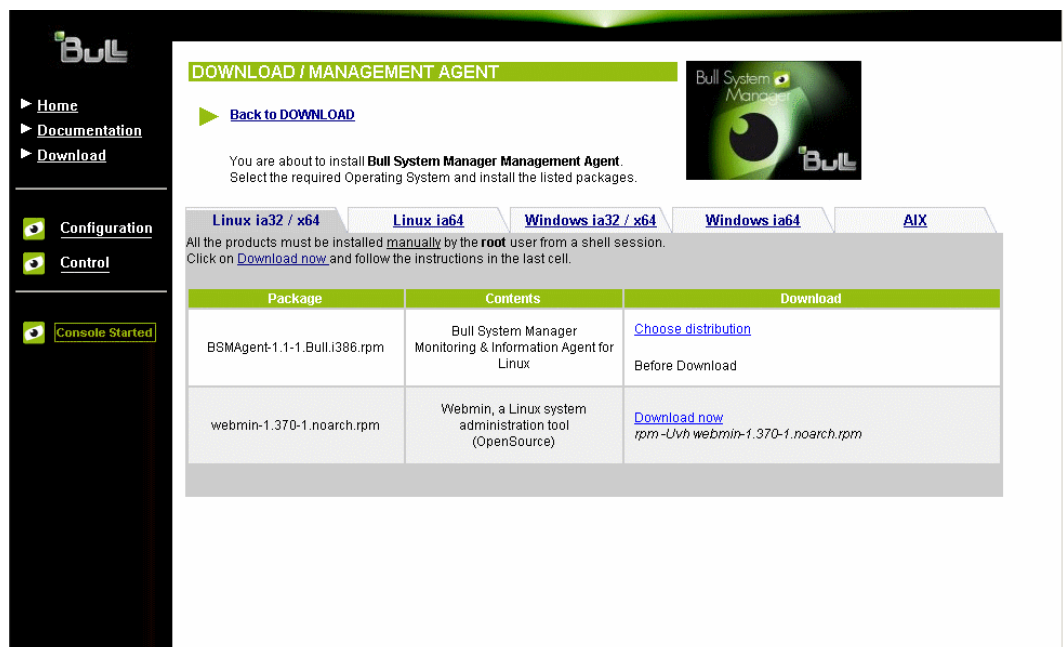


Figure 3-4. Linux Installation: Downloading Management Agent

6. Install Bull System Manager Agent:
 - a. Click the **Choose Distribution** link to select the required Linux distribution.



Figure 3-5. Linux Distribution list

- b. Download the package for your distribution and launch the commands that are displayed. If a Linux distribution is not supported (Other), the agent package must be generated on the target machine: download the source package and launch the build commands that appear.
7. Install **Webmin** as described in *Installing Webmin*, on page 27, the package directory being the temporary directory, as opposed to the CD-ROM directory.

3.5 Uninstalling Bull System Manager Components

Bull System Manager packages (**Bull System Manager Server**, **Bull System Manager Webinstall** and **Bull System Manager Agent**) are uninstalled as follows:

1. Log on as **root**.
2. Launch the command:
`rpm -e <Bull System Manager package>`

Note **Bull System Manager Webinstall** must be uninstalled before **Bull System Manager Server**.

3.6 Upgrading to a New Bull System Manager Version

When you upgrade to a new version of **Bull System Manager**, the existing Bull System Manager environment, which you may have customized, is maintained.

Bull System Manager components are upgraded as follows:

1. Log on as **root**.
2. Launch the command:
`rpm -Uvh <Bull System Manager package>`

Notes Refer to the *Release Notes* supplied with **Bull System Manager** for further details and special cases.

If you have installed Bull System Manager Server Add-ons with a previous release, you must upgrade Bull System Manager Server first, then upgrade each Server Add-on.

Chapter 4. Installing Bull System Manager Agent for AIX

4.1 Prerequisites

To install the **Bull System Manager** agent for **AIX**:

- You must be **logged as root**.
- **Management Agent** must be installed on each server that you want to monitor and manage.
Management Agent can be installed either from the CD-ROM or from the Bull System Manager web server (Mozilla or Firefox required).
- **Acrobat Reader** is required to view the PDF versions of the Bull System Manager documentation.

4.2 Installing Management Agent

Prerequisites

See *Management Agent Installation and Operational Requirements*, on page 6.

Management Agent comprises two packages:

- **Bull System Manager Agent**, responsible for the collection of monitored information (CPU load, memory, etc.) and inventory information (host information, running processes, users, file systems, etc.).
- **Webmin**, a Linux system administration tool.

When the installation is finished, the **Management Agent** components start automatically and are operational.

To install both packages, log on as root and run the following command:

```
install_agent.sh -a
```

4.2.1 Installing Management Agent from the CD-ROM

4.2.1.1 Installing Bull System Manager Agent

To install Bull System Manager Agent:

1. Log on as **root**
2. Launch the following commands:

```
./install_agent.sh -p agent
```

The **install_agent.sh** installs the binary package of the agent, according to the **PPC** architecture of the machine.

To install **Webmin**:

1. Log on as **root**.
2. Launch the following commands:

```
./install_agent.sh -p webmin
```

During the installation, **Webmin** will ask you to create a **Webmin** user and its password.

4.2.2 Installing Management Agent from the web server

Note Bull System Manager Server must be installed before **Management Agent** can be downloaded from the web server.

To download and install **Management Agent**:

1. Launch the **Bull System Manager** home page
`http://<Bull System Manager server>:<port number>/BSM/`
2. Click **Download**.
3. Select **Management Agent**.
4. Select **AIXL** operating system according to server type.
5. Click **Download Now** to download the package to a temporary directory.



Figure 4-1. AIX Installation: Downloading Management Agent

6. Install Bull System Manager Management Agent:
Download the package and launch the commands that are displayed.
7. Install Webmin:
Create a directory `/opt/BSMWebmin` (for example) and download the package into this directory. Then launch the commands that are displayed.

4.3 Uninstalling Bull System Manager Components

Bull System Manager packages (**Bull System Manager Server**, **Bull System Manager Webinstall** and **Bull System Manager Agent**) are uninstalled as follows:

1. Log on as **root**.
2. Launch the command:
rpm -e <Bull System Manager package>
3. Webmin must be uninstalled using the following script if it has been installed with default values :
/etc/webmin/uninstall.sh

4.4 Upgrading to a new version of Bull System Manager

When you upgrade to a new version of Bull System Manager version, the existing Bull System Manager environment, that you may have customized, is maintained.

Bull System Manager components are upgraded as follows:

1. Log on as **root**.
2. Launch the command:
rpm -Uvh <Bull System Manager package>

Note Refer to the *Release Notes* supplied with Bull System Manager for further details and special cases.

Chapter 5. Installing Additional Tools for Linux

Additional Tools consist of the **Remote Hardware Management Command Line Interface (CLI)** package for Linux. These commands provide a simple interface for the automation scripts used for remote hardware management such as powering on/off and obtaining the power status for a server.

Additional Tools are designed for **NovaScale T800 & R400** series (or **Express 5800**) - and **NovaScale 3000, 4000, 5000** and **6000** servers running **Linux**.

To launch the **Additional Tools** installation program:

1. Log on as **root**.
2. Insert the **Bull System Manager** CD-ROM into the drive.
The CD-ROM file system is automatically mounted to one of the following directories:
`/mnt/cdrom` (RedHat and Advanced Server distributions)
`/media/cdrom` (SuSE distribution)
3. Launch the following commands:
`cd <CD-ROM mount point>`
`./install.sh`
The `install.sh` script automatically launches the **Mozilla** browser and displays the **Welcome** page.

Note If **Mozilla** is not installed, go directly to the section describing the installation of the required tool.

4. Click **Install** and select **Additional Tools**.
5. Click **Remote Hardware Management CLI**.
6. Select **Linux 32 bits** or **Linux 64 bits**, according to server type, and follow the instructions under **How to install?**

5.1 Installing the Remote Hardware Management CLI

To install the **Remote Hardware Management CLI**:

Select the required **Linux** distribution.

1. Log on as **root**.
2. Launch the following commands:
`cd <CD-ROM mount point>/product/hardware/linux/<Distribution directory>`
`rpm -Uvh BSMHW-<version>.<arch>.rpm`

Chapter 6. Getting Started

Once the installation of **Bull System Manager** is complete:

- **Management Server** components are started.
The Bull System Manager Server is automatically declared as a monitored server if the **Management Agent** is installed.
To add additional monitored servers, refer to the *Administrator's Guide*.
- **Linux:**
bsmadm and **nagios** users are automatically declared as Bull System Manager Console **Administrators**. The **guest** user is automatically declared as a Bull System Manager **Operators**.
To add new Bull System Manager Console users, refer to the *Administrator's Guide*.
- Management Agents are started on the servers on which the **Management Agent** components are installed.
To be monitored, these servers must be added to the configuration for Bull System Manager. Refer to the *Administrator's Guide* for details.
- The **Bull System Manager Web GUI** requires the installation of a specific web browser. See *Web GUI Operational Requirements*, on page 7.

6.1 Launching Bull System Manager

Before launching the Bull System Manager **Console**, check that the web browser Java plugin is installed on the station.

The Bull System Manager home page is launched using the following URL:

`http://<Bull System Manager server>:<port number>/BSM/`

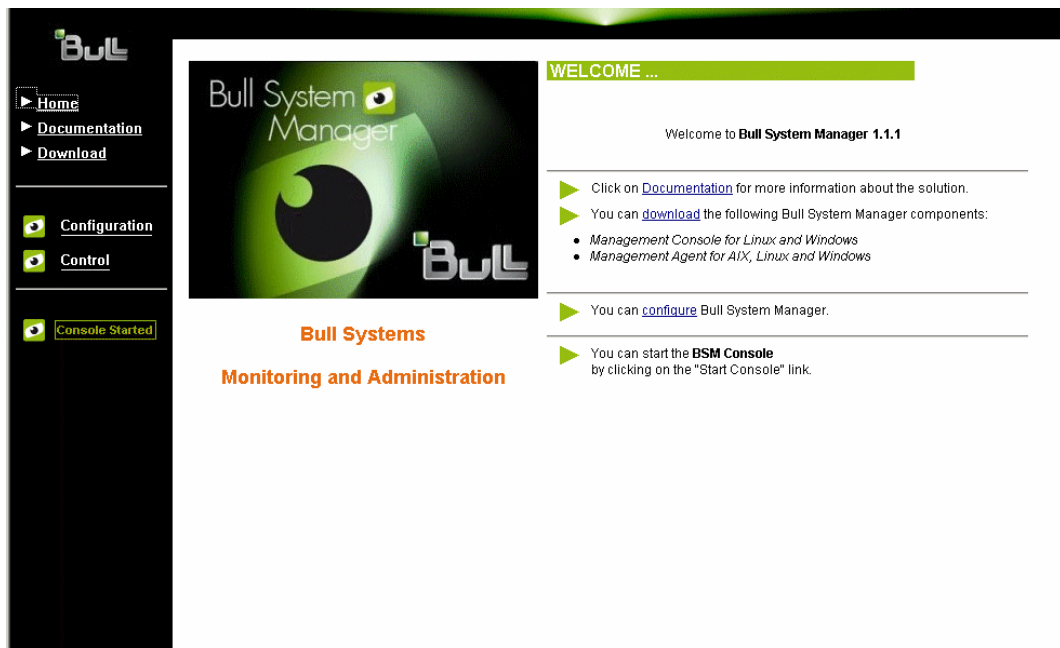


Figure 6-1. Bull System Manager home page

From the Bull System Manager home page you can:

- Access Bull System Manager Documentation.
- Download Bull System Manager Components from the web server (Management Console or Management Agent) if Bull System Manager Webinstall is installed on the web server.
- Launch the Bull System Manager Configuration tool via the **Configuration** button.
- Launch the Bull System Manager Control tool via the **Control** button
- Launch Bull System Manager Console via the **Start Console** button.
- Launch Bull System Manager Global Console via the **Start Global Console** button (only if the NDOutils extension is installed on the server).

Note The Bull System Manager Configuration tool and Console will prompt for authentication.

6.2 Bull System Manager Authentication and Roles

Bull System Manager applications must be authenticated. They use common Bull System Manager users defined for the servers.

Authentication types vary according to the Bull System Manager Server operating system (Linux or Windows) and to the Web Server (Apache or Microsoft IIS).

Moreover, the authenticated user has a user profile or role applied.

Two default roles have been defined for Bull System Manager:

- **Operator**, with access only to supervision information.
- **Administrator**, with access to supervision information, configuration tasks and Remote Control functions.

Note User roles can be only configured by the Administrator. For further details, refer to the *Administrator's Guide*.

6.2.1 Bull System Manager Server User Authentication – Linux & Windows

6.2.1.1 Apache Server Authentication

Apache users called **bsmadm** (password **bsmadm**), **nagios** (password **nagios**) and **guest** (password **guest**) are created when the Bull System Manager Server is installed. These users are not Linux or Windows users and will only be used contextually by this web server.

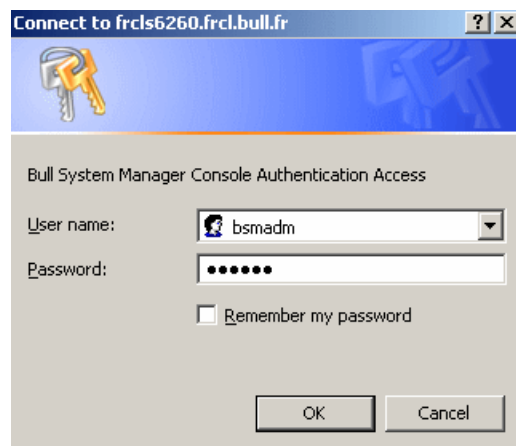


Figure 6-2. bsmadm user authentication

6.2.1.2 Adding a New User / Modifying a Password

To add a new user or to modify a password, launch BSM configuration tool, select Localsettings domain and click on Users & Roles

6.3 Launching Bull System Manager Console

1. From the Bull System Manager home page, click **Start Console**.
A security dialog box may appear when the Console is launched for the first time, and if you have configured local commands in the left toolbar:

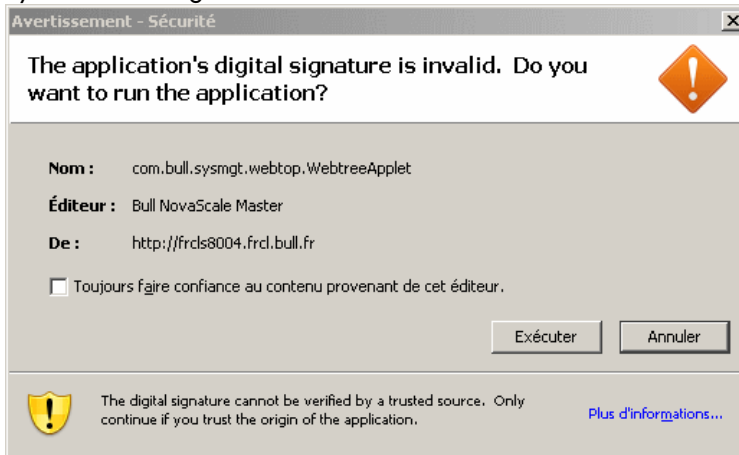


Figure 6-3. Security dialog box

2. Select **Always**. The following window appears:

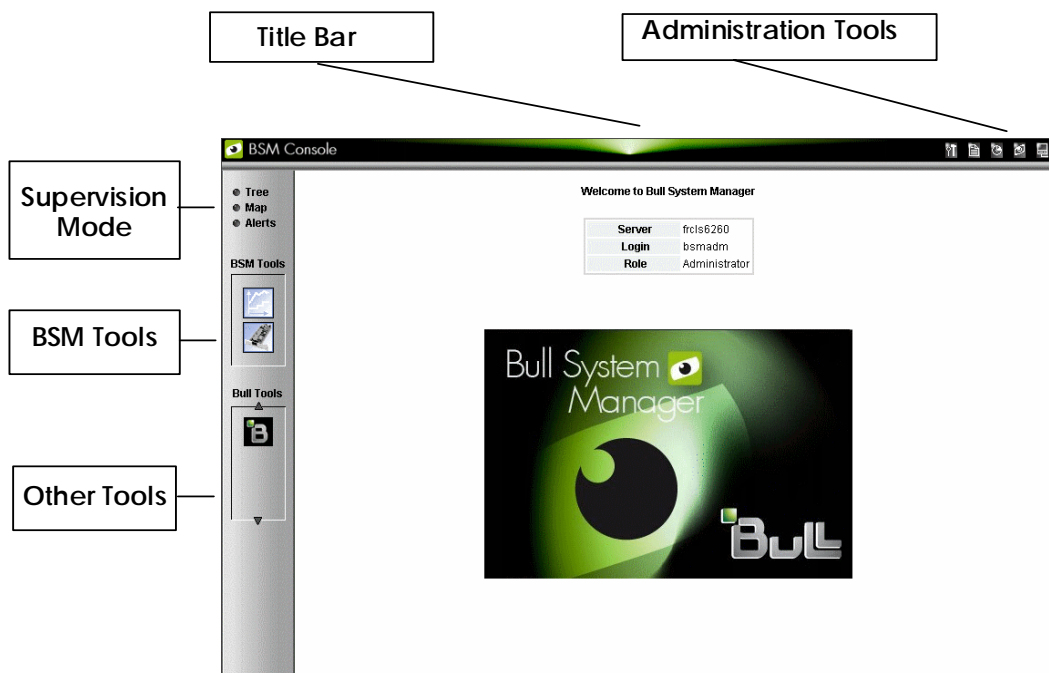


Figure 6-4. Bull System Manager Console window

The Bull System Manager console is divided into six functional parts:

Title Bar	Displays server name, time, user and role.
Supervision Mode	Allows supervision mode selection: <ul style="list-style-type: none">- Tree supervision mode- Map supervision mode- Alert supervision mode
Supervision Area	Displays information for the monitored objects, according to supervision mode.
BSM Tools	Provides access to Bull System Manager Tools (only in local console): <ul style="list-style-type: none">- Reports- Hardware Management
Administration Tool	Provides access to: <ul style="list-style-type: none">- Bull System Manager configuration application (only in local console)- Bull System Manager documentation- Bull System Manager download page- Bull System Manager control application (only in local console)
Other Tools	Provides access to external applications.

6.4 Launching Console Supervision Modes

The Bull System Manager Console provides three supervision modes. You can choose the required supervision mode by clicking **Tree**, **Map** or **Alert** in the toolbar.

- **Tree mode**
This mode represents the managed system as a logical tree of managed elements and gives access to the **Supervision**, **Reporting** and **Remote Control** contextual menus.
- **Map mode**
This mode represents the managed system as cascading maps of managed elements and gives access to the **Supervision** and **Reporting** contextual menus.
- **Alert mode**
This mode does not represent the system managed. It displays the latest events and gives access to the **Supervision** contextual menus.

For further details, refer to the *User's Guide*.

6.4.1 Launching the Tree Supervision Mode

1. Select the **Tree** mode. A security dialog box may appear when you select the Tree mode for the first time:

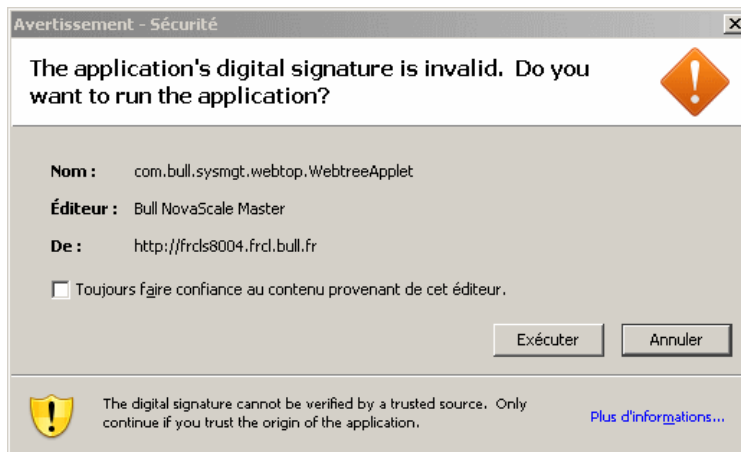


Figure 6-5. Java certification

2. Select **Always**. The following Tree mode window appears:

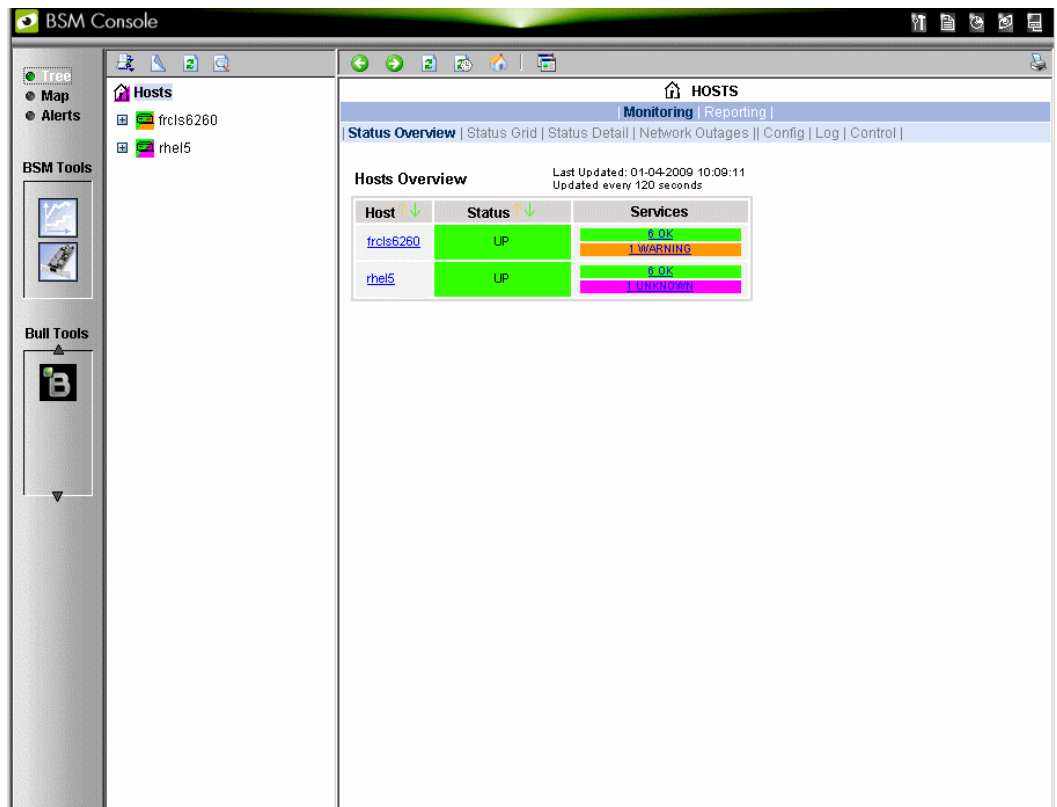


Figure 6-6. Default Tree mode window

The supervision area is divided into two panes:

- **Management Tree Pane**
- **Applications Pane**

In the example shown in Figure 6-6, you can see one **Host** named **frcls6260** in the Management Tree. When you click the **<Hostname>** node, the **Applications Pane** displays status information for this host.

You can access all the Console features from the Management Tree and from the Applications Pane menus.

For further details, refer to the *User's Guide*.

6.4.2 Launching the Map Supervision Mode

Select the **Map** mode. The following window appears:

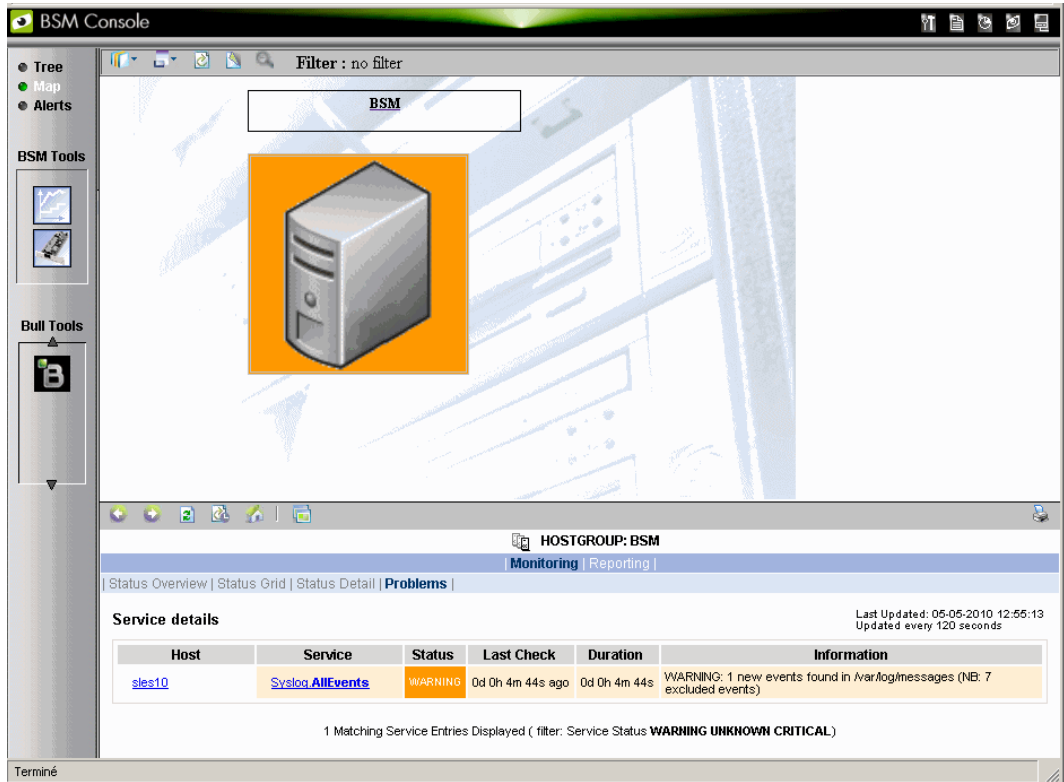


Figure 6-7. Map mode default window

The supervision area is divided into two panes:

- **Map Pane**
- **Applications Pane**

In the example shown in Figure 6-7, you can see one **Hostgroup** named **default map** with the **host** named **frcls6260** on the Map (green plot). The **Applications Pane** displays status information for this host group.

You can access all the Console **Supervision** and **Reporting** features from the Applications Pane menu.

For further details, refer to the *User's Guide*.

6.4.3 Launching the Alerts Supervision Mode

Select the **Alerts** mode. The following window appears:

The screenshot displays the BSM Console Alerts mode. The left sidebar includes 'Tree', 'Map', and 'Alerts' (selected), along with 'BSM Tools' and 'Bull Tools'. The main content area is titled 'ALERTS' and features an 'Alert Viewer' section with the following configuration:

- Alerts type: Hosts and Services
- Alerts level: All
- Report Period: Last 24 Hours
- Max Items: 15
- Not acknowledged:
- History:

Below the configuration is a 'Matching Alerts' table with the following data:

Time	Host	Service	State	Count	Information
06-01-2010 13:39:19	frcls6260	LinuxServices.syslogd	WARNING	1	WARNING - 0 processes running with command name syslogd
06-01-2010 12:13:02	frcls3104	LogicalDisks.All	WARNING	1	DISKS WARNING: (D:) more than 80% utilized.

(Total alerts : 2, displayed lines : 2, displayed alerts : 2)

Figure 6-8. Alerts mode default window

The **Applications** Pane is displayed in the supervision area.

In the example shown in Figure 6-8, you can see the latest **Monitoring** events (**status change**) for the **Host** named **frcls6260**. The **Filter Configuration** template at the top of the pane allows you to select managed elements and to configure Alert type, level, and period.

You can access the Console **Supervision** features from the Applications Pane menu or hyperlinks.

For further details, refer to the *User's Guide*.

6.5 Launching Bull System Manager Tools

Bull System Manager management tools (**Hardware Management** and **Reports**) can be accessed from the left toolbar (only in local console). When these tools are accessed from the toolbar, they are generic, (i.e. they are not contextually associated with one or more managed objects).

6.5.1 Launching the Reporting Indicators Tool

Reporting indicators are not configured by default.

Click the  icon to launch the **Reporting Indicators** tool. The following window appears:

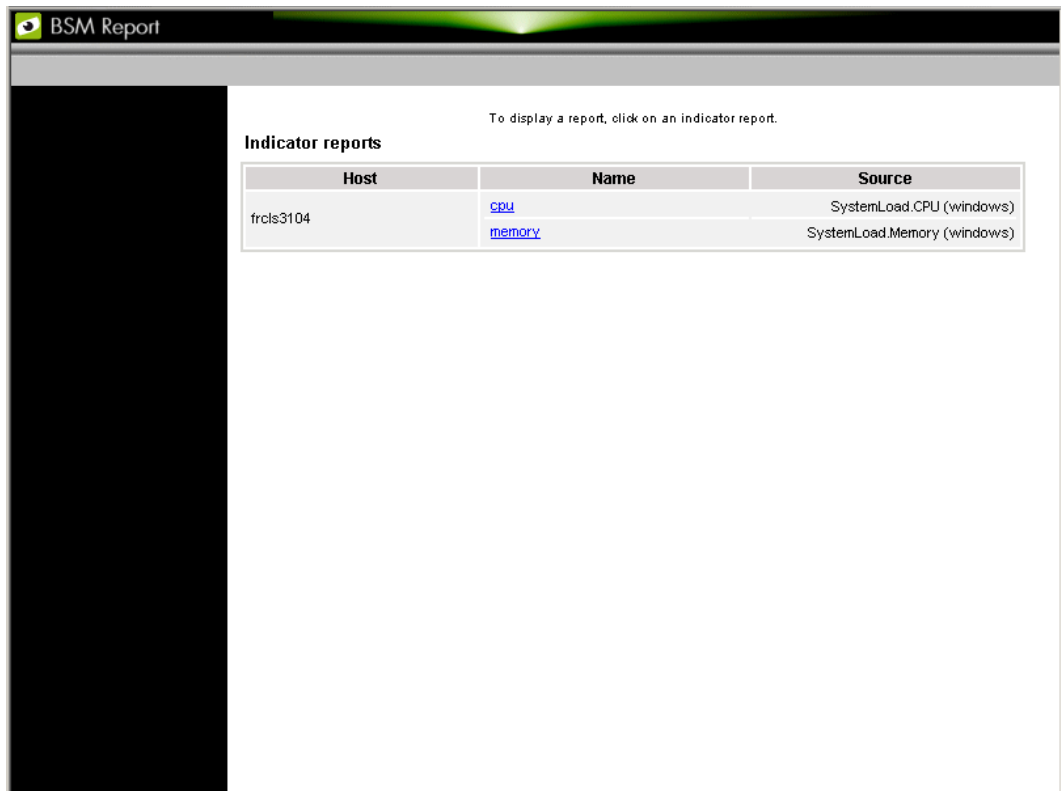



Figure 6-9. Default Reports home page

In the example shown in Figure 6-9, no indicators are available because they have not yet been configured.

Refer to the *Administrator's Guide* for details about how to configure **Reporting Indicators**.

Refer to the *User's Guide* for details about how to use **Reporting Indicators**.

6.5.2 Launching the Hardware Management GUI

Click the  icon to launch the Hardware Management GUI.

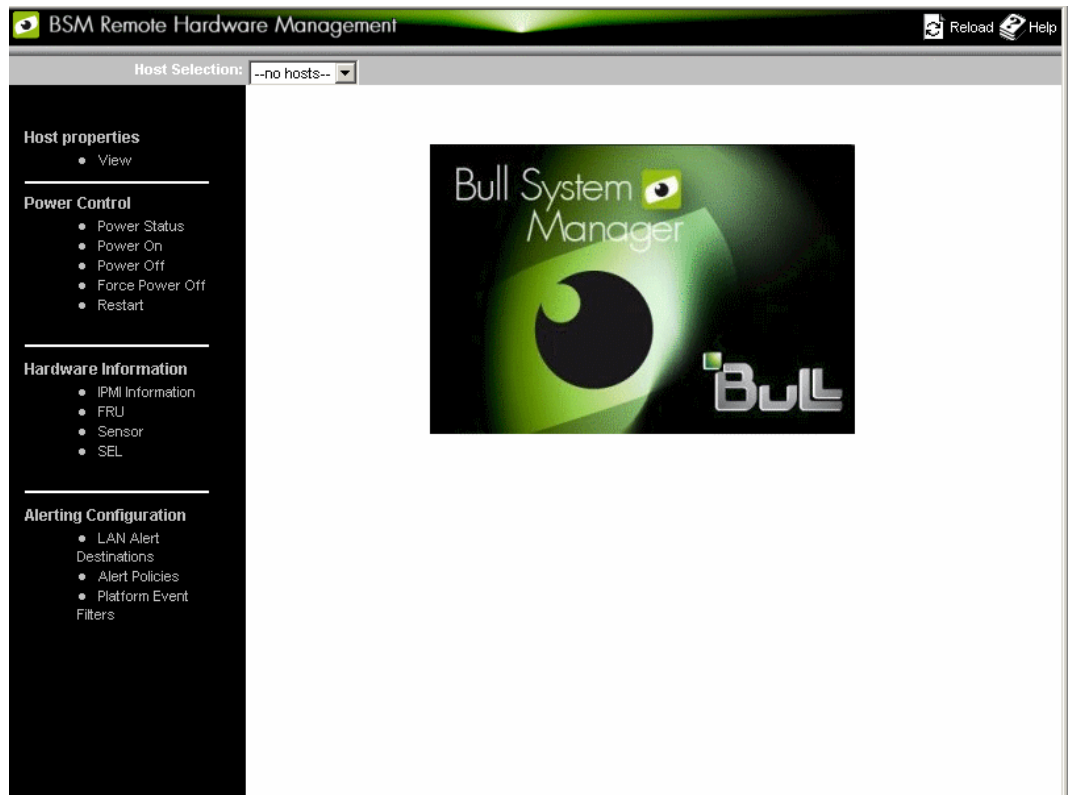


Figure 6-10. Default HW Management home page

In the example shown in Figure 6-10, no hosts are available because they have not yet been configured.

Refer to the *Administrator's Guide* for details about how to configure **Hosts** so that they appear in the Hardware Manager GUI.

Refer to the *User's Guide* for details about how to use the Hardware Management GUI.


6.6 Administering Bull System Manager

The **Console Administration** toolbar is situated in the top right corner of the Console.

Three functional icons allow you to launch:

- The Bull System Manager Configuration web GUI (only in local console)
- The online documentation home page
- The download home page
- The Bull System Manager Control (only in local console)

6.6.1 Launching the Bull System Manager Configuration Web GUI

Click the **Configuration** icon to launch the **Configuration Web GUI** from the **Bull System Manager home page** or click the  icon to launch the **Configuration Web GUI** from the **Bull System Manager Console**.

The following window appears, giving you access to three configuration domains:

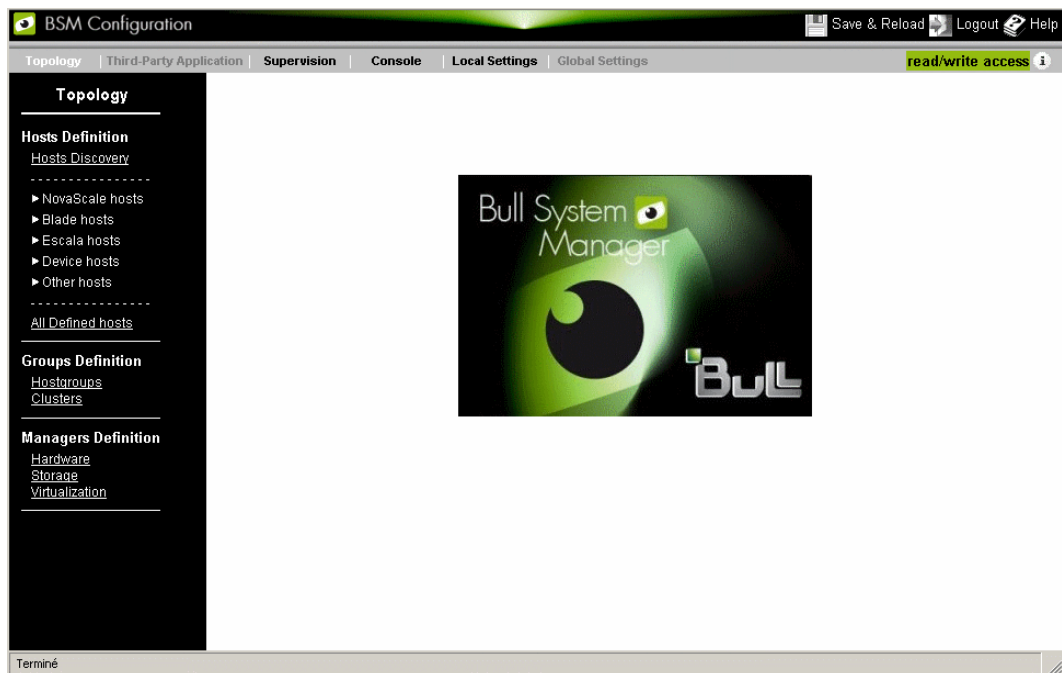




Figure 6-11. default Bull System Manager configuration home page


- **Topology**
To configure the list of **managed elements**.
- **Supervision**
To configure the **monitoring** for the elements managed.
- **Console**
To configure the Bull System Manager Console (Maps, Users, Trees, Toolbar, etc.).
- **Global Settings**
To configure the main functionalities of the console.


Refer to the *Administrator's Guide* for further details.

6.6.2 Launching the Bull System Manager Documentation home page


1. Click the  icon to launch the **Documentation** home page from the **Bull System Manager** home page or click the  icon to launch the Documentation home page from the Bull System Manager Console.

DOCUMENTATION


[Bull System Manager Server Add-ons](#)



You are about to read **Bull System Manager** and additional tools documentation.

Requirements :  for viewing Adobe PDF files

Bull System Manager

Guide	Description	Who are concerned ?	Links
Installation's Guide	How to install Bull System Manager server, console, agent parts and additional tools.	administrator.	PDF
Administrator's Guide	How to configure and customize Bull System Manager.	administrator.	PDF
User's Guide	How to use the Bull System Manager console.	administrator and operators	PDF



Additional tools

Manual	Description	Who are concerned ?	Links
CLI Ref Manual	How to use the Hardware Management CLI.	administrator and developers	PDF

Figure 6-12. Bull System Manager Documentation page

2. Click the required link to Bull System Manager Documentation in PDF format.

6.6.3 Launching the Bull System Manager Download home page

1. Click the  icon to launch the Bull System Manager **Download** home page from the Bull System Manager home page or click  to launch the Bull System Manager Download home page from the Bull System Manager Console.

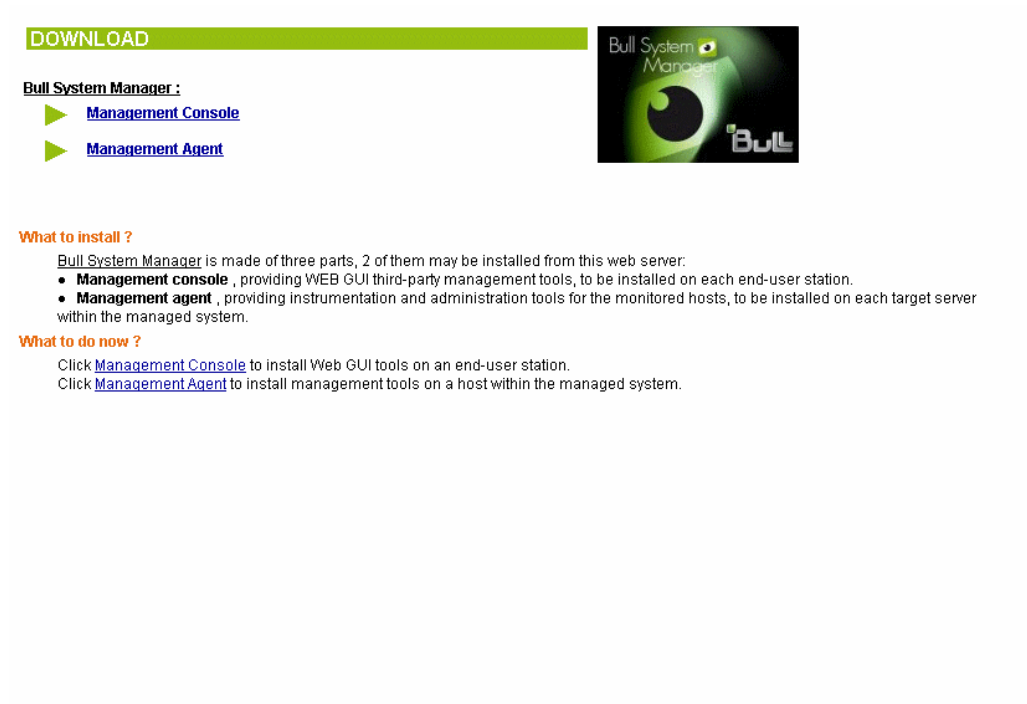


Figure 6-13. Bull System Manager Web install home page

2. Click the appropriate link to download the tools used by **Management Console** and **Management Agent**.

Refer to the *User's Guide* for further details.

6.6.4 Launching the Bull System Manager Control

The Bull System Manager Control application can be launched from the **BSM** home page by clicking the **Control** button or from an icon in the Console Administration toolbar.

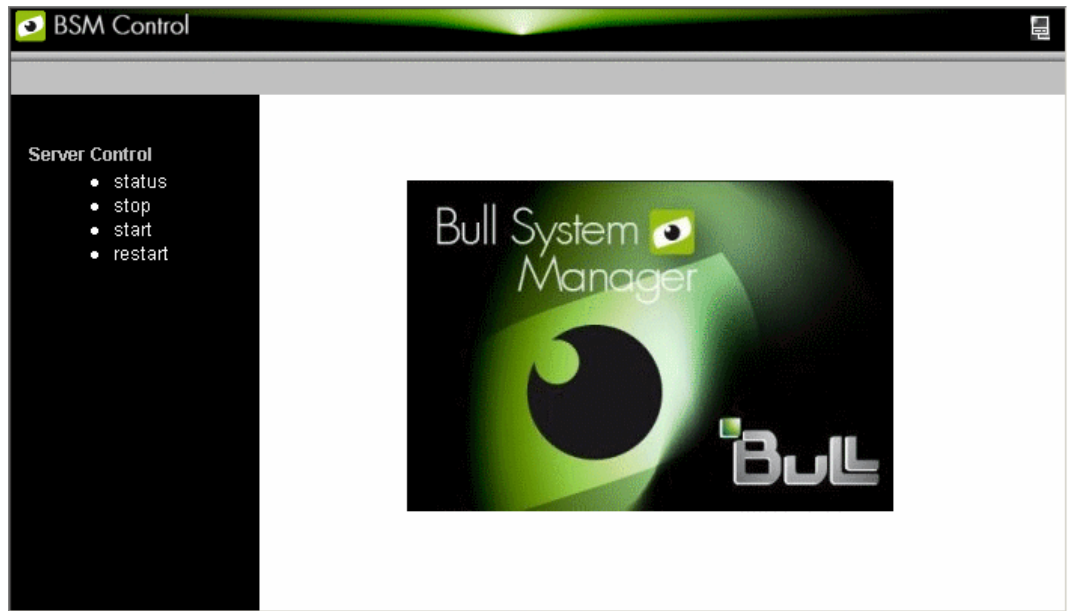


Figure 6-14. Bull System Manager Control home page

- Click **status** to access the status of the Monitoring services (**nagios**, **MRTG** and **snmptrapd**)
- Click **start/stop/restart** to start, stop or restart the Monitoring services.

Appendix A Bull System Manager Port Numbers

A.1 Bull System Manager Server Ports

The following is a list of all the Port Numbers and Services used by Bull System Manager Server.

Linux & Windows

Port	Services
10080	http
10443	https
20080	http (Global Console)
20443	https (Global Console)
15667	NSCA daemon
15668	NDOutils

Linux

Port	Services
162	snmptrapd
3306	mysql (SuSE) mysqld (RedHat)

Windows

Port	Services
162	Windows SNMP Trap service
1620	Bull System Manager snmptrapd
13306	Bull System Manager MySQL

A.2 Bull System Manager Agent Ports

The following is a list of all the Port Numbers and Services used by **Bull System Manager Agent**.

Linux and AIX

Port	Services
10000	webmin
10011	Bull System Manager Agent bsm_webmin
15666	Bull System Manager Agent bsm_nrpe

Windows

Port	Services
11247	Bull System Manager Agent bsmmon
11248	Bull System Manager Agent bsmman
15666	Bull System Manager Agent NRPE

Appendix B. Installing and Configuring the UltraVNC Server for Windows

UltraVNC (Virtual Network Computing) comprises several components. Only the UltraVNC Server component is needed.

B.1 Installing UltraVNC Server

When you run the setup binary file, after choosing the language, accepting the license agreement, reading important information and selecting the 'Destination location', the UltraVNC wizard prompts you to select the different components.

1. Select **Server Only** in the list box.

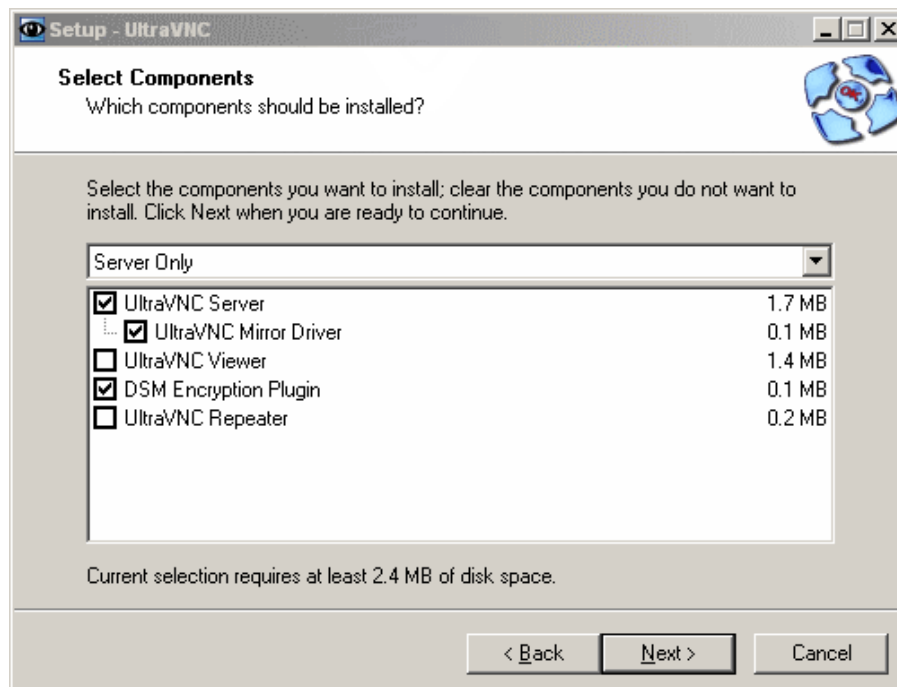


Figure B.1. Installation of UltraVNC Server component on Windows

2. Select **Start New Folder**. You MUST now select the post-install additional tasks. You are advised to select at least the first two as shown in the following figure:

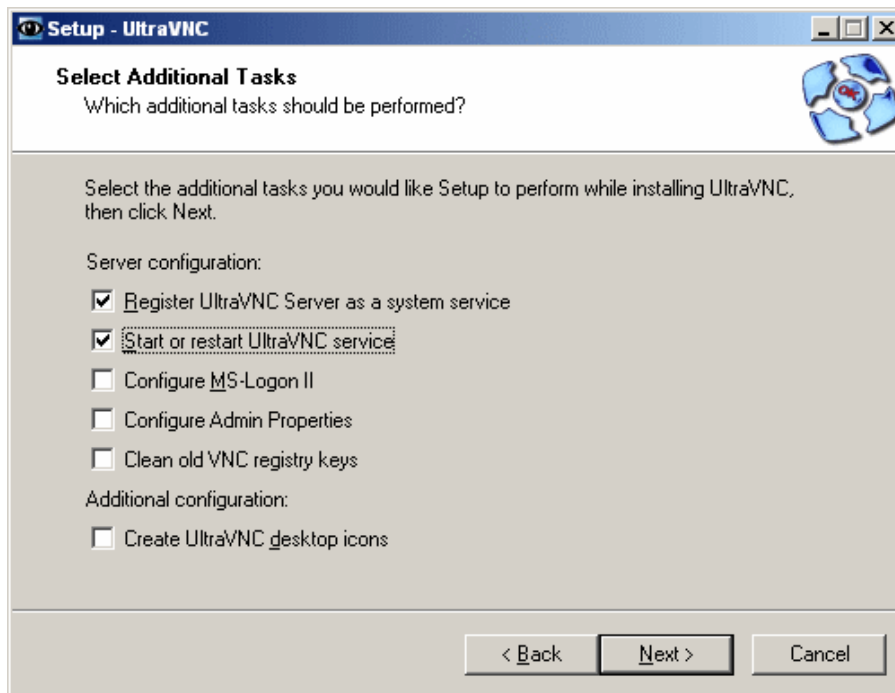


Figure B.2. Post-Installation of UltraVNC Server component on Windows

3. Click the **Next** and **Install** button.

B.2 Configuring UltraVNC Server

The first time you run **UltraVNC Server**, you are prompted to set a password. You will need this password when you connect to the target server from a remote station.

1. Launch the **UltraVNC Server Default** setting:
Start/All Programs
UltraVNC
UltraVNC server
Show Default setting
2. Update properties by entering the **UltraVNC authentication** in the **Default Local System Properties dialog** (Figure B.3).

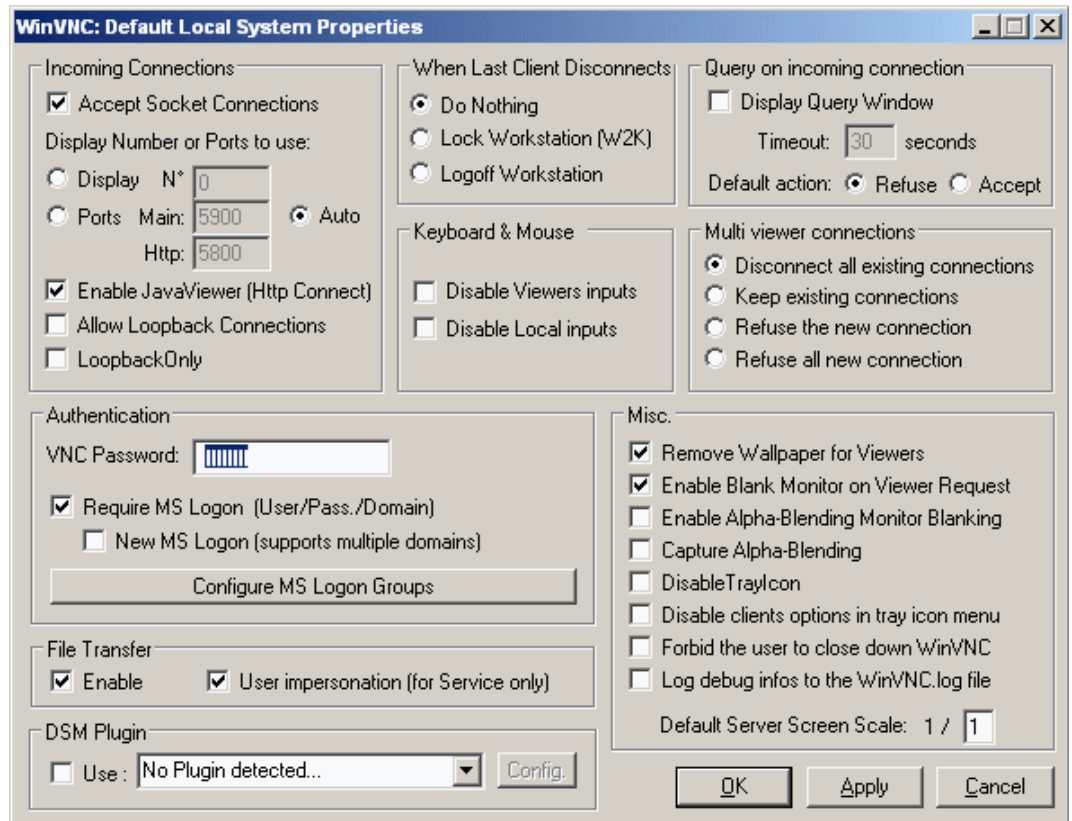


Figure B.3. UltraVNC Server Setting - Enter UltraVNC authentication

Note You can set a simple VNC password or use the **MS Logon** mechanism (a Windows session user and password).

Appendix C. Installing Management Server without `install_server.sh`

C.1 Packages

Management Server comprises three packages to be installed in the following order:

1. **Java Runtime Environment**
Required by the Bull System Manager Server infrastructure.
2. **Bull System Manager Server**
Contains the infrastructure and services for the collection and use of the management data.
3. **Bull System Manager Webinstall**
Contains the Bull System Manager components downloadable from the Bull System Manager Web Server.

C.2 Installation Process

If the `install_server.sh` command does not work for your Linux distribution, proceed as follows to install Bull System Manager Server:

1. Login as `root`.
2. Install the **Java Runtime Environment** if required:
Launch the following commands:
 - `cd <CD-ROM mount point>/product/java/linux/`
 - For Linux 32bits:
 - i. `rpm -Uhv jre-1_5_0_06-linux-i586.rpm`

Once Java is installed, set the `JAVA_HOME` environment variable to the Java installation directory in the `/root/.bash_profile` file:

- For Linux 32bits:
`export JAVA_HOME=/usr/java/jre1.5.0_06`

3. Install **Bull System Manager Server**:
Launch the following commands:
 - `cd <CD-ROM mount point>/product/server/linux/ker2.6.9+`
 - `rpm -Uhv BSMServer-<version>.rpm`The distribution directory depends on the Linux kernel version:
from **2.4.21** to higher Linux kernel versions: `linux/ker2.6.9+`

Note The Linux kernel is obtained by using the `uname -a` command.

4. Install Bull System Manager Webinstall:

Launch the following commands:

- `cd <CD-ROM mount point>/product/server/linux`
- `rpm -Uhv BSMWebinstall-<version>.rpm`

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D.12 BEA JAVA RUNTIME ENVIRONMENT (JROCKIT), STANDARD EDITION, VERSION 1.5.0_X

BEA Systems, Inc.

Binary License Agreement

BEA JRockit

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EXHIBIT A

JRockit Mission Control

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- JRockit Runtime Analyzer
- JRockit Management Console
- JRockit Memory Leak Detector

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