Zenoss®

Service Dynamics

Resource Management Installation

Zenoss, Inc.
www.zenoss.com

Zenoss Service Dynamics Resource Management Installation

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Chapter 1. Installation Considerations

Read the following sections to learn more about installation requirements for the Service Resource Management ("Resource Manager") feature of Zenoss Service Dynamics™.

1.1. Installation Artifact

Zenoss provides the following artifact for a fresh Resource Manager server deployment:

Artifact	Notes	Chapter
RPM (`*.rpm`)	Requires a Red Hat or CentOS-based Linux installation.	"Installing for RHEL5 or CentOS5"

Table 1.1. Installation Types

1.2. Hardware Requirements

Hardware requirements for Resource Manager depend on a number of factors, including I/O, memory, CPU, and the number of managed devices.

For a deployment with a low number of managed devices and data points (low I/O), only a single master is required.

For a deployment with 1000 managed devices, assuming that:

- each managed device averages 100 data points
- collection maximum is 250 data points per second (measured on a 15000 RPM hard drive)
- default cycle time is 300 seconds

You could calculate hardware requirements as:

> 1000 devices x 100 data points per device = 100,000 data points
>
> 100000 / 300 seconds / 250 dps = 1.333 collectors

In this scenario, you would need one master and two collectors to prevent I/O overload.

For each use type, minimum memory and CPU requirements are as follows:

Type	Memory	CPU
Master	8GB	8 cores
Remote collector	4GB	4 cores

Table 1.2. Minimum Hardware Requirements

1.2.1. Deployments Over 2000 Devices

If you are planning to monitor more than 2000 devices, with a significant number of data points per device, or will monitor a network with complex topology, there are additional requirements and configurations to consider. Contact Zenoss Professional Services for deployment planning assistance.

1.2.2. Other Considerations

Resource Manager is a highly I/O-intensive application; as a result, it usually performs best when using direct attached storage. However, an appropriately tuned SAN/NAS environment can also be used effectively with a Resource Manager installation.

1.3. Server Hardware Configuration

1.3.1. File System Configuration

Resource Manager stores gathered performance data in individual RRD files. Performance updates are 8 bytes per data point, which translates to a 4KB file system block update. Under such a high volume/low throughput usage pattern, journaled file systems can be detrimental to IO performance.

If possible, create a separate, non-journaled partition for `$ZENHOME/perf` (for RPM, `/opt/zenoss/perf`).

For more information about file system performance tuning and increasing RRD performance, browse to:

http://oss.oetiker.ch/rrdtool-trac/wiki/TuningRRD

1.3.2. Deploying in a Virtualized Environment

Resource Manager is deployed successfully at many sites in a virtualized environment. However, this type of environment requires additional configuration to ensure there is no resource contention for the Resource Manager application (CPU, memory, IO). Zenoss Professional Services can provide expert assistance in this area.

1.4. Post-Installation Performance Tuning Tasks

After your installation is complete, there are several configuration settings you should adjust to obtain proper performance. Based upon the size of your planned deployment, changes to the database configuration, as well as tuning of the Zope configuration file, are required. See the chapter titled "Post-Installation Performance Tuning" in this guide for more information.

Chapter 2. Installing for RHEL 5 or CentOS 5

This chapter provides detailed instructions for installing Resource Manager for RHEL 5 or CentOS 5.

To successfully complete the process, you must:

- Perform prerequisite tasks
- Install Resource Manager

2.1. Prerequisite Tasks and Requirements

Before installing Resource Manager, make sure that your system meets all requirements and that you perform all prerequisite installation and configuration tasks.

2.1.1. Requirements

Ensure that your system meets all hardware requirements, and that you have correctly configured your operating system and hard drive partitions.

In addition, make sure that:

- The `/opt/zenoss` directory is not a symbolic link to another location
- The umask is set to 022 (masks write permissions for group and others)
- You have disabled SELinux

2.1.2. Tasks

Note

This document may not define all prerequisite packages for your installation options. While installing one or more software packages, you may be prompted to install additional, prerequisite software. Zenoss recommends that you install that software as directed.

Before installing Resource Manager, configure your firewall, and then install:

- Oracle Java 1.6 or later version
- Additional required packages

The following sections provide more information about prerequisite tasks.

2.1.2.1. Configure Your Firewall

Resource Manager requires these ports be open in your firewall:

Port	Protocol	Direction to Resource Manager Server	Description
11211	TCP | UDP	Inbound	memcached
8080	TCP	Outbound	Web interface
514	UDP	Inbound	syslog
162	UDP	Inbound	SNMP Traps
25	TCP	Inbound	zenmail

Table 2.1. Ports

Alternatively, you can choose to disable your firewall. Use the following commands:

```
# service iptables stop
# chkconfig iptables off
```

2.1.2.2. Install Oracle Java

Zenoss Resource Manager requires Oracle JRE 1.6 or later version.

Note

OpenJDK is not supported for Zenoss Resource Manager. If you have OpenJDK or another Java version installed, Zenoss recommends you remove that installation before installing Oracle JRE 1.6+.

1. Download Oracle JRE:
   - 32-bit:

     ```
     wget http://javadl.sun.com/webapps/download/AutoDL?BundleId=47142 -O \
      jre-6u30-linux-i586-rpm.bin
     ```

   - 64-bit:

     ```
     wget http://javadl.sun.com/webapps/download/AutoDL?BundleId=47146 -O \
      jre-6u30-linux-x64-rpm.bin
     ```

2. Change mode, and then install Oracle JRE:
   - 32-bit:

     ```
     chmod +x jre-6u30-linux-i586-rpm.bin; ./jre-6u30-linux-i586-rpm.bin
     ```

   - 64-bit:

     ```
     chmod +x jre-6u30-linux-x64-rpm.bin; ./jre-6u30-linux-x64-rpm.bin
     ```

2.1.2.3. Install Required Packages

Follow these steps to download the Zenoss dependencies RPM repository and then install additional, required packages.

1. Install the Zenoss dependencies RPM repository. Use this command (for 32- and 64-bit systems):

   ```
   rpm -ivh http://deps.zenoss.com/yum/zenossdeps.el5.noarch.rpm
   ```

1. Run the Yellowdog Updater, Modified (YUM) to install these additional required packages. Depending on your architecture, use one of these commands:
   - 32-bit:

     ```
     yum -y install tk unixODBC erlang rabbitmq-server memcached perl-DBI net-snmp net-snmp-utils gmp \
     libgomp libgcj libxslt liberation-fonts
     ```

   - 64-bit:

     ```
     yum -y install tk unixODBC erlang rabbitmq-server memcached perl-DBI net-snmp net-snmp-utils gmp \
     libgomp libgcj.x86_64 libxslt liberation-fonts
     ```

2. Run these commands to ensure required daemons start on reboot:

   ```
   chkconfig rabbitmq-server on
   chkconfig memcached on
   chkconfig snmpd on
   ```

3. Start these services (required for Resource Manager software installation):

   ```
   service rabbitmq-server start
   service memcached start
   service snmpd start
   ```

4. Install the Zenoss DataStore RPM:
   a. Browse to this URL:

      https://support.zenoss.com

Note

Contact your Zenoss representative for site login credentials.

b. In the Downloads area, locate and then download the Zenoss DataStore RPM files.

c. Install the Zenoss DataStore. Depending on your architecture, use one of these commands:

- 32-bit:

```
rpm -ivh zends-5.5.15-1.Version.el5.i386.rpm
```

- 64-bit:

```
rpm -ivh zends-5.5.15-1.Version.el5.x86_64.rpm
```

d. Run the following commands:

```
service zends start
chkconfig zends on
```

2.2. Install the Resource Manager Software

Follow these steps to install Resource Manager for Red Hat Enterprise Linux 5 or CentOS 5. Run all commands as `root`, from the machine where you want to install Resource Manager.

2.2.1. Download the Installation Files

1. Browse to the following URL:

   https://support.zenoss.com

   Note

   Contact your Zenoss representative for site login credentials.

2. In the Downloads area, locate the current Service Dynamics installation files.
3. Download the Base, Core ZenPacks, and Enterprise ZenPacks RPM files.

2.2.2. Install the RPM

Depending on your architecture, use one of these commands to install the Base RPM file:

- 32-bit:

```
rpm -ivh zenoss-Version.el5.i386.rpm
```

- 64-bit:

```
rpm -ivh zenoss-Version.el5.x86_64.rpm
```

2.2.3. (Optional) Install and Configure a Remote Zenoss DataStore

Perform these optional configuration steps only if you want to use a separate server for your Zenoss DataStore rather than use the local Zenoss DataStore.

1. On the local server, enter these commands:

```
service zends stop
chkconfig zends off
```

Note

Resource Manager requires certain features provided by the Zenoss DataStore, so you cannot remove the Zenoss DataStore completely. You can, however, save resources by not running the main service.

2. On the remote Zenoss DataStore server:
   a. Install the Zenoss DataStore RPM:
      i. Browse to this URL:

         https://support.zenoss.com

         Note

         Contact your Zenoss representative for site login credentials.
      ii. In the Downloads area, locate and then download the Zenoss DataStore RPM files.
      iii. Install the Zenoss DataStore. Depending on your architecture, use one of these commands:
         - 32-bit:

           ```
           rpm -ivh zends-5.5.15-1.Version.el5.i386.rpm
           ```
         - 64-bit:

           ```
           rpm -ivh zends-5.5.15-1.Version.el5.x86_64.rpm
           ```
      iv. Run the following commands:

         ```
         service zends start
         chkconfig zends on
         ```
   b. Change credentials to the zenoss user:

      ```
      su zenoss
      ```
   c. Enter the following command:

      ```
      mysql -u root
      ```
   d. In the prompt that appears, enter this series of commands:

      ```
      grant all on *.* to 'root'@'%' with grant option;
      flush privileges;
      ```
3. On the local server, edit the initialization script:
   - If installing for the first time, edit the `/opt/zenoss/bin/zenoss_init_pre` file and adjust the MYSQLHOST, MYSQLROOTUSER, and MYSQLROOTPASSWD values.
   - If upgrading from a previous Zenoss release, edit the `/opt/zenoss/bin/zenoss_upgrade_pre` file and adjust the MYSQLHOST, MYSQLROOTUSER, and MYSQLROOTPASSWD values.

2.2.4. Start the System and Install the ZenPacks

1. Enter this command to start the system.

   ```
   service zenoss start
   ```
2. Install the ZenPacks. Depending on your architecture, use one of these sets of commands:
   - 32-bit:

     ```
     rpm -ivh zenoss-core-zenpacks-Version.el5.i386.rpm
     rpm -ivh zenoss-enterprise-zenpacks-Version.el5.i386.rpm
     ```
   - 64-bit:

     ```
     rpm -ivh zenoss-core-zenpacks-Version.el5.x86_64.rpm
     rpm -ivh zenoss-enterprise-zenpacks-Version.el5.x86_64.rpm
     ```

2.3. Getting Started

After installation, use your Web browser to browse to the server where Resource Manager is installed (http://xxx.xxx.xxx.xxx:8080).

Note

If you are using Internet Explorer to view the Resource Manager interface, and you have restricted the browser to trusted sites, then a warning message may appear. To prevent this, add your Resource Manager installation to the Trusted zone. These Microsoft articles provide more information on setting up trusted sites:

- Pre-Windows 7: http://support.microsoft.com/kb/174360
- Windows 7: http://windows.microsoft.com/en-US/windows7/Security-zones-adding-or-removing-web-sites

The setup wizard appears.

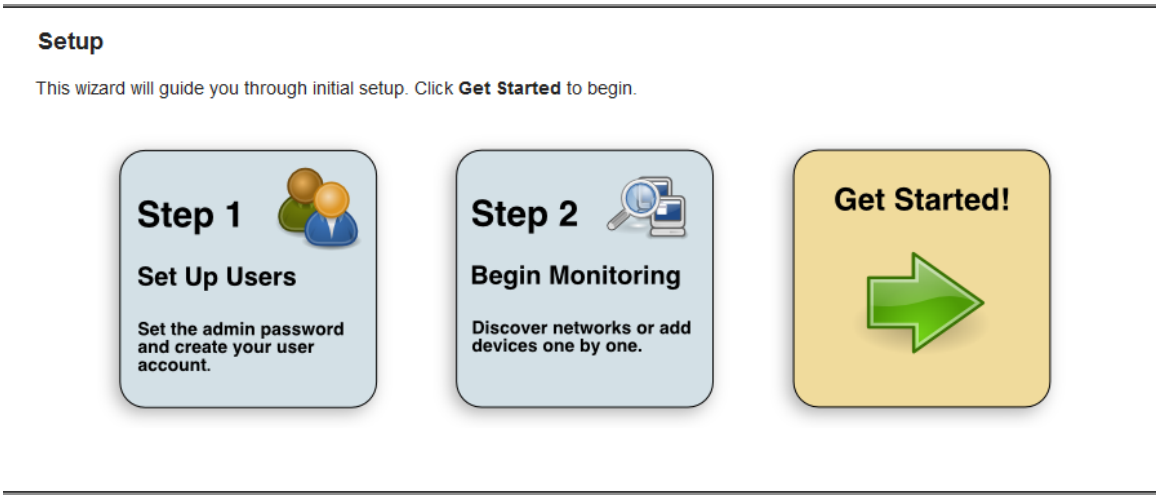

Figure 2.1. Setup Wizard

Using this wizard, you will:

- Change the admin password
- Set up an initial user
- Add some devices to the system

From the first panel of the wizard, click **Get Started!** to begin.

The Step 1: Set up Initial Users panel appears.

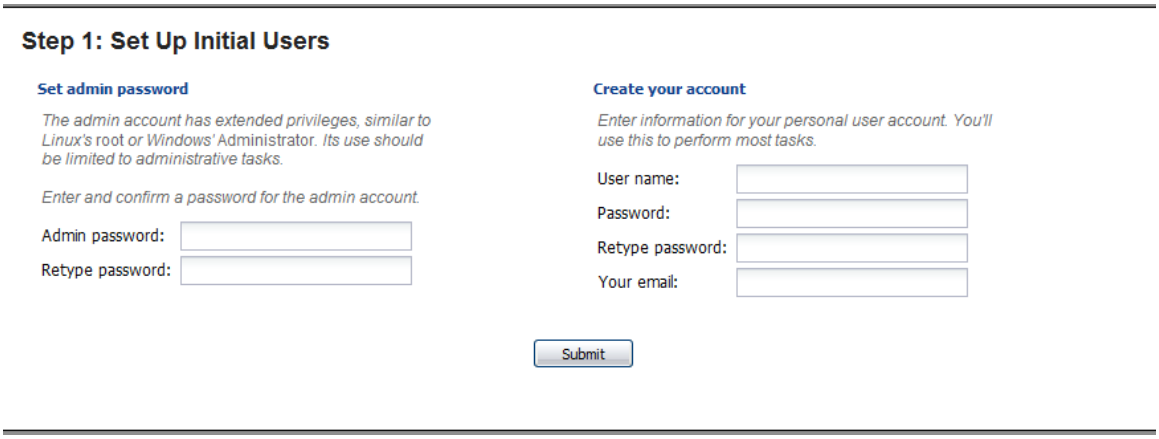

Figure 2.2. Setup Wizard: Step 1

2.3.1. Set the Administrative Password and Create a User

Follow these steps to select a password for the admin account and create your user account.

1. In the **Set admin password area**, enter and confirm a new admin password. You must enter a password value to continue.

   Note

   The Resource Manager admin account has extended privileges, and its use should be limited. Be sure to record the admin password and store it securely.

2. In the **Create your account** area, set up your Resource Manager user account. Most of the time, you will use this account to perform management tasks in Resource Manager. Enter a unique user name, password, and email address.
3. Click **Submit**.

   The Step 2: Specify or Discover Devices to Monitor panel appears.

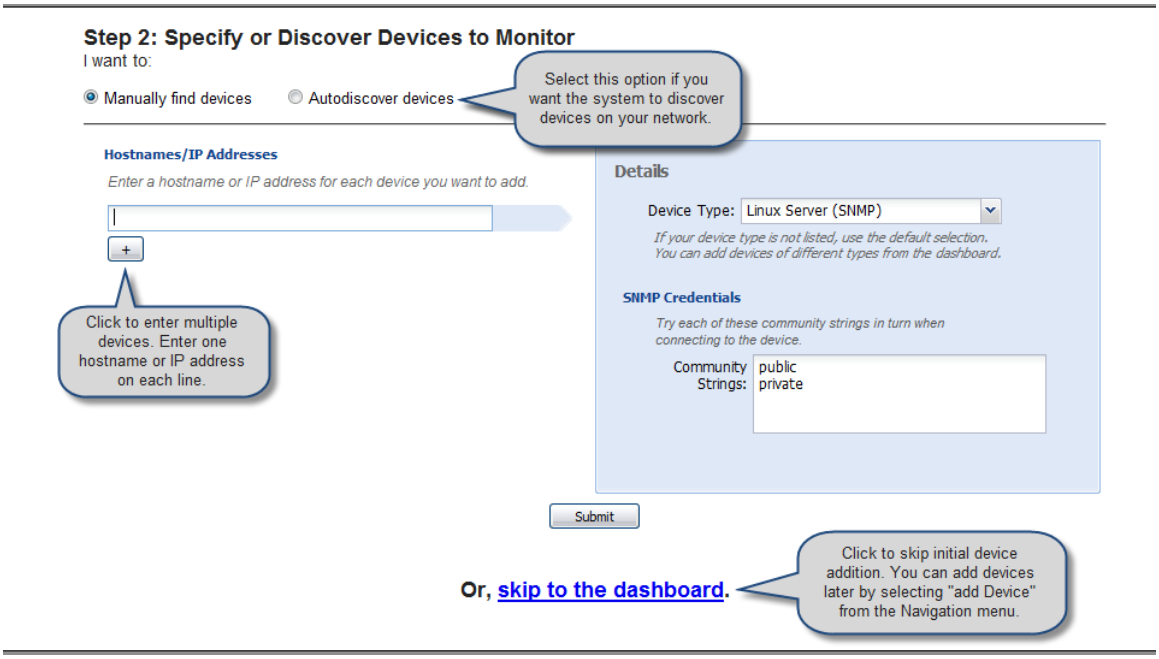

Figure 2.3. Setup Wizard: Step 2 (Manual Add)

2.3.2. Add Devices

You can add devices manually, or give Resource Manager network or IP address range information so it can discover your devices.

2.3.2.1. Adding Devices Manually

Follow these steps to manually add devices to the system. For each device you want to add:

1. Enter a fully qualified domain name or IP address
2. In the Details area, select a device type from the list. If your device type is not listed, then use the default selection. (You can change device classes for a device later, as well as add device classes.)
3. Enter the appropriate credentials used to authenticate against the device.

   Note

   For more information about setting credentials, refer to *Resource Manager Administration*.

4. To add the devices, click **Submit**.

   Resource Manager models the devices in the background.

Note

You can bypass device addition through the wizard. Click **Skip to the dashboard** to go directly to the Resource Manager Dashboard. Later, you can add devices by following the steps outlined in *Resource Manager Administration*.

2.3.2.2. Discovering Devices

To discover devices:

1. Select the **Autodiscover devices** option.

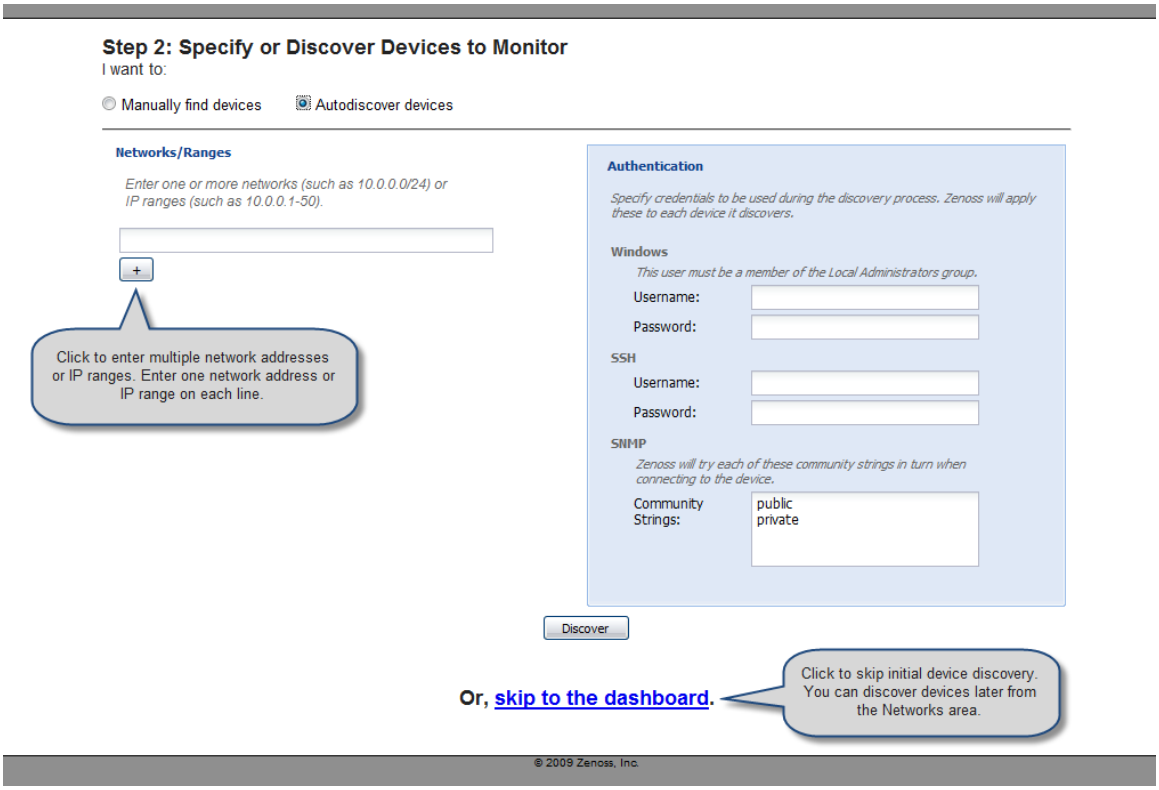

Figure 2.4. Setup Wizard: Step 2 (Discovery)

2. For each network or IP range in which you want Resource Manager to discover devices, enter an address or range. For example, you might enter a network address in CIDR notation:

   10.175.211.0/24

   or as a range of IP addresses:

   10.175.211.1-50

3. If you want to enter multiple addresses or ranges, click +. For each network, you must enter a netmask or IP range.
4. For each network or IP range, specify the Windows, SSH, or SNMP credentials you want Resource Manager to use on the devices it discovers. You can enter only one of each. Resource Manager attempts to use the same credentials on each device it discovers within the networks or IP ranges specified.
5. Click **Discover**.

   Resource Manager schedules jobs to discover devices in the networks and IP ranges you specified. (To see job status, navigate to Advanced > Settings, and then select Jobs in the left panel.)

   When discovery completes, a notification message appears in the Messages portlet on the Dashboard.

Note

You can bypass device discovery through the wizard. Click **Skip to the dashboard** to go directly to the Resource Manager Dashboard. Later, you can discover devices by following the steps outlined in *Resource Manager Administration*.

Chapter 3. Installing Collectors and Hubs

Read this chapter for information and procedures to help you install collectors and hubs.

Note

Not all deployments will benefit from a distributed collector setup. For detailed information about deploying and using distributed collectors, refer to the chapter titled "Distributed Collector" in Zenoss Service Dynamics Resource Management Extended Monitoring.

3.1. Deploying Collectors

The following sections offer information and procedures for:

- Installing prerequisites
- Deploying remote collectors
- Deploying local collectors

3.1.1. Installing Prerequisite Packages

Install these packages on the RHEL 5 or CentOS 5 server that will become the collector. Depending on your architecture, use one of the following commands:

- 32-bit:

```
yum -y install mysql-client net-snmp net-snmp-utils gmp libgomp libgcj liberation-fonts
```

- 64-bit:

```
yum -y install mysql-client net-snmp net-snmp-utils gmp libgomp libgcj.x86_64 liberation-fonts
```

3.1.2. Deploying Remote Collectors

The following sections provide detailed information needed to deploy remote collectors:

- Requirements
- Limitations
- Deployment

3.1.2.1. Requirements

Remote collector deployments must meet these requirements:

- The operating system running on the server to be deployed as a remote collector must be the same version and platform as that running on the Resource Manager master. (For example, if your Resource Manager master is CentOS 5 32-bit, then the collector must also be CentOS 5 32-bit.)
- By default, port 8789 must be open so that the collector and ZenHub can communicate (both ways). This may differ if you have configured ZenHub to run on a different port.
- The Resource Manager server hostname must be a resolvable, fully qualified domain name or IP address.
- You must update all collectors after you:
  - Update your version of Resource Manager
  - Install patches
  - Install, update, or remove ZenPacks

3.1.2.2. Limitations

The system is not compatible with Security-Enhanced Linux (SELinux) in enforcing mode. You must disable enforcing mode for all platforms running the Resource Manager daemons (Resource Manager master, remote hubs, and remote collectors).

To disable enforcing mode:

1. Edit the /etc/selinux/config file.
2. Set the following line:

```
SELINUX=disabled
```

Note

You also can disable enforcing mode temporarily (avoiding the need to reboot) with the command:

```
echo 0 > /selinux/enforce
```

For more information about SELinux, browse to http://en.wikipedia.org/wiki/SELinux, or to the SELinux home page at http://www.nsa.gov/research/selinux/index.shtml.

3.1.2.3. Deployment

Follow these steps to deploy a remote collector:

1. Browse to the Resource Manager master, and then log in to the user interface.
2. Select Advanced > Collectors from the navigation bar.
3. Click the name of the hub for your Resource Manager master. (In a default installation, this is `localhost`.)
4. On the Overview page, select Add Collector from the Action menu.

   The Add Collector page appears. From here, you can use one of several methods to access the remote host.

3.1.2.3.1. Root User Password

Follow these steps to install a remote collector using a root password for access to the remote host.

Note

You must set a password for the root user on a server before deploying a collector to it.

1. Select the Install remotely option.
2. Select the root password option.

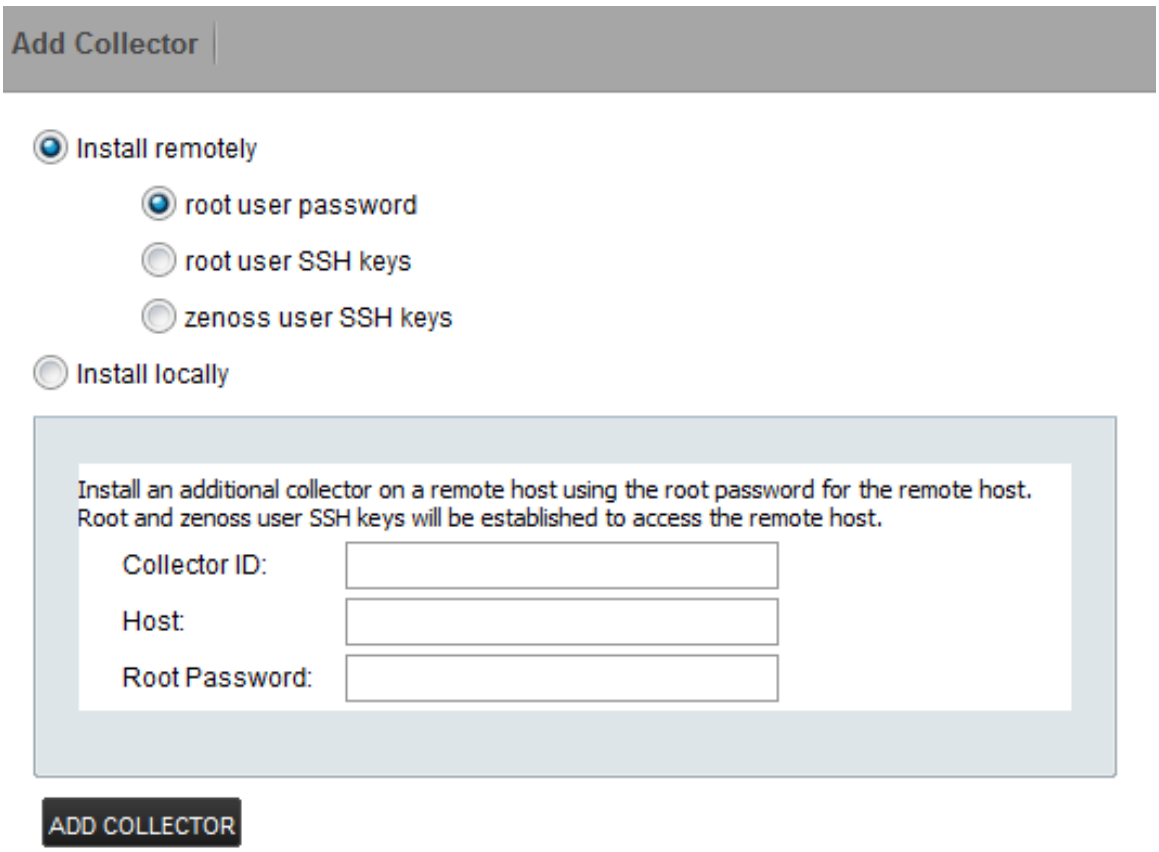

Figure 3.1. Install Remote Collector (Root Password)

3. Enter or change setup details:

Field Name	Description
Collector ID	Enter the name for the collector as it will be identified in the system. This name will be used to prefix the control scripts on the collector. If the ID is `coll1`, then scripts will be named `coll1_zenperfsnmp`.
Host	Enter the name of the host for the collector. This must be a fully qualified domain name, IP address, or resolvable hostname.
Root Password	Enter the password for the root user on the Host. The root password is not stored; it is used to configure a pre-shared key between the main server and the remote collector.

Table 3.1. Add New Collector Fields

Note

If you are creating another collector on the server, enter the `localhost` rather than the IP address of the server.

4. Click **Add Collector**. The system displays log output from the creation of the new collector. When fully configured (this may require several minutes), The system displays the final entry "navigate to *CollectorName*." Click the link to go to the overview page for the new collector.

3.1.2.3.2. Root SSH Keys

To install a remote collector, using existing root SSH keys for access to the remote host:

1. Select the Install remotely option.
2. Select the root SSH keys option.

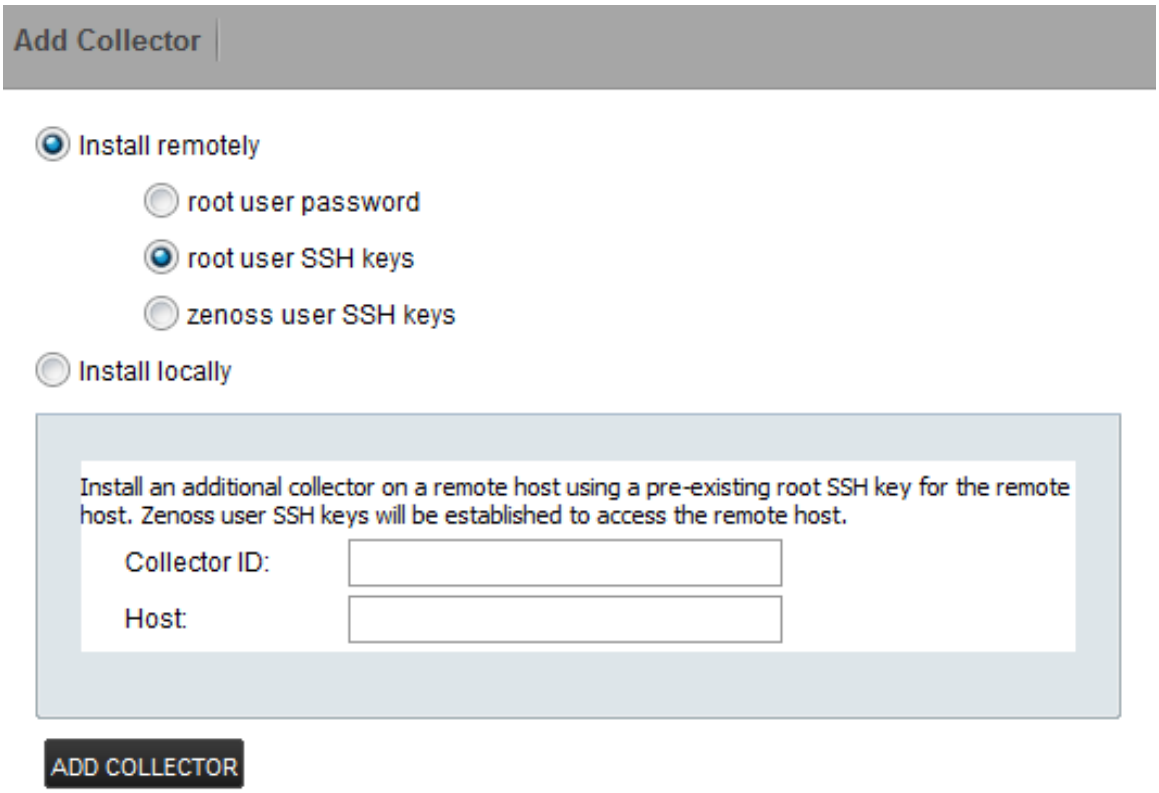

Figure 3.2. Install Remote Collector (Root SSH Keys)

3. Enter or change setup details:

Field Name	Description
Collector ID	Enter the name for the collector as it will be identified in the system. This name will be used to prefix the control scripts on the collector. If the ID is `coll1`, then scripts will be named `coll1_zenperfsnmp`.
Host	Enter the name of the host for the collector. This must be a fully qualified domain name, IP address, or resolvable hostname.

Table 3.2. Add New Collector Fields

Note

If you are creating another collector on the server, enter the `localhost` rather than the IP address of the server.

4. Click **Add Collector**. The system displays log output from the creation of the new collector. When fully configured (this may require several minutes), the system displays the final entry "navigate to *CollectorName*." Click the link to go to the overview page for the new collector.

3.1.2.3.3. Resource Manager SSH Keys

If you choose to set up a collector using Resource Manager SSH keys, the system will attempt to install by using the zenoss user. To successfully install a collector using these keys (without root access), these prerequisite conditions must be met:

- zenoss user SSH keys must be set up between the Resource Manager server and the target.
- You must be running the RPM distribution.
- Resource Manager core RPM must be installed on the target (remote) machine.

Tip: When installing the RPM on the remote machine, **do not start** the system.

Follow these steps to install a remote collector, using Resource Manager SSH keys for access to the remote host.

Note

For detailed steps for creating SSH keys, see the section titled "Setting Up SSH Keys for Distributed Collector."

1. Select the Install remotely option.
2. Select the zenoss SSH Keys option.

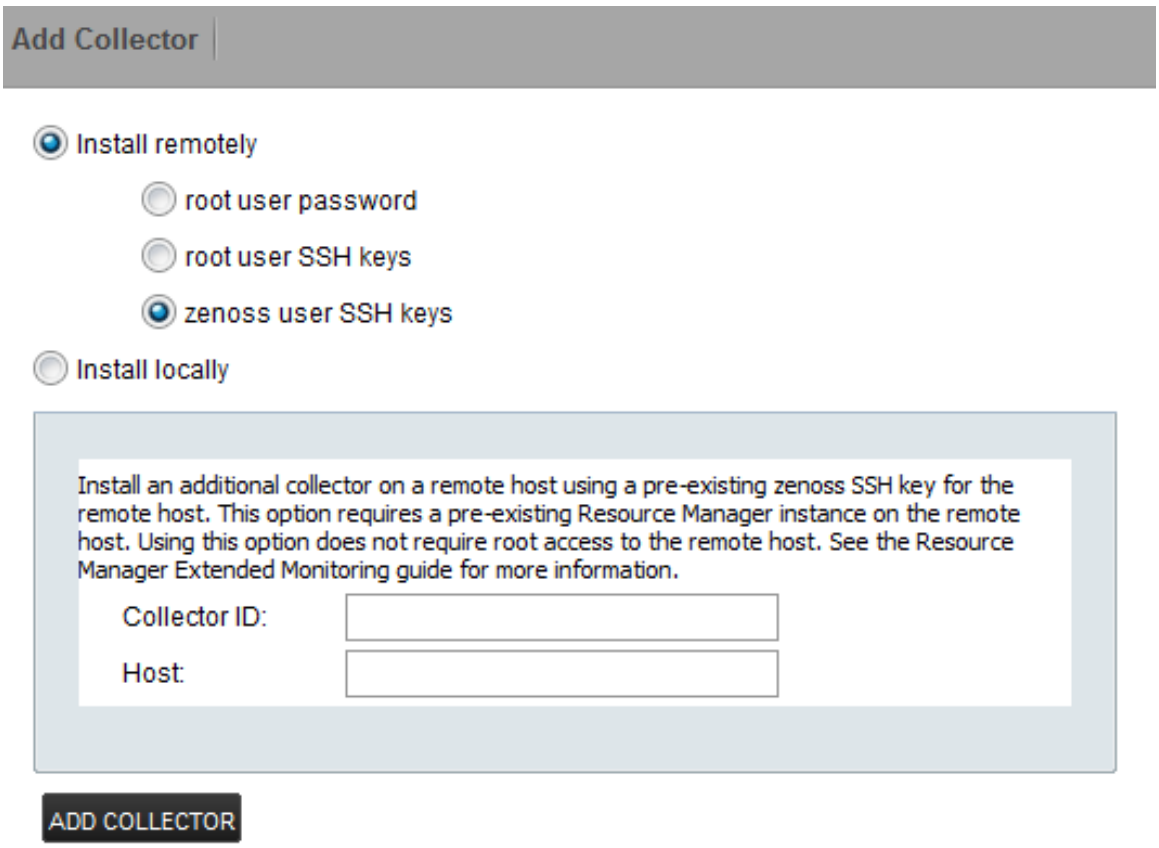

Figure 3.3. Install Remote Collector (Resource Manager SSH Keys)

3. Enter or change setup details:

Field Name	Description
Collector ID	Enter the name for the collector as it will be identified in the system. This name will be used to prefix the control scripts on the collector. If the ID is `coll1`, then scripts will be named `coll1_zenperfsnmp`.

Field Name	Description
Host	Enter the name of the host for the collector. This must be a fully qualified domain name, IP address, or resolvable hostname.

Table 3.3. Add New Collector Fields

Note

If you are creating another collector on the server, enter the `localhost` rather than the IP address of the server.

4. Click **Add Collector**. The system displays log output from the creation of the new collector. When fully configured (this may require several minutes), The system displays the final entry "navigate to *CollectorName*." Click the link to go to the overview page for the new collector.

3.1.3. Deploying Local Collectors

Follow these steps to install a local collector:

1. Browse to the Resource Manager master, and then log in to the user interface.
2. Select Advanced > Collectors from the navigation bar.
3. Click the name of the hub for your Resource Manager master. (In a default installation, this is `localhost`.)
4. On the Overview page, select Add Collector from the Action menu.

   The Add Collector page appears.
5. Select the Install locally option.

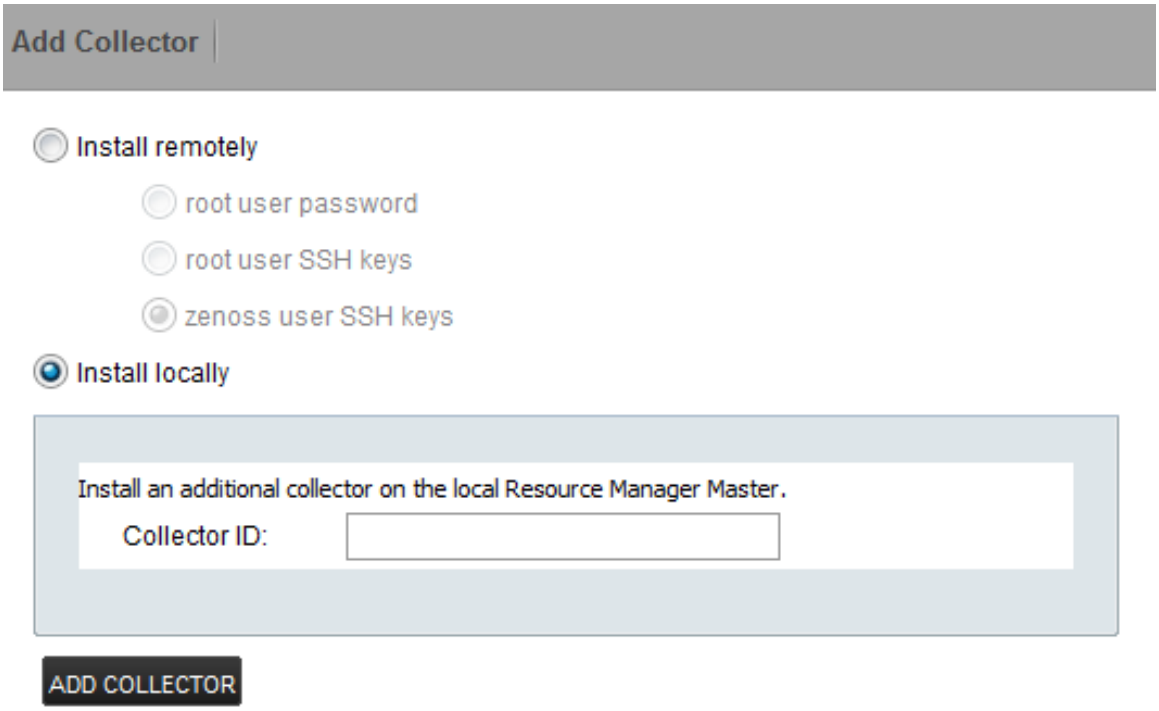

Figure 3.4. Install Locally

6. Enter or change setup details:

Field Name	Description
Collector ID	Enter the name for the collector as it will be identified in the system. This name will be used to prefix the control scripts on the collector. If the ID is `coll1`, then scripts will be named `coll1_zenperfsnmp`.

Table 3.4. Add New Collector Fields

7. Click **Add Collector**. The system displays log output from the creation of the new collector. When fully configured (this may require several minutes), click the link at the bottom of the page to go to the overview page for the new collector.

3.2. Deploying Hubs

The following sections offer information and procedures for:

- Installing prerequisites
- Deploying remote hubs

3.2.1. Installing Prerequisites

1. Install the Zenoss DataStore. Depending on your architecture, use one of these commands:
   - 32-bit:

     ```
     rpm -ivh zends-5.5.15-1.Version.el5.i386.rpm
     ```
   - 64-bit:

     ```
     rpm -ivh zends-5.5.15-1.Version.el5.x86_64.rpm
     ```
2. Install these packages on the RHEL 5 or CentOS 5 server that will become the hub. Use the following command:

   ```
   yum -y install mysql-client net-snmp net-snmp-utils gmp libgomp libgcj liberation-fonts
   ```

3.2.2. Deploying Remote Hubs

The following sections provide detailed information needed to deploy hubs:

- Requirements
- Limitations
- Configuring Zenoss DataStore
- Deployment

3.2.2.1. Requirements

Hub deployments must meet these requirements:

- The Resource Manager server hostname must be a resolvable, fully qualified domain name or IP address.
- Any server hosting a remote hub must have the Zenoss DataStore installed (but not running). The Zenoss DataStore is needed for a client library that allows MySQL connections.
- Remote hubs need to communicate on these default Resource Manager ports:
  - Port 13306 - Zenoss DataStore
  - Port 8084 - Resource Manager events system
  - Port 5672 - Resource Manager queuing system
- You must update all hubs after you:
  - Update your version of Resource Manager

- Install patches
- Install, update, or remove ZenPacks

3.2.2.2. Limitations

The system is not compatible with Security-Enhanced Linux (SELinux) in enforcing mode. You must disable enforcing mode for all platforms running the Resource Manager daemons (Resource Manager master, remote hubs, and remote collectors).

To disable enforcing mode:

1. Edit the /etc/selinux/config file.
2. Set the following line:

```
SELINUX=disabled
```

Note

You also can disable enforcing mode temporarily (avoiding the need to reboot) with the command:

```
echo 0 > /selinux/enforce
```

For more information about SELinux, browse to http://en.wikipedia.org/wiki/SELinux, or to the SELinux home page at http://www.nsa.gov/research/selinux/index.shtml.

3.2.2.3. Configuring Zenoss DataStore for Remote Hubs

Hubs on remote servers need access to the Zenoss DataStore. By default this is set to localhost, but will not work for remote hubs. Distributed collector attempts to set this field to the fully qualified domain name of the Resource Manager server when it is installed. If remote hubs appear to be having trouble connecting to the Zenoss DataStore, then check the host value in `$ZENHOME/etc/global.conf` to make sure it can be reached from the server the hub is on.

Another aspect of remote hubs connecting to the Zenoss DataStore is privileges. For a hub to connect to the database, the user specified in the `$ZENHOME/etc/global.conf file` for `mysqluser` must be granted privileges to connect to the Zenoss DataStore from the remote server. If a remote hub is logging error messages that indicate it is not allowed to connect from the given host, then these privileges are likely not set up correctly. Granting of these privileges requires a fully qualified domain name for the remote server.

Before adding a hub, ensure grants and permissions are set correctly. For your Resource Manager master, run these commands:

```
GRANT SELECT on mysql.user to zenoss@'%' IDENTIFIED BY "zenoss";
GRANT ALL PRIVILEGES ON zenoss_zep.* to zenoss@'%' IDENTIFIED BY "zenoss";
GRANT ALL PRIVILEGES ON zodb.* to zenoss@'%' IDENTIFIED BY "zenoss";
FLUSH PRIVILEGES;
```

For every remote Zenhub server, run these commands in the Zenoss DataStore, replacing *RemoteHubFQDN* with the appropriate hostname for each server:

```
GRANT SELECT on mysql.user to zenoss@'RemoteHubFQDN' IDENTIFIED BY "zenoss";
GRANT ALL PRIVILEGES ON zenoss_zep.* to zenoss@'RemoteHubFQDN' IDENTIFIED BY "zenoss";
GRANT ALL PRIVILEGES ON zodb.* to zenoss@'RemoteHubFQDN' IDENTIFIED BY "zenoss";
FLUSH PRIVILEGES;
```

3.2.2.4. Deployment

When deploying a remote hub, you can select one of several options, using:

- Root password to the remote host
- Pre-existing root SSH keys
- Resource Manager SSH keys (use only for RPM installations)

To add a hub, from the main Collectors page, select Add Hub from the Action menu.

The Add Hub page appears.

3.2.2.4.1. Install Remotely (Root Password)

Follow these steps to install a remote hub, using a root password for access to the remote host.

Note

You must set a password for the root user on a server before deploying a hub to it.

1. Select the root password option.

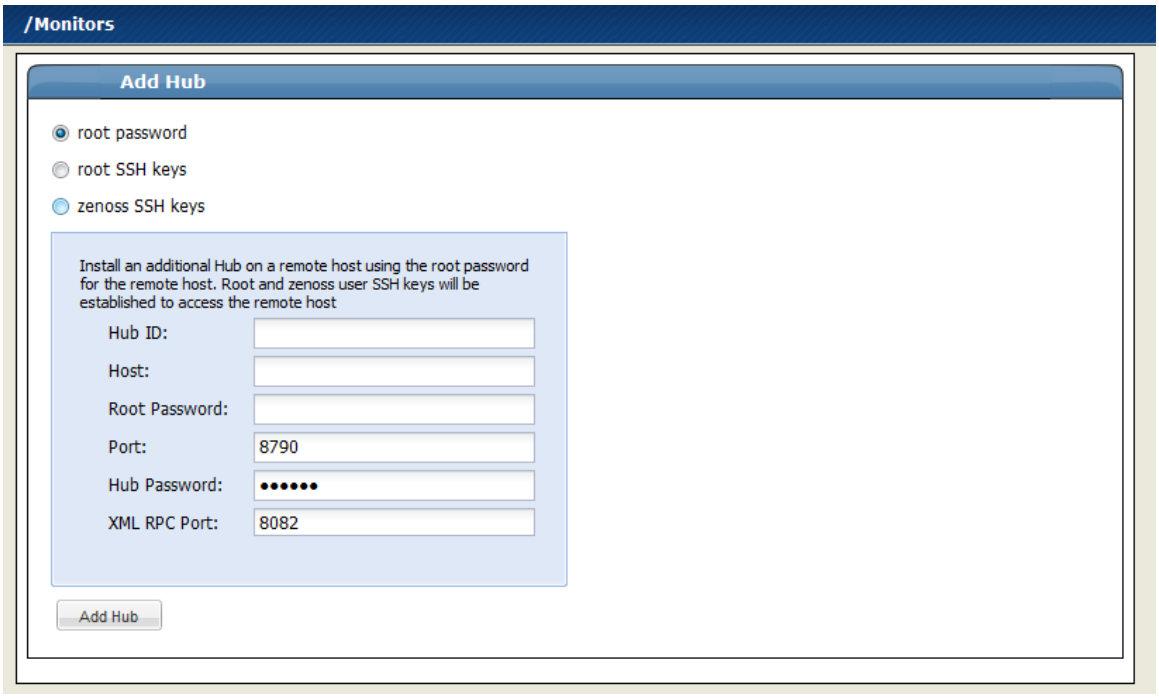

Figure 3.5. Install Remote Hub (Root Password)

2. Enter or change setup details:
   - **Hub ID** - Enter a name for the new hub. The name can be any unique combination of letters, digits, and dashes.
   - **Host** - Enter the fully qualified domain name, IP address, or resolvable hostname of the server on which the new hub will run.
   - **Root Password** - Enter the root user password for the server you specified in the Host field.
   - **Port** - Enter the port number on which the hub should listen for collectors. The default port is 8790.
   - **Hub Password** - Enter the hub password that the collectors will use to log in to this hub. The default password is "zenoss."
   - **XML RPC Port** - Specify the port on which the hub should listen for xml-rpc requests from the collectors or other API clients.
3. Click **Add Hub**.

   The system displays log output from the creation of the new hub. When fully configured (this may require several minutes), click the link at the bottom of the page to go to the overview page for the new hub.

3.2.2.4.2. Install Remotely (Root SSH Keys)

To install a remote hub, using existing root SSH keys for access to the remote host:

1. Select the root SSH keys option.

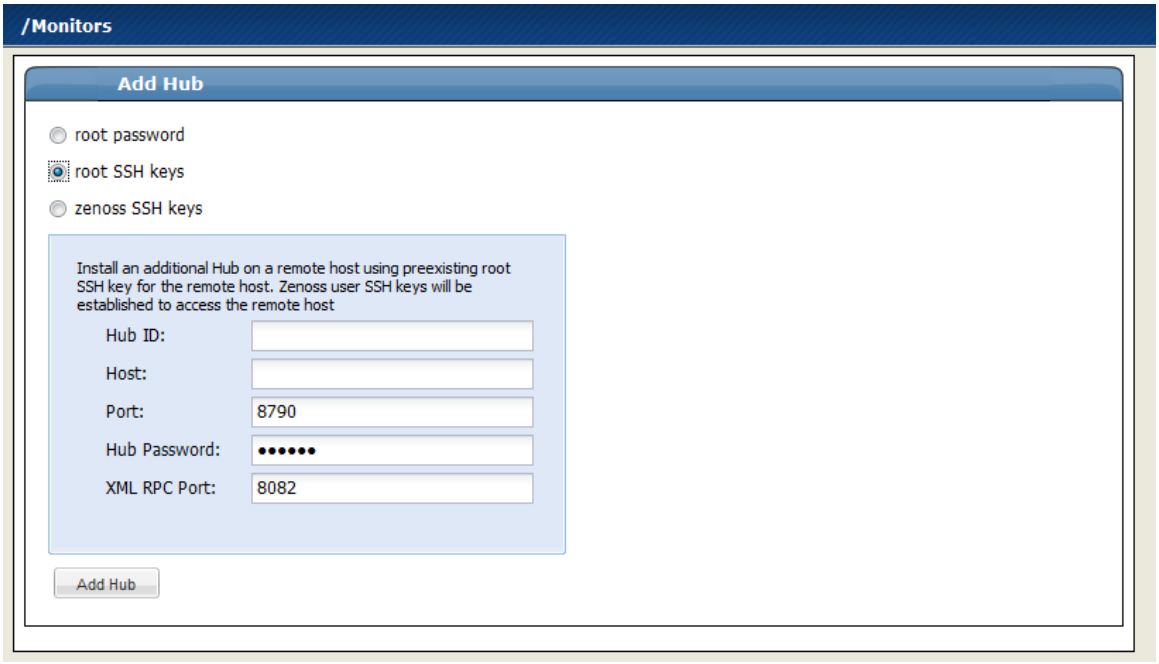

Figure 3.6. Install Remote Hub (Root SSH Keys)

2. Enter or change setup details:
   - **Hub ID** - Enter a name for the new hub. The name can be any unique combination of letters, digits, and dashes.
   - **Host** - Enter the fully qualified domain name, IP address, or resolvable hostname of the server on which the new hub will run.
   - **Port** - Enter the port number on which the hub should listen for collectors. The default port is 8790.
   - **Hub Password** - Enter the hub password that the collectors will use to log in to this hub. The default password is "zenoss."
   - **XML RPC Port** - Specify the port on which the hub should listen for xml-rpc requests from the collectors or other API clients.
3. Click **Add Hub**.

   The system displays log output from the creation of the new hub. When fully configured (this may require several minutes), click the link at the bottom of the page to go to the overview page for the new hub.

3.2.2.4.3. Install Remotely (zenoss SSH Keys)

If you choose to set up a hub using zenoss SSH keys, Resource Manager will attempt to install by using the zenoss user. To successfully install a hub using these keys (without root access), these prerequisite conditions must be met:

- zenoss user SSH keys must be set up between the Resource Manager server and the target. The target must have a zenoss user.
- ZENHOME directory must be present on the remote machine.
- zensocket/pyraw must be present on the remote machine, and the setuid bits must be set.
- The nmap program must be made setuid root.

Tip: The best way to meet the prerequisite conditions is to install the Resource Manager RPM on the remote machine. After installation, **do not start** Resource Manager.

Follow these steps to install a remote hub, using Resource Manager SSH keys for access to the remote host.

Note

For detailed steps for creating SSH keys, see the section titled "Setting Up SSH Keys for Distributed Collector."

1. Select the zenoss SSH keys option.

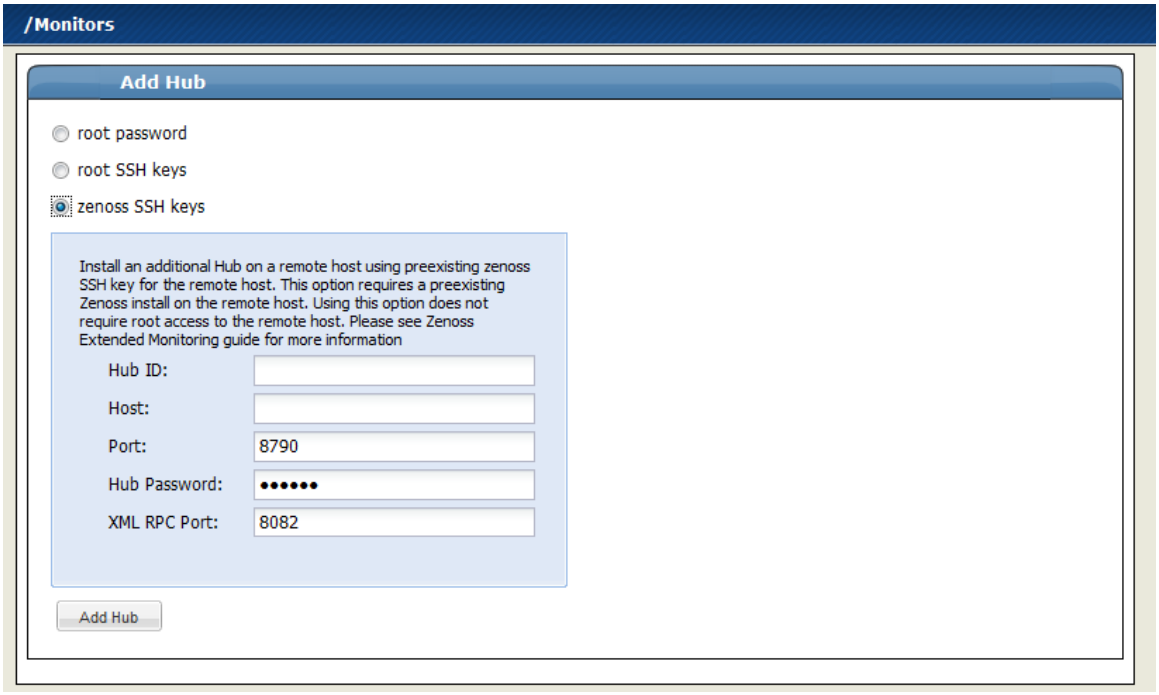

Figure 3.7. Install Remote Hub (Resource Manager SSH Keys)

2. Enter or change setup details:
   - **Hub ID** - Enter a name for the new hub. The name can be any unique combination of letters, digits, and dashes.
   - **Host** - Enter the fully qualified domain name, IP address, or resolvable hostname of the server on which the new hub will run.
   - **Port** - Enter the port number on which the hub should listen for collectors. The default port is 8790.
   - **Hub Password** - Enter the hub password that the collectors will use to log in to this hub. The default password is "zenoss."
   - **XML RPC Port** - Specify the port on which the hub should listen for xml-rpc requests from the collectors or other API clients.
3. Click **Add Hub**.

   The system displays log output from the creation of the new hub. When fully configured (this may require several minutes), click the link at the bottom of the page to go to the overview page for the new hub.

3.2.3. Setting Up SSH Keys for Distributed Collector

Follow these instructions to create SSH keys for use when setting up hubs and collectors.

These instructions assume you are using openssh. For more information, refer to the ssh-keygen man pages.

1. Use the following commands to generate an openssh RSA key pair for the zenoss user:

```
mkdir $HOME/.ssh
ssh-keygen -t rsa -f $HOME/.ssh/id_rsa -P "
```

2. Lock down the key pair:

```
chmod 700 $HOME/.ssh
```

```
chmod go-rwx $HOME/.ssh/*
```

3. Copy the generated public key `$HOME/.ssh/id_rsa.pub` file to the remote machine. On the remote machine, add the public key to the `authorized_keys` file in the account the user wants to log in to by using the SSH key.
   a. If `$HOME/.ssh` does not exist on the target machine, then create it with these commands:

      ```
      mkdir ~/.ssh
      chmod 700 ~/.ssh
      ```

   b. Add the key:

      ```
      cat id_rsa.pub >> $HOME/.ssh/authorized_keys
      chmod 600 $HOME/.ssh/authorized_keys
      ```

Note

You cannot use keys with a pass phrase with Resource Manager.

Chapter 4. Performance Tuning

After installing Resource Manager, you can optimize its performance by:

- Packing the ZODB
- Editing archived event data storage settings
- Running zentune
- Setting memory caching values

4.1. Packing the ZODB

The Zope Object Database (ZODB) keeps records of all transactions performed. As these records accumulate, the database file grows over time.

To keep the database running efficiently, Resource Manager runs a weekly `cron` job to regularly remove old transactions. You also can initiate this process at any time; as the zenoss user, use the following command:

```
$ZENHOME/bin/zenossdbpack
```

4.2. Editing Archived Event Data Storage Settings

You can edit the default settings for archived event data to improve Resource Manager performance. Changing these settings to values that are reasonable for your implementation will prevent the Zenoss DataStore from filling up your hard drive. An extremely large database also can have a negative impact on performance.

To change the settings for length of time Resource Manager archives event data:

1. Select Advanced, and then select Events from the left panel.

   The Event Configuration page appears.
2. Adjust values as desired for these configuration settings:
   - **Delete Archived Events Older Than** (days) - By default, this is set to 90 days. Accepted values are between 1 and 1000 days.
   - **Event Occurrence Purge Interval** (days) - By default, this is set to 30 days. Accepted values are between 1 and 250 days.
3. Click **Save** to save your changes.

4.3. Running zentune

ZenPacks.zenoss.AutoTune ("zentune") is a script that analyzes your system configuration and makes recommendations for better performance.

4.3.1. Usage

To run the zentune script, use this command:

```
$ zentune run
```

The script prints the current and optimal values for several configuration parameters. Recommendations for configuration changes are printed at the end of the report.

4.3.2. Sample Report

```
------ ZOPE ------------------------------------------------------------
[OK] Object cache: 50000 (250% of suggested value 20000)
[OK] Pool size: Current value 7 (no greater than 10 recommended)
```

```
[OK] RelStorage cache: Not set
[!!] Cache servers: 0 of 1 servers available
 127.0.0.1:11211 is inaccessable
[OK] Maximum number of session objects: 100000 (100000 recommended)
[OK] Debug mode: off
[!!] Check interval: Current value 500 (suggested value 1493)
[OK] Application server: 1 Zope process for 0 users
[OK] Application server: 4 threads per Zope instance

------ HUBS ----------------------------------------------------------
[OK] Hub: localhost: 1 collector

------ GLOBAL --------------------------------------------------------
[--] Global config sip size: not set
[--] Global config sip delay: not set
[--] Event flush chunk size: not set
[--] Maximum queue length: not set

------ EVENTS --------------------------------------------------------
[!!] zeneventd object cache: Current value 1000 (20% of suggested value)
[OK] zeneventd workers: 2 workers

------ RESOURCES -----------------------------------------------------
[!!] Processes: 2 cores for
 2 zenhub workers
 2 zeneventd workers
 1 Zope process
 1 zeneventserver
[OK] Memory: 4141654016 bytes of total memory

------ RECOMMENDATIONS -----------------------------------------------
* Make sure memcached is running
* Set python-check-interval in zope.conf to 1493
* Add 'configsipsize 50' line to the global.conf
* Add 'configsipdelay 5' line to the global.conf
* Add 'eventflushchunksize 2000' line to the global.conf
* Add 'maxqueuelen 20000' line to the global.conf
* Set cachesize in zeneventd.conf to at least 5000
* Number of CPU-intensive processes exceeds available cores.
  Consider moving to a distributed zenhub and/or running zeneventd
  on another machine.

----------------------------------------
```

4.4. Memory Caching

Zenoss recommends that you set the CACHESIZE value in `/etc/sysconfig/memcached` to a minimum of 1024, and ideally double the size of the cache-local-mb value in `zope.conf`.

Run memcached as close to the master as possible, as zopectl and zeneventd are its biggest users. In very large database scenarios (for example, 500,000 items in the global catalog), run other instances of memcached on the hubs, and update `global.conf` on those boxes to point there instead of to the master.

Chapter 5. Upgrading

Use the instructions in this chapter to upgrade your Resource Manager instance.

5.1. Upgrade Paths

Refer to the following table to determine the upgrade path you must follow when upgrading to a new version of Resource Manager.

If your current version is:	You can upgrade directly to this version:
Zenoss Enterprise 3.2.x	Resource Manager 4.1.1
Resource Manager 4.0.2	Resource Manager 4.1.1
Resource Manager 4.1.0	Resource Manager 4.1.1

Table 5.1. Upgrade Paths

5.2. Before Upgrading

Before performing upgrade procedures, back up your data files. Do this as the `zenoss` user, following the instructions outlined in the section titled "Back Up Resource Manager Data" in the *Zenoss Administration* guide.

If upgrading from Zenoss Enterprise, do not remove your current MySQL installation. (You can remove MySQL after upgrade is complete.)

Follow the procedures in the following sections to prepare your system for upgrade:

- Migrate Events
- Verify Prerequisites

5.2.1. Migrate Events (3.1.x or 3.2.x to 4.1.1)

Zenoss Resource Manager includes a fully redesigned event processing and storage system. At this time, upgrades to Resource Manager will not automatically migrate events from Zenoss Enterprise 3.1.x. A new, empty event table is created in the new schema after upgrade.

If you want to migrate events to Resource Manager as part of your upgrade, then a managed migration path is available. Zenoss recommends you contact Zenoss Professional Services for assistance, and then create an output file of your current MySQL events database.

To create the output file, enter this command:

```
mysqldump -u root -p [ROOT_PASSWORD] events | gzip -c > zenoss_events.sql.gz
```

5.2.2. Verify Prerequisites

Before updating Resource Manager, you must ensure that prerequisite software has been installed, including:

- Zenoss DataStore
- Erlang and RabbitMQ
- Oracle Java 1.6 or later version
- Memcached
- Additional required packages

Note

Procedures for installing these prerequisites are outlined in the section titled "Prerequisite Tasks and Requirements" in the chapter "Installing for RHEL 5 or CentOS 5" in this guide.

5.3. Upgrading RHEL 5 / CentOS 5 RPMs

Use these instructions to install an updated version of the RPM for RHEL 5 / CentOS 5. Unless otherwise noted, perform all steps as the `root` user.

1. Download the Resource Manager software from the Zenoss Support Portal. Browse to the following URL:

   https://support.zenoss.com
2. In the Downloads area, locate the installation RPM files.
3. Shut down your existing instance. Use this command:

   ```
   root# service zenoss stop
   ```
4. Install the RPM:

   ```
   root# rpm -Uvh zenoss-Version.el5.Arch.rpm
   ```

   where *Version* is the current version of Resource Manager and Arch is i386 or x86_64.
5. Start the system to complete the upgrade:

   ```
   root# service zenoss start
   ```
6. Upgrade the first set of ZenPacks:

   ```
   # rpm -Uvh --nodeps zenoss-core-zenpacks-Version.el5.Arch.rpm
   ```

   where *Version* is the current version of Resource Manager and *Arch* is i386 or x86_64.
7. Upgrade the second set of ZenPacks:

   ```
   # rpm -Uvh zenoss-enterprise-zenpacks-Version.el5.Arch.rpm
   ```

   where *Version* is the current version of Resource Manager and *Arch* is i386 or x86_64.
8. Log in to your Resource Manager instance to confirm correct operation.
9. Delete the browser cache on each user machine used to access Resource Manager. (For example, if using Firefox, press Ctrl-Shift-R to clear your cache.)

5.4. Updating Custom ZenPacks

After upgrading, you must update any ZenPacks developed by you, the Zenoss community, or Zenoss Professional Services. For more information about installing and updating ZenPacks, see the *Resource Manager Extended Monitoring* guide.

5.5. Updating the Zenoss DataStore

When updating Zenoss DataStore, the process is configured to preserve your existing Resource Manager database files and any customizations you may have made to the `/opt/zends/etc/zends.cnf` file.

During Zenoss DataStore update, if you see the following warning message:

```
warning: /opt/zends/etc/zends.cnf created as /opt/zends/etc/zends.cnf.rpmnew
```

then you must manually merge updates from `zends.cnf.rpmnew` into your customized `zends.cnf` file.

In the following example scenario, merge of the `zends.cnf` file is required after update:

```
# rpm -Uvh zends-5.5.15-1.r46498.el5.x86_64.rpm
Preparing...
########################################### [100%]
Executing pre-installation steps
Giving ZenDS 5 seconds to exit gracefully
 1:zends   warning: /opt/zends/etc/zends.cnf created as /opt/zends/etc/zends.cnf.rpmnew
```

```
########################################### [100%]
Executing post-installation steps
Starting ZenDS ..[ OK ]
Giving ZenDS 5 seconds to start

Successfully upgraded Zenoss DataStore under /opt/zends.

The default configuration is located here:
       /opt/zends/etc/zends.cnf
```

5.6. Updating Collectors and Hubs

For each machine that houses a remote collector or remote hub (zenhub), you must:

- Install required prerequisites (if not already installed)
- Update the collector or hub manually from the Resource Manager user interface

5.6.1. Updating Remote Hubs

For RHEL or CentOS, to update remote hubs:

1. Install Oracle Java Version 1.6 or later. (For installation steps, see the section titled "Install Oracle Java" in the chapter titled "Installing for RHEL 5 or CentOS 5" in this guide.)
2. Install the Zenoss DataStore RPM. (For installation steps, see the section titled "Install Required Packages" in the chapter titled "Installing for RHEL 5 or CentOS 5" in this guide.)
3. On the remote hub server, run these commands:

   ```
   service zends stop
   chkconfig zends off
   ```

   Note

   Resource Manager requires certain features provided by the Zenoss DataStore, so you cannot remove the Zenoss DataStore completely. You can, however, save resources by not running the main service.
4. Update the remote hub. From the user interface Navigation menu:
   a. Select Advanced > Settings.
   b. Click Collectors.
   c. Select the remote hub, and then select Update Hub from the Action menu.

5.6.2. Updating Remote Collectors

For RHEL or CentOS, to update remote collectors:

1. Install Oracle Java Version 1.6 or later. (For installation steps, see the section titled "Install Oracle Java" in the chapter titled "Installing for RHEL 5 or CentOS 5" in this guide.)
2. Update remote collectors (and any local collectors). From the user interface Navigation menu:
   - Select Advanced > Settings.
   - Click Collectors.
   - Select the collector, and then select Update Collector from the Action menu.