

Chapter 9

Configuring NIC Host Redundancy

Typically, you use network information collector (NIC) replication rather than NIC host redundancy to maintain high availability for NIC. NIC replication lets you share system load between NIC hosts and is simpler to configure and maintain than NIC redundancy. NIC redundancy is provided for backward compatibility. For information about NIC replication, see *Chapter 5, Locating Subscriber Information*.

This chapter contains the following sections:

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- Tasks to Configure NIC Host Redundancy on page 172
- Configuring Monitors on page 175
- Optimizing Performance of the NIC Proxy for NIC Host Redundancy on page 179

Overview of NIC Host Redundancy

In NIC host redundancy, two NIC hosts with the same configuration act as a redundant pair. One host assumes the active role, and the other the passive role. If the active host fails, the passive host writes its Common Object Request Broker Architecture (CORBA) object reference to the directory and assumes the active role. The former active host reassumes the active role only when the current active host fails. Each pair of redundant hosts constitutes a *community*.

You can also add a *monitor*, which tracks the redundant components, to that community. The SDX software includes a NIC monitor component; you can install one NIC monitor on a machine. You can then add that monitor to the directory and use it in a host redundancy configuration.

The monitor acts on behalf of a client or server that is not part of the community. If the client or server cannot communicate with the active host in the community but the hosts can communicate with each other, the monitor prompts the passive host to assume control. Without the monitor, the passive host would not assume control, and the host would be unavailable.

For example, in the network configuration for the OnoPopAllRealms distributed configuration shown in *Chapter 13, NIC Configuration Scenarios*, the monitor BOClient is installed on the same machine as the NIC proxy and tracks the communications between the hosts OnePopBO/One and OnePopBO/Two. If the monitor detects that the connection to the active host is unavailable, it prompts the passive host to assume control.

The members in the community exchange keepalive messages to monitor each other's availability. If a member does not receive a keepalive message from another member during the specified time, the first member assumes that the second member is unavailable.

Before You Configure NIC Host Redundancy

If a directory does not support multimaster replication on the same machine as the NIC host, use NIC replication rather than NIC host redundancy. Without multimaster replication on the same machine, the NIC host must write its CORBA object references to the directory only when you start the NIC host, therefore a directory failure is unlikely to affect the operation of the NIC.

Before you configure NIC host redundancy, make sure that:

- NIC host software is installed on two separate machines for each set of NIC hosts to act as a redundant pair.
- Redundancy monitor software is installed on each system that is to act as a NIC monitor.

Usually, you install the monitor on the same machine as the SAE. A machine can support only one monitor.

For information about installing the NIC software and the redundancy monitor software, see *SDX Getting Started Guide, Chapter 5, Installing the SDX-300 Software*.

Tasks to Configure NIC Host Redundancy

To configure NIC host redundancy:

1. Access the NIC configuration with SDX Configuration Editor.
2. Complete the following tasks (in the order specified) to configure components for host redundancy:
 - a. Configuring Redundant Hosts on page 173
 - b. Configuring Communities on page 174
3. Save the NIC configuration file.
4. Export the NIC configuration file to the directory.

5. (Optional) Configure monitors. See *Configuring Monitors* on page 175.
6. Start NIC hosts. See *Starting NIC Hosts* on page 179.

Configuring Redundant Hosts

If you use NIC host redundancy, configure two redundant hosts for each host.

To configure redundant hosts:

1. In the configuration file for the NIC, click the Hosts tab.
2. In the Hosts pane, scroll to the configuration for the host for which you want to configure a redundant host, and find the heading Redundant Hosts.
3. Expand the Redundant Hosts entry, and create a new instance of a redundant host.

The Redundant Host fields appear in the Hosts pane.

The screenshot shows a configuration window for 'Redundant Hosts'. At the top, there are two buttons: 'Create a New Instance of' with a dropdown menu currently showing 'Redundant Host', and 'Delete an Instance' with a dropdown menu. Below these buttons is a section titled 'Redundant Host (one)'. This section contains three input fields: 'Redundancy Community', 'Hot Standby Agents', and 'Hosted Agents'.

4. Add information about the NIC components that this host will support (see the following field descriptions).
5. Repeat Steps 2 to 4 to create the other redundant host.

Redundancy Community

- Path to the community to which the redundant host belongs.
- Value—Path to community
 - Path is relative to the Static Configuration object.
 - Subfolders in a path are separated by the forward slash (/).
- Example—/communities/nicsae

Hot Standby Agents

- List of paths to redundant agents for SAE plug-in agents supported by the redundant hosts.
- Value—Comma-separated list of paths to agents
 - Path is relative to the Static Configuration object.
 - Subfolders in a path are separated by the forward slash (/).
- Example—agents/IpVr/demo, agents/DnVr/demo

Hosted Agents

- List of paths to agents and redundant agents supported by the redundant hosts.
- Value—Comma-separated list of paths to agents
 - Path is relative to the Static Configuration object.
 - Subfolders in a path are separated by the forward slash (/).
- Example—agents/IpVr, agents/IpVr/demo, agents/DnVr, agents/DnVr/demo, agents/PoolVr

Configuring Communities

To configure a community:

1. In the configuration file for the NIC, click on the Redundancy tab.
2. Expand the Communities entry, and create a new instance of a community.

The Community fields appear in the Redundancy pane.

The screenshot shows a configuration window for 'Communities'. At the top, there are two buttons: 'Create a New Instance of' and 'Delete an Instance', each with a small dropdown arrow. Below this, a section is expanded for a community named 'Community (nicsae)'. This section contains two input fields: 'Community Members' and 'Keep Alive Time'.

3. Add information about the members that this community will support (see the following field descriptions).

Community Members

- List of community members—either two redundant hosts or two redundant agents plus an optional monitor.
- Value—Text string
 - For hosts—Name of the redundant host in the format `<primaryHostName> / <redundantHostName>`
 - For agents—Name of the redundant host that supports the redundant agent in the format `<primaryHostName> / <redundantHostName>`
 - For monitor—Name of the monitor; must match the name specified in the monitor process (see *Configuring a Monitor Process* on page 177)
- Example—`DemoHost/One, DemoHost/Two, DemoMonitor`

Keep Alive Time

- Maximum time after which a host or agent in the community must receive an availability message from the other host or agent. If the secondary host or agent does not receive a message during this time, it assumes that the primary host or agent is unavailable and assumes control.
- Value—Number of seconds in the range 0–2147483647
- Example—`agents/IpVr/demo, agents/DnVr/demo`

By design, redundancy properties are not dynamically updated if their value changes in the directory. If you change the configuration for the redundancy communities while the two hosts are running but before you start the monitor, the configuration perceived by the monitor is different from the one perceived by the hosts.

Configuring Monitors

You can add NIC monitors to track redundant components.

Complete the following tasks to configure NIC monitors:

1. *Configuring Operating Parameters for Monitors* on page 175
2. *Configuring a Monitor Process* on page 177
3. *Configuring JacORB Properties on Redundant NIC Hosts* on page 177
4. *Starting NIC Hosts* on page 179
5. *Starting NIC Monitors* on page 178

Configuring Operating Parameters for Monitors

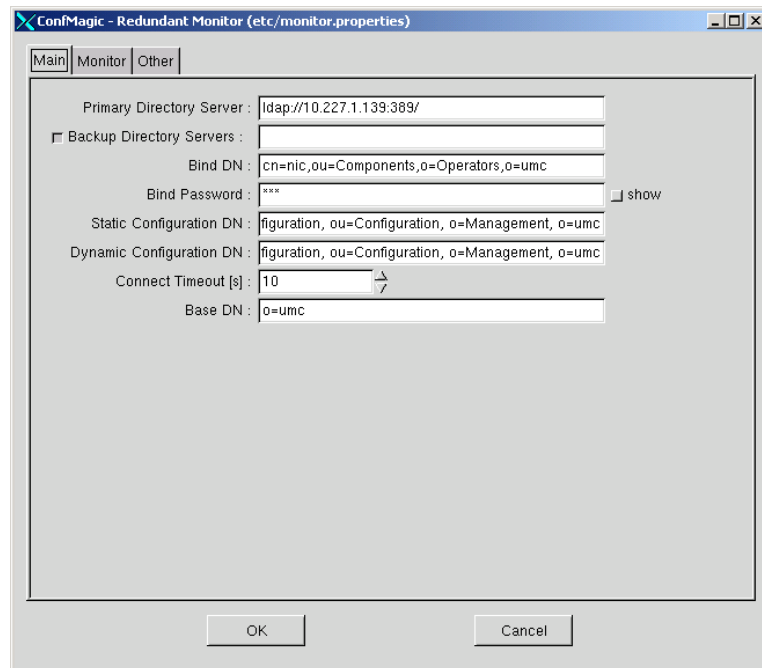
You must configure operating parameters for each monitor in your NIC configuration. The operating parameters define how the monitor interacts with other SDX components, such as the directory.

To configure the operating parameters:

1. Log in as **root**.
2. Start the local configuration tool in the directory where you installed the redundancy monitor software.

/opt/UMC/monitor/etc/config

The Redundant Monitor window appears.



3. Set the parameters in each tab of this window. See *Setting the JRE for a Redundant Monitor* on page 176 and *Chapter 5, Locating Subscriber Information*.
4. Click OK.

Setting the JRE for a Redundant Monitor

You can set the value for the Redundant Monitor Java in the Monitor tab.

Redundant Monitor Java

- Path to the JRE.
- Value—Path (absolute or relative) to the directory that contains the JRE
- Example—*../jre/bin*

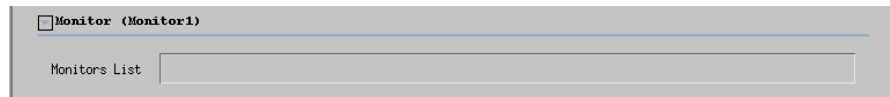
Configuring a Monitor Process

You configure a monitor by adding it to a monitoring process, referred to as a monitor in SDX Configuration Editor

To configure a monitoring process:

1. In the configuration file for the NIC, click on the Redundancy tab.
2. Expand the Monitors entry, and create a new instance of a monitor (monitoring process).

The Monitor fields appear in the Redundancy pane.



3. Specify the monitors that this monitoring process supports.

Monitor List

- List of monitors that the monitoring process will support.
- Value—Comma-separated list of monitors; each monitor has the format `< monitorName > :/communities/ < communityName >`
 - `< monitorName >` —Name of monitor; must match the name specified in the community (see *Configuring Communities on page 174*)
 - `< communityName >` —Name of community; must match the name specified in the configuration for the community (see *Configuring Communities on page 174*)
- Example—`DemoMonitor:/communities/Demohost,`
`nicSaeDemoMonitor:/communities/nicsaeDemo`

Configuring JacORB Properties on Redundant NIC Hosts

If the system on which a NIC hosts resides uses an object request broker (ORB) different from the one provided in the SDX software distribution, it is important to configure some JacORB properties on each NIC host to enable the ORB to correctly determine when connections between redundant NIC hosts are unavailable. If you do not configure these properties properly, the ORB relies on the TCP default socket timeout (usually 8 minutes) to determine when a connection between redundant NIC hosts is unavailable or cannot be established. Using high values for these properties affects overall system availability.

To configure the JacORB properties:

1. With a text editor, open the *jacorb.properties* file.
2. Ensure that the property `jacorb.connection.client_idle_timeout` is uncommented, and set this property to a value between 5,000 and 30,000 milliseconds.
3. (JRE 1.4 only) If the default value is not appropriate for your network configuration, change the value of the property `net.juniper.smgmt.socket_factory.timeout.connect`.
4. Save and close the *jacorb.properties* file.
5. Repeat Steps 1 to 4 for each NIC host.

jacorb.connection.client_idle_timeout

- Time after which the ORB assumes that an existing connection between two machines has become unavailable.
- Value—Number of milliseconds in the range 5000–30000
- Default—30000
- Example—`jacorb.connection.client_idle_timeout = 10000`

net.juniper.smgmt.socket_factory.timeout.connect

- Time after which the ORB assumes that a new connection cannot be established between two machines.
- Value—Number of milliseconds in the range 0–2147483647
- Default—5000
- Example—`net.juniper.smgmt.socket_factory.timeout.connect = 10000`

Starting NIC Monitors

You must start each NIC monitor before its associated components can begin operating.

To start a monitor:

1. On the machine on which the monitor is installed, log in as `root` or as an authorized nonroot admin user.
2. Start the monitor from its installation directory:

`/opt/UMC/monitor/etc/monitor start`

After you have started a monitor, you can view log files of its operation and stop the host or monitor (see *SDX Monitoring and Troubleshooting Guide, Chapter 7, Managing the NIC*).

Starting NIC Hosts

You must configure operating parameters for each NIC host and then start each NIC host before its associated components can begin operating. For information about how to configure NIC host parameters and how to start NIC hosts see *Chapter 5, Locating Subscriber Information*.

Optimizing Performance of the NIC Proxy for NIC Host Redundancy

If you configure NIC host redundancy and the NIC proxy submits resolution requests to the NIC host at a high rate, the NIC proxy may take a significant amount of time to start communicating with a NIC host when that host makes the transition from the passive role to the active role. In this case, you will notice that many resolution requests are failing, and the NIC log files will indicate that the NIC proxy is sending requests to the former active NIC host.

This time delay occurs because the ORB tries to connect the NIC proxy to the former active NIC host for each outstanding resolution request. When the connection attempt fails, the ORB tries several times to reconnect the devices and waits for a specified interval of time between each attempt. To accelerate this process, modify the ORB properties that control these actions.

Depending on which NIC proxies are affected, you can modify the properties for one Web application only or for all Web applications in a JRE. For information about configuring the properties of an ORB other than JacORB, see the documentation for the ORB, and use the property descriptions below as a guideline. To configure the properties for JacORB:

1. Access the directory that contains the *jacorb.properties* file.
 - To configure the properties for one Web application only:


```
cd <webAppDirectory>/WEB-INF/lib
```
 - To configure the properties for all Web applications in the JRE:


```
cd <jreInstallDirectory>/jre/lib
```
2. With a text editor, open the *jacorb.properties* file.
3. Modify the values of the properties *jacorb.retries* and *jacorb.retry_interval*.
4. Save and close the *jacorb.properties* file.

jacorb.retries

- Number of times that the ORB tries to connect the NIC proxy to the NIC host.
- Value—Integer in the range 0–2147483647
- Guidelines—If you notice that many resolution requests are failing and the NIC log files indicate that the NIC proxy is sending requests to the former active NIC host, reduce the value of this property.
- Default—5
- Example—*jacorb.retries* = 1

jacorb.retry_interval

- Time between the ORB's attempts to connect the NIC proxy to the NIC host.
- Value—Number of milliseconds in the range 0–2147483647
- Guidelines—If you notice that many resolution requests are failing and the NIC log files indicate that the NIC proxy is sending requests to the former active NIC host, reduce the value of this property.
- Default—500
- Example—`jacorb.retry_interval = 200`