

Chapter 20

Managing the Juniper Networks Database with the SRC CLI

This chapter describes the Juniper Networks database and how to configure it. Topics include:

- Configuration Statements for the Juniper Networks Database with the SRC CLI on page 140
- Enabling the Juniper Networks Database to Run in Standalone Mode with the SRC CLI on page 141
- Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141
- Securing the Juniper Networks Database with the SRC CLI on page 143
- Updating Data on a Juniper Networks Database with the SRC CLI on page 146
- Changing the Mode of a Juniper Networks Database with the SRC CLI on page 143
- Adding a Juniper Networks Database to an Established Community with the SRC CLI on page 144
- Promoting a Secondary Database to a Primary Role in a Configuration with One Primary Database with the SRC CLI on page 145
- Updating Data on a Juniper Networks Database with the SRC CLI on page 146
- Synchronizing Data on a Juniper Networks Database with the SRC CLI on page 146
- Loading Sample Data in to a Juniper Networks Database with the SRC CLI on page 147
- Securing Communications Between the Juniper Networks Database and SRC Components with the SRC CLI on page 148
- Verifying Configuration for a Juniper Networks Database with the SRC CLI on page 149

- Getting Information About Operations in a Juniper Networks Database with the SRC CLI on page 149
- Example: Configuration for a Database Community on page 150
- Troubleshooting Data Synchronization for Juniper Networks Databases with the SRC CLI on page 153
- Recovering Data in a Community with One Primary Database and One Secondary Database with the SRC CLI on page 154

Configuration Statements for the Juniper Networks Database with the SRC CLI

Use the following configuration statements to configure the Juniper Networks database at the [edit] hierarchy level:

```
system ldap server {
stand-alone;
}

system ldap server community {
    role (primary | secondary);
    primary-neighbors [primary-neighbor...];
    secondary-neighbors [secondary-neighbor...];
}

system ldap server security {
(enable | strict);
}
```



The **strict** statement is supported only on C-series Controllers.

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Enabling the Juniper Networks Database to Run in Standalone Mode with the SRC CLI on page 141*
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141*
- *Securing the Juniper Networks Database with the SRC CLI on page 143*

Enabling the Juniper Networks Database to Run in Standalone Mode with the SRC CLI

When you run a Juniper Networks database in standalone mode, the database does not communicate with other Juniper Networks databases.

Use the following configuration statements to enable the Juniper Networks database on a C-series Controller in standalone mode:

```
system ldap server {
  stand-alone;
}
```

To enable a Juniper Networks database to run in standalone mode:

1. From configuration mode, access the configuration statement that configures the Juniper Networks database.

```
user@host# edit system ldap server
```

2. Enable standalone mode.

```
[edit system ldap server]
user@host# set stand-alone
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Configuration Statements for the Juniper Networks Database with the SRC CLI on page 140*
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141*
- *Securing the Juniper Networks Database with the SRC CLI on page 143*

Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI

If you are adding a Juniper Networks database to an existing community, see *Adding a Juniper Networks Database to an Established Community with the SRC CLI on page 144*.

Use the following configuration statements to enable the Juniper Networks database on a C-series Controller in community mode:

```
system ldap server community {
  role (primary | secondary);
  primary-neighbors [primary-neighbor...];
  secondary-neighbors [secondary-neighbor...];
}
```

To enable the Juniper Networks database to run in community mode:

1. From configuration mode, access the configuration statement that configures the Juniper Networks database in community mode:

```
user@host# edit system ldap server community
```

2. Specify the role of the database as primary or secondary:

```
[edit system ldap server community]
user@host# set role primary
```

or

```
[edit system ldap server community]
user@host# set role secondary
```

3. Configure primary neighbors. Specify each neighbor by IP address, fully qualified hostname, or a hostname that can be resolved through the domain name system:

```
[edit system ldap server community]
user@host# set primary-neighbors neighbor ...
```

For example, set C1 and C2 as primary neighbors:

```
[edit system ldap server community]
user@host# set primary-neighbors C1 C2
```

4. Configure secondary neighbors. Specify each neighbor by IP address, fully qualified hostname, or a hostname that can be resolved through the domain name system:

```
[edit system ldap server community]
user@host# set secondary-neighbors neighbor ...
```

For example, set C3 and C4 as secondary neighbors:

```
[edit system ldap server community]
user@host# set secondary-neighbors C3 C4
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Configuration Statements for the Juniper Networks Database with the SRC CLI on page 140*
- *Enabling the Juniper Networks Database to Run in Standalone Mode with the SRC CLI on page 141*
- *Securing the Juniper Networks Database with the SRC CLI on page 143*
- *Example: Configuration for a Database Community on page 150*

Securing the Juniper Networks Database with the SRC CLI

You can secure connections to a Juniper Networks database by:

- Allowing only Secure Lightweight Directory Access Protocol (LDAPS) connections from remote systems. In this case, both database replication and remote SRC components connect through LDAPS. Restricting all remote connections to LDAPS is supported only on C-series Controllers.
- Allowing only LDAPS connections for database replication, but LDAP or LDAPS connections for other applications. In this case, remote SRC components can connect through LDAP or LDAPS.

Use the following configuration statements to secure connections to the Juniper Networks database on a C-series Controller:

```
system ldap server security {
(enable | strict);
}
```



The **strict** statement is supported only on C-series Controllers.

To secure the Juniper Networks database, perform one of the following tasks:

- (Optional) From configuration mode, access the configuration statement that configures the Juniper Networks database to secure connections to other Juniper Networks databases for data replication:

```
user@host# edit system ldap server security enable
```

- (Optional) From configuration mode, access the configuration statement that configures the Juniper Networks database to accept connections only through LDAPS:

```
user@host# edit system ldap server security strict
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Securing Communications Between the Juniper Networks Database and SRC Components with the SRC CLI on page 148*

Changing the Mode of a Juniper Networks Database with the SRC CLI

Because the Juniper Networks database can run in either standalone or community mode, to change modes you must disable the current mode and enable the other mode. Typically, you change from standalone mode, which was used for testing, to community mode for a full deployment.

To change the mode of the Juniper Networks database from standalone to community:

1. Disable standalone mode:

```
[edit system ldap server]
user@host# delete stand-alone
```

2. Enable the database in community mode, and configure the role and neighbors.

See *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI* on page 141.

Related Topics

- *Chapter 19, Overview of the Juniper Networks Database*
- *Configuration Statements for the Juniper Networks Database with the SRC CLI* on page 140

Adding a Juniper Networks Database to an Established Community with the SRC CLI

When you add a Juniper Networks database to an existing community, make sure that you configure the primary neighbor relationships from the existing primary databases before you enable the new database.



If you assign a primary role to a database new to an existing community before you configure the neighbor relationships from existing community databases that have a primary role, you can lose data on neighbor databases that already have a primary role.

To add a Juniper Networks database to an existing community:

1. On existing databases that have a primary role, configure neighbor relationships for the new database.

For example, to configure primary neighbors for the existing servers C1 and C2 for the new server C-new:

On C1:

```
[edit system ldap server community]
user@C1# set primary-neighbor C-new
```

On C2:

```
[edit system ldap server community]
user@C2# set primary-neighbor C-new
```

2. On the new database, enable the primary role and configure primary neighbors.

For example, to enable the database in primary role and configure C1 and C2 as primary neighbors:

```
[edit]
user@C-new# edit system ldap server community
[edit system ldap server community]
user@C-new# set role primary
user@C-new# set primary-neighbors C1 C2
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141*

Promoting a Secondary Database to a Primary Role in a Configuration with One Primary Database with the SRC CLI

Although all communities should have two databases with a primary role, if a community includes one database assigned a primary role and another database assigned a secondary role, promote the database assigned a secondary role to a primary role.

To promote a Juniper Networks database from a secondary role to a primary role:

1. On the database that has a secondary role, set the role to primary.

For example, if the database on C2 has a secondary role:

```
user@C2# edit system ldap server community
[edit system ldap server community]
user@C2# set role primary
user@C2# commit
```

C2 already has C1 configured as primary neighbor.

2. On the existing database that has a primary role, remove the neighbor as secondary and add it as primary.

For example, to remove C2 as a secondary neighbor and add it as a primary neighbor for the database on C1:

```
user@C1# edit system ldap server community
[edit system ldap server community]
user@C1# set primary-neighbors C2
user@C1# commit
```

3. (Optional if you have two databases with a primary role in a community) Switch the role of the database that originally had a secondary role back to secondary:

```
[edit system ldap server community]
user@C2# set role secondary
user@C2# commit
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141*

Updating Data on a Juniper Networks Database with the SRC CLI

After you bring a Juniper Networks database online after some period of inaccessibility, update the database with any database changes that occurred while the database was offline.

To update data in a neighbor (for example, neighbor1) in a community of Juniper Networks databases:

```
user@host> request system ldap community force-update neighbor neighbor1
```

Related Topics

- *Getting Information About Operations in a Juniper Networks Database with the SRC CLI on page 149*

Synchronizing Data on a Juniper Networks Database with the SRC CLI

You can initialize a Juniper Networks database with data from a neighbor. This process also removes any existing data in the database.

To replace data with data from a neighbor (for example, neighbor1):

```
user@host> request system ldap community initialize neighbor neighbor1
```

Related Topics

- *Updating Data on a Juniper Networks Database with the SRC CLI on page 146*
- *Getting Information About Operations in a Juniper Networks Database with the SRC CLI on page 149*

Loading Sample Data in to a Juniper Networks Database with the SRC CLI

The SRC software provides sample data that you can load into the Juniper Networks database. Typically, this data is used for testing or for demonstration purposes. You can load sample data for:

- Enterprise service portals
- SNMP traps for the SNMP agent
- Sample applications:
 - Dynamic Service Activator application (in the SRC Application Library)
 - Intrusion Detection and Prevention (IDP) integration application (unsupported sample application in the SRC Application Library)
 - Instant Virtual Extremity (IVE) Host Checker integration application (unsupported sample application in the SRC Application Library)
 - Traffic-Mirroring Application (unsupported sample application in the SRC Application Library)
 - Sample residential portal (unsupported sample application in the SRC Application Library)
 - Equipment registration mode
 - Internet service provider (ISP) mode

Loading sample data is not required to run the SRC software.

To load sample data for the Enterprise Manager Portal and the sample enterprise service portal:

```
user@host> request system ldap load enterprise-portal
```

To load sample data for the SNMP agent:

```
user@host> request system ldap load snmp-agent
```

To load sample data for the Dynamic Service Activator application:

```
user@host> request system ldap load dsa-configuration
```

To load sample data for the Intrusion Detection and Prevention (IDP) integration application:

```
user@host> request system ldap load idp-configuration
```

To load sample data for the Instant Virtual Extremity (IVE) Host Checker integration application:

```
user@host> request system ldap load hostchecker-configuration
```

To load sample data for the Traffic-Mirroring Application:

```
user@host> request system ldap load tm-configuration
```

To load sample data for the sample residential portal to demonstrate an application that provides a means for subscribers to directly log in to a subscriber session for their ISP:

```
user@host> request system ldap load isp-service-portal
```

To load sample data for the sample residential portal to demonstrate an application that provides an association between a subscriber and the equipment being used to make the DHCP connection:

```
user@host> request system ldap load equipment-registration
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*

Securing Communications Between the Juniper Networks Database and SRC Components with the SRC CLI

Communications between SRC components and the Juniper Networks database use password authentication. You can change the default passwords for the following software components to ensure that communications are secure.

- SRC CLI
- NIC
- Configuration for SRC components other than the CLI and the NIC

To change a user password:

```
user@host>request system ldap change-component-password  
component-name new-password new-password
```

where *component-name* is:

- cli—Specifies communication between the SRC CLI and the database
- conf—Specifies communication about configuration
- nic—Specifies communication between NIC components and the database

Related Topics

- *Securing the Juniper Networks Database with the SRC CLI on page 143*

Verifying Configuration for a Juniper Networks Database with the SRC CLI

To review the configuration for the Juniper Networks database on a C-series Controller:

- Run the `show system ldap server` command at the `[edit]` hierarchy level. For example:

```
[edit]
user@host# show system ldap server
community {
  role primary;
  primary-neighbors C2;
}
```

The output indicates the mode, standalone or community. If the database is running in community mode, the output also includes information about the community configuration on this system.

If the command does not display any output, the Juniper Networks database on the system is disabled.

Related Topics

- *Configuration Statements for the Juniper Networks Database with the SRC CLI* on page 140
- *Enabling the Juniper Networks Database to Run in Standalone Mode with the SRC CLI* on page 141
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI* on page 141
- *Securing the Juniper Networks Database with the SRC CLI* on page 143

Getting Information About Operations in a Juniper Networks Database with the SRC CLI

To get information about operations performed on a Juniper Networks database:

```
user@host> show system ldap statistics
Local JDB statistics
Number of Add operations since startup          0
Number of Delete operations since startup        0
Number of Modify operations since startup        0
Number of Rename operations since startup        0
Number of Read operations since startup          265
Number of List operations since startup          129
Number of Subtree Search operations since startup 114
Number of Bind operations                      110
Number of Anonymous Bind operations since startup 94
Number of Compare operations since startup       0
Number of current connections                   3
Number of all connections since startup         110
Number of bind errors since startup              0
Number of all errors since startup               59
```

Related Topics

- *Updating Data on a Juniper Networks Database with the SRC CLI on page 146*
- *Recovering Data in a Community with One Primary Database and One Secondary Database with the SRC CLI on page 154*
- *Troubleshooting Data Synchronization for Juniper Networks Databases with the SRC CLI on page 153*

Example: Configuration for a Database Community

A community of Juniper Networks databases lets you set up redundancy for client applications that connect to these databases.

This sample configuration describes the tasks for configuring Juniper Networks databases on C-series Controllers:

- Requirements on page 150
- Overview and Sample Topology on page 150
- Configuration on page 151

Requirements

Software

Minimum SRC Release 1.0.0

Hardware

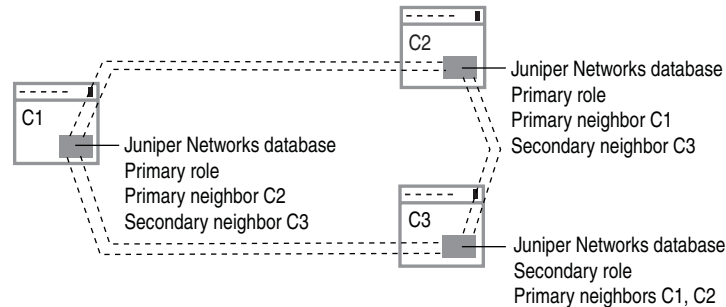
C2000 or C4000

Overview and Sample Topology

You configure a number of Juniper Networks databases as members of a community to protect data by replicating data from one database to another, and by specifying relationships between databases to support failover if a database that has the primary role for a set of applications becomes inoperable. This example uses C1 and C2 as databases that have a primary role, and C3 as a database that has a secondary role.

Figure 20 shows the sample configuration.

Figure 20: Sample Community of Juniper Network Databases



The following configuration shows the configuration statements for databases shown in Figure 20.

Configuration

Configuring C1

Quick Configuration To quickly configure a Juniper Networks database, copy the following commands into a text editor, and modify them; then load the configuration from the file.

[edit]

```
set system ldap server community role primary
set system ldap server community primary-neighbors C2
set system ldap server community secondary-neighbors C3
```

Step-by-Step Procedure To configure the C1 system:

1. From configuration mode, access the configuration statement that configures the Juniper Networks database in community mode.

[edit]

```
user@C1# edit system ldap server community
```

2. Specify the database role as primary.

[edit system ldap server community]

```
user@C1# set role primary
```

3. Specify primary neighbors.

[edit system ldap server community]

```
user@C1# set primary-neighbors C2
```

4. Specify secondary neighbors.

[edit system ldap server community]

```
user@C1# set secondary-neighbors C3
```

Configuring C2

Quick Configuration To customize the configuration example for your needs, copy the following commands into a text editor, and modify them; then load the configuration from the file.

```
[edit]
set system ldap server community role primary
set system ldap server community primary-neighbors C1
set system ldap server community secondary-neighbors C3
```

Step-by-Step Procedure To configure the C2 system:

1. From configuration mode, access the configuration statement that configures the Juniper Networks database in community mode.

```
[edit]
user@C2# edit system ldap server community
```

2. Specify the database role as primary.

```
[edit system ldap server community]
user@C2# set role primary
```

3. Specify primary neighbors.

```
[edit system ldap server community]
user@C2# set primary-neighbors C1
```

4. Specify secondary neighbors.

```
[edit system ldap server community]
user@C2# set secondary-neighbors C3
```

Configuring C3

Quick Configuration To customize the configuration example for your needs, copy the following commands into a text editor, and modify them; then load the configuration from the file.

```
[edit]
set system ldap server community role secondary
set system ldap server community primary-neighbors C1 C2
```

Step-by-Step Procedure To configure the C3 system:

1. From configuration mode, access the configuration statement that configures the Juniper Networks database in community mode.

```
[edit]
user@C3# edit system ldap server community
```

2. Specify the database role as primary.

```
[edit system ldap server community]
user@C3# set role secondary
```

3. Specify primary neighbors.

```
[edit system ldap server community]
user@C3# set primary-neighbors C1 C2
```

Related Topics

- *Overview of the Juniper Networks Database on page 135*
- *Configuration Statements for the Juniper Networks Database with the SRC CLI on page 140*
- *Enabling the Juniper Networks Database to Run in Community Mode with the SRC CLI on page 141*

Troubleshooting Data Synchronization for Juniper Networks Databases with the SRC CLI

Problem Data in a community of Juniper Networks databases may not be synchronized.

Solution 1. Obtain information about the replication status of Juniper Networks databases in a community by running the `show system ldap community` on system that runs the primary Juniper Networks database:

```
user@host> show system ldap community
```

The command output indicates that the databases are not synchronized by:

- Quantity of changes since last startup
 - Start and end time of last update
 - Status of last update
2. If the databases are not synchronized, initialize neighbors in the community from the primary Juniper Networks database:

```
user@host> request system ldap community initialize neighbor neighbor 1
```

where `neighbor1` is the name of the neighbor to be synchronized.

Related Topics

- *Recovering Data in a Community with One Primary Database and One Secondary Database with the SRC CLI on page 154*
- *Promoting a Secondary Database to a Primary Role in a Configuration with One Primary Database with the SRC CLI on page 145*
- *Updating Data on a Juniper Networks Database with the SRC CLI on page 146*

Recovering Data in a Community with One Primary Database and One Secondary Database with the SRC CLI

In an environment in which a community includes one database assigned a primary role and another database assigned a secondary role, and the primary database is not operative, you must promote the secondary database to primary and reconfigure the inoperative primary database.

1. On the database that has a secondary role, set the role to primary.

For example, if the database on C2 has a secondary role:

```
user@C2# edit system ldap server community
[edit system ldap server community]
user@C2# set role primary
user@C2# commit
```

C2 already has C1 configured as primary neighbor.

2. On the existing database that has a primary role, remove the neighbor as secondary and add it as primary.

For example, to configure C1 as a primary database with C2 as a primary neighbor:

```
user@C1# edit system ldap server community
[edit system ldap server community]
user@C1# set role primary
user@C1# delete secondary-neighbors C2
user@C1# set primary-neighbors C2
user@C1# commit
```

Related Topics

- *Troubleshooting Data Synchronization for Juniper Networks Databases with the SRC CLI on page 153*