



CHAPTER 2

Installing the Cisco Multi NetFlow Collector

This chapter describes how to install the Cisco Multi NetFlow Collector (MNFC) application. It includes the following sections:

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Requirements

Cisco MNFC supports only Cisco NFC Release 6. It does not support previous NFC releases. Cisco MNFC and NFC must run on separate servers. The following sections describe requirements for Cisco Multi NetFlow Collector, Release 6.0.



Note

The CPU, RAM, and disk space recommendations listed are minimum requirements. Your actual requirements are determined by your configuration and by the volume and uniqueness of NetFlow data that is received. Actual resource usage can vary greatly depending on these factors.

Supported Operating Systems and Platforms

Multi NetFlow Collector, Release 6.0 supports the following operating systems and platforms:

- Solaris 8, 9, or 10 on a midrange server, such as the Sun Fire V490 with Quad UltraSPARC IV 1.5 GHz processors.
- Red Hat Enterprise Linux 3.0, or 4.0 (ES and AS) on a midrange server, such as an IBM x346 with a single dual-core Intel Xeon 3.8 GHz processor.

**Note**

To serve as the concentrator in a scalable NetFlow solution, the workstation should be dedicated to the Multi NetFlow Collector and should not be running other applications.

Hardware Requirements

The Multi NetFlow Collector, Release 6.0 has the following hardware requirements:

- Minimum of 16 GB RAM, 10K SCSI, dual 70 GB disk, and dual processor on an midrange-level server.

Browser Requirements

The Multi NetFlow Collector, Release 6.0 web-based user interface is compatible with Microsoft Internet Explorer 6 and Mozilla Firefox 1.5 or greater on Windows or UNIX. The web-based UI requires that the browser support a Java virtual machine (JVM) to run applets.

**Note**

The Sun JVM must be used; the JVM version must be 1.5 or higher. You can download Sun JVM 1.5 from the website <http://java.sun.com/javase/downloads/index.jsp>.

Preparing to Install Multi NetFlow Collector

To install the Multi NetFlow Collector, Release 6.0, you must complete the following:

- Set up nfcuser and informix user accounts
- Prepare raw disk partitions for MNFC's database
- Install the Cisco NetFlow Network Concentrator (CSCOmnc) package
- Install Informix Dynamic Server (IDS)
- Configure the Informix Dynamic Server
- Set up the MNFC license

These tasks are described in the following sections.

Setting Up User Accounts

To create accounts for the MNFC user and for the IDS administrator, do the following:

Step 1 Verify that the group **informix** exists in **/etc/group**. Enter:

```
niscat group.org_dir
```

If the group exists, note its **group id**. If it does not exist, create it using the command **groupadd**.

Step 2 Verify that the user name **informix** exists in **/etc/passwd**. Run **id informix** to verify that the informix user exists.

If the user name **informix** does not exist, create both the user and group using the command **useradd**. Enter:

```
useradd -u 744 -d /opt/informix_home -s /bin/sh informix
```

If the **informix** user exists but is not found in **/etc/group**, enter the following:

```
useradd -u 744 -g informix -d /opt/informix_home -s /bin/sh informix
```

See the following example:

```
useradd -u 744 -d /opt/informix_home -s /bin/sh informix
```

```
mkdir /opt/informix_home
```

```
chown informix:informix /opt/informix_home
```

```
passwd informix
```

Setting Up Raw Disk Partitions for Informix

For optimal work with database we have to give it raw disk partitions so that RDBMS server will work using its own IO stacks bypassing the file system.

Following is outline of the procedure to prepare raw disk partitions.

Allocating Disk Space

Cisco recommend that the minimal number of hard disk drives required for running MNFC is two, the boot, OS, and file system partitions should be allocated on one disk drive, while other disk drives should be used as raw disks for the database.

Solaris Platform

On a Solaris platform, use the command **format** to view disk space allocation. Below is an example:

```
nfc-ott1# format
Searching for disks...done

AVAILABLE DISK SELECTIONS:
   0. c0t0d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>
      /pci@1f,4000/scsi@3/sd@0,0
   1. c0t1d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
      /pci@1f,4000/scsi@3/sd@1,0
Specify disk (enter its number): 1
selecting c0t1d0
[disk formatted]
.....

partition> p
Current partition table (original):
Total disk cylinders available: 24620 + 2 (reserved cylinders)

Part      Tag      Flag      Cylinders      Size      Blocks
   0      root      wm         0 - 0          1.41MB     (1/0/0)      2889
```

```

1 unassigned   wu          1 - 12309      16.96GB      (12309/0/0) 35560701
2 unassigned   wu        12310 - 24618      16.96GB      (12309/0/0) 35560701
3 backup       wm          0 - 24619      33.92GB      (24620/0/0) 71127180
4 unassigned   wm          0              0             (0/0/0)      0
5 unassigned   wm          0              0             (0/0/0)      0
6 unassigned   wm          0              0             (0/0/0)      0
7 unassigned   wm          0              0             (0/0/0)      0

```

The following is an example of the raw partitions created for disk **c0t1d0**:

```

# ls -l /dev/rdisk/c0t1d0s[12]
lrwxrwxrwx  1 root    root          45 Apr 21 12:11 /dev/rdisk/c0t1d0s1 ->
../../../../devices/pci@1f,4000/scsi@3/sd@1,0:b,raw
lrwxrwxrwx  1 root    root          45 Apr 21 12:11 /dev/rdisk/c0t1d0s2 ->
../../../../devices/pci@1f,4000/scsi@3/sd@1,0:c,raw

```

To create symbolic links in **/dev** to **/dev/rdisk**, for the example above enter the following:

```
ln -s /dev/rdisk/c0t1d0s1 /dev/raw_dev1
```

```
ln -s /dev/rdisk/c0t1d0s2 /dev/raw_dev2
```

Step 3 Verify the symbolic links by entering the following:

```
# ls -l /dev/raw_dev?
```

For this example, the following is displayed:

```

lrwxrwxrwx 1 root oldother 18 Oct 12 16:02 /dev/raw_dev1 -> /dev/rdisk/c0t1d0s1
lrwxrwxrwx 1 root oldother 18 Oct 12 16:02 /dev/raw_dev2 -> /dev/rdisk/c0t1d0s2

```



Warning

For MNFC database installation, the symbolic link in /dev must contain raw.

Set ownership of block devices to **Informix** and **chmod** to **66**. See the following example:

```

# ls -l /devices/pci@1f,4000/scsi@3/sd@1,0:?,raw
crw-r----- 1 root    sys        32,496 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:a,raw
crw-rw----  1 informix informix  32,497 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:b,raw
crw-rw----  1 informix informix  32,498 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:c,raw
crw-r----- 1 root    sys        32,499 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:d,raw
crw-r----- 1 root    sys        32,500 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:e,raw
crw-r----- 1 root    sys        32,501 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:f,raw
crw-r----- 1 root    sys        32,502 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:g,raw
crw-r----- 1 root    sys        32,503 Apr 21 12:11
/devices/pci@1f,4000/scsi@3/sd@1,0:h,raw

```

Linux Platform

On a Linux platform, use the command **fdisk** to view disk space allocation. Below is an example for disk **sdb** and partitions **sdb[1,3]**:

```

:~# fdisk /dev/sdb
.....

Disk /dev/sdb: 73.4 GB, 73407820800 bytes
255 heads, 63 sectors/track, 8924 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
 /dev/sdb1             2         1724    13839997+  83  Linux
 /dev/sdb2             1           1         8032     83  Linux
 /dev/sdb3          1725         8924    57834000     83  Linux

```

To define raw devices, use the **raw** utility. Refer to **man raw** if you need details on using the utility. For example:

```
raw /dev/raw/raw1 /dev/sdb1
```

```
raw /dev/raw/raw3 /dev/sdb3
```

To verify the creation of the raw device, enter:

```
more /etc/sysconfig/rawdevices
```

Below is an example:

```
# more /etc/sysconfig/rawdevices
```

To list the raw device, enter:

```
ls -l /dev/raw/raw?
```

Below is an example:

```

# raw device bindings
# format: <rawdev> <major> <minor>
#         <rawdev> <blockdev>
# example: /dev/raw/raw1 /dev/sda1
#         /dev/raw/raw2 8 5
/dev/raw/raw1 /dev/sdb1
/dev/raw/raw3 /dev/sdb3

```



Warning

In /etc/sysconfig/rawdevices, use <rawdev> <blockdev> format because it contains word raw. For example, /dev/raw/raw1 /dev/sdb1.

Set ownership of block devices to **Informix** and **chmod** to **66**. See the following example:

```

# ls -l /dev/raw/raw?
crw-rw---- 1 informix informix 162, 1 Jun 24 2004 /dev/raw/raw1
crw-rw---- 1 root      disk      162, 2 Jun 24 2004 /dev/raw/raw2
crw-rw---- 1 informix informix 162, 3 Jun 24 2004 /dev/raw/raw3
crw-rw---- 1 root      disk      162, 4 Jun 24 2004 /dev/raw/raw4
crw-rw---- 1 root      disk      162, 5 Jun 24 2004 /dev/raw/raw5
crw-rw---- 1 root      disk      162, 6 Jun 24 2004 /dev/raw/raw6
crw-rw---- 1 root      disk      162, 7 Jun 24 2004 /dev/raw/raw7
crw-rw---- 1 root      disk      162, 8 Jun 24 2004 /dev/raw/raw8

```

Installing Multi NetFlow Collector

The Multi NetFlow Collector, Release 6.0 is distributed on DVD. When installing from the DVD do the following:

-
- Step 1** Log into the host as root.
- Step 2** Insert the DVD in to the drive.
- Step 3** Navigate to the **CSCOmnc-6.0.0-31-standard** directory using **cd**.
- Step 4** Run **MNFC_setup.sh**. The image is installed to **/opt/CSCOmnc**.
- Step 5** When prompted, specify the following:
- The OS user id to own the \$MNFC_DIR subdirectory and to run the MNFC server.
 - The version of JRE to be used for MNFC server if more than one version is available.
 - Whether you want the MNFC application to start up when the server host is rebooted.

The following is a sample transcript:

```
# ./MNFC_setup.sh

Using software package /opt/packages/CSCOmnc-6.0.0-31-standard/./CSCOmnc.zip.

*****

Cisco Multi NetFlow Collector 6.0.0 [standard image, build 31]
Copyright (c) 2006-2007 by Cisco Systems, Inc.
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This product contains cryptographic features and is subject to
United States and local country laws governing import, export,
transfer and use. Delivery of Cisco cryptographic products does
not imply third-party authority to import, export, distribute
or use encryption. Importers, exporters, distributors and users
are responsible for compliance with U.S. and local country laws.

By using this product you agree to comply with applicable laws
and regulations. If you are unable to comply with U.S. and local
laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be
found at: http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email
to export@cisco.com.

*****

Press Return to continue...

An existing userid must be selected as the owner of files and processes.

Enter userid: nfcuser

This will be installed and run with user id nfcuser; group id is nfcuser.

Installing new package...

Installing Java from jdk-1_5_0_10-linux-i586.bin...
```

```

Web UI login name: [nfcuser]
Web UI password for nfcuser:
Enter value again to confirm:
Setting file ownership...

Updating platform config...

Would you like to start this when the system initializes? (y/n) y

CSCOmnc will be started automatically when the system initializes.

Installation of Cisco Multi NetFlow Collector 6.0.0 [standard image, build 31]
is complete. Informix should now be installed and configured
as described in the product User's Guide.

Note: In order to use this product, you must first obtain a license
from Cisco at http://www.cisco.com/go/license and copy
it to /opt/CSCOmnc/config/mnfc.lic

```

- #
- Step 6** Update time zone data in the Java Runtime Environment (JRE) packaged with NFC with the latest time zone data available. See [Appendix B, “Updating JRE Time Zone Data”](#) for details.
-

Installing Informix

You must install the Informix Dynamic Serve if the MNFC server does not have IDS 9.40. Do the following:

-
- Step 1** Log into the host as root.
- Step 2** Obtain Kernel parameters and operating system patches.
- Obtain the MachineNote from IBM for the IDS 9.40 pack that will be used. Verify and update if needed the patches and kernel parameters as recommended by the MachineNote.
- Step 3** Insert Disk 2 in to the CDROM drive.
- Step 4** Navigate to the Linux or SunOS directory using **cd**.
- Step 5** From the current directory, run the script **ids_install**.

The script **ids_install** can be executed interactively; for MNFC the only needed component is IDS itself, so the script can be executed in straight silent mode. For example:

```

INFORMIXDIR=/opt/informix
export INFORMIXDIR
./ids_install IDS

```

Configuring the Database

To configure the database, do the following.

**Note**

The script **bin/configuredb.sh** is designed to be executed at install time. If you execute the script after MNFC is in use, then configuration entities such as Aggregators, Summarizations, and Correlators must be discarded and recreated and the MNFC server restarted.

Step 1 As root, run **/opt/CSCOmnc/bin/configuredb.sh**.

For efficiency and performance reasons, MNFC works with application data (NetFlow records and derived or correlated tables) stored in Informix tables fragmented into 24, or 48, or 96, etc. extents depending on available space. See the supported disk fragmentation profiles in Appendix B and the Records Retention and Data Latency in Primary Table section of the *Cisco Multi NetFlow Collector User Guide*.

The availability of disk fragmentation options for a particular server configuration is determined by the allocated disk size, that is the total space estimated as available on Informix raw disk partitions. If multiple choices exist you can pick the fragmentation option manually.

In addition, you must:

- Specify which valid user account MNFC can use internally in its built-in scheduler
- Confirm the choices

The following is a sample transcript:

```
[root@IBM346 bin]$ ./configuredb.sh
Acquiring info on disk partitions...
Planning allocation of dbspaces...
```

```
The following disk fragmentation profiles are available
based on available raw partitions space total of 214957669
(less slices allow for greater capacity, more slices allow for longer retention.
Please refer to MNFC Performance and Sizing Guide for details).
```

```
SMALL profile: number of slices = 24
MEDIUM profile: number of slices = 48
LARGE profile: number of slices = 96
```

```
Number of slices: [96] 48
Planning allocation of dbspaces...
System account for quartz DB access: nfcuser
Account password for nfcuser:
Enter value again to confirm:
```

```
Configuring the following values:
```

```
Storage for Rootdbs device/path: /dev/raw/raw2
Rootdbs size (kb): 23884000
System account for quartz DB access: nfcuser
Password for quartz DB access: *****
Number of DB slices: 48
```

```
Proceed? [yes]
```

```
Configuring database using MEDIUM profile...
```

```
Updating /opt/informix/etc/onconfig.nfc...
Updating /opt/informix/etc/sqlhosts...
Updating /opt/CSCOmnc/config/quartz.properties...
Updating /opt/CSCOmnc/config/nfcdb.xml...
```

```

Finished updating files, starting Informix ...
Checking status ...
Executing DBSpace creation...
Creating dbspace 1 on /dev/raw/raw1
Verifying physical disk space, please wait ...
Space successfully added.

** WARNING ** A level 0 archive of Root DBSpace will need to be done.
Creating dbspace 2 on /dev/raw/raw1
Verifying physical disk space, please wait ...
Space successfully added.

.....

Creating dbspace 48 on /dev/raw/raw1
Verifying physical disk space, please wait ...
Space successfully added.

** WARNING ** A level 0 archive of Root DBSpace will need to be done.
Checking DBSpace count...
Creating NFC_DB instance...
Creating NFC DB and tables.

Database created.

.....

Database closed.

Creating metadata.

Shutting down Informix...

DB Configuration is complete.

[root@IBM346 bin]$

```

For more information on database configuration profiles and the number of allocated dbspaces, refer to Appendix B of the *Cisco Multi NetFlow Collector User Guide*.

Uninstalling Multi NetFlow Collector

To uninstall the Multi NetFlow Collector, do the following:

-
- Step 1** Shut down the MNFC system by entering `cscmnfc stop`.
 - Step 2** Execute the command `uninstall.sh` outside of the `$MNFC_DIR` subtree. The subtree `$MNFC_DIR` will be removed.
-

Licensing

A license file is required for each host running Multi NetFlow Collector Release 6. The license is specific to the IP address of the host. You can obtain a permanent license at <http://www.cisco.com/go/license>.

You must have the IP address of the host on which Multi NetFlow Collector will run. To obtain a permanent license, you must also have the PAK you received after purchasing NetFlow Collector. After you enter the information, a license file is emailed to you. Copy the license file or its contents with no alterations to `/opt/CSCOmnc/config/mnfc.lic`.

The first line of the license file contains either the demo expiration date or the word **permanent** for a permanent license, and the IP address of the host to which Multi NetFlow Collector is licensed.

If the host running Multi NetFlow Collector has more than one network card and IP address, specify the IP address associated with the hostname when licensing the product.



Note

By default, Red Hat Enterprise Linux associates the system hostname with the loopback address **127.0.0.1** in `/etc/hosts`. However, for licensing to work, the hostname must be associated with the host's IP address. Edit `/etc/hosts`, remove the hostname from the loopback address entry, and add an entry for the licensed IP address.

The file `/etc/nsswitch.conf` is normally configured so that hostname lookups are first obtained from files (`/etc/hosts`).