

HP Network Automation Software

For the Windows® and Linux operating systems

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Installation and Upgrade Guide

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Chapter 1: Getting Started

This guide includes information on upgrading to or installing HP Network Automation Software (NA) on a single NA Core. Distributed System and Satellite configurations require additional information before upgrading. Please consult the Distributed System and Satellite documentation before following the instructions in this guide.

This chapter contains the following topics:

- ["HP Network Automation Support Matrix" below](#)
- ["Installation Overview" below](#)
- ["Pre-Installation Checklist" on the next page](#)
- ["Additional NA Configurations" on page 11](#)
- ["HP Live Network Service" on page 11](#)
- ["Summary Reports" on page 11](#)

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HP Network Automation Support Matrix

For information on hardware and software requirements, database requirements, integrations with other products, coexistence with other products, additional required applications, internationalization and localization support, and other installation requirements, see the *NA Support Matrix*, available as described in ["Documentation Updates" on page 2](#).

Installation Overview

When installing NA on a supported 64-bit platform, NA uses the 64-bit Java Virtual Machine (JVM).

NA 9.1x and NA 9.2x Users

You can upgrade from NA 9.1x or NA 9.2x directly to NA 10.00 as described in ["Upgrading to NA 10.00 from a Different System" on page 12](#) or ["Upgrading to NA 10.00 on the Same System" on page 24](#).

Note: Before upgrading NA, move any existing *.backup files from the <NA_HOME>/server/lib/scripts/Database/Truecontrol directory to a location outside the NA directory structure.

NA 10.00 Users

For a new NA 10.00 installation, see ["Installing NA 10.00" on page 35](#).

Pre-Installation Checklist

To successfully install HP Network Automation (NA), you should review the pre-install checklist in [Table 1](#).

Note: When upgrading NA from a 32-bit operating system to a 64-bit operating system, all of the wrapper configuration files (files such as `jboss_wrapper.conf` and `syslog_wrapper.conf`) will be overwritten.

Table 1 Pre-Installation Checklist

Area	Consideration
User Information	How many users will be using NA?
	How many different roles will NA users represent?
	Are you using individual credentials for tasks or single sign-on?
Installation Information	What is the FQDN of the server on which NA will be installed?
	What OS will be running on the server onto which NA will be installed?
	What path will NA be installed into?
	Are there other applications running on the server on which NA will be installed?
	What database will you be using (MySQL, Oracle, or Microsoft® SQL Server)? (Note: If you are using Oracle, you will need to create an Oracle database. For information on configuring an Oracle database, see the Oracle documentation.)
	What is the fully qualified domain name of the database server?
	For the database server, the user must have privileges to create users and databases. (Note: This information is needed during NA install to create the appropriate users and databases.)
	What TCP port is the database listening on for remote connections?
	If NA installs MySQL as part of the installation, what directory will MySQL be installed into? (Note: If MySQL is not installed on the same system as NA, what port is MySQL running on and what is its fully qualified domain name?)
	Do you have the proper device credential information to access devices? (Note: Devices can be grouped by credential.)
	Do any access-lists need to be modified for the NA server to access devices?
	Do you have a device group plan?
	Do you plan to use dynamic device groups?
	Do you plan to create groups during a bulk import via a CSV file?
	Do you plan on using detect network devices and do you have your IP address range(s)?

Table 1 Pre-Installation Checklist, continued

Area	Consideration
Distributed System Configurations (See the <i>NA Multimaster Distributed System on Oracle Guide</i> or the <i>NA Multimaster Distributed System on SQL Server Guide</i> .)	Are you using Oracle or Microsoft SQL Server?
	Are there firewalls or ACLs between the database servers?
	What is the approximate bandwidth between database sites?
	Are all NA servers and database servers configured for the same time zone and synchronized by a common time source?
	Are you using the distributed system configuration for failover or load balancing (or both)?
	What is the total number of NA Cores you are planning to configure? (Note: An NA Core is a single NA server and its attached database.)
Syslog	Is there a Syslog server to which devices are sending messages?
	Do you want devices to send Syslog messages to the NA server?
	What is the fully qualified domain name of the Syslog server?
	What OS is the Syslog server running?
	What is the name and version of the Syslog server?
Authentication	<p>What type of authentication will be used for NA (Local, TACACS+, RADIUS, SecurID, TWIST, or LDAP)? Are you using HP Server Automation (SA)? What type of authentication will be used for devices (Local, TACACS+, RADIUS, or SecurID)?</p> <ul style="list-style-type: none"> • If you are using TACACS+ or RADIUS for authentication, what is the fully qualified domain name or IP address of the primary and secondary TACACS+ or RADIUS server? What is the shared secret for the NA host configured on the TACACS+ or RADIUS server? What type of authentication method is being used to encrypt the TACACS+ or RADIUS communication: PAP (the default), CHAP, or MSCHAP? • If you are using LDAP for application authentication, what is the fully qualified domain name of the LDAP server? What is the LDAP port? What type of connection should be made to the LDAP Server (Regular or SSL)? What is the Domain User Account or User Principal Name of the user being used to make the connection to LDAP? What is the password for the user being used to make the connection to LDAP? What is the Search Base? What are the LDAP security groups that are allowed to access NA? • If you are using HP Server Automation (SA) integrated authentication, what is the SA Twist Server fully qualified domain name? What is the HP SA Twist Username/Password? What is the OCC Server name?
Device Connection	<p>What types of connection are permitted to and from your devices? Possibilities are:</p> <ul style="list-style-type: none"> • Telnet • SSH • SNMP • SNMPv3

Table 1 Pre-Installation Checklist, continued

Area	Consideration
	<ul style="list-style-type: none"> • SCP • FTP • Console • Bastion Host • Rlogin • TFTP • NAT
Email	What is the fully qualified domain name of your SMTP server?
	What email address should NA use for an SMTP “From” address when sending email reports?
Workflow	<p>Will workflow be enabled? If so:</p> <ul style="list-style-type: none"> • What group(s) need approval? • What tasks need approval? • Who can approve tasks?
Satellite Gateways	<p>Are you using Satellite Gateways? If so:</p> <ul style="list-style-type: none"> • What is the design goal for the Satellite Gateways (simplified network traffic, NAT'ed / overlapping IP addresses)? • What OS will be used for each Satellite Gateway (For supported operating systems, see the NA Support Matrix.)?
Sizing Information	How many nodes do you plan on managing with NA and over what period of time?
	How long would you prefer to store old configuration files?
	On average, how many lines are there in the configuration file.
	<p>The default database pruning options include:</p> <ul style="list-style-type: none"> • Configurations — saved for 365 days • Diagnostics — Saved for 45 days • Events — Saved for 45 days • Tasks — Saved for 365 days • Sessions — Saved for 45 days • Log files — Saved for 30 days • Task log files — Saved for 7 days • Topology Data — Saved for 45 days • Diagram files — Saved for 1 day • All data — Saved for 365 days

Additional NA Configurations

For information on configuring a Distributed System environment, see the *NA Multimaster Distributed System on Oracle Guide* or the *NA Multimaster Distributed System on SQL Server Guide*.

For information on configuring a Horizontal Scalability system environment, see the *NA Horizontal Scalability Guide*.

For information on configuring a Gateway and Satellite agent environment, see the *NA Satellite Guide*.

HP Live Network Service

HP Live Network is a complementary content delivery service that is integrated into HP Network Automation for the delivery of free NA driver updates and subscription-based network security and compliance content updates. The HP Live Network security and compliance service enables immediate assessment of network security and policy violations, as well as automated remediation options.

The NA core server accesses the HP Live Network service through the HP Live Network Connector (LNC), which is a separate installation.

Note: LNC requires Internet access.

The LNC and the *HP Live Network connector User Guide*, which includes installation and configuration instructions, are available on the HP Live Network web site **Resources** tab at:

<https://hpln.hp.com/group/hp-live-network-connector>

Summary Reports

The Summary reports are generated in the Microsoft Excel (.xls) format. You can either run the Summary reports from a Windows client computer connected to your NA server or you can use another program to view the Summary reports if you are running NA on a Linux platform.

Chapter 2: Upgrading to NA 10.00 from a Different System

NA 10.00 must run on a 64-bit operating system.

This chapter describes the procedure for upgrading from NA 9.1x or 9.2x running on a standalone NA core server to NA 10.00 running on a different standalone NA core server.

For information about upgrading other NA environments, see the appropriate documentation:

- NA Multimaster Distributed System

For information about upgrading NA in a Distributed System environment, see “Upgrade the NA Mesh” in the *NA Multimaster Distributed System on Oracle Guide* or the *NA Multimaster Distributed System on SQL Server Guide*. Come back to this chapter when directed to do so in the upgrade procedure.

- NA Horizontal Scalability

For information about upgrading NA in a Horizontal Scalability environment, see “Upgrading Horizontal Scalability” in the *NA Horizontal Scalability Guide*. Come back to this chapter when directed to do so in the upgrade procedure.

- NA Satellites

If you are using NA Satellites, after installing the current version of NA, run the “Deploy Remote Agent” task to re-install the upgraded Satellite agent on all of the remote Gateways. For information, see the “Upgrading the Satellite” section of the *NA Satellite Guide*.

NA services are not available during the upgrade process. In addition, after you run the NA Service Pack Installer, you cannot roll back to the previous version of NA.

Upgrade and Installation Caveats

When installing or upgrading NA, note the following:

- This documentation describes the process for upgrading NA on the same operating system type only (Windows to Windows or Solaris/Linux to Linux). Support can assist you with troubleshooting upgrade problems regardless of operating system path. If you require assistance with the process of moving NA to a different operating system, contact HP Professional Services.
- The NA Installer does not perform any sort of version checking. As a result, you could complete installations or upgrades on unsupported platforms.
- If you run a 64-bit NA full install or a Service Pack install on a 32-bit platform, the NA Installer will start and then quit without any error message.
- The Windows version of the NA Installer includes a black CLI window that runs in the background. Do not close this window or the install will end without prompting you. In addition, when performing NA installs over the

network, for example running the `hpna_win.exe` installer from a remote share, you will see the black CLI window for several minutes.

Restoration of Previous Customizations

During the NA upgrade, the NA Setup program automatically backs up critical NA files.

After upgrading NA, the installer automatically restores the following files:

- Device software images from the backup directory are copied to `<NA_HOME>/server/images`.
- Summary reports from the backup directory are copied to `<NA_HOME>/addins`.
- NA LiveNetwork content files are copied to `<NA_HOME>/content`.
- If you selected the use the previous administrative settings option during installation, the `site_options.rcx` and `adjustable_options.rcx` file from the backup directory are copied to `<NA_HOME>/jre`.
- The SecurID token file is restored.
- The Gateway encryption key is restored.
- The SSL public key certificate is restored.
- The `license.dat` file is restored if you do not have a new license file.

The following files are backed up. However, they are not restored during the NA upgrade:

- Most `.rcx` files in the `<NA_HOME>/jre` folder.
 - Aside from the `site_options.rcx` and `adjustable_options.rcx` files, changes in other `.rcx` files will not be preserved.
 - If you have customized the NA summary reports template or specification, such as adding additional report tabs, manually update the customized settings from the backed up version of the `reporting.rcx` file to the new version of the `reporting.rcx` file.
 - If you changed other `.rcx` files in the previous installation and want to keep those changes after upgrading, add those changes into the new `adjustable_options.rcx` file. You cannot use the previous `.rcx` file to overwrite the new version. Doing so could cause the application to fail.
- `<NA_HOME>/server/ext/jboss/server/default/conf/log4j.xml` file.
 - As of NA 9.20, the `log4j.xml` file is no longer used. The comparative file is `<NA_HOME>/server/ext/jboss/server/default/deploy/jboss-logging.xml`.
 - To restore previous settings, manually edit the `jboss-logging.xml` file with the customizations in the `log4j.xml` file. Note that the configuration formats differ between the two files.
- Wrapper configuration files in `<NA_HOME>/server/ext/wrapper/conf`.

- If you selected the use the previous administrative settings option during installation, the upgrade installer attempts to merge the settings from the backed up version of the `jboss.conf` file to the new `jboss.conf` file. Verify the configuration in the new file.
- To restore previous settings in other `.conf` files, manually edit the corresponding file after upgrading. You cannot use the previous file to overwrite the new version. Doing so could cause the application to fail.

Upgrade Procedure

The following steps provide an outline for upgrading NA from a standalone NA core server to a different standalone NA core server. In this procedure, Server X identifies the source (existing) NA core server and Server Y identifies the target (new) NA core server.

Caution: Do *not* upgrade Oracle or SQL Server while upgrading the NA core software across servers. If you need to upgrade the database product for a standalone NA core server, complete this procedure, and then upgrade the database product as described in ["Database Upgrades" on page 51](#).

1. Verify the current NA version:
 - If the NA core version is NA 7.xx or 9.0x, follow the appropriate upgrade procedure in version 9.20 of the NA Installation and Upgrade Guide before completing this procedure.
 - If the NA core version is currently NA 9.1x or 9.2x, continue with this procedure.

2. Obtain new NA 10.00 license keys. See ["Obtaining an NA License" on page 17](#).

3. Determine the NA database name and database user name.

In the NA console, on the **Admin > System Status** page, locate the DatabaseMonitor row, and then click **Run Now** in that row.

On the **Monitor Details** page, locate the values for `Database catalog` (the database name) and `Database user name`.

4. Prepare Server Y with a supported operating system.
5. On Server X, stop all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).
6. On Server X, if a core gateway is installed on the NA core server, stop that gateway:

```
/etc/init.d/opswgw-<gateway_name> stop
```

7. On Server X, back up the following files:

- **Windows:**
 - `<NA_HOME>\jre*.rcx`
 - `<NA_HOME>\server\ext\wrapper\conf\jboss_wrapper.conf`
 - `<NA_HOME>\server\ext\jboss\server\default\deploy\db-ds.xml`

■ **Linux:**

- `<NA_HOME>/jre/*.rcx`
- `<NA_HOME>/server/ext/wrapper/conf/jboss_wrapper.conf`
- `<NA_HOME>/server/ext/jboss/server/default/deploy/db-ds.xml`

8. Back up all of the data in the database. For instructions, see the database documentation or contact your database administrator (DBA).

For MySQL, use a command similar to the following example:

```
mysqldump -u root -p -h 127.0.0.1 --database NA > NAdump.sql
```

For the MySQL examples in this procedure, the database user name is root, and the database name is NA.

9. On Server Y, install the same NA version as on Server X.

For example, if Server X has NA 9.22 plus one hotfix, install NA 9.20, the NA 9.22 patch, and then the hotfix.

Note: Because you will not be running this NA version in production on Server Y, it is acceptable to install the current NA version on the operating system of Server Y.

During installation, note the following:

- If you are using the embedded database, choose to install MySQL. Specify the same database name, user name, and password as on Server X.
- If you are using a remote database, provide the information for connecting to the existing NA database.

10. On Server Y, stop all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

11. Replicate the NA configuration of Server X as follows:

- a. Copy the backed up `*.rcx` files from Server X to the same location on Server Y.

Tip: In a multiple NA core environment, consider whether the `*.rcx` files contain NA core-specific settings. In this case, copy the `*.rcx` files in a way that replicates the existing NA configuration onto the new servers.

- b. On Server Y, manually edit the `jboss_wrapper.conf` and `db-ds.xml` files to restore any customizations made on Server X.

12. If you are using the embedded database, do the following:

- a. If the MySQL configuration for the NA database has been modified on Server X, replicate the configuration changes on Server Y.

MySQL provides configuration files at several levels. You must know which, if any, have been changed. The global configuration file is commonly located as follows:

- **Windows:** <Drive>:\MySQL\my.ini
- **Linux:** /etc/my.cnf

Determine which MySQL configuration files have been modified for the NA database, and then do one of the following:

- Copy these files from Server X to the same location on Server Y. Retain permissions on the files.
 - Edit the MySQL configuration files on Server Y to match those on Server X.
- b. Copy the database backup file from Server X to Server Y.
- Ensure that the database user has read access to the database backup file.
- c. On Server Y, import the data from the NA database backup into the new database instance created during installation of NA. For example:

```
mysql -u root -p NA < NAdump.sql
```

13. Ensure that the database server is running.
14. *Optional.* Verify the authenticity of the NA 10.00 Service Pack Installer as described in ["Optional. Verify the Signature of the NA Installer" on page 18](#).
15. On Server Y, run the NA 10.00 Service Pack Installer as described in ["Running the NA 10.00 Service Pack Installer" on page 18](#).

Note: If the upgrade fails, save all log files to a location outside the NA directory structure before re-running the upgrade.

16. On Server Y, if NA uses a MySQL database, check the MySQL configuration as described in ["Verify the MySQL Configuration" on page 20](#).
17. If Server Y runs the Linux operating system and if NA uses a MySQL database, verify that the `/etc/hosts` file contains the following line:

```
127.0.0.1      localhost
```

The NA-installed MySQL requires the localhost line exactly as shown here. To expand the information in the hosts file, add new lines containing the additional definitions.

18. *Linux only.* Set the open file limit for NA sessions as described in ["Set the ulimit Values for Running NA \(Linux only\)" on page 21](#).
19. Disable the JCS disk cache as described in ["Disabling the JCS Disk Cache" on page 21](#).

20. *Optional.* Use the optimized Data Pruning task as described in "[Data Pruning](#)" on page 22.
21. Update the NA configuration as described in "[Verify the NA User Interface Settings](#)" on page 23.
22. On Server Y, install the latest NA Driver Pack as described in "[Install the Latest NA Driver Pack](#)" on page 23.
23. On Server Y, if a core gateway was installed on Server X, install the core gateway as described in the *NA Satellite Guide*.

Obtaining an NA License

You must obtain new NA 10.00 permanent license keys before upgrading.

Tip: In a multiple NA core environment, use the same license keys on all NA cores.

NA supports the following license types:

- **InstantOn** — InstantOn licenses are shipped with the product. Each InstantOn license is limited to 250 devices and 60 days of use after installing the product.
- **Permanent** — Permanent licenses must be obtained through the HP License Key Delivery Service. Permanent licenses do not have an expiration date.
- **Evaluation** — Evaluation licenses are temporary licenses with customized capacity and duration. For more information, contact your NA Sales Representative.

To obtain NA 10.00 permanent license keys, follow these steps:

1. Go to <http://support.openview.hp.com/support.jsp>.
2. Click **Sign-in with HP Passport** or the **Login** button, enter your credentials, and click the **Sign-in** button.
3. Click the **Downloads** tab.
4. Click the **Software Updates** box.
5. Click the **My Updates** link.
6. Either select your Service Agreement ID (SAID) from the pull-down menu or enter your SAID, agree to the terms and conditions, and click **Submit**.
7. Expand the **Network Management Center** node.
8. Select the HP NA version 10.00 line.
9. Click the **Get Software Updates** button.
10. Click the **Get Licensing** tab.
11. Verify the selected product name.

12. Click the **Get License** link.
13. On the Search Entitlements to Activate page, verify the selected entitlement, and then click **Activate**.
14. Save the NA license file and then transfer it to a location accessible from the NA core server.

Optional. Verify the Signature of the NA Installer

A Gnu Privacy Guard (GPG) signature file (.sig) is included with all NA installers on the NA installation media. HP recommends that you verify the authenticity of the NA installer before installing NA. To verify the validity of a file, follow the instructions for “Verification using GPG” at:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning>

This process is valid for all operating system platforms supported by NA. File verification can be done on any system that supports running gpg. Because the verification process might vary depending on the gpg version and operating platform, consult the documentation for your version of gpg.

Running the NA 10.00 Service Pack Installer

Before running the NA Service Pack Installer, ensure that the database server is running.

The NA Service Pack Installer sets the Java virtual machine (JVM) heap size in relation to the amount of system RAM and the number of processors. Generally speaking, the installer sets the JVM heap size to half of the RAM. (The NA installer does not explicitly set the size of the young generation, so this value defaults to 1/3 of the JVM heap size.) Note the following exceptions:

- If the heap size is already set to a larger value than the NA Service Pack Installer would set, the NA Service Pack Installer does not change that value.
- If the NA core server has more than 64GB of RAM, the NA installer sets the JVM heap size to 32GB.
- If HP Network Node Manager i Software is already installed on the NA core server, the NA installer sets the JVM heap size to 512MB regardless of the system RAM size. In this case, the NA installer sets the JVM permanent generation garbage collection (PermGen) to 128MB.

Read the section appropriate to your operating system type.

Running the Service Pack Installer on a Windows Operating System

For upgrading on a Windows platform, insert the NA Service Pack Installer DVD into the DVD drive and do the following:

1. On the Windows taskbar, click Start, then click Run.
2. Enter: [drive]:\windows_[nnnn]-[mmddyy]_spi_setup.exe, where [drive] is the letter of your DVD drive, [nnnn] is the build number, and [mmddyy] is the build date.
3. Click OK.
4. Follow the instructions on the screen.

Caution: *Oracle only.* In a Multimaster Distributed System environment, do not enable case-insensitive search while upgrading NA.

Running the Service Pack Installer on a Linux Operating System

If you are installing the NA Service Pack Installer on an NA Linux server, insert the DVD into the DVD drive and mount it. You must have root access to run the NA Service Pack Installer.

1. `cd / [DVD_MOUNT_POINT]`, where `[DVD_MOUNT_POINT]` is the location of the DVD drive.
2. `cd linux`
3. Set the environment variable using the following commands: `TZ=UTC` and `export TZ`.
4. Set the open file limit for this session:
 - a. Determine the open file limits by running the following commands:

```
ulimit -Sn
ulimit -Hn
```

The soft file limit must be at least 32768.

The hard file limit must be at least 32768.
 - b. If necessary, update the soft file limit by running the following command:

```
ulimit -n 32768
```
5. `sh linux_[nnnn]-[mmddyy]_spi_setup_64.bin`, where `[nnnn]` is the build number and `[mmddyy]` is the build date.
6. Follow the instructions on the screen.

Caution: *Oracle only.* In a Multimaster Distributed System environment, do not enable case-insensitive search while upgrading NA.

If you see the following errors in the log file, verify the value of the `TZ` environment variable, and then restart the NA Service Pack Installer:

```
SQLException while trying to connect to the database.
java.sql.SQLException: ORA-00604: error occurred at recursive SQL level 1
RA-01882: timezone region not found
```

Verify the MySQL Configuration

The following MySQL configuration options affect NA performance:

- Large device configurations can exceed the default packet size configured for MySQL, resulting in an error similar to the following example:

```
DeviceDataManagementEJB: Exception in addDeviceData -  
com.mysql.jdbc.PacketTooBigException: Packet for query is too large.
```

To avoid this problem, increase the maximum packet size that MySQL accepts to at least 16MB. If the error still occurs after adjusting this value, increase it further, up to a maximum of 1GB.

- Restricting MySQL to a small number of concurrent threads can reduce NA performance. (On prior versions of NA, the default number was 10.) To avoid this problem, in the MySQL configuration file, set the number of concurrent threads to 20, which the NA-installed version of MySQL interprets as “infinite threads.”

To set the MySQL configuration as described here, follow these steps:

1. Locate the file to modify.

The global configuration file is commonly located as follows:

- **Windows:** <Drive>:\MySQL\my.ini
- **Linux:** /etc/my.cnf

2. Back up the file identified in step 1.
3. Open the configuration file in a text editor, such as WordPad or vi.
4. To set the MySQL permitted packet size to 16MB, edit the configuration file as follows:

- a. Locate the line that contains the `string max_allowed_packet=.`

If this line does not exist, create it in the next step.

- b. Increase the allocation by updating this line to read:

```
max_allowed_packet=16776192
```

5. To set infinite thread concurrency, edit the configuration file as follows:

- a. Locate the line that contains the string `innodb_thread_concurrency=.`

- b. Set infinite thread concurrency by updating this line to read:

```
innodb_thread_concurrency=20
```

6. Save the configuration file.
7. Stop all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

8. Restart MySQL:

- *Windows:* Open the Services control panel. In the list of services, right-click the MySQL service, and then click **Restart**.
- *Linux* Run the following command:

```
/etc/init.d/mysql restart
```

9. Start all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Set the ulimit Values for Running NA (Linux only)

On the NA core server, ensure that the open file limits are set appropriately for each NA session.

1. Change to the following directory:

```
/etc/init.d
```

2. Back up the `truecontrol` file to a location outside the `/etc` directory.

3. In the `truecontrol` file, add the following line as the first non-commented line:

```
ulimit -n 32768
```

4. In an NA Horizontal Scalability environment, repeat all of the previous steps on each NA core server.

5. On each NA server, restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Tip: You can wait to restart the NA services until after disabling the JCS disk cache (next).

Disabling the JCS Disk Cache

To disable the JCS disk cache, follow these steps:

1. Change to the following directory:

- *Windows:* `<NA_HOME>\jre`
- *Linux:* `<NA_HOME>/jre`

2. Back up the `cache.ccf` file to a location outside the `<NA_HOME>` directory.

3. In a text editor such as WordPad or vi, open the `cache.ccf` file.

4. Verify that the `jcs.default=` line does not include any settings. It should read exactly as follows:

```
jcs.default=
```

5. Search for the string `AVAILABLE AUXILIARY CACHES` to locate the following lines:

```
# AVAILABLE AUXILIARY CACHES
jcs.auxiliary.DC=org.apache.jcs.auxiliary.disk.indexed.IndexedDiskCacheFactory
jcs.auxiliary.DC.attributes=org.apache.jcs.auxiliary.disk.indexed.IndexedDiskCacheAttributes
jcs.auxiliary.DC.attributes.DiskPath=/tmp/cache
jcs.auxiliary.DC.attributes.MaxPurgatorySize=10000000
jcs.auxiliary.DC.attributes.MaxKeySize=1000000
jcs.auxiliary.DC.attributes.MaxRecycleBinSize=5000
jcs.auxiliary.DC.attributes.OptimizeAtRemoveCount=300000
jcs.auxiliary.DC.attributes.ShutdownSpoolTimeLimit=60
```

6. Comment out each of the lines located in the previous step by inserting a number sign character (#) at the beginning of the line.
7. Save the `cache.ccf` file.
8. In an NA Horizontal Scalability environment, repeat all of the previous steps on each NA core server.
9. On each NA server, restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Data Pruning

As of NA 9.20, the Data Pruning task is optimized from that of previous versions of NA. To take advantage of this optimization, verify that the Data Pruning task is scheduled to run at least weekly.

Note: In a Distributed System or Horizontal Scalability environment, it is recommended to run the Data Pruning task manually on one NA core server until the warning message does not appear. At that point, verify that the Data Pruning task is scheduled to run at least weekly on each core.

After upgrading NA, the first several runs of the Data Pruning task might exceed the configured maximum task time. In this case, you might see the following warning message:

```
com.rendition.pruner.ConfigPruner: The task thread was interrupted. Pruning
partially completed.
```

This message indicates that additional records can be pruned. No action is necessary; subsequent runs of the Data Pruning task will clear the additional records.

Tip: If the database configuration includes redo logs, ensure that adequate disk space is available for these logs, especially while the warning message appears. The required size depends on the database configuration and the size of the NA database.

To complete database cleanup faster, do either or both of the following steps:

- Temporarily increase the value of Max Task Length to a value such as 18000 (5 hours). This setting is under Tasks on the Admin > Administrative Settings > Server page in the NA console.

Tip: After the warning message no longer appears, reset the Max Task Length to the original value (3600 by default).

- Run the Data Pruning task manually until the warning message does not appear.

Verify the NA User Interface Settings

Upgrading to NA 9.20 or later installs code fixes for HTML and application processing. To enable these fixes, follow these steps:

1. Log on to the NA console as an NA administrator.
2. Open the User Interpage page (**Admin > Administrative Settings > User Interface**).
3. Under Security, make the following changes:
 - Select the **Cross site scripting** check box.
 - Clear the **Show Stack Traces** check box.
4. Under **Miscellaneous**, make the following changes:
 - Select the **Disable hidden stack trace output** check box.
 - Select the **Disable detailed exception message output** check box.

Install the Latest NA Driver Pack

The NA upgrade installer overwrites the existing driver pack on the NA server with the driver pack embedded in the installer. To prevent a functionality regression, after you upgrade or install NA, install the latest NA Driver Pack. Follow these steps:

1. Go to the HP Live Network web site at:

<https://hpln.hp.com//node/19/contentfiles?dir=2257>

(under Driver Packs > Network Automation Version 10.xx Driver Packs)

Access to this page requires an HP Live Network user account.

2. Download the latest NA Driver Pack.
3. Install the downloaded driver pack.

Chapter 3: Upgrading to NA 10.00 on the Same System

NA 10.00 must run on a 64-bit operating system.

This chapter describes the procedure for upgrading a standalone NA core server to NA 10.00 from NA 9.1x or 9.2x running on a 64-bit operating system or on a 32-bit operating system that can be upgraded to a 64-bit operating system on the same hardware.

For information about upgrading other NA environments, see the appropriate documentation:

- NA Multimaster Distributed System

For information about upgrading NA in a Distributed System environment, see “Upgrade the NA Mesh” in the *NA Multimaster Distributed System on Oracle Guide* or the *NA Multimaster Distributed System on SQL Server Guide*. Come back to this chapter when directed to do so in the upgrade procedure.

- NA Horizontal Scalability

For information about upgrading NA in a Horizontal Scalability environment, see “Upgrading Horizontal Scalability” in the *NA Horizontal Scalability Guide*. Come back to this chapter when directed to do so in the upgrade procedure.

- NA Satellites

If you are using NA Satellites, after installing the current version of NA, run the “Deploy Remote Agent” task to re-install the upgraded Satellite agent on all of the remote Gateways. For information, see the “Upgrading the Satellite” section of the *NA Satellite Guide*.

NA services are not available during the upgrade process. In addition, after you run the NA Service Pack Installer, you cannot roll back to the previous version of NA.

Upgrade and Installation Caveats

When installing or upgrading NA, note the following:

- This documentation describes the process for upgrading NA on the same operating system type only (Windows to Windows or Solaris/Linux to Linux). Support can assist you with troubleshooting upgrade problems regardless of operating system path. If you require assistance with the process of moving NA to a different operating system, contact HP Professional Services.
- The NA Installer does not perform any sort of version checking. As a result, you could complete installations or upgrades on unsupported platforms.
- If you run a 64-bit NA full install or a Service Pack install on a 32-bit platform, the NA Installer will start and then quit without any error message.
- The Windows version of the NA Installer includes a black CLI window that runs in the background. Do not close this window or the install will end without prompting you. In addition, when performing NA installs over the

network, for example running the `hpna_win.exe` installer from a remote share, you will see the black CLI window for several minutes.

Restoration of Previous Customizations

During the NA upgrade, the NA Setup program automatically backs up critical NA files.

After upgrading NA, the installer automatically restores the following files:

- Device software images from the backup directory are copied to `<NA_HOME>/server/images`.
- Summary reports from the backup directory are copied to `<NA_HOME>/addins`.
- NA LiveNetwork content files are copied to `<NA_HOME>/content`.
- If you selected the use the previous administrative settings option during installation, the `site_options.rcx` and `adjustable_options.rcx` file from the backup directory are copied to `<NA_HOME>/jre`.
- The SecurID token file is restored.
- The Gateway encryption key is restored.
- The SSL public key certificate is restored.
- The `license.dat` file is restored if you do not have a new license file.

The following files are backed up. However, they are not restored during the NA upgrade:

- Most `.rcx` files in the `<NA_HOME>/jre` folder.
 - Aside from the `site_options.rcx` and `adjustable_options.rcx` files, changes in other `.rcx` files will not be preserved.
 - If you have customized the NA summary reports template or specification, such as adding additional report tabs, manually update the customized settings from the backed up version of the `reporting.rcx` file to the new version of the `reporting.rcx` file.
 - If you changed other `.rcx` files in the previous installation and want to keep those changes after upgrading, add those changes into the new `adjustable_options.rcx` file. You cannot use the previous `.rcx` file to overwrite the new version. Doing so could cause the application to fail.
- `<NA_HOME>/server/ext/jboss/server/default/conf/log4j.xml` file.
 - As of NA 9.20, the `log4j.xml` file is no longer used. The comparative file is `<NA_HOME>/server/ext/jboss/server/default/deploy/jboss-logging.xml`.
 - To restore previous settings, manually edit the `jboss-logging.xml` file with the customizations in the `log4j.xml` file. Note that the configuration formats differ between the two files.
- Wrapper configuration files in `<NA_HOME>/server/ext/wrapper/conf`.

- If you selected the use the previous administrative settings option during installation, the upgrade installer attempts to merge the settings from the backed up version of the `jboss.conf` file to the new `jboss.conf` file. Verify the configuration in the new file.
- To restore previous settings in other `.conf` files, manually edit the corresponding file after upgrading. You cannot use the previous file to overwrite the new version. Doing so could cause the application to fail.

Upgrade Procedure

The following steps provide an outline for upgrading NA on a standalone NA core server.

1. Verify the current NA version:
 - If the NA core version is NA 7.xx or 9.0x, follow the appropriate upgrade procedure in version 9.20 of the NA Installation and Upgrade Guide before completing this procedure.
 - If the NA core version is currently NA 9.1x or 9.2x, continue with this procedure.
2. Obtain new NA 10.00 license keys. See ["Obtaining an NA License" on page 28](#).
3. Stop all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).
4. If a core gateway is installed on the NA core server, stop that gateway:

```
/etc/init.d/opswgw-<gateway_name> stop
```

5. Back up the NA installation directory to a safe location. For example, if you installed NA in `C:\NA` or `/opt/NA`, back up the entire directory to a safe location.
6. Back up all of the data in the database. For instructions, see the database documentation or contact your database administrator (DBA).

Tip: When backing up and restoring the database, enter the NA database name in the identical case as the database name in the database application. For example, if you created your NA database as `Nadb`, enter exactly `Nadb`.

7. Move any existing `*.backup` files from the `<NA_HOME>/server/lib/scripts/Database/Truecontrol` directory to a location outside the NA directory structure.
8. If you will need to reboot the NA core server during this procedure, for example if you are upgrading the operating system or the database, disable automatic starting of the NA services. See ["Disable All NA Services" on page 48](#).
9. If NA 10.00 is not supported on the operating system of the current NA core server, do the following:
 - a. Upgrade the operating system to a version supported by NA 10.00.

For all operating system upgrades, consult the vendor documentation and your system support personnel.

- b. Restart NA, and then verify that NA is working properly.
 - c. Stop all NA services before continuing with this procedure.
10. If NA 10.00 is not supported on the database version of the current NA database server, do the following:
 - a. Upgrade the database to a version supported by NA 10.00.
 - For all database upgrades, consult the documentation provided by the appropriate vendor and your database administrator (DBA).
 - If after upgrading NA you experience performance issues, such as the NA Home page taking a long time to load, it is recommended that your Oracle DBA perform a re-index of the tables in the NA database instance. This work should be part of your regular Oracle maintenance tasks.
 - b. Restart NA, and then verify that NA is working properly.
 - c. Stop all NA services before continuing with this procedure.
11. Ensure that the database server is running.
12. *Optional.* Verify the authenticity of the NA 10.00 Service Pack Installer as described in ["Optional. Verify the Signature of the NA Installer" on page 29.](#)
13. Run the NA 10.00 Service Pack Installer as described in ["Running the NA 10.00 Service Pack Installer" on page 29.](#)

Note: If the upgrade fails, save all log files to a location outside the NA directory structure before re-running the upgrade.

Tip: The Service Pack Installer re-enables automatic starting of the NA services.

14. If NA uses a MySQL database, check the MySQL configuration as described in ["Verify the MySQL Configuration" on page 31.](#)
15. On the Linux operating system, if NA uses a MySQL database, verify that the `/etc/hosts` file contains the following line:

```
127.0.0.1      localhost
```

The NA-installed MySQL requires the localhost line exactly as shown here. To expand the information in the hosts file, add new lines containing the additional definitions.
16. *Linux only.* Set the open file limit for NA sessions as described in ["Set the ulimit Values for Running NA \(Linux only\)" on page 32.](#)
17. Disable the JCS disk cache as described in ["Disabling the JCS Disk Cache" on page 32.](#)

18. *Optional.* Use the optimized Data Pruning task as described in "[Data Pruning](#)" on page 33.
19. Update the NA configuration as described in "[Verify the NA User Interface Settings](#)" on page 34.
20. Install the latest NA Driver Pack as described in "[Install the Latest NA Driver Pack](#)" on page 34.
21. If a core gateway is installed on the NA core server, start that gateway:

```
/etc/init.d/opswgw-<gateway_name> start
```

Obtaining an NA License

You must obtain new NA 10.00 permanent license keys before upgrading.

Tip: In a multiple NA core environment, use the same license keys on all NA cores.

NA supports the following license types:

- **InstantOn** — InstantOn licenses are shipped with the product. Each InstantOn license is limited to 250 devices and 60 days of use after installing the product.
- **Permanent** — Permanent licenses must be obtained through the HP License Key Delivery Service. Permanent licenses do not have an expiration date.
- **Evaluation** — Evaluation licenses are temporary licenses with customized capacity and duration. For more information, contact your NA Sales Representative.

To obtain NA 10.00 permanent license keys, follow these steps:

1. Go to <http://support.openview.hp.com/support.jsp>.
2. Click **Sign-in with HP Passport** or the **Login** button, enter your credentials, and click the **Sign-in** button.
3. Click the **Downloads** tab.
4. Click the **Software Updates** box.
5. Click the **My Updates** link.
6. Either select your Service Agreement ID (SAID) from the pull-down menu or enter your SAID, agree to the terms and conditions, and click **Submit**.
7. Expand the **Network Management Center** node.
8. Select the HP NA version 10.00 line.
9. Click the **Get Software Updates** button.
10. Click the **Get Licensing** tab.
11. Verify the selected product name.

12. Click the **Get License** link.
13. On the Search Entitlements to Activate page, verify the selected entitlement, and then click **Activate**.
14. Save the NA license file and then transfer it to a location accessible from the NA core server.

Optional. Verify the Signature of the NA Installer

A Gnu Privacy Guard (GPG) signature file (.sig) is included with all NA installers on the NA installation media. HP recommends that you verify the authenticity of the NA installer before installing NA. To verify the validity of a file, follow the instructions for “Verification using GPG” at:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning>

This process is valid for all operating system platforms supported by NA. File verification can be done on any system that supports running gpg. Because the verification process might vary depending on the gpg version and operating platform, consult the documentation for your version of gpg.

Running the NA 10.00 Service Pack Installer

Before running the NA Service Pack Installer, ensure that the database server is running.

The NA Service Pack Installer sets the Java virtual machine (JVM) heap size in relation to the amount of system RAM and the number of processors. Generally speaking, the installer sets the JVM heap size to half of the RAM. (The NA installer does not explicitly set the size of the young generation, so this value defaults to 1/3 of the JVM heap size.) Note the following exceptions:

- If the heap size is already set to a larger value than the NA Service Pack Installer would set, the NA Service Pack Installer does not change that value.
- If the NA core server has more than 64GB of RAM, the NA installer sets the JVM heap size to 32GB.
- If HP Network Node Manager i Software is already installed on the NA core server, the NA installer sets the JVM heap size to 512MB regardless of the system RAM size. In this case, the NA installer sets the JVM permanent generation garbage collection (PermGen) to 128MB.

Read the section appropriate to your operating system type.

Running the Service Pack Installer on a Windows Operating System

For upgrading on a Windows platform, insert the NA Service Pack Installer DVD into the DVD drive and do the following:

1. On the Windows taskbar, click Start, then click Run.
2. Enter: [drive]:\windows_[nnnn]-[mmddyy]_spi_setup.exe, where [drive] is the letter of your DVD drive, [nnnn] is the build number, and [mmddyy] is the build date.
3. Click OK.
4. Follow the instructions on the screen.

Caution: *Oracle only.* In a Multimaster Distributed System environment, do not enable case-insensitive search while upgrading NA.

Running the Service Pack Installer on a Linux Operating System

If you are installing the NA Service Pack Installer on an NA Linux server, insert the DVD into the DVD drive and mount it. You must have root access to run the NA Service Pack Installer.

1. `cd / [DVD_MOUNT_POINT]`, where `[DVD_MOUNT_POINT]` is the location of the DVD drive.
2. `cd linux`
3. Set the environment variable using the following commands: `TZ=UTC` and `export TZ`.
4. Set the open file limit for this session:
 - a. Determine the open file limits by running the following commands:

```
ulimit -Sn
ulimit -Hn
```

The soft file limit must be at least 32768.

The hard file limit must be at least 32768.
 - b. If necessary, update the soft file limit by running the following command:

```
ulimit -n 32768
```
5. `sh linux_[nnnn]-[mmddyy]_spi_setup_64.bin`, where `[nnnn]` is the build number and `[mmddyy]` is the build date.
6. Follow the instructions on the screen.

Caution: *Oracle only.* In a Multimaster Distributed System environment, do not enable case-insensitive search while upgrading NA.

If you see the following errors in the log file, verify the value of the `TZ` environment variable, and then restart the NA Service Pack Installer:

```
SQLException while trying to connect to the database.
java.sql.SQLException: ORA-00604: error occurred at recursive SQL level 1
ORA-01882: timezone region not found
```

Verify the MySQL Configuration

The following MySQL configuration options affect NA performance:

- Large device configurations can exceed the default packet size configured for MySQL, resulting in an error similar to the following example:

```
DeviceDataManagementEJB: Exception in addDeviceData -  
com.mysql.jdbc.PacketTooBigException: Packet for query is too large.
```

To avoid this problem, increase the maximum packet size that MySQL accepts to at least 16MB. If the error still occurs after adjusting this value, increase it further, up to a maximum of 1GB.

- Restricting MySQL to a small number of concurrent threads can reduce NA performance. (On prior versions of NA, the default number was 10.) To avoid this problem, in the MySQL configuration file, set the number of concurrent threads to 20, which the NA-installed version of MySQL interprets as “infinite threads.”

To set the MySQL configuration as described here, follow these steps:

1. Locate the file to modify.

The global configuration file is commonly located as follows:

- **Windows:** <Drive>:\MySQL\my.ini
- **Linux:** /etc/my.cnf

2. Back up the file identified in step 1.
3. Open the configuration file in a text editor, such as WordPad or vi.
4. To set the MySQL permitted packet size to 16MB, edit the configuration file as follows:

- a. Locate the line that contains the `string max_allowed_packet=.`

If this line does not exist, create it in the next step.

- b. Increase the allocation by updating this line to read:

```
max_allowed_packet=16776192
```

5. To set infinite thread concurrency, edit the configuration file as follows:

- a. Locate the line that contains the string `innodb_thread_concurrency=.`

- b. Set infinite thread concurrency by updating this line to read:

```
innodb_thread_concurrency=20
```

6. Save the configuration file.
7. Stop all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

8. Restart MySQL:

- *Windows:* Open the Services control panel. In the list of services, right-click the MySQL service, and then click **Restart**.
- *Linux* Run the following command:

```
/etc/init.d/mysql restart
```

9. Start all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Set the ulimit Values for Running NA (Linux only)

On the NA core server, ensure that the open file limits are set appropriately for each NA session.

1. Change to the following directory:

```
/etc/init.d
```

2. Back up the `truecontrol` file to a location outside the `/etc` directory.

3. In the `truecontrol` file, add the following line as the first non-commented line:

```
ulimit -n 32768
```

4. In an NA Horizontal Scalability environment, repeat all of the previous steps on each NA core server.

5. On each NA server, restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Tip: You can wait to restart the NA services until after disabling the JCS disk cache (next).

Disabling the JCS Disk Cache

To disable the JCS disk cache, follow these steps:

1. Change to the following directory:

- *Windows:* `<NA_HOME>\jre`
- *Linux:* `<NA_HOME>/jre`

2. Back up the `cache.ccf` file to a location outside the `<NA_HOME>` directory.

3. In a text editor such as WordPad or vi, open the `cache.ccf` file.

4. Verify that the `jcs.default=` line does not include any settings. It should read exactly as follows:

```
jcs.default=
```


5. Search for the string `AVAILABLE AUXILIARY CACHES` to locate the following lines:

```
# AVAILABLE AUXILIARY CACHES
jcs.auxiliary.DC=org.apache.jcs.auxiliary.disk.indexed.IndexedDiskCacheFactory
jcs.auxiliary.DC.attributes=org.apache.jcs.auxiliary.disk.indexed.IndexedDiskCacheAttributes
jcs.auxiliary.DC.attributes.DiskPath=/tmp/cache
jcs.auxiliary.DC.attributes.MaxPurgatorySize=10000000
jcs.auxiliary.DC.attributes.MaxKeySize=1000000
jcs.auxiliary.DC.attributes.MaxRecycleBinSize=5000
jcs.auxiliary.DC.attributes.OptimizeAtRemoveCount=300000
jcs.auxiliary.DC.attributes.ShutdownSpoolTimeLimit=60
```

6. Comment out each of the lines located in the previous step by inserting a number sign character (#) at the beginning of the line.
7. Save the `cache.ccf` file.
8. In an NA Horizontal Scalability environment, repeat all of the previous steps on each NA core server.
9. On each NA server, restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Data Pruning

As of NA 9.20, the Data Pruning task is optimized from that of previous versions of NA. To take advantage of this optimization, verify that the Data Pruning task is scheduled to run at least weekly.

Note: In a Distributed System or Horizontal Scalability environment, it is recommended to run the Data Pruning task manually on one NA core server until the warning message does not appear. At that point, verify that the Data Pruning task is scheduled to run at least weekly on each core.

After upgrading NA, the first several runs of the Data Pruning task might exceed the configured maximum task time. In this case, you might see the following warning message:

```
com.rendition.pruner.ConfigPruner: The task thread was interrupted. Pruning
partially completed.
```

This message indicates that additional records can be pruned. No action is necessary; subsequent runs of the Data Pruning task will clear the additional records.

Tip: If the database configuration includes redo logs, ensure that adequate disk space is available for these logs, especially while the warning message appears. The required size depends on the database configuration and the size of the NA database.

To complete database cleanup faster, do either or both of the following steps:

- Temporarily increase the value of Max Task Length to a value such as 18000 (5 hours). This setting is under Tasks on the Admin > Administrative Settings > Server page in the NA console.

Tip: After the warning message no longer appears, reset the Max Task Length to the original value (3600 by default).

- Run the Data Pruning task manually until the warning message does not appear.

Verify the NA User Interface Settings

Upgrading to NA 9.20 or later installs code fixes for HTML and application processing. To enable these fixes, follow these steps:

1. Log on to the NA console as an NA administrator.
2. Open the User Interpage page (**Admin > Administrative Settings > User Interface**).
3. Under Security, make the following changes:
 - Select the **Cross site scripting** check box.
 - Clear the **Show Stack Traces** check box.
4. Under **Miscellaneous**, make the following changes:
 - Select the **Disable hidden stack trace output** check box.
 - Select the **Disable detailed exception message output** check box.

Install the Latest NA Driver Pack

The NA upgrade installer overwrites the existing driver pack on the NA server with the driver pack embedded in the installer. To prevent a functionality regression, after you upgrade or install NA, install the latest NA Driver Pack. Follow these steps:

1. Go to the HP Live Network web site at:

<https://hpln.hp.com//node/19/contentfiles?dir=2257>

(under Driver Packs > Network Automation Version 10.xx Driver Packs)

Access to this page requires an HP Live Network user account.

2. Download the latest NA Driver Pack.
3. Install the downloaded driver pack.

Chapter 4: Installing NA 10.00

This chapter provides information on installing NA 10.00 on a new standalone NA core server.

For information about installing in other NA environments, see the appropriate documentation:

- NA Multimaster Distributed System

For information about installing NA in a Distributed System environment, see the *NA Multimaster Distributed System on Oracle Guide* or the *NA Multimaster Distributed System on SQL Server Guide*.

- NA Horizontal Scalability

For information about installing NA in a Horizontal Scalability environment, see the *NA Horizontal Scalability Guide*.

- NA Satellites

See the "Installation" section of the *NA Satellite Guide*.

The following steps provide an outline for single NA Core installation:

1. ["Prepare the Database" below](#)
2. ["Install Nmap" on page 39](#)
3. ["Obtain an NA License" on page 39](#)
4. ["Optional. Verify the Signature of the NA Installer" on page 40](#)
5. ["Run the NA Installer" on page 41](#)
6. ["Set the ulimit Values for Running NA \(Linux only\)" on page 43](#)
7. ["Install the Latest NA Driver Pack" on page 43](#)

Prepare the Database

For Oracle or SQL Server, NA supports reducing the privileges of the NA database user account for general operation. For information, see "Running NA with Minimal Database User Privileges" in the *NA Administration Guide*.

For information about database options, read the section appropriate to your database type:

- ["MySQL Database Options" on the next page](#)
- ["Oracle Database Options" on the next page](#)
- ["Microsoft SQL Server Database Options" on page 38](#)

MySQL Database Options

On the Linux operating system, verify that the `/etc/hosts` file contains the following line:

```
127.0.0.1      localhost
```

The NA-installed MySQL requires the localhost line exactly as shown here. To expand the information in the hosts file, add new lines containing the additional definitions.

Make note of the following MySQL Database options during installation:

1. If you want NA to install MySQL Enterprise Server 5.0.58, when prompted for the folder in which to install MySQL, do not select the NA Install folder or any sub-folder therein.
2. When prompted whether or not to create a new database or use an existing one, select the “Create New Database” option. Do not return to the previous step after the database has been created.

Note: If you want to use an existing NA database created by a previous NA installation, select the “using existing database” option. The database will be upgraded to the current version, if applicable.

Oracle Database Options

Oracle database configuration requirements:

- Create a new tablespace dedicated to NA. For example:

```
CREATE TABLESPACE NADB DATAFILE '/u01/app/oracle/oradata/SIDxx/NADB01.DBF'  
SIZE 30G REUSE;
```

Tip: To enable future defragmentation of the NA tablespace, create the tablespace with automatic segment space management (ASSM). The example command creates the tablespace with ASSM.

- Create an NA database user that uses the new tablespace. For example (for Oracle user name `nauser`):

```
CREATE USER nauser IDENTIFIED BY napass DEFAULT TABLESPACE NADB QUOTA 100M ON  
NADB;
```

- Grant at least the following privileges to the NA database user:

- CREATE SEQUENCE
- CREATE SESSION
- CREATE TABLE
- CREATE PROCEDURE
- SELECT ANY DICTIONARY
- CONNECT
- EXECUTE on `CTXSYS.ctx_ddl`

For example (for Oracle user name `nauser`):

```
GRANT CREATE SEQUENCE, CREATE SESSION, CREATE TABLE to nauser;  
GRANT CREATE PROCEDURE, SELECT ANY DICTIONARY, CONNECT to nauser;  
GRANT EXECUTE on CTXSYS.ctx_ddl to nauser;
```

- To enable future configuration of the “contains (full text)” search functionality, enable Oracle Text for the database.

Designating Unclustered Oracle During NA Installation

In an unclustered Oracle environment, note the following database options during installation:

1. When prompted for the Database Admin Login information, enter the database user with access to the NA tablespace.
2. When prompted to configure the database, select the “Clean database for use by NA” option. Do not return to the previous step after the database has been created.

Note: If you want to use an existing NA database created by a previous NA installation, select the “using existing database” option. The database will be upgraded to the current version, if applicable.

Designating Oracle RAC During NA Installation

In an Oracle RAC environment, note the following database options during installation:

1. When prompted for the Database Admin Login information, enter the database user with access to the NA tablespace.
2. When prompted to configure the database, select the “Clean database for use by NA” option. Do not return to the previous step after the database has been created.

Note: If you want to use an existing NA database created by a previous NA installation, select the “using existing database” option. The database will be upgraded to the current version, if applicable.

3. When prompted for database credentials, do the following:
 - a. In a text editor, open the `<NA_HOME>/server/conf/JDBCDrivers.properties` file.
 - b. Set the `oracle.url` variable in the following format:

```
oracle.url=jdbc:oracle:thin:@//<server>:<port>/<service_name>
```

Replace the variables as follows:

- `<server>` is the IP address or fully-qualified hostname of the Oracle RAC cluster.
- `<port>` is the port of the Oracle RAC cluster.
- `<service_name>` is the service name of the Oracle RAC cluster.

c. Save the file.

d. At the NA installer prompt, enter the following information:

- For the database IP address or hostname, enter the value of `<server>` in the `oracle.url` variable.
- For the database port, enter the value of `<port>` in the `oracle.url` variable.
- For the database SID / Service Name, enter the value of `<service_name>` in the `oracle.url` variable.

4. After NA installation completes, ensure that the Oracle RAC cluster information in the `<NA_HOME>/server/ext/jboss/server/default/deploy/db_ds.xml` file is current.

Microsoft SQL Server Database Options

SQL Server database configuration requirement:

- To enable future configuration of the “contains (full text)” search functionality, install and enable the SQL Server Full Text Search service for the database.

Make note of the following SQL Server Database options during NA installation:

1. When prompted for the Database Admin login, if you do not select the “Use Windows Authentication” option, make sure you have set all privileges at the global level.
2. When prompted for the database administrator credentials, provide a SQL Server user account with the `sysadmin` role. You can use the SQL Server SA user account or a custom user account.
3. When prompted whether or not to create a new database or use an existing one, select the “Create New Database” option.

Note: If you want to use an existing NA database created by a previous NA installation, select the “using existing database” option. The database will be upgraded to the current version, if applicable.

4. When prompted for credentials for a new database user, provide a user name that does not yet exist in SQL Server.

As the SQL Server administrator user, the NA installer does the following database actions:

1. Populates the NA database with the NA tables.
2. Creates a new SQL Server user with the provided credentials. The NA core connects to the NA database using this new account.

Install Nmap

Nmap enables you to scan networks to determine which hosts are up and the services they offer.

Install Nmap as described in the section appropriate to the operating system of the NA core server:

- ["Installing Nmap on a Windows Operating System " below](#)
- ["Installing Nmap on a Linux Operating System" below](#)

For more information about Nmap, see “Scanning Methods” in the *NA User Guide*.

Installing Nmap on a Windows Operating System

The Nmap execution file included with NA might not be compliant with all Windows versions. Be sure to download the correct Nmap install packages for your Windows versions.

Installing Nmap on a Linux Operating System

To install Nmap on a Linux operating system, follow these steps:

1. `cd <NA_HOME>/server/ext/nmap`
2. Install the RPM package using the following command:

```
rpm -i <rpm file>
```

For example:

```
cd <NA_HOME>/server/ext/nmap  
rpm -i nmap-3.81-1.i386.rpm
```

3. Create a link to the nmap executable in the `<NA_HOME>/server/ext/nmap` directory:

```
cd <NA_HOME>/server/ext/nmap  
ln -s /usr/bin/nmap nmap
```

Obtain an NA License

You must obtain new NA 10.00 permanent license keys before upgrading.

Tip: In a multiple NA core environment, use the same license keys on all NA cores.

NA supports the following license types:

- **InstantOn** — InstantOn licenses are shipped with the product. Each InstantOn license is limited to 250 devices and 60 days of use after installing the product.
- **Permanent** — Permanent licenses must be obtained through the HP License Key Delivery Service. Permanent licenses do not have an expiration date.
- **Evaluation** — Evaluation licenses are temporary licenses with customized capacity and duration. For more information, contact your NA Sales Representative.

To obtain NA 10.00 permanent license keys, follow these steps:

1. Go to <http://support.openview.hp.com/support.jsp>.
2. Click **Sign-in with HP Passport** or the **Login** button, enter your credentials, and click the **Sign-in** button.
3. Click the **Downloads** tab.
4. Click the **Software Updates** box.
5. Click the **My Updates** link.
6. Either select your Service Agreement ID (SAID) from the pull-down menu or enter your SAID, agree to the terms and conditions, and click **Submit**.
7. Expand the **Network Management Center** node.
8. Select the HP NA version 10.00 line.
9. Click the **Get Software Updates** button.
10. Click the **Get Licensing** tab.
11. Verify the selected product name.
12. Click the **Get License** link.
13. On the Search Entitlements to Activate page, verify the selected entitlement, and then click **Activate**.
14. Save the NA license file and then transfer it to a location accessible from the NA core server.

Optional. Verify the Signature of the NA Installer

A Gnu Privacy Guard (GPG) signature file (.sig) is included with all NA installers on the NA installation media. HP recommends that you verify the authenticity of the NA installer before installing NA. To verify the validity of a file, follow the instructions for "Verification using GPG" at:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning>

This process is valid for all operating system platforms supported by NA. File verification can be done on any system that supports running gpg. Because the verification process might vary depending on the gpg version and operating platform, consult the documentation for your version of gpg.

Run the NA Installer

If you are installing NA on a Windows platform, run the Install Wizard. If you are installing NA on a Linux platform, run the CLI Installer.

The NA installer sets the Java virtual machine (JVM) heap size in relation to the amount of system RAM and the number of processors. Generally speaking, the installer sets the JVM heap size to half of the RAM. (The NA installer does not explicitly set the size of the young generation, so this value defaults to 1/3 of the JVM heap size.) Note the following exceptions:

- If the NA core server has more than 64GB of RAM, the NA installer sets the JVM heap size to 32GB.
- If HP Network Node Manager i Software (NNMi) is already installed on the NA core server, the NA installer sets the JVM heap size to 512MB regardless of the system RAM size. In this case, the NA installer sets the JVM permanent generation garbage collection (PermGen) to 128MB.

Note: Be sure you have a supported version of ActivePerl (for Windows) or Perl (for Linux) installed before installing NA. For information about supported versions, see the *NA Support Matrix*.

Note: If the installation fails, save all log files to a location outside the NA directory structure before re-running the installation.

Read the section appropriate to your operating system type.

Running the Installer on a Windows Operating System

With Administrator privileges, do the following to install NA:

1. On the Windows taskbar, click Start, and then click Run.
2. Enter: <drive>:\windows\windows_[nnn]-[mmddyy]_setup_64.exe, where <drive> is the letter of your CD-ROM drive and [nnn]-[mmddyy] is the build number.
3. Click OK.

Follow the instructions on the screen.

Note: Setup does not work with PC Anywhere. If you attempt to run Setup through PC Anywhere, you cannot view the windows to step through the installation. This also affects uninstalling NA.

Running the Installer on a Linux Operating System

To install NA on a Linux server, follow these steps:

1. Log on to the Linux server as the `root` user.
2. If the installer is on physical media, mount that drive:

- a. `mount /mnt/cdrom`
- b. `cd /mnt/cdrom`

3. Change to the directory containing the CLI installer.

On the physical media, change to the `linux` directory.

4. Set the time zone environment variable using the following commands:

```
TZ=UTC
export TZ
```

5. Set the open file limit for this session:

- a. Determine the open file limits by running the following commands:

```
ulimit -Sn
ulimit -Hn
```

The soft file limit must be at least 32768.

The hard file limit must be at least 32768.

- b. If necessary, update the soft file limit by running the following command:

```
ulimit -n 32768
```

6. Run the installer:

```
./linux_[nnn]-[mmddyy]_setup_64.bin
```

Follow the instructions on the screen.

If you see the following errors in the log file, verify the value of the `TZ` environment variable, and then restart the NA Service Pack Installer:

```
SQLException while trying to connect to the database.
java.sql.SQLException: ORA-00604: error occurred at recursive SQL level 1
ORA-01882: timezone region not found
```

Set the ulimit Values for Running NA (Linux only)

On the NA core server, ensure that the open file limits are set appropriately for each NA session.

1. Change to the following directory:

```
/etc/init.d
```

2. Back up the `truecontrol` file to a location outside the `/etc` directory.
3. In the `truecontrol` file, add the following line as the first non-commented line:

```
ulimit -n 32768
```

4. In an NA Horizontal Scalability environment, repeat all of the previous steps on each NA core server.
5. On each NA server, restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

Install the Latest NA Driver Pack

The NA upgrade installer overwrites the existing driver pack on the NA server with the driver pack embedded in the installer. To prevent a functionality regression, after you upgrade or install NA, install the latest NA Driver Pack. Follow these steps:

1. Go to the HP Live Network web site at:

<https://hpln.hp.com//node/19/contentfiles?dir=2257>

(under Driver Packs > Network Automation Version 10.xx Driver Packs)

Access to this page requires an HP Live Network user account.

2. Download the latest NA Driver Pack.
3. Install the downloaded driver pack.

Chapter 5: Uninstalling NA and MySQL

Uninstalling NA requires several steps. The most significant steps are uninstalling NA itself and removing related components from either Windows, or Linux. If you chose to install a MySQL database with NA, you may want to uninstall that database at the same time, however, you permanently lose your historical data if you delete the database.

Note: MySQL must be uninstalled separately.

Keep in mind when uninstalling NA, the uninstall does not drop the database. If you manually drop the database, you must ensure that those files are removed before trying to re-install NA.

Note: If the uninstall fails, save all log files to a location outside the NA directory structure before re-running the uninstall process.

This chapter contains the following topics:

- ["Uninstalling NA from Windows" below](#)
- ["Manually Uninstalling NA \(Windows\)" on the next page](#)
- ["Uninstalling MySQL 5.0.58 \(NA Installer\)" on the next page](#)

Uninstalling NA from Windows

The following steps assume you installed NA using the default directories and names. If you installed NA in a different directory or used different names, adjust accordingly.

To uninstall NA from Windows, do the following:

1. Click **Start > Programs > HP Network Automation> Uninstall HP Network Automation**.
2. Click **Uninstall**.
3. When the uninstall program is done, click Finish.
4. A message appears saying that you must reboot. The folder `c:\NA` (the installation folder) is removed when you reboot the computer.

Note: If you upgraded to a newer version of NA on a Windows platform, the NA Uninstaller does not remove the FTP service. As a result, after uninstalling NA, enter the `sc delete TrueControlFTP` command from the command line prompt to delete the FTP service.

Uninstalling NA from Linux

To uninstall NA from Linux, do the following step as the root user:

1. Change to the `<NA_HOME>/UninstallerData` directory (for example: `/opt/NA/UninstallerData`).
2. Enter: `./Uninstall_HP_Network_Automation`
3. After the uninstaller completes, delete the `<NA_HOME>` directory if it still exists.

Manually Uninstalling NA (Windows)

If the NA uninstaller makes no progress for over 10 minutes stop the NA uninstaller process and do the following:

1. Run the following commands to stop all NA services:

```
{<NA_HOME>} \server\ext\wrapper\bin\UninstallAAAWrapper-NT.bat  
{<NA_HOME>} \server\ext\wrapper\bin\UninstallJBossWrapper-NT.bat  
{<NA_HOME>} \server\ext\wrapper\bin\UninstallSWIMWrapper-NT.bat  
{<NA_HOME>} \server\ext\wrapper\bin\UninstallSyslogWrapper-NT.bat  
{<NA_HOME>} \server\ext\wrapper\bin\UninstallTFTPWrapper-NT.bat
```

2. Delete the NA folder.
3. Delete the following Windows registry keys if they exist:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Rendition Networks\TrueControl  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TrueControlJBoss  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TrueControlAAA  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TrueControlJBossSWIM  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TrueControlJBossSyslog  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TrueControlJBossTFTP
```

4. Manually delete the `%WINDIR%\temp\Rendition` folder. (Note: `%WINDIR%` is usually located in `C:\WINDOWS` or `C:\WINNT`. However, it might reside on a different drive.)

Uninstalling MySQL 5.0.58 (NA Installer)

This section includes information on uninstalling MySQL 5.0.58 if MySQL 5.0.58 was installed by the NA Installer.

To uninstall MySQL 5.0.58 on a Windows platform:

1. Double click `[$MYSQL_HOME]\bin\remove-service.bat`.
2. Backup the MySQL data folder if necessary.
3. Manually delete `[$MYSQL_HOME]`. Where `[$MYSQL_HOME]` is where MySQL is installed.

To uninstall MySQL 5.0.58 on a Linux platform:

1. Run `/etc/init.d/mysql stop`
2. Back up the MySQL data folder if necessary.
3. Run `rm -rf /etc/init.d/mysql /etc/my.cnf [$MYSQL_HOME]`, where `[$MYSQL_HOME]` is where MySQL is installed (`/opt/mysql` is the default).

Appendix A: Common Procedures

This section describes procedures that are common to many HP Network Automation Software (NA) configuration and maintenance tasks. It includes the following topics:

- ["Start, Stop, or Restart All NA Services" below](#)
- ["Disable All NA Services" on the next page](#)
- ["Working with .rcx Files" on the next page](#)

Start, Stop, or Restart All NA Services

Stopping the NA services before changing the NA configuration prevents conflicting data from being stored in the NA database. Some procedures call for restarting the NA services to read the updated configuration.

To start all NA services

- *Windows*: Open the **Services** control panel. In the list of services, right-click each of the following services, and then click **Start**:
 - TrueControl ManagementEngine
 - TrueControl FTP Server
 - TrueControl SWIM Server
 - TrueControl Syslog Server
 - TrueControl TFTP Server
- *Linux*: Run the following command:

```
/etc/init.d/truecontrol start
```

To stop all NA services

- *Windows*: Open the **Services** control panel. In the list of services, right-click each of the following services, and then click **Stop**:
 - TrueControl ManagementEngine
 - TrueControl FTP Server
 - TrueControl SWIM Server
 - TrueControl Syslog Server
 - TrueControl TFTP Server
- *Linux*: Run the following command:

```
/etc/init.d/truecontrol stop
```

To restart all NA services

- *Windows*: Open the **Services** control panel. In the list of services, right-click each of the following services, and then click **Restart**:

- **TrueControl ManagementEngine**
 - **TrueControl FTP Server**
 - **TrueControl SWIM Server**
 - **TrueControl Syslog Server**
 - **TrueControl TFTP Server**
- *Linux*: Run the following command:

```
/etc/init.d/truecontrol restart
```

Disable All NA Services

Some procedures call for disabling automatic startup of the NA services on system boot.

To disable all NA services

- *Windows*: Open the **Services** control panel. In the list of services, right-click each of the following services, click **Properties**, and then set Startup Type to **Disabled**:
 - **TrueControl ManagementEngine**
 - **TrueControl FTP Server**
 - **TrueControl SWIM Server**
 - **TrueControl Syslog Server**
 - **TrueControl TFTP Server**
- *Linux*:

```
mv /etc/rc.d/rc5.d/S99truecontrol /etc/S99truecontrol
```

Working with .rcx Files

The HP Network Automation Software (NA) property files use the `.rcx` extension. NA reads `.rcx` files in reverse alphabetical order. If a given setting is in multiple `.rcx` files, NA uses the last-read value. Thus, the settings in the `adjustable_options.rcx` file take precedence over the settings in the other `.rcx` files installed with NA.

Note: At startup, NA reads *all* files in the `jre` directory and interprets their contents for NA configuration options. For this reason, save all backup copies of `.rcx` files outside the root NA directory.

In Horizontal Scalability environments, NA shares the actual values of most settings, not the `.rcx` files, across the NA cores. When a setting is modified on one NA core, that setting is replicated to the other NA cores. If an NA core is not operational during the change replication, that NA core does not receive the change. In that case, at a later time, use the Admin > Distributed > Renew Configuration Options page to push changes to other NA cores.

Tip: The distributed system options section of the `appserver.rcx` file lists the settings that are specific to one NA core and are not shared across the NA cores.

Some configuration changes require `.rcx` file modifications. The `.rcx` files are located in the following directory:

- *Windows*: `<NA_HOME>\jre`
- *Linux*: `<NA_HOME>/jre`

Caution: Always edit `.rcx` files with care. These files use XML format. If a `.rcx` file change results in invalid XML, the NA console might not start correctly.

Tip: It is recommended to make all configuration changes in the `adjustable_options.rcx` file. NA patch installations and product upgrades might overwrite any of the other NA-installed `.rcx` files.

The general procedure for changing `.rcx` files is as follows:

1. Back up the `.rcx` file to a location outside the `<NA_HOME>` directory.
(NA reads all `.rcx` files within the NA directory structure.)
2. Add new content or update existing content as described in the instructions.
3. Save the `.rcx` file.
4. Reload the `.rcx` settings by doing *one* of the following:
 - In the NA console, on the Admin > Administrative Settings > User Interface page, click **Save**.
 - Run the `reload server options` command from the NA proxy.
 - Restart the NA services.

Tip: Some changes do not take effect until the NA services have been restarted.

Appendix B: Other Installation Topics

This section includes information for maintaining your HP Network Automation Software (NA) installation. It includes the following topics:

- ["Deploying NA License Information" below](#)
- ["System Status Page" on the next page](#)
- ["Database Upgrades" on the next page](#)

Deploying NA License Information

The best practice for deploying an NA 10.00 license is to provide the text file containing the NA license key to the NA core server during installation or upgrade. In this way, the NA console is immediately accessible. If you do not provide the NA license text file during installation or upgrade and the InstantOn license has already been consumed, NA is unusable until you provide valid NA 10.00 license information.

To deploy an NA license key after product installation or upgrade, follow the procedure that matches your situation:

- If you can log on to the NA console:
 - a. Obtain an NA license key as described in ["Obtain an NA License" on page 39](#).
 - b. Log on to the NA console as an NA administrator.
 - c. On the About HP Network Automation page (**Help > About HP Network Automation**) click the **View License Information** link.
 - d. On the License Information page, copy the entire contents of the delivered license file into the text box, and then click **Update License**.
- If you cannot log on to the NA console:
 - a. Obtain an NA license key as described in ["Obtain an NA License" on page 39](#).
 - b. Copy the new NA license key into the `license.dat` file, which is located in the NA installation directory (`<NA_HOME>`).
 - If the file exists, completely replace the current contents with the entire contents of the delivered license file.
 - If the file does not exist, create the file to include only the contents of the delivered license file (with no extra lines).
 - c. Restart all NA services. See ["Start, Stop, or Restart All NA Services" on page 47](#).

System Status Page

If you do not know the name of the existing NA database, before shutting down NA do the following:

1. On the menu bar under Admin, click System Status. The System Status page opens.
2. In the Monitor Name column, locate DatabaseMonitor.
3. Click the View Details option in the Actions column. The database information is displayed.

Database Upgrades

This topic describes how to upgrade the NA database separately from upgrading the NA core software. If you also need to upgrade the NA core software, see the appropriate instructions first:

- ["Upgrading to NA 10.00 from a Different System" on page 12](#)
- ["Upgrading to NA 10.00 on the Same System" on page 24](#)

For a same-system upgrade of the database software on the database server used by NA, follow these steps:

1. Stop all NA services.
2. Back up the NA database.

Note: When you enter a database name to identify the NA database, it must be in the identical case as the database name in the database application. For example, if you created your NA database as "Nadb," be sure to enter "Nadb" when backing up and restoring the database.

3. Upgrade the database to a version supported by NA 10.00.
4. Restart NA and verify that NA is working properly.

Note: For all database upgrades, consult the documentation provided by the appropriate vendor and your database administrator (DBA).

We appreciate your feedback!

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on Installation and Upgrade Guide, July 2014 (Network Automation Software 10.00)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to ovdoc-nsm@hp.com.