HP Network Automation Software

For the Windows®, Linux, and Solaris operating systems

Software Version: 9.20

Support Matrix

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Acknowledgements

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Documentation Updates

This guide's title page contains the following identifying information:

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HP Network Automation Support Matrix

This document provides an overview of the system requirements and supported platforms for HP Network Automation Software (NA) version 9.20. It contains the following topics:

➤   This document is updated as new information becomes available. To check for recent updates, or to verify that you are using the most recent edition of a document, go to:

http://h20230.www2.hp.com/selfsolve/manuals

Hardware and Operating System Requirements

Before installing NA, verify that your NA application server meets the following minimum requirements.

▶ The NA application server must have a static IP address.

⚑ If you are using an external database, for the database server hardware and operating system requirements, see the database documentation.

Supported Hardware

Table 1 lists the physical hardware NA supports.

Table 1   NA-Supported Hardware

Processor	Supported Operating System Types	Notes
Intel® 64-bit (x86-64) AMD 64-bit (AMD64)	Windows Linux	• Minimum of 2.5GHz • 1 physical CPU with 6 cores and 12 logical processors with hyper-threading • NA does not support the Intel Itanium® processor family.
Oracle SPARC64 VI or later (M-Series) Oracle SPARC T4 or later (T-Series)	Oracle Solaris	• Minimum of 2.5GHz • 1 physical CPU with 6 cores and 12 virtual processors • For co-resident NA and HP Network Node Manager i Software (NNMi), use an M-Series processor.

Supported Virtual Servers

Table 2 lists the virtual servers NA supports.

Table 2   NA-Supported Virtual Servers

Virtual Server	Supported Operating System Types	Notes
VMware: • ESX Server 3.5 • ESX 4.0 or later minor version • ESXi 4.1 or later minor version • ESXi 5.0 or later minor version	• Host OS: — Windows — Linux • Guest OS: Any of the operating systems listed in Table 4, NA-Supported Operating Systems	• The virtual environment must meet the x86-64 or AMD64 hardware requirements listed in Table 1, NA-Supported Hardware.
Microsoft® Hyper-V R2	• Host OS: Windows Server 2008 R2 x64 • Guest OS: Any of the Windows operating systems listed in Table 4, NA-Supported Operating Systems	
Oracle Solaris Zones	Oracle Solaris	

If you are running NA in a virtual environment, review the follow guidelines:

- Because NA can be network intensive, many virtual machines sharing a virtual switch and network interface card could result in unexpected behavior, including time-outs and failed tasks.

- Each virtual environment is different and could function differently under loads with shared VM guests.

- On a virtual server, it is recommended that the Disk I/O be split. The virtual server must have two arrays:

  — One array for the host operating system

  — One array for the virtual machines

- Live migration (for example, using Vmotion) of the NA application server is not recommended.

- If you plan to use virtual machines for both the NA application and the NA database, ensure that they are running on different guests. It is recommended to host the database virtual machine on a different array to avoid conflicting I/O on the array. Verify that the database is supported in a virtual environment.

- When configuring NA on virtual machines in a Multimaster Distributed System environment or a Horizontal Scalability environment, the maximum number of NA application servers is two.

- Some virtual guests time drift, which can be an issue and should be corrected. Synchronizing the guests to an external time source can solve this issue.

- Each NA guest system must be configured with a set reservation for CPU and memory. These reservations should be at least 125% of the standalone server requirements listed in Table 3, System Configuration Requirements. Ensure that the resource pool containing the NA guest system has adequate resources to consistently deliver the CPU and memory reservations to the NA guest system.

Performance Issues

To counter performance issues while running NA in a virtual environment, do the following:

- Increase hardware resources on the physical host.

- Ensure resources are dedicated to the NA application server guest.

- Decrease the number of guests running simultaneously.

- Add a network interface card dedicated to NA to the virtual server.

A large number of concurrent tasks increases NA resource demand. If performance issues arise, reduce the number of concurrent tasks or provide more resources to the NA virtual server. (This suggestion also applies to physical servers.)

Troubleshooting and Support

HP Support will endeavor to support NA in a virtual environment, and HP does not require customers to recreate and troubleshoot every product issue in a non-virtual environment. However, HP reserves the right to request that customers diagnose certain issues in a native, certified operating system environment without the virtual image. HP will only make this request when there is strong indication to believe that the virtual environment is a contributing factor to the issue.

RAM, Swap/Disk Space, and Network Requirements

Table 3 lists the approximate minimum requirements and reflects levels tested by HP. If you have a particularly complex environment, you might want to provision more powerful hardware.

Table 3   System Configuration Requirements

Server	Memory	Swap Space	Disk
Separate Application Server	16 GB RAM	16 GB[a]	40 GB
Separate Database Server	16 GB RAM	16 GB	512 GB, Fast SCSI
Combined Application Server and Database Server	16 GB RAM	16 GB	512 GB, Fast SCSI

a.   NA on a Solaris system requires a large amount of swap space because of the way the `fork()` system call works. For example, forking a 24 GB process allocates 24 GB in the swap file, which guarantees space to swap out the new process if necessary. If the 24 GB is not available in swap, the `fork()` system call fails.

When the application and database servers are different systems, the connection between the servers should be at least 100 Mbps Fast Ethernet, full duplex.

Port Utilization

NA communicates with devices using a combination of protocols and ports. If you use a given protocol, NA requires access to the corresponding port. Specifically, if NA communicates with devices protected by firewalls, these ports must be open, or you must use an alternative means of communication, such as an NA Satellite server. For information about allocating ports, see "Appendix B, Troubleshooting," in the *NA Installation and Upgrade Guide*.

Operating Systems

Table 4 lists the supported operating systems for the NA application and the NA satellite.

▶ As of version 9.20, the NA application runs on 64-bit architecture only. For information about upgrading from a 32-bit architecture, see "Upgrading to NA 9.20 from a Different System" or "Upgrading to NA 9.20 on the Same System" in the *NA Installation and Upgrade Guide*.

Table 4 NA-Supported Operating Systems

Operating System	NA Application Supported Versions	NA Satellite Supported Versions
Windows Server 2008:		
• x64 Datacenter Edition, SP2	X	
• R2 x64 Datacenter Edition, SP1	X	
• x64 Enterprise Edition, SP2	X	None
• R2 x64 Enterprise Edition, SP1	X	
• x64 Standard Edition, SP2	X	
• R2 x64 Standard Edition, SP1	X	

Note: RSA device authentication is not yet available on Windows Server 2008. If you run NA on a Windows operating system require RSA device authentication, you cannot install or upgrade to NA 9.20 at this time.

Operating System	NA Application Supported Versions	NA Satellite Supported Versions
Linux:		
• Red Hat Enterprise Linux Server AS 4.0 or later minor version		X
• Red Hat Enterprise Linux Server 5.4 or later minor version through 5.6	X	X
• Red Hat Enterprise Linux Server 6.0 or later minor version	X	
• SUSE Linux Enterprise Server 9		X
• SUSE Linux Enterprise Server 11 SP1	X	

Tip: Red Hat does not support direct upgrades from Red Hat Enterprise Linux Server 5.x to 6.0.

Operating System	NA Application Supported Versions	NA Satellite Supported Versions
Solaris:		
• Oracle Solaris 10 SPARC	X	X

Note:
- Before installing NA on a Solaris platform, reconfigure the Syslog server to not listen for remote Syslog messages.
- NA on a Solaris system requires a large amount of swap space because of the way the `fork()` system call works. For example, forking a 24 GB process allocates 24 GB in the swap file, which guarantees space to swap out the new process if necessary. If the 24 GB is not available in swap, the `fork()` system call fails.

Supported Databases

See the appropriate section for your environment:

- Databases for Standalone NA Core on page 10
- Databases for Multimaster Distributed System on page 11
- Databases for Horizontal Scalability on page 11

Databases for Standalone NA Core

The NA database can be installed on any supported platform. Table 5 describes the supported databases for a standalone NA Core environment.

Table 5   Standalone NA Core - Supported Databases

Database Version	Supported NA Versions	Notes
Oracle 10g R2 (10.2.0.2, 10.2.0.4, or 10.2.0.5) Standard or Enterprise Edition	9.20 with or without patches	64-bit Oracle is supported.
Oracle 11g R1 (11.1.0.7) Standard or Enterprise Edition	9.20 with or without patches	
Oracle 11g R2 (11.2.0.1 or 11.2.0.2) Standard or Enterprise Edition	9.20 with or without patches	
Oracle Real Application Clusters (RAC) on Oracle 11g R2 (11.2.0.1 or 11.2.0.2) Enterprise Edition	9.20 with or without patches	
Microsoft SQL Server 2005 Standard or Enterprise Edition (SP2 or higher)	9.20 with or without patches	64-bit Microsoft SQL Server is supported. NA does not support the use of Microsoft SQL Server Named Instances.
Microsoft SQL Server 2008 Standard or Enterprise Edition	9.20 with or without patches	
MySQL 5.0.58	9.20 with or without patches	The supported version of MySQL ships with NA and runs on all NA-supported operating systems.

It is recommended to run the NA application and the NA database on separate physical machines. In addition, the database server should be dedicated to NA, rather than serving multiple applications.

Databases for Multimaster Distributed System

Table 6 describes the supported databases for a Multimaster Distributed System environment.

Table 6   Multimaster Distributed System - Supported Databases

Database Version	Supported NA Versions	Limitations
Oracle 10g R2 (10.2.0.2, 10.2.0.4, or 10.2.0.5) Enterprise Edition	9.20 with or without patches	No more than five NA Cores can be configured together.
Oracle 11g R1 (11.1.0.7) Enterprise Edition	9.20 with or without patches	
Oracle 11g R2 (11.2.0.1 or 11.2.0.2) Enterprise Edition	9.20 with or without patches	
Microsoft SQL Server Standard or Enterprise Edition 2005 (SP2 or higher)	9.20 with or without patches	No more than two NA Cores can be configured together. The maximum number of managed devices should not exceed 6,500.
Microsoft SQL Server Standard or Enterprise Edition 2008	9.20 with or without patches	NA does not support the use of Microsoft SQL Server Named Instances.
MySQL	None	MySQL is not supported for Multimaster Distributed System environments.

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

Databases for Horizontal Scalability

Table 7 describes the supported databases for a Horizontal Scalability environment.

Table 7   Horizontal Scalability - Supported Databases

Database Version	Supported NA Versions	Limitations
Oracle 10g R2 (10.2.0.2, 10.2.0.4, or 10.2.0.5) Standard or Enterprise Edition	9.20 with or without patches	No more than five HP Network Automation application servers can be configured together with a single database.
Oracle 11g R1 (11.1.0.7) Standard or Enterprise Edition	9.20 with or without patches	
Oracle 11g R2 (11.2.0.1 or 11.2.0.2) Standard or Enterprise Edition	9.20 with or without patches	
Oracle Real Application Clusters (RAC) on Oracle 11g R2 (11.2.0.1 or 11.2.0.2) Enterprise Edition	9.20 with or without patches	

Table 7   Horizontal Scalability - Supported Databases (cont'd)

Database Version	Supported NA Versions	Limitations
Microsoft SQL Server Standard and Enterprise Edition 2005 (SP2 or higher)	9.20 with or without patches	No more than five HP Network Automation application servers can be configured together with a single database.
Microsoft SQL Server Standard and Enterprise Edition 2008	9.20 with or without patches	NA does not support the use of Microsoft SQL Server Named Instances.
MySQL	None	MySQL is not supported for Horizontal Scalability environments.

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

Disaster Recovery

NA has been tested with Oracle GoldenGate configured with an Oracle database.

For more information, see the *NA Disaster Recovery Configuration Guide*, available from the HP Product Manuals web site at **h20230.www2.hp.com/selfsolve/manuals**. Use your HP Passport account to access this site, or register a new HP Passport identifier.

Authentication

Table 8 lists the authentication components that have been tested with NA.

Table 8   NA-Supported Authentication Components

Authentication Type	NA Console	NA Command-Line Interface
Microsoft Active Directory on Windows Server 2008 with Domain and Forest function level: Windows 2000	X	X
Cisco Secure Access Control System version 3.1 for TACACS and RADIUS	X	X
Cisco Secure Access Control System version 5.1 for TACACS and RADIUS (recommended)	X	X

Table 8   NA-Supported Authentication Components (cont'd)

Authentication Type	NA Console	NA Command-Line Interface
OpenLDAP version 2.4.23	X	X
On the NA application server, RSA Authentication Manager version 6.1 with SecurID Software Tokens version 3.x and SoftID version 3.0.7 or 4.1 (needed for the Windows operating system only)	X	
On the NA application server, RSA Authentication Manager version 7.1 with SecurID Software Tokens version 4.1 and SoftID version 4.1 (needed for the Windows operating system only) (recommended)	X	

▶ RSA device authentication is not yet available on Windows Server 2008. If you run NA on a Windows operating system require RSA device authentication, you cannot install or upgrade to NA 9.20 at this time.

Satellite Configuration

NA 9.20 delivers the version gw-37.0.0.0.12.7-2 of the gateway software. This version corresponds to the gateway software shipped with HP Server Automation (SA) 7.50 and 7.60.

Satellite configurations use SA tunnels. Sharing Gateways between SA and NA is supported in SA 7.50 and NA 9.20.

To run an NA and SA Satellite co-residency environment, you will need two CPUs, 4 GB RAM, and 128 GB disk space. You can only manage 1,500 servers and 5,000 network nodes. For information about configuring a Satellite environment, see the *NA Satellite Guide*.

Java API

The Java API has been tested with the following operating systems:

- Windows Server 2008 R2
- Windows Server 2003
- Windows Server 2000, SP2
- Windows 2000 Professional, SP2
- Red Hat Enterprise Linux Server 5.2
- Red Hat Enterprise Linux Server AS (update 2 and 3)
- Oracle Solaris 10

Integration and Coexistence with Other Products

Coexistence

The following product can co-exist on the same system as the NA version 9.20 application server:

- HP Network Node Manager i Software (NNMi) version 9.20

🚩 It is recommended that NA and NNMi each run on a dedicated server.

Integrations

Table 9 lists the products have additional functionality available through an integration with NA version 9.20. Unless otherwise stated, patched versions of NA also integrate with patched or unpatched versions of the products listed here.

Table 9   Supported Integrations with NA

Integrating Product	Versions	Notes
HP Business Service Automation Essentials (BSAE)	• 2.01 • 9.10 • 9.11	All versions require the NA-provided hotfix for QCCR1B99473 applied to the BSAE system.
HP Live Network Connector (LNc)	• 3.11.01 or later	The latest HP Live Network Connector is recommended.
HP Network Node Manager i Software (NNMi)	• 9.20	Documented in the *HP Network Node Manager i Software—HP Network Automation Integration Guide*.
HP Operations Orchestration Software (HP OO)	• 9.00 • 9.02 • 9.03	
HP Server Automation Software (SA)	• 9.13	

Web Browsers

General Web Browser Requirements

- Disable all pop-up window blockers for the browser.
- Enable cookies for the browser.
- Enable JavaScript (active scripting) for the browser.

- Install Adobe® Flash version 9.x or later (for proper display of the device selector). For information about disabling the use of Flash, see the *NA Administration Guide*, available from the HP Product Manuals web site at **h20230.www2.hp.com/selfsolve/manuals**. Use your HP Passport account to access this site, or register a new HP Passport identifier

Supported Web Browsers

- Microsoft Internet Explorer (32-bit and 64-bit) version 8 (not running in Compatibility View mode)

- Microsoft Internet Explorer (32-bit and 64-bit) version 9 (not running in Compatibility View mode)

- Mozilla Firefox 10.x ESR

  The Firefox ESR (Extended Support Release) browser is available from **http://www.mozilla.org/firefox/organizations/all.html**.

Internationalization and Localization Support

NA 9.20 can be installed on an operating system running under the following non-English locales or character sets:

- UTF-8

- GB2312 for Simplified Chinese

- Shift-JIS for Japanese

- EUC-KR for Korean

▶ To switch the locale of an English Windows Server 2008 platform to Asian languages, the DBCS support must first be installed.

NA accepts a local language in the following places:

- Comment fields

- Description fields

- Custom data labels

- Custom data fields

- Most name and text fields, such as device location and vendor

You can search on single and multi-byte character sets, as long as the field being searched accepts them. You can also import and export configuration policies that contain single and multi-byte character sets.

▶ On Windows systems, NA does not support installation using directory paths with localized characters. The path name for the NA installation directory can contain English characters only.

Before using Internet Explorer to access an NA application server that is configured to support an Asian Language, install the East Asian Language with the following procedure:

1   In the Control Panel, select **Regional and Language Options**.

2   On the Languages tab, select **Install files for East Asian Languages**, and then follow the instructions.

Oracle Localization Considerations

When using NA globalization support with Oracle, specify the appropriate database character set when creating a new Oracle database. In addition, if the language you select is double-byte encoded, for example Chinese, Korean, or Japanese, you might also want to set the NLS_LENGTH_SEMANTICS initialization parameter to CHAR, so that one DBCS character is counted as "one" instead of "two."

SQL Server Localization Considerations

During NA installation, you are prompted to select a Collation Type when configuring a new SQL Server database. The goal is to facilitate the use of NA regardless of your native language, writing system, and cultural conventions.

SQL Server collation dictates the character set that is stored in the database. For example, if you select a Chinese collation, you can only enter Chinese characters, not Japanese, Korean, and so on. You can always enter Latin characters regardless of the collation type.

For SQL Server, NA supports the following collations:

- SQL_Latin1_ General_CP1_CI_AS
- Chinese_PRC_CI_AS
- Japanese_CI_AS
- Korean_Wansung_CI_AS

For more information about collations, see the documentation for your database.

MySQL Localization Considerations

NA supports UTF-8 non-English Oracle locales. NA does not support any language other than English when MySQL is used as the back-end database.

For MySQL, NA supports the following collations:

- latin1
- utf8
- sjis
- gb2312
- euckr

For more information about collations, see the documentation for your database.

Additional Applications

You might need access to the following optional applications:

- Adobe Reader version 6.0 or later to view the NA documentation.
- Microsoft Excel 2000 or later to view Summary Reports.

- ActivePerl 5.8.x (for Windows)

- Perl 5.8.x (for Solaris and Linux)

- Perl Net::SSH::Expect module (for using the Opsware::NAS::Connect module with SSH), Linux and Solaris only

➤ SSH connections to the NA Perl API require the Net::SSH::Expect module. Due to limitations of ActiveState ActivePerl on Windows, the NA Perl API does not support SSH connections from Windows systems. As a workaround, install the NA client on a supported Linux or Solaris system, and run the NA Perl API from that system.

HP Network Automation Supported Devices Matrix

To access the *NA Supported Devices Matrix*, view the *Supported Devices- NA 7.x and later* document on the HP Live Network web site:

https://hpln.hp.com/node/19/contentfiles?dir=2258

(under Driver Packs > Documentation)

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

We appreciate your feedback!

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