SolarWinds N-central

Version 12.1 SP1 HF2 (build 12.1.1.324)
Upgrade paths and notes

To upgrade to 12.1 SP1 HF2, your SolarWinds N-central server must be running one of the following versions:

- SolarWinds N-central 12.0.0.285-400
- SolarWinds N-central 12.0.1.118-500
- SolarWinds N-central 12.1.0.744-1150
- SolarWinds N-central 12.1.1.153+

Note the following when upgrading SolarWinds N-central.

Agents currently on unsupported Operating Systems such as XP and 2003, will not upgrade but will remain functional.

Scheduled Tasks may expire if the Agent on an associated device is being upgraded when the task is scheduled to be completed. Agent upgrades are normally short in duration but may be delayed if a re-start of the device is pending.
What we've fixed in SolarWinds N-central

Release 12.1 SP1 HF2 (Build 12.1.1.324)

- We've fixed an issue where RDP remote control wasn't working if SSH to N-central was blocked (NCCF-11165).
- We've fixed an issue where MSP Manager tickets weren't showing up in the N-central UI (NCCF-11114).
- We've addressed a problem where a System Error was preventing the creation of SNMP custom services (NCCF-11108).
- We've addressed a problem where N-central was preventing the creation of Customers and Devices whose name stated with a numeric character (NCCF-11053).
- We've solved an issue where the PKG version of the macOS agent crashes on MacOS 10.14 (Mojave) (NCCF-10381).

Release 12.1 SP1 HF1 (Build 12.1.1.230)

- We've fixed a problem where scheduled tasks were incorrectly executing after a device reboot (NCCF-11104).
- We've addressed an issue where some N-central servers became unresponsive after upgrading to 12.1 SP1 (NCCF-11047).
- We've fixed a problem where XML-based e-mail were not being sent because the notification payload was incorrectly being set to a NULL value (NCCF-10568).
- The N-central OpenSSH software has been updated to 5.3p1-124 (NCCF-10865).
- The N-central PostgreSQL database has been updated to v9.3.25 (NCCF-10410).
- We've enhanced the N-central security profile by performing the following changes. Thanks to Call2 B.V., a Dutch Partner, for identifying these issues and working with us to resolve them:
  - The N-central web server has been updated so that the Directory Indexing feature has been disabled (NCCF-10437).
  - The "permitted-cross-domain-policies" setting in the Cross-Domain Policy (CDP) of N-central has been set to "none" (NCCF-10434).
  - Two changes have been made to Password Reset feature in N-central (NCCF-10414):
    - It’s been enhanced to send out a time-limited token for password resets, instead of a temporary password.
    - It now shows the same message when resetting a password, regardless of whether or not the user exists.
  - The link that accesses Report Manager will use a POST request to login, as long as Report Manager is running v5.0 SP5 RC or above (NCCF-10414).
Known Limitations

The "Known Issues" list for the current version of the SolarWinds N-central software is composed of material issues significantly impacting performance whose cause has been replicated by SolarWinds MSP and where a fix has not yet been released. The list is not exclusive and does not contain items that are under investigation. Any Known Issues set forth herein may not impact every customer environment. The SolarWinds N-central software is being provided as it operates today. Any potential modifications, including a specific bug fix or any potential delivery of the same, are not considered part of the current SolarWinds N-central software and are not guaranteed.

Active Issues

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>When exporting a large list of Active Issues items to PDF format at either the System or Service Organization level, the server may fail. Exporting to CSV format does not cause this problem.</td>
<td>62860</td>
</tr>
</tbody>
</table>

Agents & Probes

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication issues may be encountered for SolarWinds N-central Probes installed on Windows servers that have multiple NICs. For more information, refer to &quot;KBA20020: Configuring A Server With Multiple NICs&quot; in the online Help.</td>
<td>67778</td>
</tr>
</tbody>
</table>

Automation Manager

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Automation Manager Policies created using Automation Manager 1.6 or earlier may result in Failed to create an EndDate ... errors if the Policies are run on a computer using a different date format. This issue does not affect Policies created using Automation Manager 1.7 or later.</td>
<td>65712</td>
</tr>
</tbody>
</table>

AV Defender and Backup Manager – D2D

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom Settings option no longer available in 10 for backup profiles.</td>
<td>NSBM-709</td>
</tr>
<tr>
<td>ShadowProtect Data Reader service is using high CPU due to large amount of historical data as part of the backup.</td>
<td>74971</td>
</tr>
<tr>
<td>The About Backup Manager dialog box no longer indicates if the Backup Manager software is licensed.</td>
<td>68226</td>
</tr>
</tbody>
</table>
Custom Services

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom services may appear as misconfigured when the system locale of the device is not set to English. For example, in Portuguese the default decimal in c#/.net is not a period, &quot;,&quot;, it is a comma, &quot;,&quot;. If you are having this issue, please contact SolarWinds N-able Technical Support.</td>
<td>65288</td>
</tr>
</tbody>
</table>

Dashboards

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modifying a Dashboard that is associated with a large number of services may cause performance issues when using the Firefox browser.</td>
<td>70326</td>
</tr>
</tbody>
</table>

Core Functionality

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warranty information might be inaccurate when determining the warranty expiry dates of devices that are not located in the USA.</td>
<td>NCCF-3649</td>
</tr>
<tr>
<td>URL with embedded username and password prompts for Java upgrade, logging in manually does not prompt.</td>
<td>NCCF-2415</td>
</tr>
<tr>
<td>Chrome 42.x does not support NPAPI plugins which means that Java and Direct Connect will not function with that browser version. When attempting to open remote control connections in Chrome 42.x, users will be repeatedly prompted to install either Java or the NTRglobal plugin with no successful connections made. To resolve this issue, perform the following:</td>
<td>73359</td>
</tr>
<tr>
<td>1. In the Chrome address bar, type chrome://flags/.</td>
<td></td>
</tr>
<tr>
<td>2. Under <strong>Enable NPAPI</strong>, click Enable.</td>
<td></td>
</tr>
<tr>
<td>3. Restart Chrome.</td>
<td></td>
</tr>
</tbody>
</table>

PSA Integration

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>In some instances, tickets closed in PSAs are not being cleared in SolarWinds N-central. This is likely because the ticketing recipient profile in SolarWinds N-central has <strong>Do not change the Ticket Status</strong> selected (in order to manually configure tickets). Then, when the ticket is removed in the PSA, SolarWinds N-central will not be able to update/resolve the ticket's status and new tickets cannot be created for the same issue. Until a solution is available</td>
<td>65620</td>
</tr>
</tbody>
</table>
through the UI for this situation, the work around is to set a Return to Normal status and set a non-used status in the 'updatable statuses' section or set the same status as the return to normal one. This will cause SolarWinds N-central to add a note to the ticket on return to normal but will not alter the ticket's status. This will allow the stale ticket check to remove the ticket from the system.

### UI

<table>
<thead>
<tr>
<th>Description</th>
<th>Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td>After re-naming, the <strong>Names</strong> of files or Registry entries may not be displayed properly in the <strong>File System</strong> window and the <strong>Registry</strong> window of the <strong>Tools</strong> tab when using Internet Explorer.</td>
<td>68149</td>
</tr>
</tbody>
</table>
## End of support

The following are being deprecated in a future release of SolarWinds N-central:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Layer Security (TLS)</td>
<td>A future release of SolarWinds N-central will start disallowing traffic over TLS 1.0 and TLS 1.1. This will cause any Windows Agents or Windows Probes that are running on Windows XP and Windows Server 2003, as well as pre-v12.1 versions of the MacOS agent, to lose the ability to communicate with your SolarWinds N-central server. We strongly recommend using a Windows Probe to monitor those devices.</td>
</tr>
<tr>
<td>Internet Explorer 11</td>
<td>Due to declining usage in the field, a future release of SolarWinds N-central will drop support for the Internet Explorer 11 web browser.</td>
</tr>
<tr>
<td>Pager and SMS Services</td>
<td>In an upcoming release of SolarWinds N-central, the SMS Services and Pager Services features will be deprecated. Any user accounts with a Notification Method that utilizes those services will need to be updated to use an alternative delivery mechanism for notifications.</td>
</tr>
<tr>
<td>Agents</td>
<td>As of next major release for those of you still utilizing the AV5 Bitdefender Antivirus be advised that monitoring from our AV5 agents will no longer continue. As a result this will leave your environments in a vulnerable state. We encourage you to review your agents to ensure you are now utilizing our latest AV6 agents. Reminder that our online help for Security Manager is available on the NRC.</td>
</tr>
</tbody>
</table>
SolarWinds N-central System Requirements

The following requirements are for typical usage patterns, acknowledging that some patterns may require greater system resources from an SolarWinds N-central server than others.

If you have any questions about how your needs affect the system requirements of your SolarWinds N-central server, contact your Channel Sales Specialist or email n-able-salesgroup@solarwinds.com.

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel Xeon E5-2600 series or similar.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Hardware</td>
<td>The server (non-virtual) used to install SolarWinds N-central in a bare metal environment must be certified to run Red Hat Enterprise Linux 6.9 (x64) by Red Hat, or the hardware vendor, without any additional drivers. Please check the Red Hat Customer Portal for details.</td>
</tr>
</tbody>
</table>

⚠️ UEFI (Unified Extensible Firmware Interface) boot support is a technology preview in CentOS 6.x, and not supported. As a result, SolarWinds N-central must be installed using the legacy BIOS boot method.

Solid State Drives are not Recommended. Hard drives should be server-grade hard drives, such as SCSI, SAS or Fibre Channel, for managing more than 1,000 devices. Desktop-grade hard drives, for example SATA, may be used for managing less than 1,000 devices, but are not recommended due to performance issues.

System requirements by number of devices managed

The table below lists the minimum specifications required to manage the number of devices indicated (based on average usage). Performance can be improved by exceeding these requirements. When determining your hardware requirements, consider any growth in managed device count that may occur over time.

<table>
<thead>
<tr>
<th>NUMBER OF DEVICES</th>
<th>CPU CORES</th>
<th>MEMORY</th>
<th>STORAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1,000</td>
<td>2</td>
<td>4 GB RAM</td>
<td>75 GB HDD</td>
</tr>
<tr>
<td>Up to 3,000</td>
<td>4</td>
<td>8 GB RAM</td>
<td>150 GB HDD</td>
</tr>
<tr>
<td>Up to 6,000</td>
<td>8</td>
<td>16 GB RAM</td>
<td>300 GB HDD</td>
</tr>
<tr>
<td>Up to 9,000</td>
<td>12</td>
<td>24 GB RAM</td>
<td>450 GB HDD</td>
</tr>
<tr>
<td>Up to 12,000</td>
<td>16</td>
<td>32 GB RAM</td>
<td>600 GB HDD</td>
</tr>
<tr>
<td>Up to 16,000</td>
<td>22</td>
<td>48 GB RAM</td>
<td>800 GB HDD</td>
</tr>
<tr>
<td>Up to 20,000</td>
<td>28</td>
<td>64 GB RAM</td>
<td>1,000 GB HDD</td>
</tr>
</tbody>
</table>
Notes

1. Server-grade hard drives (such as SAS, SCSI, or Fibre Channel) are required to ensure performance and power-loss data protection.

2. Hard drives on the SolarWinds N-central server should not be shared with other applications that have significant I/O workloads. For example, Report Manager should not be installed on the same drive as SolarWinds N-central.

3. SolarWinds MSP recommends two or more hard drives be placed in a RAID to improve redundancy. With two drives, RAID 1 must be used. With more than two drives, RAID 1+0 is preferred, but RAID 5 is also an option.

4. SolarWinds MSP recommends more, smaller disks in a RAID array, as opposed to fewer larger disks. Database backed applications, like SolarWinds N-central, have better write performance with an increased number of spindles.

5. If using Solid State Drives (SSDs), SolarWinds MSP requires Enterprise Grade SSDs with a SAS interface. SSDs must have an endurance rating of at least 0.2 DWPD (Drive Writes Per Day), and at least 4 physical disks in a RAID 10 array. The RAID array must appear to the operating system as a Block Device. At this time, many PCIe and NVMe disks do not meet this last requirement.

6. SolarWinds N-central must be run on a server with a RAID controller that includes a Flash-Backed Write Cache (FBWC) or Battery-Backed Write Cache (BBWC).

7. Configure the RAID controller to use the default stripe size and a Read/Write cache of 50%/50%.

Examples of supported servers

Due to the ecosystem of different hardware, SolarWinds MSP does not certify specific hardware configurations. Instead we rely on the upstream Red Hat Enterprise Linux and hardware vendor testing and certification.

Examples of servers that have been Red Hat certified include HPE ProLiant - ML350 Gen9 and Dell PowerEdge R720.

Please consult with your hardware vendor to ensure that any server to be used for a bare metal installation meets the above requirements, and is Red Hat Enterprise Linux 6.9 certified, without the need for additional drivers. Physical servers must support legacy BIOS boot, as the newer UEFI boot is a technology preview in CentOS 6.x, and not supported. SolarWinds MSP does not support UEFI boot at this time.

SolarWinds MSP recommends that for any bare metal server, two or more SAS 10k or faster hard drives be placed in a RAID array to improve redundancy. RAID 1+0 is preferred, but RAID 5 is also supported (at the hardware RAID BIOS level).
Support for virtualized environments

SolarWinds N-central supports those versions of VMware ESX Server and Windows Server Hyper-V that are compatible with Red Hat Enterprise Linux 6 (x64). Use the latest stable versions of VMware or Hyper-V are used in order to ensure the best performance and compatibility with SolarWinds N-central.

⚠️ **Hyper-V on Windows Desktop Operating Systems not Supported.**

SolarWinds N-central installed on a virtual machine in Hyper-V that is running on a Windows desktop operating system is not a supported configuration. Hyper-V must be installed on a supported server class Windows operating system.

Microsoft Windows Server 2016 is the newest Long Term Support (LTS) version of the Windows Server product, and is supported as a Hyper-V host for SolarWinds N-central. Microsoft has released versions subsequent to Windows Server 2016 known as "Semi-Annual" releases, specifically Windows Server 1706 and Windows Server 1803 that are not supported as Hyper-V hosts for SolarWinds N-central.

SolarWinds MSP is committed to providing support to customers using virtualized environments as we do with other SolarWinds N-central certified hardware.

ℹ️ If you need to deploy SolarWinds N-central in a Hyper-V environment with more than seven virtual processors or more than 30GB of allocated RAM, contact Technical Support for assistance.

About virtualization

Virtualization provides an abstraction layer between the hardware and the OS which permits the operation of multiple logical systems on one physical server unit. The table below includes considerations when using this deployment method.

<table>
<thead>
<tr>
<th>System Performance</th>
<th>It is impossible to guarantee the scalability or performance of an SolarWinds N-central server deployed on a Virtual Machine due to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- variability in field environments resulting from virtualization server configurations,</td>
</tr>
<tr>
<td></td>
<td>- number of guests run on the virtualized server, and</td>
</tr>
<tr>
<td></td>
<td>- performance of the underlying VMware system.</td>
</tr>
</tbody>
</table>

| Supportability     | SolarWinds MSP supports the SolarWinds N-central software deployed in VMware and Hyper-V in the same way that we support SolarWinds N-central deployed in other environments. This support is limited to the components (software and OS) shipped with SolarWinds N-central and does not include troubleshooting of virtualization systems or performance issues related to environmental factors. These are supported on a best-effort basis. In the event of serious performance problems, we might ask you to move the system to a physical hardware deployment. |
Generation

Installing SolarWinds N-central as a guest on a Hyper-V server requires that the Virtual Machine is Generation 1. Attempting to install SolarWinds N-central on a Generation 2 Virtual Machine will fail.

Network Adapters (VMware only)

N-central supports both E1000 and VMXNET3. When the VM is configured as Red Hat 6, it will use VMXNET3 by default (which is preferred).

MAC Addresses

SolarWinds N-central does not support dynamic MAC addresses. Static MAC addresses must be configured for the virtual machine where you install SolarWinds N-central.

Recommended configuration for the virtualized server

- Assign higher resource access priority to SolarWinds N-central than competing systems.
- Do no over-provision memory on the host system. Over-provisioning causes disk based swapping that impacts system performance.
- Ensure that the system has sufficient RAM and hard drive space to provide permanently allocated resources.

Supported Software

Browsers

SolarWinds N-central supports the latest versions of:

- Internet Explorer®
- Microsoft Edge®
- Mozilla Firefox®
- Desktop versions Google Chrome®. Mobile phone browsers are not supported.

Chrome 42.x does not support NPAPI plugins (including Java and Direct Connect). When you attempt to launch a remote control connection in Chrome 42.x, you will be repeatedly prompted to install Java or the NTRglobal plugin without success.

Workaround:
In the Chrome address bar, type chrome://flags.
Under Enable NPAPI, click Enable.
Restart Chrome.

SolarWinds N-central is not supported on Internet Explorer in Compatibility View mode.

Attended Remote Control and Direct Connect remote control connections are not supported on 64-bit browsers.
Remote Control
Remote control connections require the following software on the computers that initiate connections:

- Java 6 Update 20 or greater

Report Manager
To use Report Manager with SolarWinds N-central, ensure you upgrade to the latest version of Report Manager.

Automation Manager
Automation Manager requires .NET Framework 4.5.2 and PowerShell 3.0 to run AMP-based services with SolarWinds N-central.

SNMP Community String
When monitoring the SolarWinds N-central server using SNMP, the community string used for SNMP queries to the server must use **N-central_SNMP**, not **public**.

Supported Operating Systems
This section describes the supported operating systems for SolarWinds N-central.

Windows Agents require:

- Microsoft .NET Framework 4.5.2 (or later)

Windows Server 2019

- Windows Server 2019 Datacenter
- Windows Server 2019 Standard

Windows Server 2016

- Windows Server 2016 Datacenter
- Windows Server 2016 Standard
- Windows Server 2016 Essentials
- Windows Storage Server 2016
- Windows Server 2016 MultiPoint Premium Server
- Microsoft Hyper-V Server 2016

Windows Server 2012

- R2 Datacenter
- R2 Essentials
- R2 Foundation
- R2 Standard
- Datacenter 64-bit Edition
- Essentials 64-bit Edition
- Foundation 64-bit Edition
- Standard 64-bit Edition
- Storage Server 2012 Enterprise 64-bit Edition
- Storage Server 2012 Express 64-bit Edition
- Storage Server 2012 Standard 64-bit Edition
- Storage Server 2012 Workgroup 64-bit Edition

Windows Server 2008
- R2 Datacenter Server
- R2 Enterprise Server
- R2 Foundation Server
- R2 Standard Server
- R2 Web Server

The following are required to install Windows Agents on a server using Windows Server 2008 R2 Server Core 64-bit:
- The operating system must be Windows Server 2008 R2 Server Core 64-bit SP1 or later.
- .NET Framework 4 for Server Core (64-bit) must be installed.

Microsoft Windows Hyper-V
- Server 2012 64-bit Edition
- Server 2008 R2

Windows 10
- Microsoft Windows 10 Enterprise & Professional
- Education editions

Windows 8 and 8.1
- 8.1 Enterprise
- 8.1 Enterprise 64-bit Edition
- 8.1 Professional
- 8.1 Professional 64-bit Edition
- 8 Enterprise
- 8 Enterprise 64-bit Edition
- 8 Professional
- 8 Professional 64-bit Edition
- 8 64-bit Edition
Windows 7

- Microsoft Windows 7 Enterprise & Professional
- Microsoft Windows 7 Ultimate

Linux Agents

Independent Agents are required for 32-bit and 64-bit Linux OS installations.

The probe performs an SSH connection a Linux device. To discover a Ubuntu/Debian OS device, the device must have openssh installed.

- CentOS 6.7 and higher (32/64-bit)
- Red Hat Enterprise Linux 6.6 and 7 (32/64-bit)
- Ubuntu 18.04 (LTS build of "Bionic Beaver")
- Ubuntu 16.04 (LTS build of "Xenial Xerus")
- Ubuntu 14.04 (LTS build of "Trusty Tahr")
- Debian 8.7 32-bit (using Ubuntu Agent DEB version 14 x86)
- Debian 8.7 64-bit (using Ubuntu Agent DEB 14 x64)

Mac Agents

- 10.14 (Mojave)
- 10.13 (High Sierra)
- 10.12 (Sierra)

AV Defender

Workstation Operating Systems

- Microsoft Windows Vista SP1
- Microsoft Windows 7
- Microsoft Windows 8, 8.1
- Microsoft Windows 10
- Microsoft Windows 10 TH2
- Microsoft Windows 10 Anniversary Update "Redstone"

Tablet And Embedded Operating Systems

- Windows Embedded Standard 2009
- Windows Embedded POSReady 2009
- Windows Embedded Enterprise 7
- Windows Embedded POSReady 7
- Windows Embedded Standard 7
Server Operating Systems

- Microsoft Windows 2008
- Microsoft Windows 2008 Server
- Microsoft Windows 2008 R2
- Microsoft Windows Small Business Server 2011
- Microsoft Windows Home Server 2011
- Microsoft Windows 2012 Server
- Microsoft Windows 2012 Server R2
- Microsoft Windows 2016 Server

For Microsoft Windows Embedded Standard 7, TCP/IP, Filter Manager, and Windows Installer must all be enabled.

Patch Manager

Patch Manager

Workstation Operating Systems

- Microsoft Windows 7
- Microsoft Windows 8
- Microsoft Windows 8.1
- Microsoft Windows 10 version 1607 and later

Server Operating Systems

- Microsoft Windows Server 2008 R2 SP1
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2 SP1
- Microsoft Windows Server 2016

Unsupported Operating Systems

- Windows XP
- Windows Vista
- Microsoft Windows Server 2003
- Microsoft Windows Server 2008

Windows Update Agent

The minimum version of the Windows Update Agent (WUA) needs to be greater than 7.6.7600.320. The base NT build version of Windows should be 6.1 or later. Older versions of the base NT build cannot upgrade past version 7.6.7600.256 of the Windows Update Agent.
Automation Manager

Workstation Operating Systems

- Microsoft Windows 7 (32/64-bit)
- Microsoft Windows 8 (32/64-bit)
- Microsoft Windows 8.1 (32/64-bit)
- Microsoft Windows 10 (32/64-bit)

Server Operating Systems

- Microsoft Windows Server 2008 (32/64-bit)
- Microsoft Windows Server 2008 R2 (32/64-bit)
- Microsoft Windows Server 2012 (32/64-bit)
- Microsoft Windows Server 2012 R2 (32/64-bit)
Supported operating systems for remote control

The availability of remote control connections will vary depending on the operating systems of both the client and target devices. The table below outlines the operating systems and their compatibility with various remote control types.

<table>
<thead>
<tr>
<th>REMOTE CONTROL TYPE</th>
<th>WINDOWS</th>
<th>LINUX</th>
<th>MAC OS X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REMOTE SYSTEM</td>
<td>TECHNICIAN</td>
<td>REMOTE SYSTEM</td>
</tr>
<tr>
<td>Custom</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Take Control</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Remote Desktop</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>SSH</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TeamViewer</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Telnet</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Web</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

1. Requires a remote third-party desktop viewer compatible with Mac.
Licensing and Customer Support

Agent/Probe Installation Software

SolarWinds N-central 12.1 SP1 HF2 uses the 7-Zip file archiver for installing agents and probes. 7-Zip is free software redistributed under the terms of the GNU Lesser General Public License as published by the Free Software Foundation. For more information, see http://www.7-zip.org.

Customer Support

Contact SolarWinds MSP to activate your SolarWinds N-central server.

<table>
<thead>
<tr>
<th>Web Page:</th>
<th><a href="http://www.solarwindsmsp.com">http://www.solarwindsmsp.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Support Self-Service Portal:</td>
<td><a href="https://support.solarwindsmsp.com/kb/">https://support.solarwindsmsp.com/kb/</a></td>
</tr>
<tr>
<td>Phone:</td>
<td>Toll Free (U.S./CAN): 1-866-302-4689</td>
</tr>
<tr>
<td></td>
<td>International: +800-6225-3000</td>
</tr>
<tr>
<td></td>
<td>Local: (613) 592-6676, select option 2 for support</td>
</tr>
</tbody>
</table>
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