NComputing™

N-series
Thin Clients
for Citrix HDX

User Manual

Important Notices

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www.ncomputing.com

Refer to the Limited Hardware Warranty applicable to your region for information on what is and what is not covered by the warranty, your responsibilities, exclusions, and how to obtain service. It is your responsibility to download a copy of the warranty at the time of purchase to keep for your records. The warranty can be downloaded from the "Documentation" page in the Support section of the NComputing website.

This product gives users shared access to computer resources. It is not a computer, and may not support all software applications, especially high-resolution graphics applications or 3D games that are designed to be supported by stand-alone computers. Similarly, it may not support all hardware peripherals that are designed to be supported by stand-alone computers.

Refer to your computer operating system and application software vendors' license agreements for information on using these products with NComputing systems. Additional software licenses may be required.

The NComputing hardware and software products described in this user manual are protected by numerous granted and pending U.S. and international patents. Some components of NComputing products utilize open-source software. Please refer to the GPL Declarations section of this User Manual for more information.

Your N-series purchase was bundled with an entitlement to vSpace Management Center and Premium Support

Review section 4.1 of this manual to learn more about claiming your vSpace Management Center license(s) and access to NComputing Premium Support.

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Regulatory Compliance

FCC Information

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment to a power outlet on a circuit different from which the receiver is connected
- Consult your dealer or an experienced radio TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

European Community:

Disposal Information:

This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. The separate recycling of your product will help ensure that it is recycled in a manner that protects human health and the environment.

GPL Declarations

The NComputing N-series access device contains – in part – some free software (software licensed in a way that ensures your freedom to run, copy, distribute, study, change and improve the software). This free software is also contained in the N-series firmware update files that are distributed online. The free software contained within the N-series firmware includes a version of X-LOADER, U-BOOT, LINUX, LIBSYSFS, LIBUCI, LIBUSBIP, ETHTOOL, UCLIBC, QT and BUSYBOX.

Further, for at least three (3) years from the date of distribution of the applicable product or software, we will give to anyone who contacts us at gplcoderequest@ncomputing.com, for a charge of no more than our cost of physically performing source code distribution, a machine-readable copy of the complete corresponding source code for the version of the software that we distributed to you. For additional information refer to this page on the NComputing website:
www.ncomputing.com/gplcodedownload

Safety Information

Refer to the following to prevent any physical injury or loss of assets caused by damage to the product.

A user must read this User Manual carefully before use and properly follow the instructions.

- Make sure that the place of installation is not too hot (above 35˚C), too cold (below 0˚C), or too wet (above 85% relative humidity).
- Avoid any severe impacts to the product
- Make sure that the product is not exposed to direct sunlight or any hot machinery.
- Please keep the product away from any items which have strong magnetic properties.
- Do not disassemble, repair or rebuild the product.
- Please properly route all cables and power cords to avoid a tripping hazard. An electric shock, fire, damage to the product or physical injury may occur as a result of tripping over the cable.

1.0 N-series Overview

The NComputing N-series HDX-ready Citrix access device utilizes powerful third-generation Numo™ 3 Software on Chip technology to deliver a high-performance, affordable client for Citrix environments. This user manual will walk you through the differences between each of the different N-series models and explain their basic functionality.

1.1 N-series models

The N-series is available in three distinct versions; the N400, N500, and N500w. The entry level N400 is the thin client of choice for task workers and those workers with light multimedia needs. The N500 adds client-side video rendering to enable the delivery of full 1080p multimedia content, improved network capabilities, as well as options for dual monitor and wireless connectivity.

| N400 | N500 | N500w |

	N400	N500	N500w
Network Bandwidth	10/100	10/100/1000	10/100/1000
Onboard Memory	256 MB	512 MB	512 MB
Video Playback	720p	1080p	1080p
4x USB 2.0 Ports	✓	✓	✓
DVI Video Output	✓	✓	✓
Optional Dual Monitor Support		✓	✓
Wireless Network Connectivity			✓

NOTE: The N500w supports secured wireless networks with **visible SSIDs** using **WPA** or **WPA2**.

1.2 N-series Package Contents

When you unpack your N-series device, you will find the following items: N-series device, N-series Quick Installation Guide, VESA Mounting bracket with screws, and 12V Power adapter.

1.3 N-series Peripheral Connections

Each of the different models within the N-series lineup feature the following peripheral options listed below from left to right in order of appearance on the device.

Front

Back

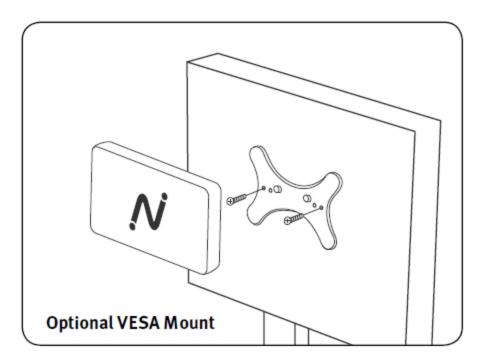| Front of Device	Back of Device
Power On/Off/Reset Switch	Wireless Network Antennae (N500w only)
2x USB 2.0 Ports	2x USB 2.0 Ports
Analog Speaker Port	RJ45 Ethernet Port
Analog Microphone Port	DVI Monitor Port
	12V DC Power Port
	Kensington Security Lock

1.4 VESA Mount

Included with each N-series device is a VESA mount which can be used to attach the N-series device to the back of any VESA compatible monitor, as shown below.

Optional VESA Mount

1.5 Citrix Requirements

To utilize the N-series device, you will need access to a Citrix environment. The N-series is compatible with the following Citrix environments:

- XenDesktop versions 5.0, 5.5, and 5.6
- XenApp 5, versions 6 and 6.5
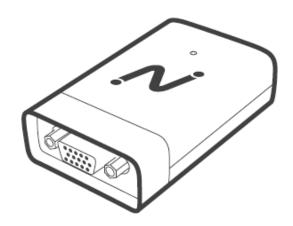- VDI-in-a-box 5.0 and 5.1

For more information on the installation and configuration of Citrix environments, visit http://www.citrix.com/lang/English/home.asp

1.6 Secondary Display Adapter

For deployments requiring two monitors per user, NComputing offers the N-series Secondary Display Adaptor. This accessory is offered in VGA and DVI models and is optimized for use with productivity applications and 2D graphics content.

The Secondary Display Adaptor makes use of DDC interface technology, allowing it to automatically scale its output to the full native resolution of most monitors.
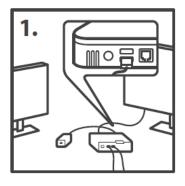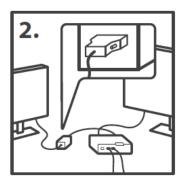
Installing the Secondary Display Adaptor

1. With the N-series powered off, connect the Secondary Display Adaptor to the lower USB port on the back of the device. This USB port is marked with a keyboard symbol.

    Note: You can relocate your USB keyboard to either of the USB ports on the front of the N-series. If you have run out of USB ports, a powered USB hub can be connected to either of the USB ports on the front the N-series device to support additional connections.

2. Connect your second monitor to the Secondary Display Adaptor and turn it on.

3. Turn on your N-series device.

2.0 Device Configuration

It is strongly recommended that before connecting your N-series for the first time, you review the configuration options to ensure that they conform to the needs of your environment.

You can reach the configuration screen by clicking the gear icon to the bottom left of the initial Log-in screen. Next to the gear icon is a dropdown that will allow you to change your keyboard layout to match a number of regional and national standards, as shown above.
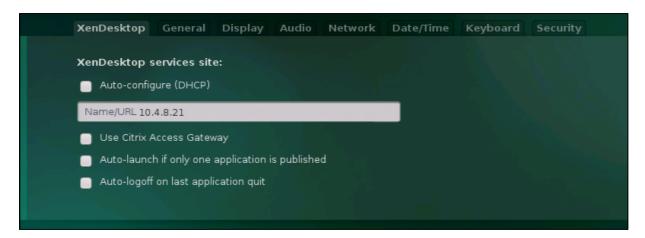

Once in the configuration screen, you can return to the Log-in screen at any time using the "Home" button. Remember to SAVE your configuration changes as you apply them using the "Save" button to the bottom left of the configuration window.

2.1 The XenDesktop Tab

The XenDesktop tab is used to point your N-series device to your XenDesktop Services Site as well as configure certain application behaviors.
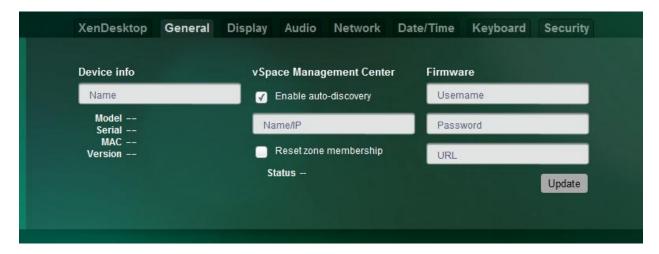

- **Auto-configure (DHCP)* –** Instructs the N-series device to obtain XenDesktop Services Site information automatically via DHCP (requires that you configure your DHCP server to distribute this information).

- **Name/URL –** Use this field if you wish to manually enter the IP, URL, or Fully Qualified Domain Name of your XenDesktop Services Site.

- **Use Citrix Access Gateway –** Enabling this feature will allow your N-series device to access your Citrix environment securely from outside your network via the Citrix Access Gateway.

- **Auto-launch if only one application is published** – If your XenDesktop environment is configured to only publish a single application to the user session obtained by a given device, you can use this feature to automatically launch that application on login.

- **Auto-logoff on last application quit** – Enabling this feature will cause your N-series device to automatically log out if all applications are closed.

*Note: You can configure your DHCP server to automatically provide your N-series device(s) with XenDesktop server information. This eliminates the need for you to manually configure this setting for each device. Review section 4.2 DHCP Options for Automatic N-series Configuration for more information.

2.2 The General Tab

The General Tab displays basic device information, is used to manage the connection between your N-series device and vSpace Management Center servers, and allows you to update your device firmware.

- **Device Info** – Here you can provide an identifying name for your device in the Name field, and view the device's model, serial number, MAC address, and firmware version.

- **vSpace Manage Center***

  - **Enable auto-discovery** – Instructs your N-series device to automatically search for and connect to vSpace Management Center servers within its subnet.

  - **Name / IP** – Here you can manually enter the IP or Fully Qualified Domain Name of a vSpace Management Center server within your network.

  - **Reset zone membership** – Enabling this feature will clear any previous zone membership information as the device joins a new vSpace Management Center server.
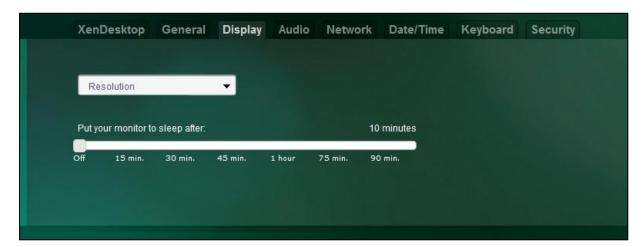
- **Firmware**

  - **Username / Password** – Enter the username and password of the FTP server you've stored your updated N-series firmware on.

  - **URL** – Enter the URL of the FTP server you've stored your updated N-series firmware on.

  - **Update** – Once you've specified the above information, press the Update button to begin a firmware update.

*Note: You can configure your DHCP server to automatically provide your N-series device(s) with vSpace Management Center server information. This eliminates the need for you to manually configure this setting for each device. Review section 4.2 DHCP Options for Automatic N-series Configuration for more information.

2.3 The Display Tab

The Display Tab contains settings for monitor resolution as well as screen saver functionality.

- **Resolution Dropdown –** Use the Resolution dropdown menu to select your desired monitor resolution.
- **Screensaver Delay –** The N-series can be instructed to turn off its video signal after a predefined period of idle time. Use this slider to enable this feature and define the desired idle period.

2.4 The Audio Tab

The Audio Tab allows you to configure audio input and output settings.

The Audio Tab contains the following options:

- **Enable speakers** – When checked, enables sound.
- **Enable microphone** – When checked, enables microphone input.

2.5 The Network Tab

The Network Tab allows you to configure N-series device network settings as well as change the device name.

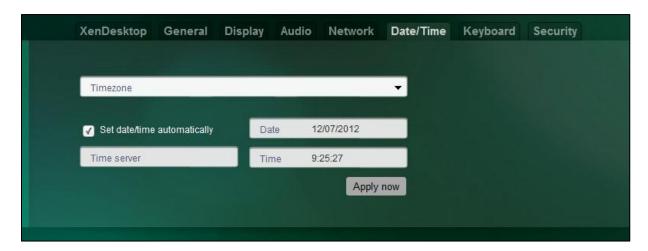**The Network tab includes the following options:**

- **Interface***
    - o **Wired –** Select to use a physical Ethernet connection.
    - o **Wireless –** Select to user a wireless network connection.

- **Obtain IP address**
    - o **Automatically (DHCP) –** Instructs the N-series device to automatically obtain its network configuration via DHCP.
    - o **Manually –** Allows you to manually configure the N-series device's network settings.

- **IP -** Enter the desired IP address for the N-series device.

- **Netmask -** Enter the desired Netmask for the N-series device.

- **Gateway -** Enter the desired Gateway for the N-series device.

- **Primary DNS -** Enter the address of your primary DNS server.

- **Secondary DNS –** Enter the address of your secondary DNS server (if applicable).

- **PING –** Enter an IP address and press the button marked "P" to test your network connectivity.

- **SSID* –** Click the "N" button to view and select from the currently visible wireless networks.

- **Security* –** Select the type of security used by your wireless network.

- **Key* –** Enter the security key appropriate for your wireless network. Click the "P" button to hide or show the password.

[*] Denotes a feature only available on the N500w

2.6 The Date / Time Tab

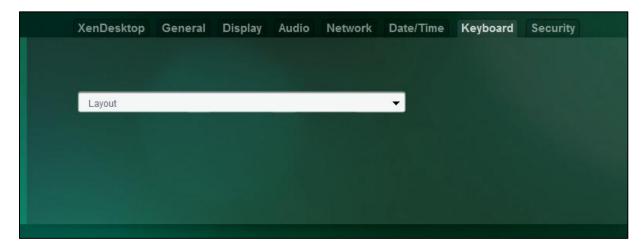The Date/Time Tab is used to set the internal clock of the N-series device.

The following settings are available under the System Date section:

- **Time zone Dropdown** – Select the appropriate time zone from this dropdown menu.

- **Set date/time automatically** – Enables the use of the NTP service to obtain automatic date/time information via your network.

- **Time server** – This field allows you to specify the NTP enabled time server you wish to use for your device.

- **Date / Time** – Click on these fields to set the current date and time.

- **Apply Now** – Press the Apply Now button to finalize your settings.
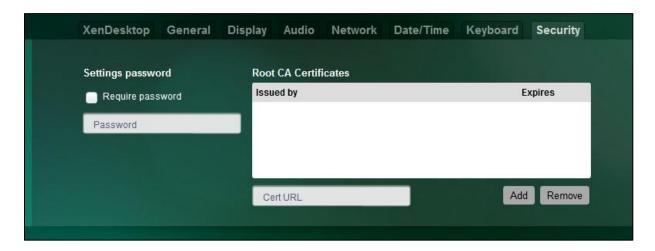
2.7 The Keyboard Tab

The Keyboard Tab provided access to localized keyboard layout support.

Use the dropdown menu featured on this screen to select a keyboard layout appropriate for your deployment.

2.8 The Security Tab

The Security Tab allows you to password protect your device settings and manage your security certificates.

- **Settings Password** – Enabling this feature and entering a password in the field provided will prevent other users from making changes to your device settings unless they have the specified password.

- **Root CA Certificates** – This field lists the certificates currently loaded on your device. You can manage certificates by specifying a certificate URL in the field provided and using the Add/Remove buttons.

3.0 Connecting to your Citrix Environment

From the initial Log-in screen, enter the User Name, Password, and Domain information of the Citrix Environment you wish to connect to. Once this information is entered, press the "LogOn" button.

Once you've logged into your Citrix environment, you'll be presented with a standard Citrix desktop layout as shown below. From this screen you can return to the Log-in screen by clicking "**Log Off**" towards the top of the window. You can lock your desktop using the "**Lock**" button, and unlock the desktop using the same password you used to log into your Citrix environment. The **search bar** at the top of the window can be used to locate applications available to your Citrix environment.

The "**Home**" icon on the left side of the screen returns you to this default desktop layout. The "Apps" icon allows you to browse through available applications and environments. Click the "Add Apps" button in the center of the screen to create shortcuts for available applications and environments.

4.0 Support and Additional Resources

4.1 Accessing your vSpace Management Center License(s) and Premium Support Entitlement

Your N-series thin client was bundled with an entitlement to receive the NComputing vSpace Management Center software along with one (1) year of Premium Support. To activate these entitlements follow these steps:

1. Go to: http://www.ncomputing.com/enroll

> **a.** If you already have an account on ncomputing.com – login at the prompt and fill out all the fields.
>
> > - If you do not have an account – follow the links to create an account (this also gives you access to various resources including posting on the NComputing Community) - make sure you enter your e-mail address correctly as this will be used to deliver your licenses and entitlement information
> >
> > - Return to the http://www.ncomputing.com/enroll page and fill out all the fields
>
> **b.** Click "Submit"

2. You will receive an e-mail confirmation immediately after your submit your request.

3. Within 2 business days you will receive an e-mail that includes:

> **a.** License key(s) for activating your vSpace Management Center installation (see vSpace Management Center user manual for details)
>
> **b.** Link to activate your Premium Support entitlement.

You will now have everything you need to begin taking advantage of your Premium Support account as well as the remote management features of vSpace Management Center.

4.2 DHCP Options for Automatic N-series Configuration

This section of the manual will assist administrators in configuring their Microsoft Windows DHCP server(s) to allow the NComputing N-Series to automatically connect to XenDesktop and vSpace Management Center environments. For the purpose of this user manual, we'll be illustrating this process using Server 2003 and Server 2008 R2. It should be noted however that any DHCP server can be used.

If you are already familiar with the administration of DHCP servers and the creation of option tags, feel free to skip to the N-series DHCP Tags section of this guide for a list of tags that the N-series supports.

For those less familiar with DHCP administration, the following pages describe how to access the DHCP settings in Server 2003 and Server 2008 respectively.

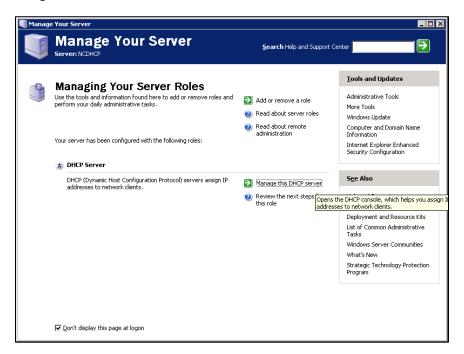## Accessing DHCP Settings in Windows Server 2003

From the DHCP server:

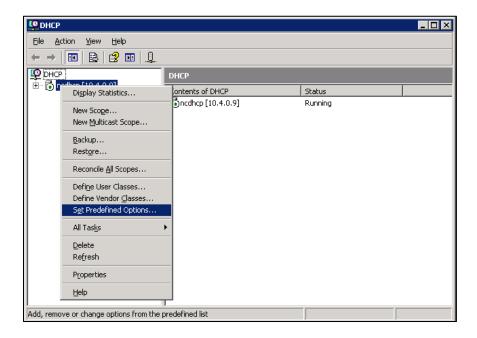1. From the Start Menu click "Manage Your Server"

2. Click "Manage this DHCP server" as seen below:

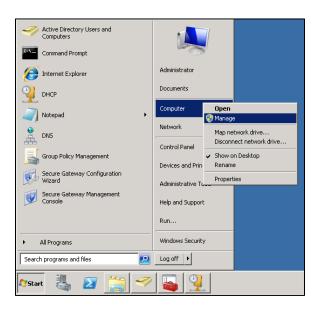3. Select DHCP and click "Set Predefined Options" as seen below.

4. Proceed to the **N-series DHCP Tags** section of this guide for a description of available DHCP tags and instructions for adding them to your DHCP server.
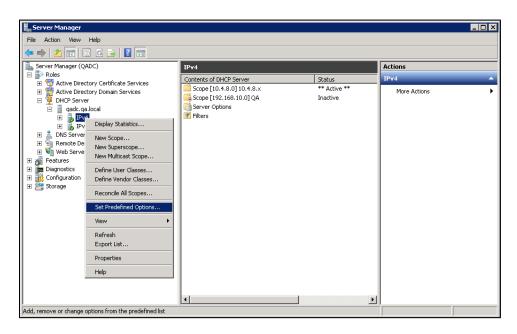
Accessing DHCP Settings in Windows Server 2008

From the DHCP Server:

1. Right-click Computer and select "Manage"
2. From the Computer Management window, open the Roles section and then the DHCP Server section as seen below.

3. Open the DHCP Server Name in question, right-click on IPv4, and select "Set Predefined Options". You are now ready to specify which DHCP tags you wish to add to your N-series environment. Each of the potential tags and their functions are explained in the next section of this guide.
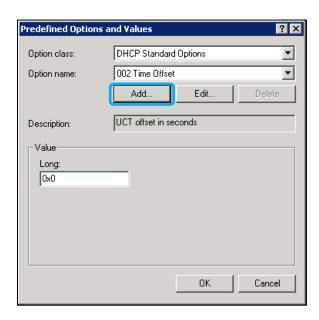
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N-series DHCP Tags

The N-series can make use of several DHCP tags and functions. This section will walk you through adding the tags and functions appropriate for your deployment.

1. From the Predefined Options and Values window, click the "Add" button.

2. Select and implement your chosen tags by filling out the Name, Data type, Code, and Description fields as specified below. **Note** that the "STRING VALUE" is used later in **step 5**.

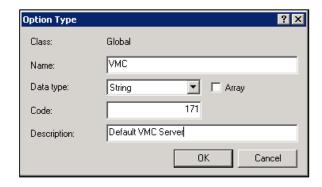| XenDesktop Tag 181		
This tag will automatically link your N-series device(s) with their designated XenDesktop server(s).	**Name**	XenDesktop*
	Data Type	String
	Code	181
	Description	Default XenDesktop server
	STRING VALUE	(The IP, URL, or Fully Qualified Domain Name of your XenDesktop server.)
	Notes	*We recommend you use "XenDesktop" plus the IP address or URL of your XenDesktop server to differentiate this tag from any future tags you might add.

NComputing CMF Tag 171

This tag will automatically link your N-series device(s) with their designated vSpace Management Center server.	**Name**	VMC*
	Data Type	String
	Code	171
	Description	Default vSpace Management Center Server
	STRING VALUE	(The IP or Fully Qualified Domain Name of your vSpace Management Center server)
	Notes	*We recommend you use "VMC" plus the IP address or URL of your vSpace Management Center server to differentiate this tag from any future tags you might add.

N-series Firmware Tag 172

| This tag allows you to direct your N-series devices to a server that you have created to store and distribute N-series firmware.

Use this tag to store the firmware server's network address.

If your firmware server requires a username and password, use tags 173 and 174 to store those details.	**Name**	N-series Firmware URL
	Data Type	String
	Code	172
	Description	Address of firmware update server.
	STRING VALUE	(The FTP, HTTP, or HTTPS address of your firmware server.)
	Notes	If the server you are storing N-series firmware on requires a username and password, add NComputing CMF Tags 173 and 174 to store that information.

N-series Firmware Tag 173

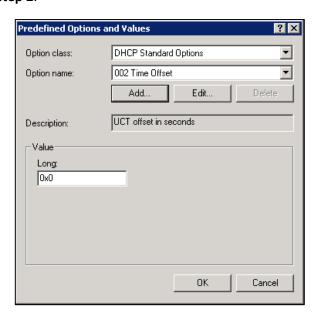| Use this tag in conjunction with 172 to store the firmware server's username (if username and password are required).	**Name**	N-series Firmware Username
	Data Type	String
	Code	173
	Description	Address of firmware update server.
	STRING VALUE	(The FTP, HTTP, or HTTPS address of your firmware server.)
	Notes	This tag is only required if the server you are storing N-series firmware on requires a username.

N-series Firmware Tag 174		
Use this tag in conjunction with 172 to store the firmware server's password (if username and password are required).	Name	N-series Firmware Password
	Data Type	String
	Code	174
	Description	Address of firmware update server.
	STRING VALUE	(The FTP, HTTP, or HTTPS address of your firmware server.)
	Notes	This tag is only required if the server you are storing N-series firmware on requires a password.

To the right is an example of a completed entry (in this case, the VMC 171 tag).

3. You can now verify that the tag you created has been saved by clicking on the **Option Name** drop down (see image below) and searching for the tag(s) in question.

4. Once again from the Predefined Options and Values window, select each tag and fill in the **Value** field with the string values specified earlier in **step 2**.

   a. **Example:** For Tag 171, the string value would be the IP address or Fully Qualified Domain Name of your vSpace Management Center server.

   b. **Note:** For tags that accept IP addresses, you can enter multiple IP addresses so long as each IP is separated by a semi-colon (;).

5. Once your entries are complete, click "OK". Your DHCP Tags are now configured. You may now exit Server Management.

4.3 NComputing Technical Support

For additional technical documentation, solutions, and how-to's, visit
http://www.ncomputing.com/kb/

To request Technical Support for NComputing products, please visit the NComputing Support
page at http://www.ncomputing.com/support

4.4 Additional Information on Citrix products and support

For additional information and support for Citrix products and environments, visit
http://www.citrix.com/lang/English/home.asp

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