NComputing®

X350 and X550
Desktop Virtualization Kits
with vSpace®

User Manual

Important Notices

Please note that reproduction of this user manual in whole or in part, without express written permission from NComputing, is not permitted.

NComputing reserves the right to make improvements and/or changes to this User Guide and to the products, programs and/or specifications described herein at any time without notice. Information contained in this document may have been obtained from internal testing or from a third party. NComputing shall not be liable for any direct, indirect, special, incidental or consequential damages in connection with the use of this material. The latest version of this User Guide can be downloaded from the "Documentation" area in the Support section of the NComputing website at: http://www.ncomputing.com/documentation

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 and 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" area in the Support section of the NComputing website.

Please refer to the End User License Agreement (EULA) and Terms of Use (TOU) that are presented for your review during the software installation process. The information contained in these documents is very important. The EULA and TOU constitute agreements between you and NComputing and are accepted by you by installing and using the product. It is your responsibility to print a copy of the EULA and TOU directly from the installer in order to keep for your records.

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.

Microsoft Windows Licenses. You are licensed by NComputing to use the vSpace software under the terms of the EULA. You must also acquire the appropriate number of Windows Server licenses and Client Access Licenses for each device or user accessing Windows Server software. You cannot use the vSpace software with Windows Client software (i.e., Windows XP, Windows 7) unless a single user and no other user accesses the same Windows Client software at any one time, or you are authorized to do so under an applicable license from Microsoft or as expressly set forth in the "Microsoft Windows Server to Windows XP License Rights" section of the NComputing EULA. In all cases, your rights and obligations with respect to the use of vSpace software with Windows Server software and Windows Client software are defined by both the NComputing vSpace software EULA and the applicable Microsoft Software License Agreement or EULA. For more information on licensing with Microsoft operating systems see: www.ncomputing.com/mslicensing

The NComputing hardware and software products described in this user manual are protected by numerous granted and pending U.S. and international patents.

Contents

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.

Please disconnect the Cat 5e or Cat 6 cable from the product when it is not in use for a long period of time.

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. For enhancing performance and reliability, we recommend using an FTP or STP cable between the X350 or X550 PCI card and the XD2 devices.

> This device complies with part 15 of the FCC Rules.
> Operation is subject to the following two conditions:
>
> (1) This device may not cause harmful interference, and
> (2) This device must accept any interference received, including interference that may cause undesired operation.

MIC Certification Information

X350 PCI Card

NCC-X350(B)

1.□□□□□(□□□): NComputing X-series (X350)

2.□□□□ □□ □□: □□□□ □□□□

  3.□□□/□□□□: □□□□ □□□□/□□

4.□□□□: □□ □□

X550 PCI Card

NCC-X550(B)

1.□□□□□(□□□): NComputing X-series (X550)

2.□□□□ □□ □□: □□□□ □□□□

  3.□□□/□□□□: □□□□ □□□□/□□

4.□□□□: □□ □□

XD2 Access Device

NCC-XD2(B)

1.□□□□□(□□□): NComputing X-series (XD2)

2.□□□□ □□ □□: □□□□ □□□□

  3.□□□/□□□□: □□□/□□

4.□□□□: □□ □□

□ □□□□ □□□□(B □)□□□ □□□□□□ □□□□ □ □□□□□ □□ □□□□□ □□ □□ □□ □□□□ □□, □□ □□□□□ □□□□ □ □□□□□.

□□□ □□ □ □□□□ □□□□ □□□□ X350/X550 PCI Card □ XD2 Access Device □ □□ □ FTP □□□ STP Cable □ □□□□ □□ □□□□.

Product Overview

NComputing vSpace desktop virtualization software divides your host PC's resources into independent virtual workspaces that give each user their own full PC experience. The X-series PCI card connects your PC to each of the XD2 access devices through a standard Category 5e or shielded Category 6 cable (sold separately). Each XD2 connects to a user's keyboard, monitor, mouse and speakers. All these components work together to efficiently harness the excess computing capacity of your PC so multiple users can share it at the same time.

- The X550 desktop virtualization kit includes a license for NComputing vSpace software, one full-height X550 PCI card, and five (5) XD2 access devices.

- The X350 desktop virtualization kit includes a license for NComputing vSpace software, one low-profile X350 PCI card, and three (3) XD2 access devices.

One X350 Kit Enables Four Users to Share a PC (Seven with Two Kits)

One X550 Kit Enables Six Users to Share a PC (Eleven with Two Kits)

One X550 kit adds five users to a PC, and an X350 kit adds three users to a PC. Including the first user that works directly on the PC, this means that:

- Six users can share a single PC with one X550 kit. With two X550 kits, you can add ten users to a PC for a total of eleven users sharing one PC.

- Four users can share a single PC with one X350 kit. With two X350 kits, you can add six users to a PC for a total of seven users sharing one PC.

Minimum System Requirements

Host Computer

Refer to the "vSpace Operating System Support Matrix" in the NComputing Knowledge Base for the latest information on supported operating system versions (note that unless specifically listed in the OS support matrix document, a new OS service pack may not be supported by then-current vSpace software). As a best practice, before deploying any new OS service pack, first confirm vSpace support per above and then test in a representative non-production environment with all your applications before rolling out to your complete environment (e.g. you should not allow automatic updates).

Microsoft Windows Licenses. You are licensed by NComputing to use the vSpace software under the terms of the End-User License Agreement (EULA). You must also acquire the appropriate number of Windows Server licenses and Client Access Licenses (CALs) for each device or user accessing Windows Server software. You cannot use the vSpace software with Windows Client software (i.e., Windows Vista, Windows 7) unless a single user and no other user accesses the same Windows Client software at any one time, or you are authorized to do so under an applicable license from Microsoft or as expressly set forth in the "Microsoft Windows Server to Windows XP License Rights" section of the NComputing EULA.[1] In all cases, your rights and obligations with respect to the use of vSpace software with Windows Server software and Windows Client software are defined by both the NComputing vSpace software EULA and the applicable Microsoft Software License Agreement or EULA. For more information on licensing with Microsoft operating systems see: www.ncomputing.com/mslicensing

Each X550 PCI card requires an available full-height PCI slot, while each X350 requires either an available full-height or half-height PCI slot.

For a single X350 kit with 1-4 users, a host PC should have a minimum of a 2.4 GHz processor or any dual-core processor and 2 GB RAM. For a single X550 kit with up to 6 users, a 3.0 GHz processor or any dual- or quad-core processor with at least 3 GB of RAM is recommended. You should double the amount of RAM for 64-bit systems.

For a dual card installation (two X350 or two X550 kits with 7 to 11 users), a host PC should have a minimum of a 3.0 GHz processor or an equivalent dual- or quad-core processor and 4+ GB RAM (for 64-bit hosts, 6+ GB is recommended).

Note that performance varies based on the shared computer specifications and what applications are being run. For multimedia applications, benchmark testing has shown

---

[1] Microsoft Windows Server to Windows XP License Rights. If you have licensed the appropriate number of Windows Server operating system and associated Client Access Licenses for simultaneous access by multiple users to the host computer, you may install and run vSpace on a separately licensed Windows XP operating system for simultaneous access by multiple users in lieu of the Windows Server operating system. You may only install and use either the Windows Server operating system software or the Windows XP Client operating system software but not both. Microsoft does not provide any support for vSpace or for the Windows XP operating system in this configuration; you should seek support from NComputing for issues relating to vSpace and its use with the Windows XP Client operating system.

that with host systems as described above, six or more stations can run independent video streams at native DVD resolution (720 x 480). Several stations (3-4) can also run full-screen video (at 1024x768). Of course, performance depends on several factors, including the shared PC specifications, monitor resolution, video file being played and the types of decoders and media player used.

Access Devices

For each XD2 access device you will need:

- PS/2 keyboard and PS/2 mouse
- Monitor (supporting 800x600, 1024x768, 1280x720, 1280x800, 1280x1024, 1360x768, or 1440x900 resolution)
- A Category 5e cable for lengths up to 5 meters or a shielded (STP or FTP) Category 6 cable for lengths between 5 and 10 meters
- Optional: speakers or headphones
- Optional: USB devices and USB cables (connect directly to host PC and can be assigned to each station via the vSpace software)

Install the Hardware

Before attempting to install the X350/X550 kit, verify that your Windows or Linux OS is supported by vSpace, and that the OS is properly installed, updated and all devices viewable in the OS device manager are working properly. Also, check to be sure your package includes one X550 (or X350) PCI card, five (or three) XD2 devices, the vSpace installation CD, and ten (or six) monitor mounting screws.

Install the X-series PCI Card

1. Disconnect all peripheral and power cables from the host PC.

2. Remove the host PC system cover.

3. Locate an available PCI slot for the X-series PCI card.

4. Insert one PCI card and secure the bracket to the chassis with a retaining screw (or other fastening mechanism specific to your PC). Note: The X550 is a full-height PCI card, and the X350 is a half-height PCI card.

Optional installation of a second PCI card (matched pairs only)

If the system has a second available PCI slot and you wish to use a second X-series kit, insert the second card into the available slot and secure the card to the chassis. Note that only matched sets of cards are supported. For example, you can use two X550 cards in a PC or two X350 cards. You cannot use both an X350 and an X550 card in the same system.

5. Replace the system cover and reconnect all peripheral and power cables.

Connect Peripheral Devices

Connect each access device to a port on the PCI card using high-quality Cat 5e or shielded Cat 6 cables. These must be standard, straight (not crossover) cables.

Maximum cable length between the X-series card and an access device is:

Standard Category 5e UTP cable: up to 5 meters
Standard Category 6 STP or FTP cable: up to 10 meters

WARNING: You must NOT attach any Ethernet networking equipment, such as a hub, switch or router, between the access device and the PCI card. The signals being sent from the X350/X550 PCI card to the XD2 device are NOT Ethernet.

Connect the desired peripheral devices to each XD2 access device. If you plan to use any USB devices, connect these directly to the host PC – these can then be assigned to each XD2 station with the vSpace software.
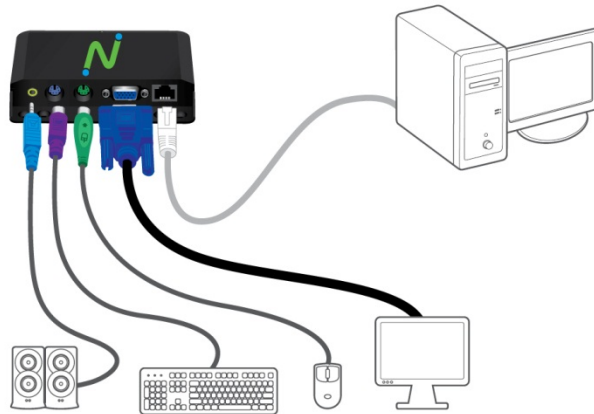
Using two screws (provided) you can attach the XD2 to the back of an LCD monitor that has VESA-compliant mounting holes, as shown below.
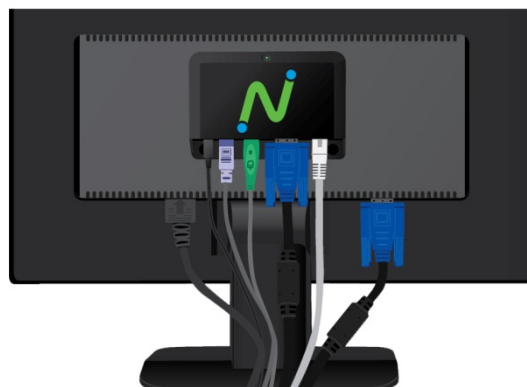
Install the NComputing vSpace Software

This user manual applies to vSpace 4, 5 and 6 for Windows. For vSpace on Linux, please refer to the separate *Installation Guide for Linux* provided with the Linux software download. Note that screen shots included below for reference may vary slightly depending on the version of vSpace and the operating system you are installing.

IMPORTANT! Per the instructions below, always check the NComputing website for the latest vSpace software. The software on the CD in your package may not be the latest version.

- You can view a chart specifying which version of vSpace is the latest for which operating system in the NComputing Knowledge Base (http://www.ncomputing.com/kb/) by searching on "vSpace Operating System Support Matrix." Or click directly on this link: vSpace Operating System Support Matrix

- You can download the appropriate version by visiting the Software Download Center (http://www.ncomputing.com/softwaredownload) – note that the software download center will include Release Notes specific to that release – it is very important to read these release notes prior to installation.

- In addition, the latest version of this user manual is posted on the Documentation page in the Support section of the website (http://www.ncomputing.com/documentation)

NOTE: The vSpace software is hardware protected and cannot be used if an X-series PCI card is not present in the host PC at runtime.

Installing vSpace 4 and 5

This section describes how to install vSpace 4 and 5. Proceed to the next section for instructions on installing vSpace 6.

1. *Turn on the host PC. After Windows starts, it will automatically bring up a dialog* box called "Found New Hardware Wizard."

Do not install anything from Windows Update for the X350/X550 PCI card. Simply click "Cancel" on this screen.

2. Insert the software installation CD into the host PC's CD drive.

If the installer does not automatically launch, go to "My Computer," open the CD drive icon, and manually start the installation using the .exe file.

3. At the installation screen, follow the prompts to install the software.
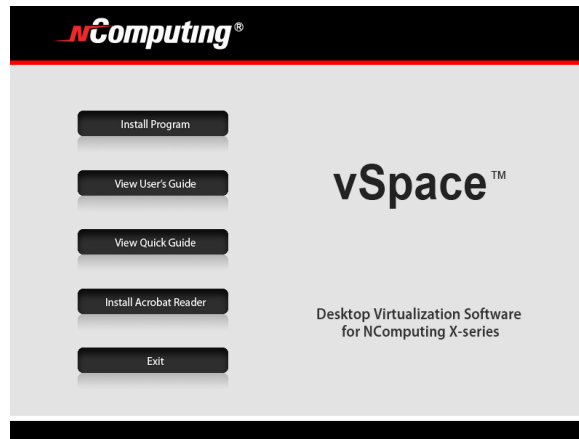
Before actual installation starts, the software may attempt to connect to the Internet to compare the software version on the CD with the latest software version on the NComputing update server. If there is a later version on the NComputing server, a prompt will appear to ask if you want to use the version on the CD or if you want to download the latest version (installation of the latest software is always recommended).

NOTE: You can also skip using the CD to install vSpace, and simply go to the Software Download Center on the NComputing website to get the latest software installation files.

4. At the installer's "Welcome" screen, click on the "Next" button which will take you to the antivirus and firewall warning screen. Read and follow the instructions, and then click on the "Next" button.
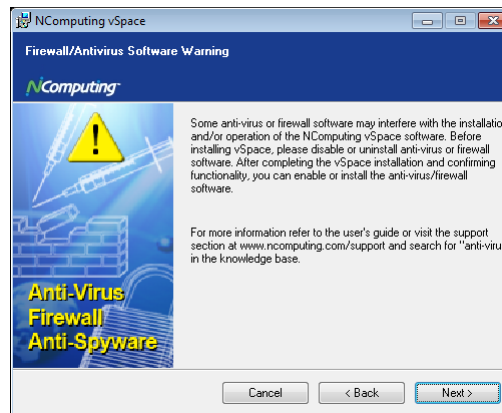
5. At the software End User License Agreement and Terms of Use screens, read the agreements and if you agree, click on the "I agree" checkbox, and then click on the "Next" button.
6. From the "Choose Destination Location" screen, you can choose to install vSpace in the default location, or you can navigate to a different location and install vSpace there. When you are finished, click on the "Next" button.

7. At the "Create Password for Administrator" screen, select whether to use or disable use of an administrator password. If you choose to use an administrator password, enter it and retype it. Click on the "Next" button.
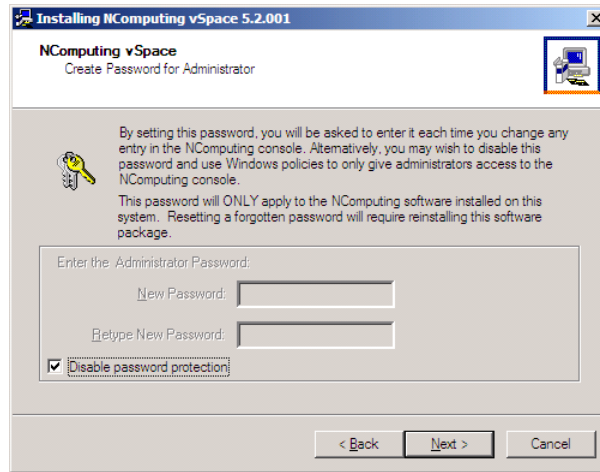
Note: This password only applies to the vSpace software installed on the host PC. Resetting a forgotten password will require uninstalling and reinstalling the vSpace software. Therefore, the system administrator needs to manage this password carefully.
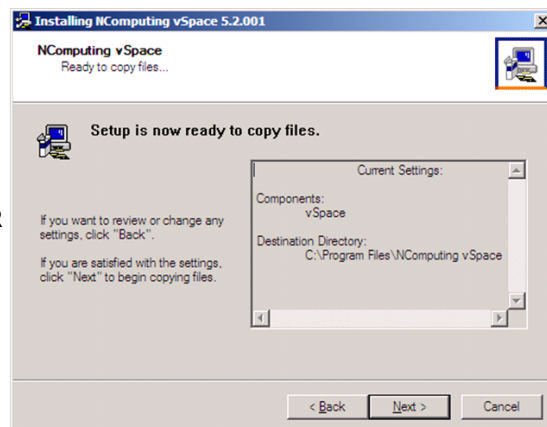
Note: The NComputing Administration Console allows you to administer vSpace software and parameters associated with the access devices on this PC. It will automatically be installed on this system.

At this point, one of the following "ready to copy files" screens will be displayed (vSpace 4 and 5). If this is the first time vSpace has been installed on this system, the "Create sys info file" check box will appear on the screen. Leave the box unchecked. Review your selections and click on the "Next" button.

OR
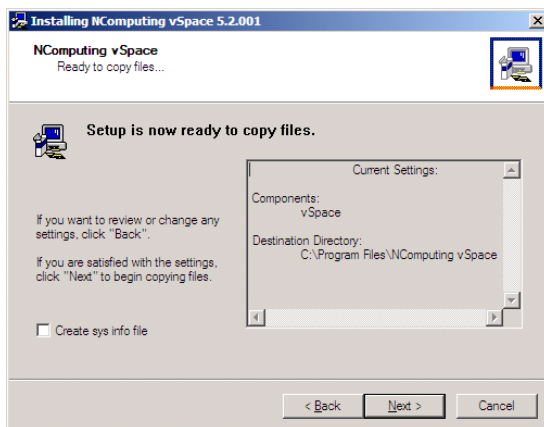
First time install screen   **Screen if vSpace has previously been installed**

Note: "Create sys info file" enables the Windows utility to create a system information file and place it in your My Documents folder. This process will create a record of your system's configuration but it may take some time to create. This is only necessary if you are specifically asked to do so when interacting with NComputing Technical Support.
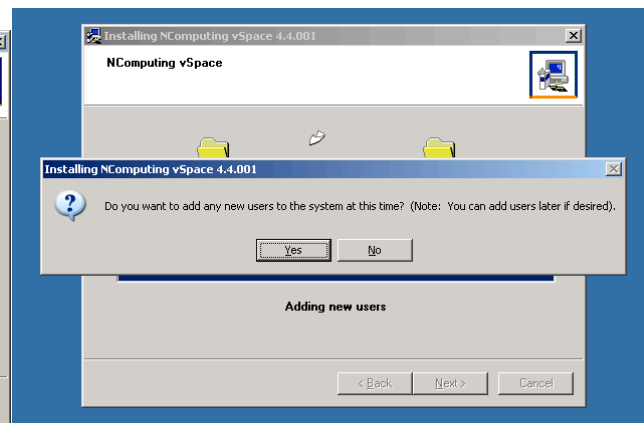
The vSpace software will then be installed.
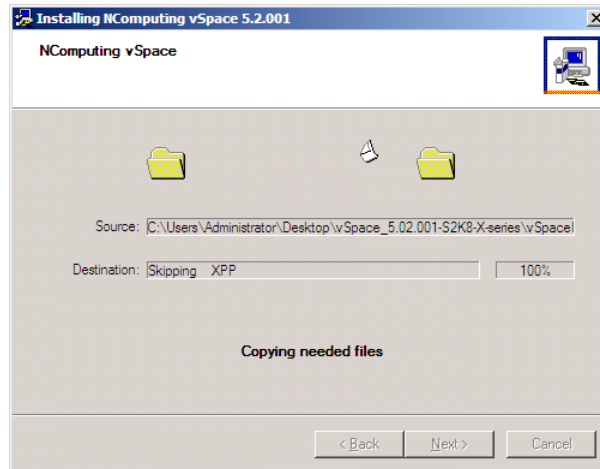
8. At the "Add new users" pop-up, select whether or not you would like to add new users to the system. If you click on the "Yes" button, the installation program will launch a screen to administer user accounts on the host computer. If you click the "No" button, the installation process will continue without bringing up the user administration screen.

If you choose to add or set up new User Accounts later, you can do so by going to Start->Control Panel->User Accounts. You can also search on "To add a new user to the computer" in the Windows Help and Support Center for more information.
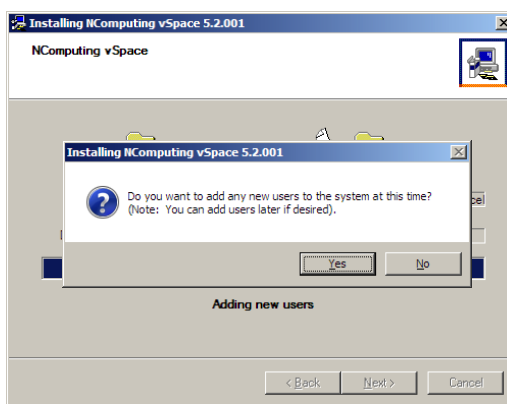
Windows Server 2008 install screen   **Windows Server 2003 install screen**

Note: It is strongly recommended that all users have their own user accounts to enable control of their own settings. If you click on the "Yes" button, the "Local Users and Groups" Windows utility (screen shot shown below) will be displayed on an otherwise blank overlay screen. You can right-click and select "New User…" to add each desired individual user account. When you are finished adding users, close the "Local Users and Groups" utility and you will be brought back to finish the vSpace installation process.
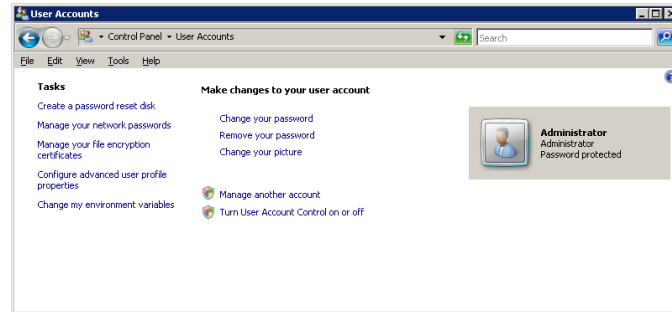
Windows Server 2008 user account management screen
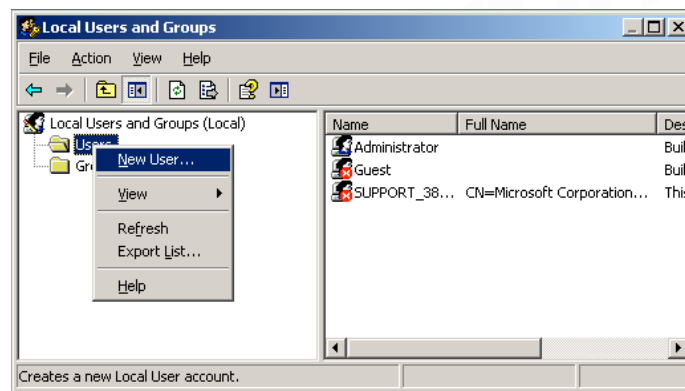
Windows Server 2003 user account management screen

9. At the "vSpace successfully installed" screen, click "Close" to end the installer, and select whether or not to immediately restart the computer (a restart is required before vSpace can be used).

NOTE: During installation, you will be prompted to enter a default resolution setting for the X-series stations. After installing the software you can change the resolution for all stations connected to a single card from the Management Console. See the sections on the Management Console for your version of vSpace later in this manual for instructions on how to set the resolution.

IMPORTANT: Now proceed to the product registration section to register and activate your system (required for operation beyond 30 days and for sessions longer than 1 hour during the trial period).

Installing vSpace 6

Perform the steps in this section to install vSpace 6 on a host PC.

1. *Turn on the host PC. After Windows starts, it will automatically bring up a dialog box called "Found New Hardware Wizard."*

Do not install anything from Windows Update for the X350/X550 PCI card. Simply click "Cancel" on this screen.

2. Insert the software installation CD into the host PC's CD drive.

   If the installer does not automatically launch, go to "My Computer," open the CD drive icon, and manually start the installation using the .msi file.

   The installer is a single .EXE file that can install vSpace on both 64-bit and 32-bit versions of Microsoft Windows (refer to the "vSpace Operating System Support Matrix" in the NComputing Knowledge Base for the latest information on supported operating system versions). When you run the setup.exe file, an appropriate 64-bit or 32-bit "setup.msi" file is extracted in the same directory (this .msi file can be used for silent installation, for example).

3. At the installation screen, follow the prompts to install the software.

NOTE: You can also skip using the CD to install vSpace, and simply go to the Software Download Center on the NComputing website to get the latest software installation files.

4. At the installer's "Welcome" screen, click on the "Next" button.
5. At the software End User License Agreement and Terms of Use screens, read the agreements and if you agree, click on the "I agree" checkbox, and then click on the "Next" button.
6. When prompted, choose the default screen resolution for all the vSpace stations. You can change this setting after you install vSpace.
7. From the "Select Destination Location" screen, you can choose to install vSpace in the default location, or you can navigate to a different location and install vSpace there. When you are finished, click on the "Next" button.
8. When asked if you want to add new users to the system, if you click on the "Yes" button, the installation program will launch a screen to administer user accounts on the host PC. If you click the "No" button, the installation process will continue without bringing up the user administration screen.

If you choose to add or set up new User Accounts later, you can do so by going to Start->Control Panel->User Accounts. You can also search on "To add a new user to the computer" in the Windows Help and Support Center for more information.

Note: It is strongly recommended that all users have their own user accounts to enable control of their own settings. If you click on the "Yes" button, a Windows utility screen (see the screen shots below for reference) will be displayed. When you are finished adding users, close the Windows utility and you will be brought back to finish the vSpace installation process.
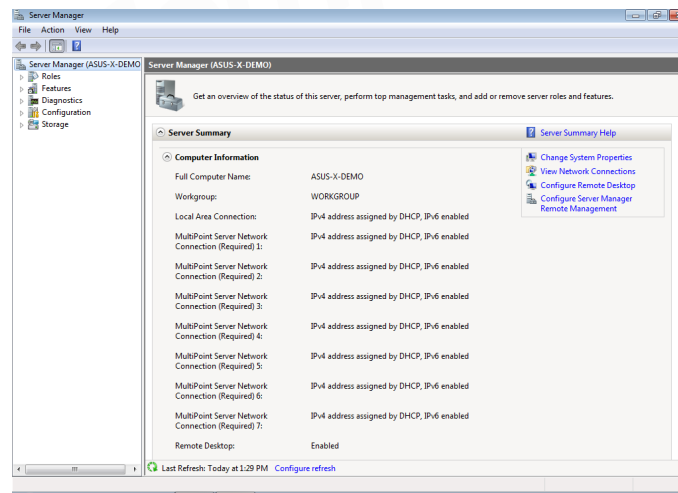
Windows Server 2008 R2 and MultiPoint Server user account management screen
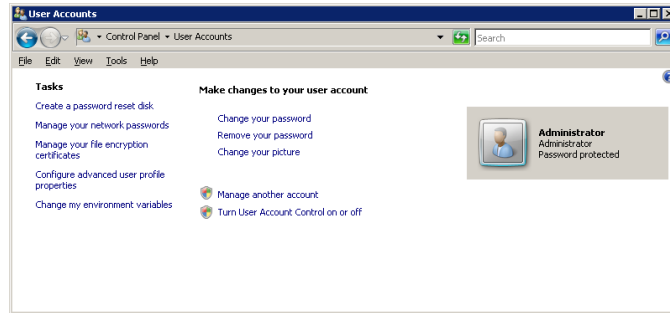
Windows Server 2008 user account management screen
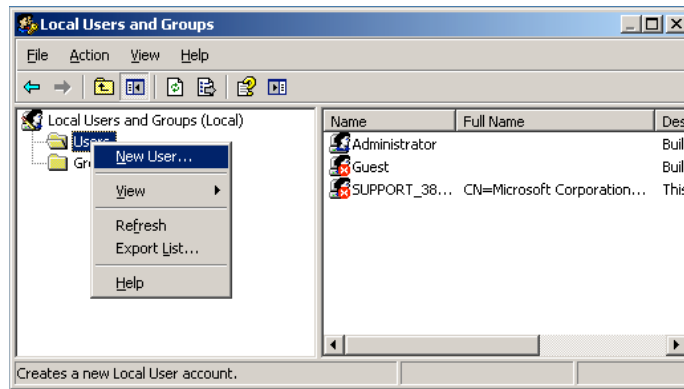
Windows Server 2003 user account management screen

9. When the License wizard screen is displayed, enter the name of the person that will be maintaining the vSpace software on this system. You must also enter the person's company, select a location country from the dropdown menu, enter street address, city, state/province, zip code, and phone number, reseller/dealer name where the product was purchased, and select the type of expected product use from the second dropdown menu. Then click "Finish."

10. At the "vSpace successfully installed" screen, click "Close" to end the installer, and select whether or not to immediately restart the computer (a restart is required before vSpace can be used).

The vSpace software will then be installed.

NOTE: During installation, you are prompted to enter a default resolution setting for the X-series stations. After installing the software, you can change the resolution for all stations connected to a single card from the Management Console. See the sections on the Management Console for your version of vSpace later in this manual for instructions on how to set the resolution.

IMPORTANT: Now proceed to the next section to register and activate your system (required for operation beyond 30 days and for sessions longer than 1 hour during the trial period).

Product Registration

The X350/X550 PCI card contains an embedded hardware license which allows it to support up to three/five access devices. When first installed, the X350/X550 starts a trial license which permits you to use up to three/five attached access devices for the next 30 days. Until you register, sessions are limited to 60 minutes and a reminder info box like the one shown below will be displayed at least once a day on every user station. If you fail to register the X350/X550 card with NComputing (online or offline) within the 30-day trial period, the PCI card will cease to function.
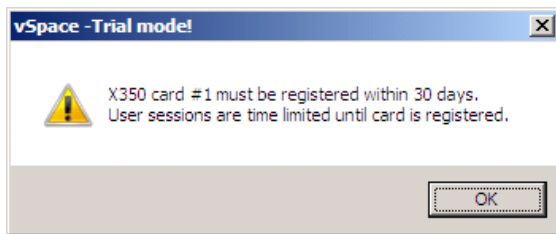
Reminder box displayed daily on each user station attached to an unregistered PCI card.
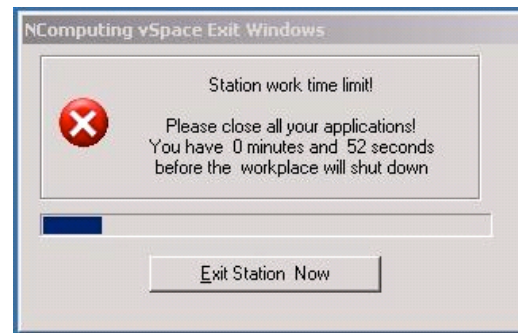
Warning message that the 60-minute session limit has been reached. This message appears on user stations prior to station shut down.

Allowing a card's trial license to expire will not prevent you from later registering the card. You can always launch the vSpace Registration application from the host PC's main screen, via :

> Start > All Programs > NComputing vSpace > vSpace registration

Then perform either online or offline registration, and full PCI card functionality will be delivered once the card is successfully registered with NComputing.
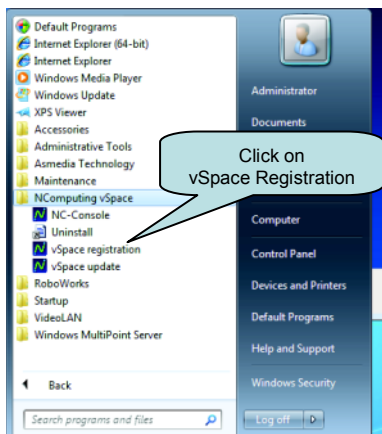
**Windows Multipoint Server screen**   **Windows Server 2003 screen**
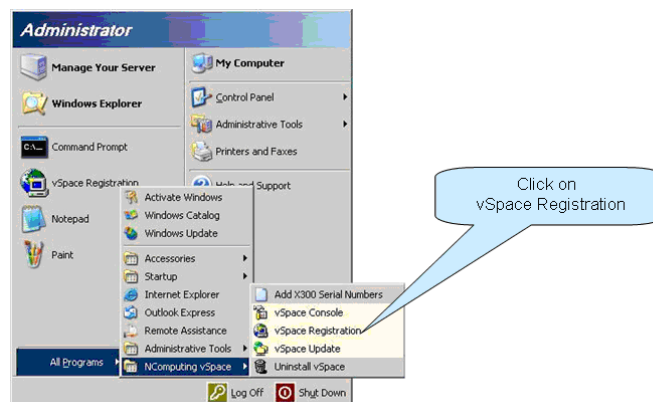
Below are some notes regarding installing matched X-series PCI cards and product registration:

- If you have two matched X-series cards installed in the host PC during product registration, the vSpace registration application will register both cards at the same time.

- If you have a single X-series card installed when you register the product, during product registration, you may select the "Register future devices in the background" option so that if you later install a second PCI card in the host PC, the vSpace registration application will discover and register the second card with your information without any user intervention.

- If you install a single X-series PCI card and register the product, do not select the option to register future devices in the background, and later install a second PCI card, you'll need to run the registration program again to activate the second card.

- If you install a second X-series PCI card after the first card's 30-day trial period has expired, the user access devices you connect to the second card will not start up; you'll need to register the product.

- If you register the product after the trial period, you'll need to reboot the host PC to initialize the card and start up sessions on the user access devices.

At any time during the registration process, you can use the "Back" button to return to a previous screen to change your entries, and you can also click on the "Cancel" button to cancel the process at that point.

At the registration program "welcome" screen, if vSpace password protection is turned on, you will need to enter your password in the password entry dialog box that will display. Enter the password and then click the "Next" button.
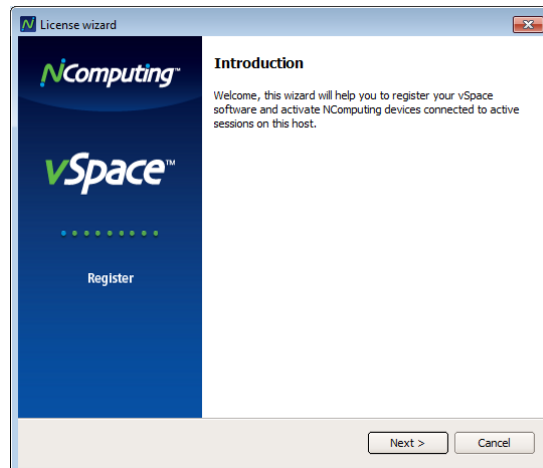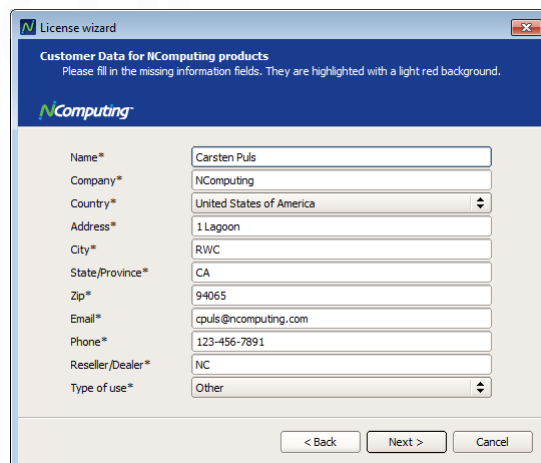

The Type of Registration screen is displayed.
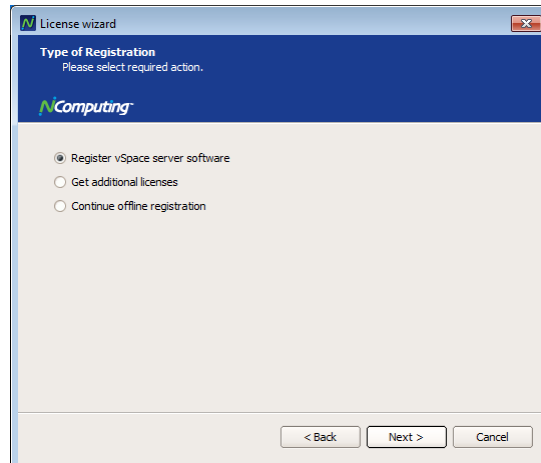
To proceed with online registrations, select the "Register vSpace server software" option. If the host PC doesn't currently have an Internet connection or you prefer to register offline, select the "Continue offline registration" button. Click "Next" to proceed with the selected registration option. If you selected online registration, continue following the steps below. If you selected offline registration, skip ahead to the next section.

Note: the "Get additional licenses" option does not apply to the X-series products.

If you selected the register online option, the "Customer data for NComputing products" screen is displayed.

If you entered the contact information for your organization during vSpace installation, the information you entered is displayed onscreen. If you didn't enter the contact information, enter the requested information in this screen. When finished entering all the information, click "Next."

A screen is displayed that allows you to select what serial number(s) to register. The screen provides a list of X350/X550 PCI card number(s) read directly from the card(s). For each serial number, the screen shows if it is registered or not yet registered. Any

unregistered PCI card(s) will have the appropriate box checked. Click on the "Next" button to proceed.
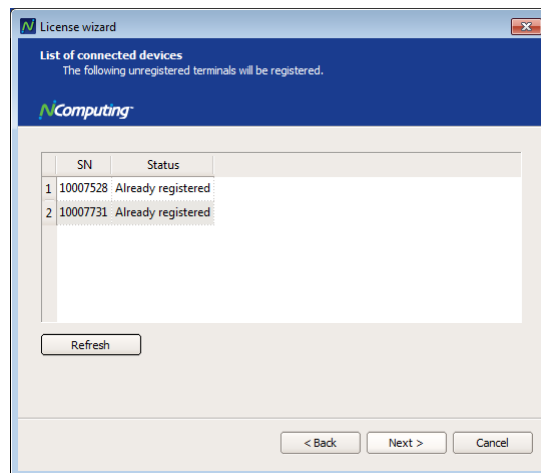
The Registration Type screen is displayed. This screen allows you to pick how you will register your X350/X550 PCI card.
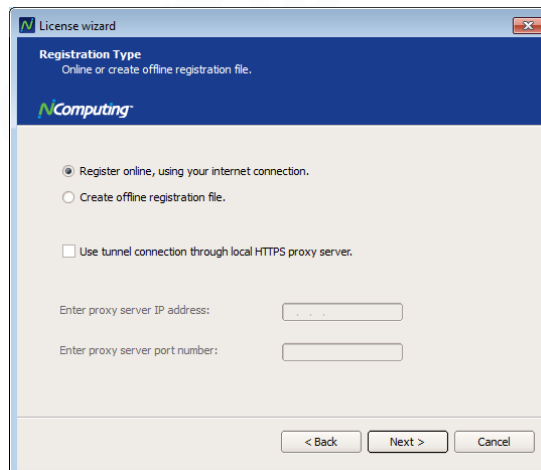
Note: If you use a proxy server for Internet connectivity, enter the proxy connection data here.

To register vSpace online, select the "Register online" button. To register offline, select the "Create offline registration file" button. Click the "Next" button to continue.

Remember that successful registration is necessary for the X350/X550 card to function past the initial 30 days.

If you chose online registration, follow the instructions below. If you chose offline registration, skip ahead to the next section.

You will then see a registration progress bar. Once the online registration process has completed, you can view the results. Click on the "Finish" button.

Note: with vSpace 6, if you entered your registration information during installation and you were online at that time, your system may have registered automatically in the background so that at this stage in the manual registration process you will get a notice indicating that the system has already been registered.

Offline Registration

Using the offline registration option, you will create a file containing the PCI card number and the user registration information that must be emailed to:

registration@ncomputing.com

Once a matching registration file has been emailed back, you will restart the "vSpace registration" program and point the application to the location where you have stored the returned X350/X550 license.

When you select to register offline, the screen presented allows you to select the serial number(s) to register. The screen provides a list of X350/X550 PCI card number(s) read directly from the card(s). For each serial number, the screen shows if it is registered or not yet registered. Any unregistered PCI card(s) will have the appropriate box checked. Click on the "Next" button to proceed.

In the next screen, you see the user information previously entered and the PCI card numbers chosen for registration. Confirm that the information is correct and then click on the "Next" button to continue.

In the next screen, you select where to store the file that must be emailed to registration@NComputing.com . Navigate to the desired location and then click the "Next" button.

The offline registration file is then created and stored in the location specified.

Once the file is created, you can copy it to another PC, if necessary. Email that file to registration@ncomputing.com. You will receive an immediate email reply confirming that the registration information reached NComputing. If the registration system determines that the file is valid and that the X350/X550 is entitled to be activated, you will receive an email within the next 2 or 3 minutes with an attached license file specific to the X350/X550 card(s) and the PC in which it was installed.

Once you receive the license file, start the registration program again and select "Continue offline registration."

The next screen allows you to specify the disk directory where you have stored your returned license file(s).

The registration program will search through the specified disk directory (it can be on a USB disk-on-key device or network share) looking for the specific license file that matches the X350/X550 PCI card(s) installed in the host PC.

When the registration program locates the correct license file(s), the license removes the 30-day time limit from the PCI card(s). Click on the "Finish" button to complete the offline registration process.

Client Access License (CAL) Installation

For multi-user applications, in addition to installing and activating the Windows Server operating system license on the host PC, you need to acquire two types of client access licenses.

First, you need a standard Windows Server CAL for each user or device.

You also need to install a:

- Remote Desktop Services CAL (RDS-CAL) when running on Windows Server

or

- Windows MultiPoint Server CAL (WMS-CAL) when running on Windows MultiPoint Server for each user or device accessing the system.

For Windows Server operating systems, you will need to add the Remote Desktop Licensing Server role (provided with the operating system) to at least one host in your environment.

After you install the licensing server on a particular host:

- You will use the Remote Desktop Licensing Manager application to activate the server and add RDS CALs. Other hosts in your environment can then point to this license server.

- For Windows MultiPoint Server, the licensing server component is pre-installed and you can simply use the MultiPoint Manager application to enter in your WMS CAL (instead of using the Remote Desktop Licensing Manager, which does not accept WMS CALs).

For further details on setting up the license server and installing CALs, please refer to your respective operating system documentation or refer to the article entitled: "How to Configure a Remote Desktop Licensing Server for vSpace 6" in the NComputing Knowledge Base.

Upgrading Your PC or Moving Your Card to another PC

The registration process assigns your vSpace software license and X-series PCI card to the specific host PC in which they are installed. If you change or upgrade multiple components on your PC, such as the hard drive and operating system or if you move the PCI card to another PC, you will need to re-assign your software license and card to the new host PC configuration. When making such a change, simply repeat the online or offline registration process. *You can reassign your license in this way a maximum of two additional times after your initial registration. If you exceed this limit, you will need to contact NComputing technical support.*

Uninstalling vSpace

To uninstall the vSpace software, select Start > NComputing vSpace > Uninstall. Follow the prompts and the vSpace software will be removed from the host PC. You will be prompted to restart the host PC to complete the process.

Updating the vSpace Software

This section describes how to update the vSpace 4/5 and vSpace 6 software. See the section below for information on updating vSpace 4/5. To update vSpace 6, skip ahead to the next section.

Updating vSpace 4 and 5

Once you have successfully completed the registration process, you can update the software directly over the Internet by selecting Start > NComputing > Update vSpace (provided that updates to which you may be entitled are available).

Note: If the "Enter Password" window appears, enter the administrator password.
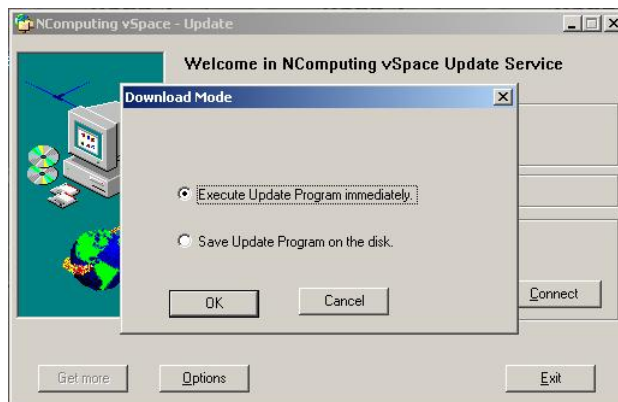
Click the "Options" button to select whether to you want the update done right now, or if you would like to save the update program to on a disk. If you save the update to a disk, you can apply the update later, and/or you can carry the update to another PC to update vSpace on that PC without connecting to the Internet.

Click the "Connect" button to check for the availability of a software update.
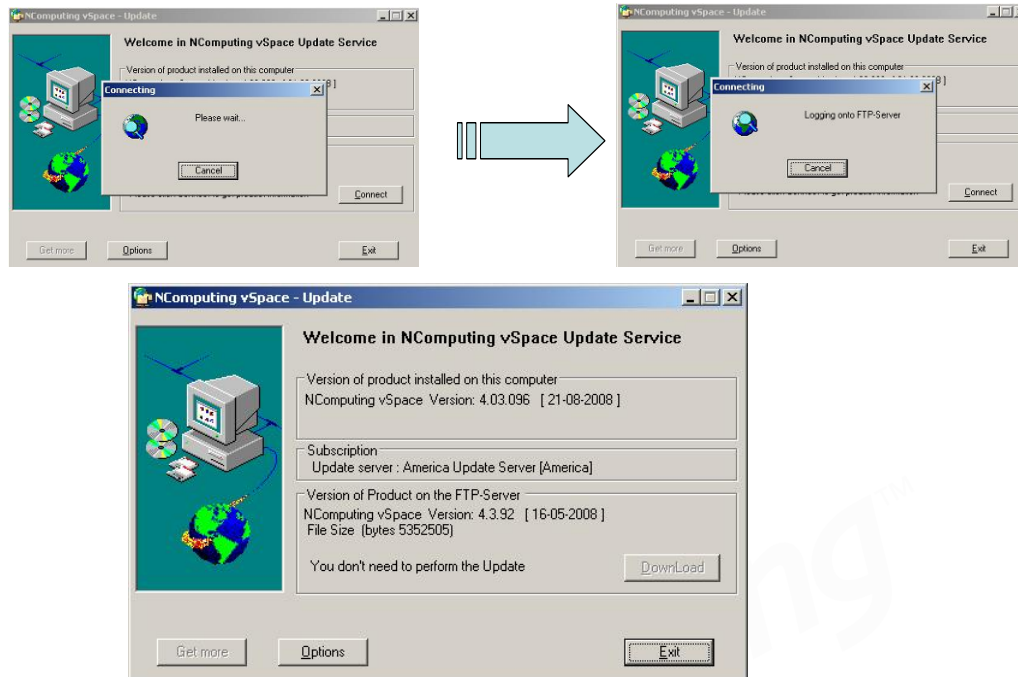
If there is a new version available, click on the "Download" button to start the update process. When the download is complete: 1) if you previously used the Options button to select "save update program to disk," the update will be saved to disk for you to apply later; 2) if you didn't use the Options button to modify the standard update behavior, installation of the new version will immediately begin.

If there was no new version available, simply click on the "Exit" button. You will be asked to confirm that you want to exit, and then the update program ends.

The core version number for your vSpace software installation can be found by going to:

        Start → All programs → NComputing vSpace → vSpace Update

Launch the Update Wizard and it will show you the current version installed on your system (i.e. 4.4.004).

Note that the vSpace Console application has its own version number that can be found by clicking on Help → About vSpace Console (note this is typically a subset of the main software version, e.g. 4.4). The version of the graphics driver for the X550/X350 can be found by going to the Device Manager and clicking on Display Adapters → X550 Graphic Controller → Properties → Driver (this driver version will have an additional digit added to the core vSpace version).

Updating vSpace 6

To update the vSpace 6 software:

1. From the host PC, select Start>All Programs>NComputing vSpace>vSpace update

    The vSpace Update wizard is displayed.
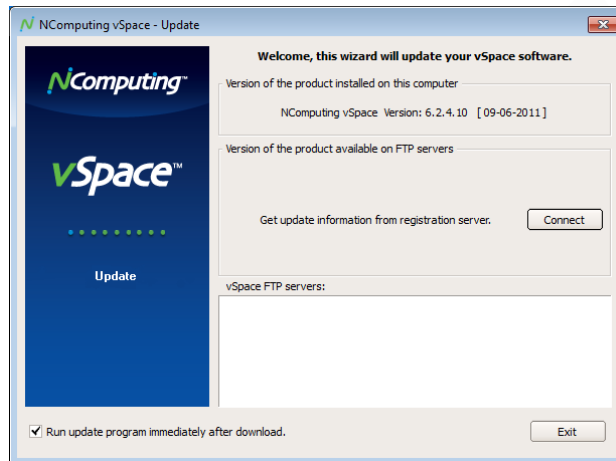
2. Click the "Connect" button to connect to the registration server and check for software updates. A message will be displayed to inform you if you do or don't need to update the software. To update the software, follow the onscreen instructions.

Using the vSpace 4 or 5 Management Console

Start the management console from the Windows Start menu. The application is called "vSpace Console."

You can also start the management console by right-clicking on the NComputing icon in the system tray and selecting "vSpace Management Console" or by simply double-clicking on the NComputing icon in the system tray.
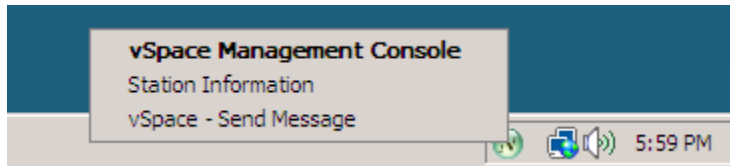
The color of the NComputing system tray icon displayed on the administrator's host station provides vSpace status information.
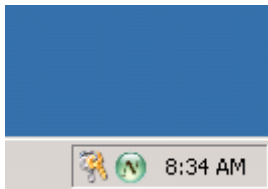
vSpace is enabled and running normally.
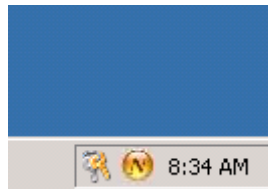
vSpace is enabled and running, but a minor system module inconsistency has been noted. Please check the NComputing online Knowledge Base for any recommended software update.

vSpace has been disabled on this system.

Other vSpace options available from a right-click on the system tray icon are:

- Station Information – tells you about the station on which you are logged-in
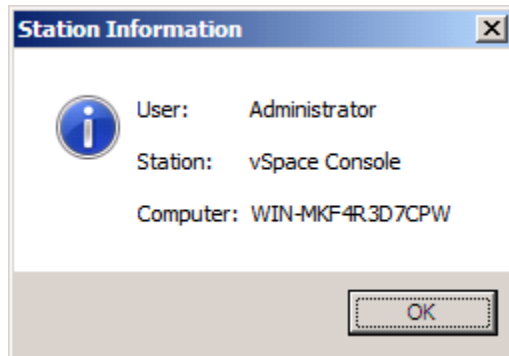
- Send Message to other vSpace users on this system.
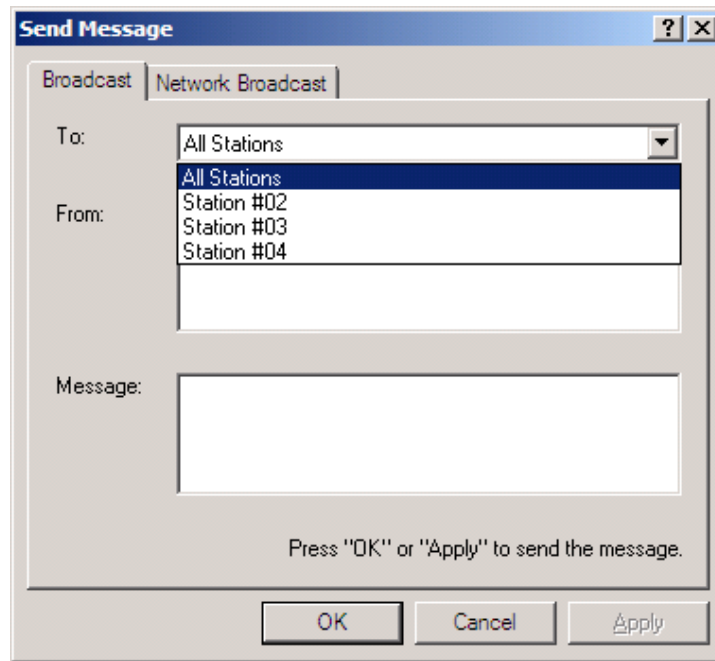
Send a message to users on the same vSpace PC as this user.

From the Start menu, vSpace has the following four commands:
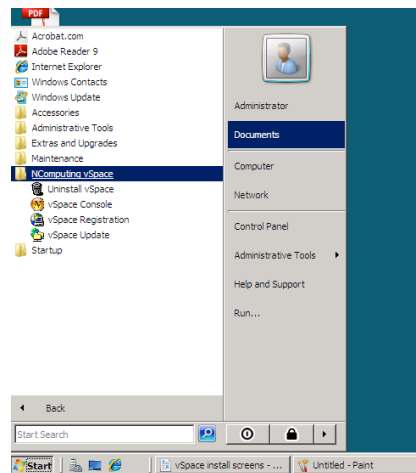
- Uninstall vSpace: will uninstall the vSpace software
- vSpace Console: will launch the Administrator Console
- vSpace Registration: will launch the registration process
- vSpace Update: will launch a utility that enables online software updates
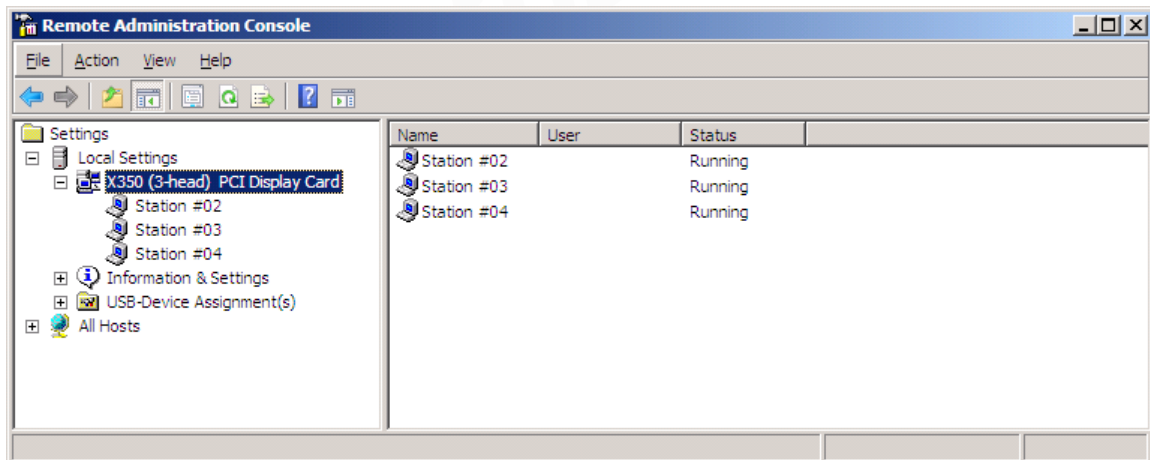
Administration Console Interface

Local Settings

The "Local Settings" tree allows you to see and change settings for the host PC.
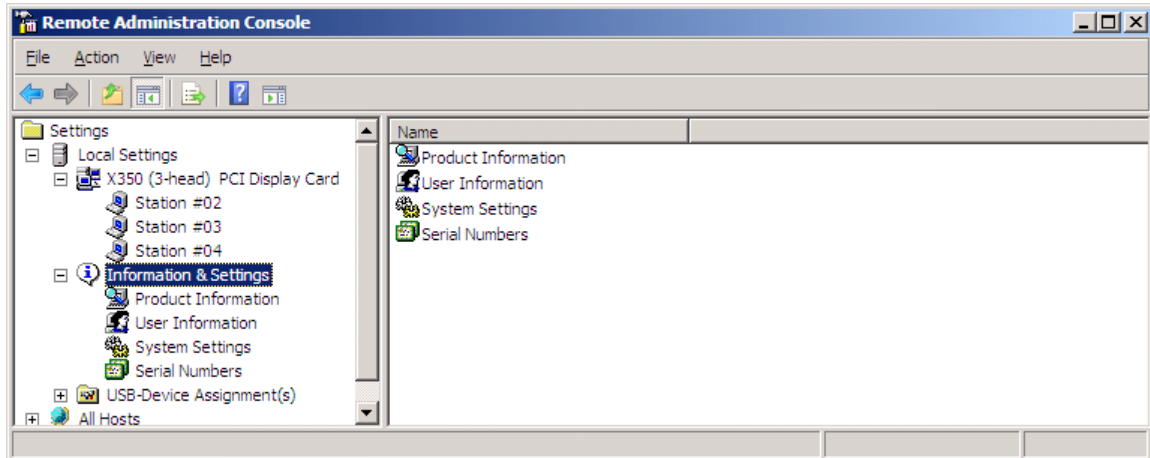
X350/X550 PCI Card

Select the "X350 PCI Card" or "X550 PCI Card" item to show information about all the vSpace sessions currently available on that PCI card.

Right-click on the selected "X550 PCI Card" (or "X350 PCI Card") item to do the following:

- **Stop Stations:** this will stop the sessions on all of the user stations that are connected to this card at once.

- **Start Stations**: this will start the sessions for all stations connected to this card if they are in the stopped state.

- **View**: this lets you select different viewing options for the information in the right pane.

- **Refresh**: refreshes the information displayed in the right pane.

- **Export List:** Exports a list (tab- or comma-delimited text file) that can be used to keep a record of which users (if any) are logged-in to each station at a given point in time.

- **Properties**: Displays or modifies the properties defined for that particular PCI card.

NOTE: All stations attached to the same X350/X550 PCI card will use the same resolution and color depth that is set in the Administration Console. Selecting the Properties option brings up a new window that allows setting the common monitor resolution and color depth. (A system reboot is required before the new resolution and/or color depth can take effect.)

Note: You CANNOT change the monitor resolution and color depth from the Display Properties on each individual station (e.g. right-clicking on the Windows desktop).
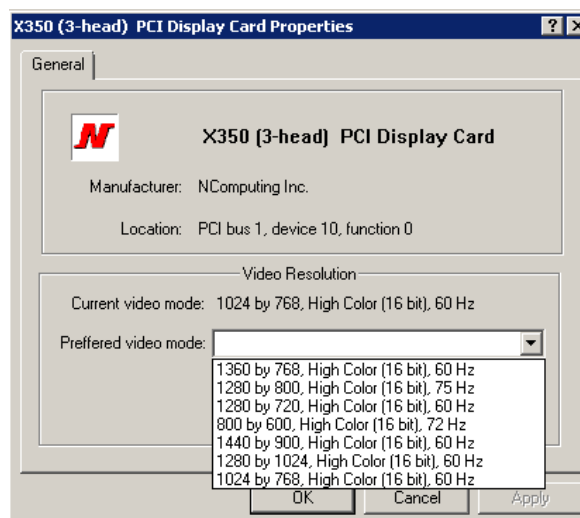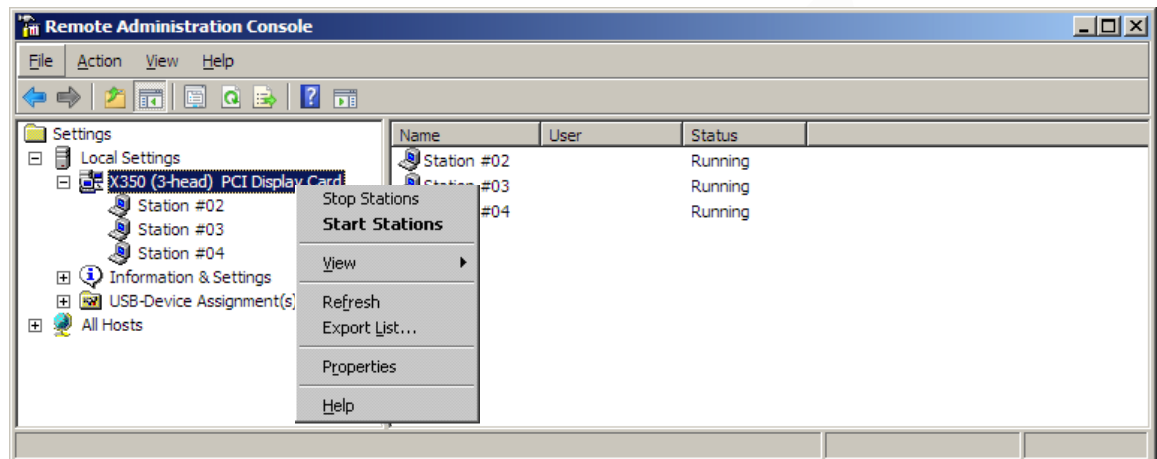
NOTE: Changing the PCI card's resolution and/or color depth is only allowed from the Administration console on the local system. Properties for cards inside other network systems can be remotely viewed, but resolution/color depth changes cannot be remotely applied.
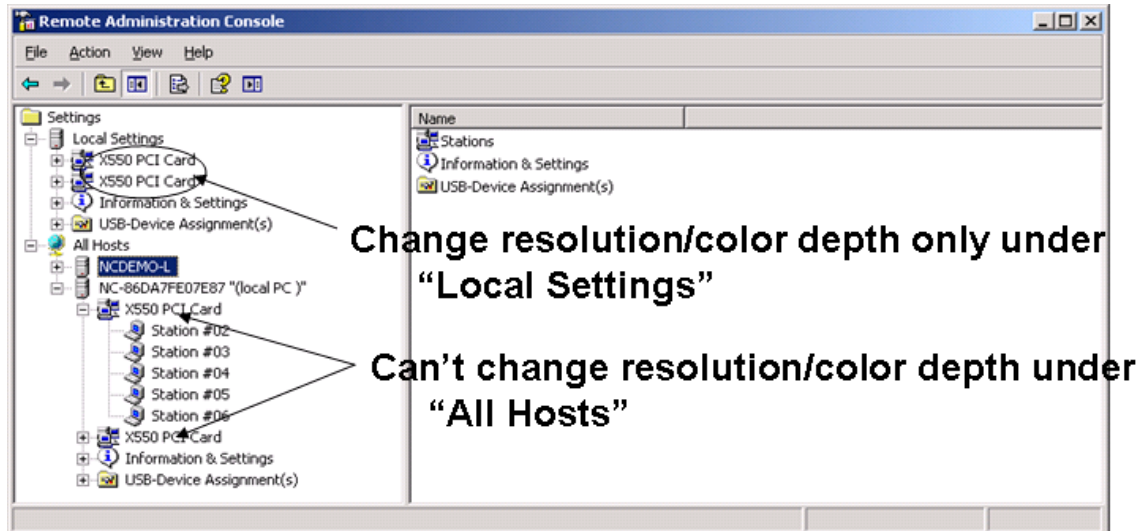

Right-click a station in the left window to force that station (and the associated user session) to stop. Note: you can also stop the station by clicking the red "Stop" button in the tool bar when you have selected a station. A confirmation window will appear and ask if you want to stop the selected station. It also reminds you to exit all programs and log off the station. In the same way you can also start a station either by right-clicking the station and selecting "Start Station" or by clicking the triangle button (next to the stop button) in the toolbar at the top of the window.
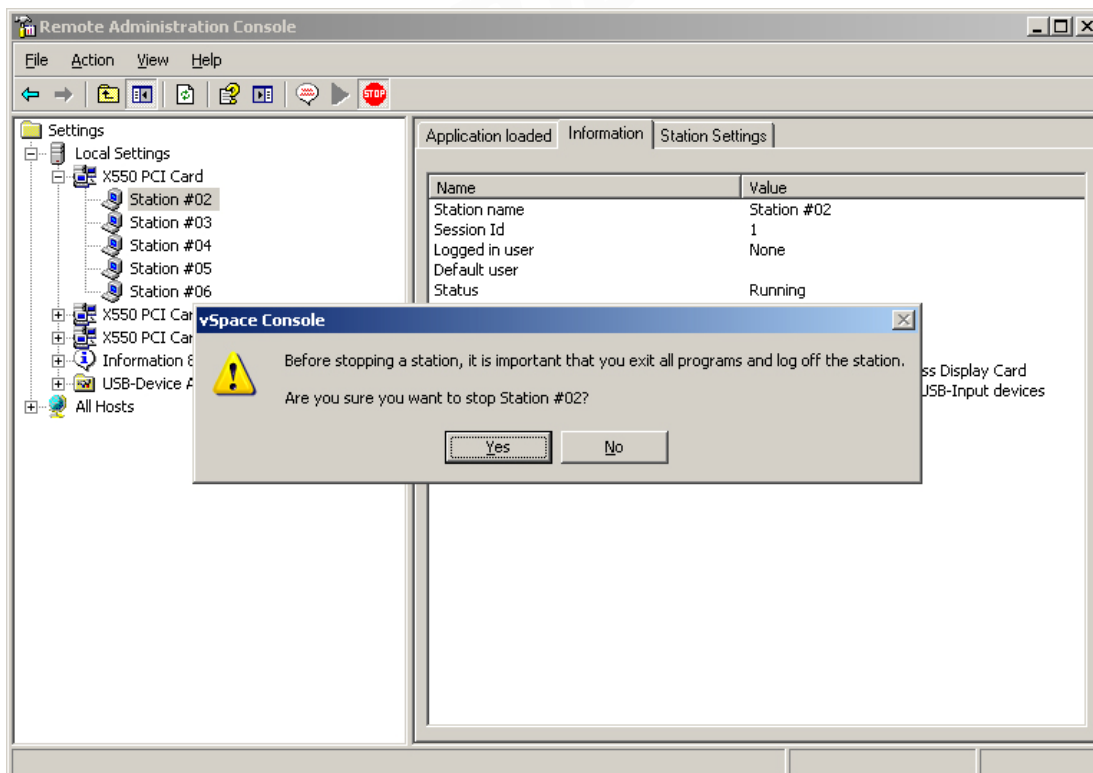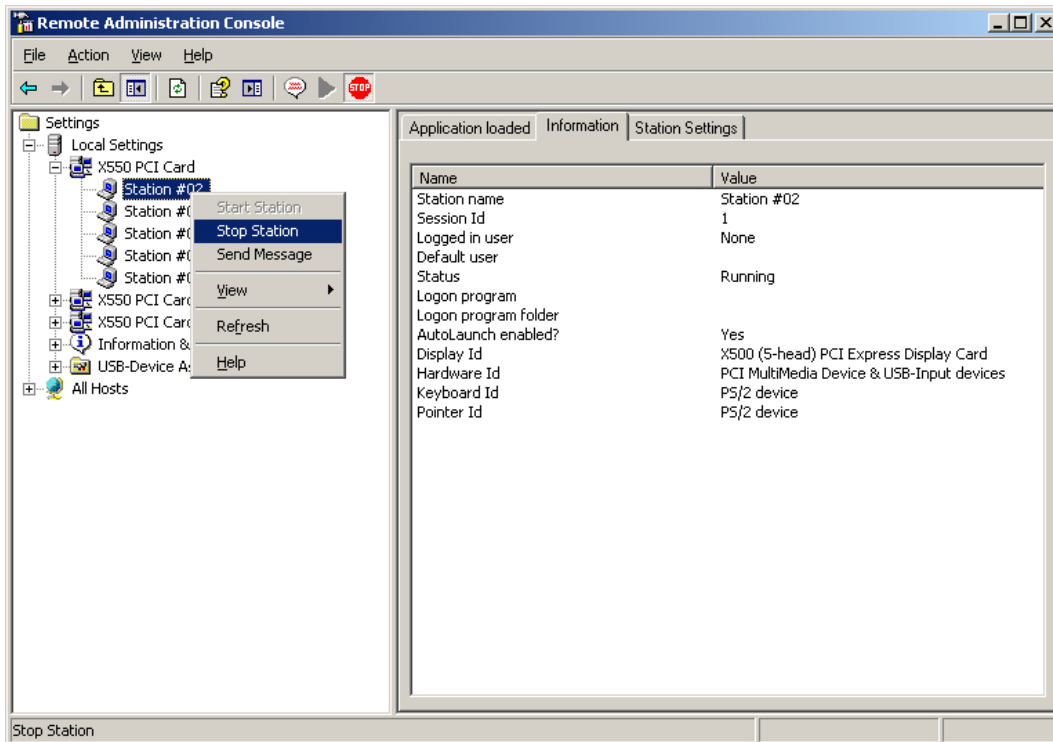
To send a message to the screen of the user session currently running on that station, right-click a station in the left window (or click the message icon in the toolbar). From this window, you can only send messages to stations attached to this PC.

If you right-click directly on a "station number," you can access three tabs of available information. The "Application loaded" tab shows all the applications running on that station's session.
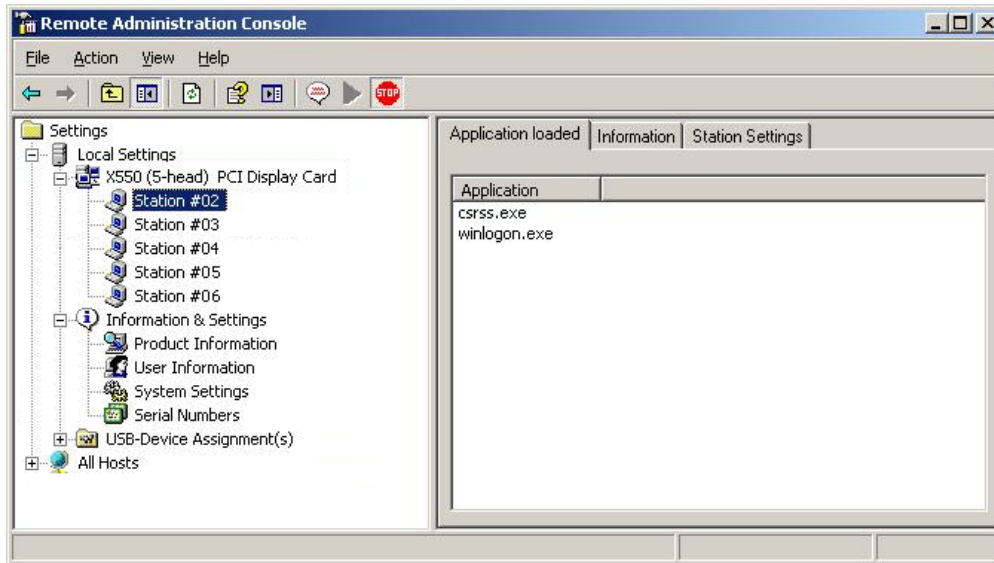

The "Information" tab (displayed in the screen shot below) shows the following information about the selected station's session:

- **Station name**: the access device / station's "provisioned name"

- **Session ID**: the vSpace session number for the session on this station

- **Logged in user**: the username of the user who is currently logged in.

- **Default user**: the default username for the access device session. If one is not configured, it shows the last user that logged in.

- **Status**: the session status

- **Logon program**: the filename that will run at session login (typically a kiosk type application)

- **Logon program folder**: the folder where the logon program exists.

- **AutoLaunch enabled**: the station's automatic launch status

- **Display Id**: the PCI card ID for the card to which this station is attached

- **Hardware Id**: the virtual hardware "name" for the station's access device

- **Keyboard Id**: what type of keyboard interface is used (always PS/2)

- **Pointer Id**: what type of pointer interface (i.e., mouse) is used (always PS/2)
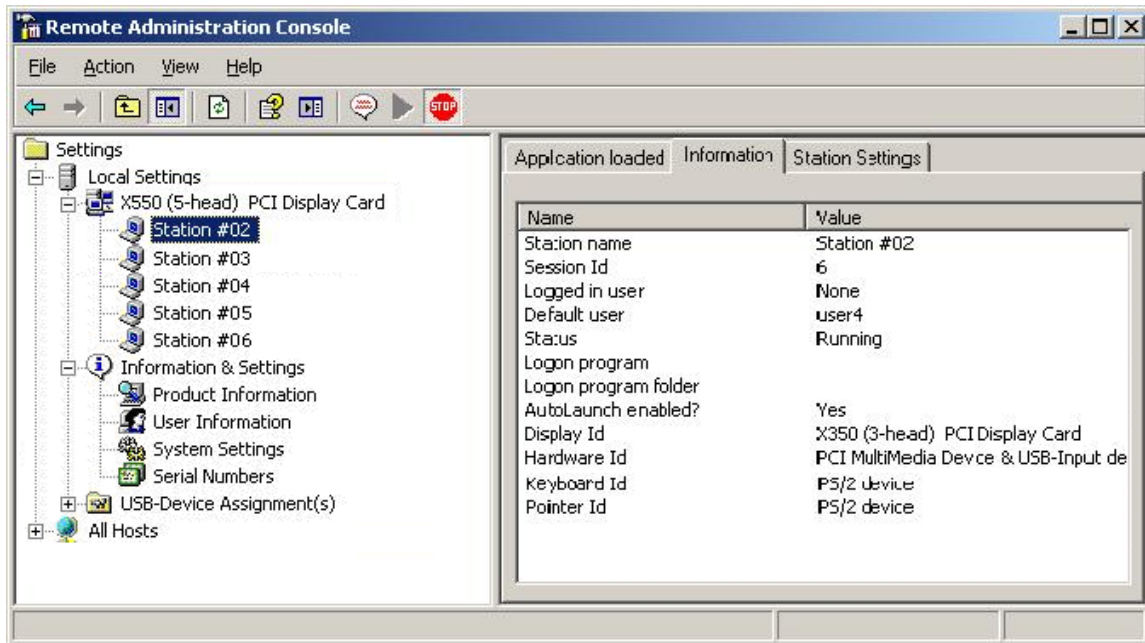
The "Station Settings" tab shows parameters that can be set for each station.
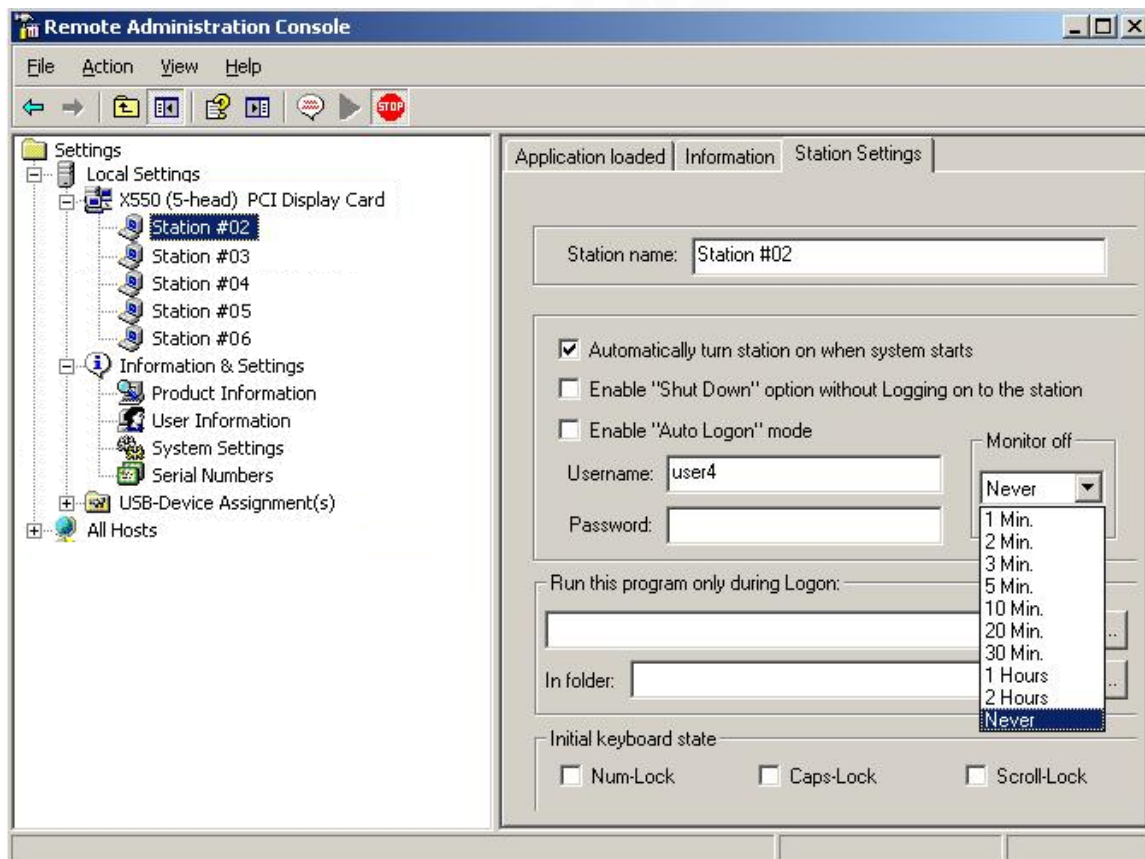
The parameters configurable from this window are:

- **Station name**: The "provisioned name" of the station

- **Automatically turn station on when system starts:** If you uncheck this checkbox, the station (and its monitor) will not start when the system boots up. This is normally left to on by default; otherwise, you will have to manually start the station from this Administration console. In the tool bar, individual stations can be turned on or off by using the green triangular arrow or red stop sign.

- **Enable "Shut Down" option without logging on to the station:** If this is turned on, access device users see the shut down options in their logon window and their "Start" programs tab. This would allow the host PC to be shut down without a valid user logon. If this is turned off, the shut down options are not visible until the user logs on.

- **Monitor off:** An individual X-series station consumes less than one watt of power, but the monitor attached to it consumes many times that (50-70 watts for an LCD monitor and well over 100 watts for a CRT). Thus the X350/X550 PCI card provides an EXTRA "energy saver" setting that is independently configurable for each access device or station. This dropdown menu sets the amount of time the station can be idle before the X350/X550 puts the monitor into a sleep state. Moving the mouse or pressing a key on the keyboard attached to the corresponding access device will wake up the monitor. The installation default value for "Monitor off" is 20 minutes. Selecting the value of "Never" means that the monitor will always remain powered on. (All normal screen saver functions still apply to prevent monitor "burn.")

- **Enable "Auto Logon" mode**: When this is enabled and there is an entry in the "username" and "password" fields, the specified username is automatically logged in when the station starts. Note: a password must be entered to enable this feature. Also, note that in some environments, your Windows Group Policies may require users to first press "CTRL-ALT-DEL" to complete a logon.

- **Run this program only during Logon**: and **In folder:**

  When you select a program to run and the folder where it is located, the program is started when there is a logon using the station. (This option, along with the Enable Auto Logon option, are often used in setting up unattended kiosk environments.)

- **Initial keyboard state**: These check boxes allow setting the specific keyboard states that will be active when the station starts. There are separate settings for Num-Lock, Caps-Lock and Scroll-Lock.

- **Keyboard Type** (*only visible on operating systems using double-byte characters, such as the Korean language OS*): Use this dropdown menu to select the appropriate keyboard type from the available options (see below).
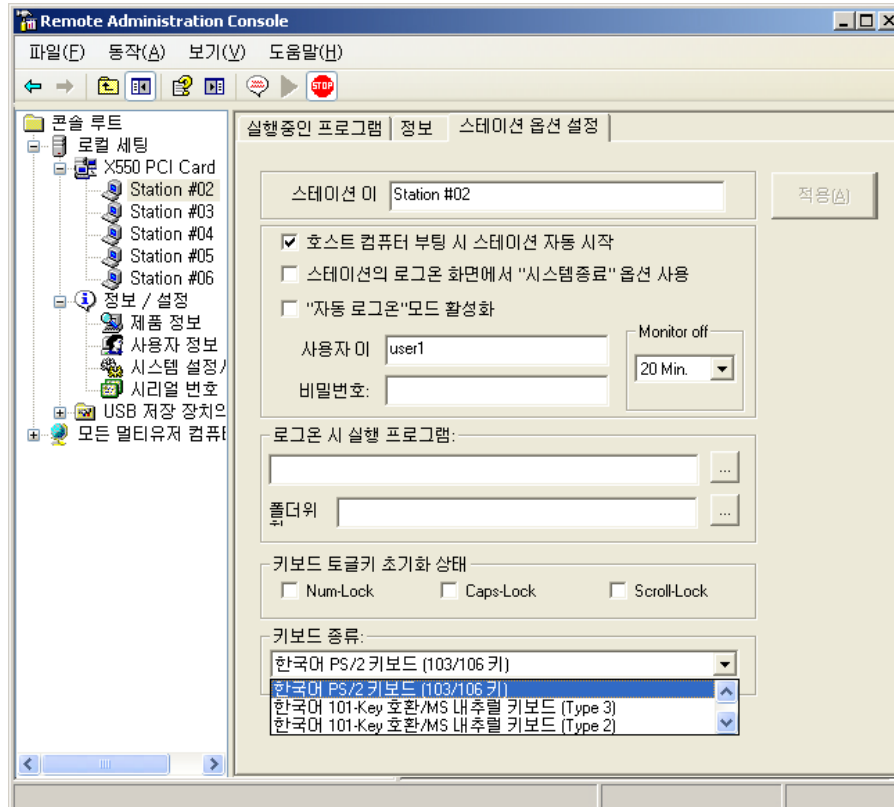
Information & Settings

The "Product Information" item shows information about the installed vSpace software, such as product name, build date, version string and vendor information. (You cannot modify these values.)
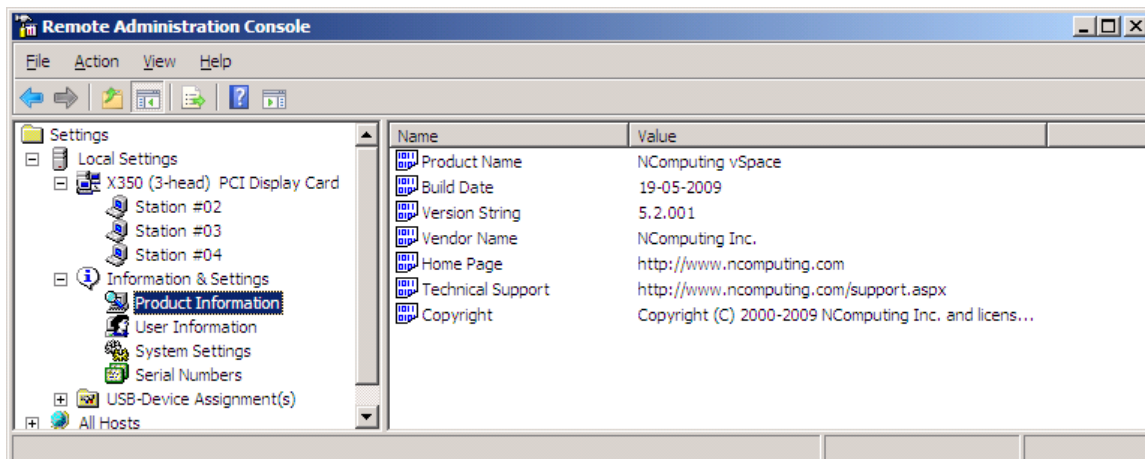
The "User information" item shows the information entered during the registration process, and double clicking an item brings up a window allowing you to change the value.
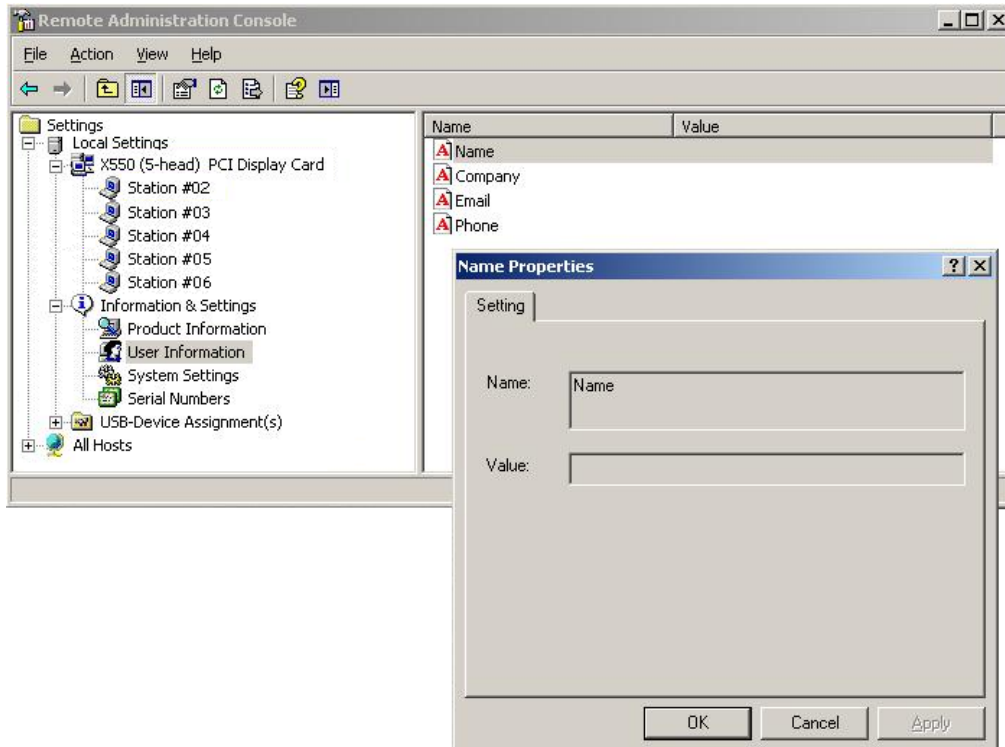
The "System Settings" item shows the following settings for the vSpace software. Double-click on the name of the setting to adjust it, unless it is read-only, which is specified below.
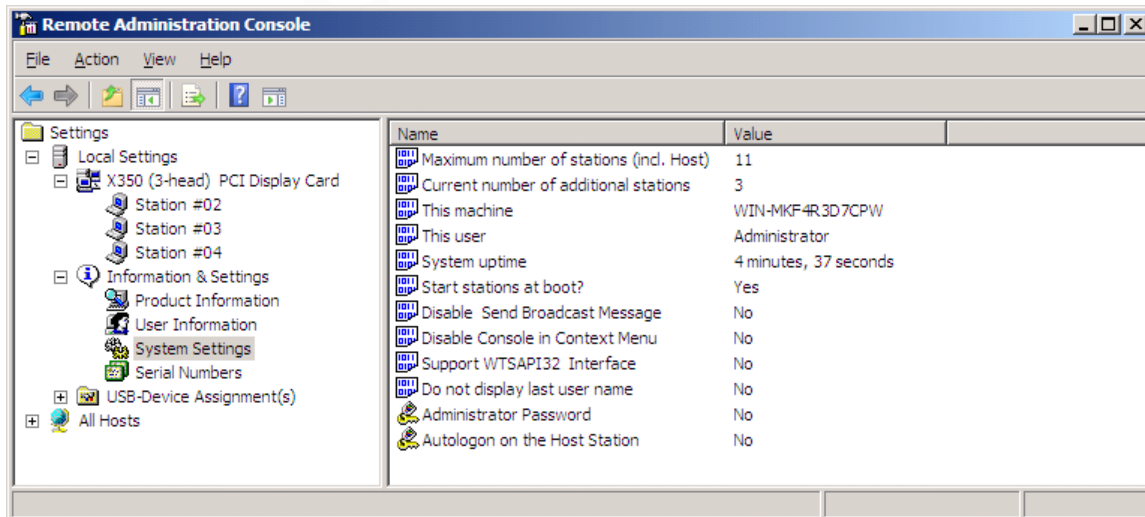

- **Maximum number of stations (incl. Host)**: the maximum number of sessions the vSpace software is configured to support. This number includes the host PC. This setting is read-only.

- **Current number of additional stations:** the number of additional stations. This setting is read-only.

- **This machine: the name of the host PC.** This setting is read-only.

- **This user:** the currently logged-in user's username. This setting is read-only.

- **System uptime:** how long the system has been up. This setting is read-only.

- **Start stations at boot?**: whether or not the stations start when the host PC boots. You can set this to either on or off.

- **Disable Send Broadcast Message:** sets whether or not the administrator has disabled broadcast messages from the NComputing vSpace icon in the Windows System Tray. You can set this to either "Yes" or "No." When set to "Yes," a user cannot access the vSpace console to send a broadcast message. If set to "No," a user can send broadcast messages from the vSpace console. To send a broadcast message, go to Local settings in the vSpace console → right-click on the station number → enter a message →send the message.

- **Disable console in context menu:** when enabled, the user cannot launch the console from the NComputing vSpace icon in the Windows System Tray.

- **Support WTSAPI32 Interface:** (This option may be disabled in some versions of vSpace.) Controls whether support for the WTSAPI32 application interface is turned on or off. This setting is intended to support certain management applications.

- **Do not display last user name:** when enabled, the user name field in the Windows logon screen will not be auto-populated with the information from the last user to have logged into a session on that station.

- **Administrator Password**: used to enable and define an administrator password. You can change the administrator password properties.

- **Autologon on the Host Station:** used to enable the host PC to start without the Windows logon screen and to define the username and password to use to bypass the logon screen. You can enable or disable autologon and define the username and password.

The "Serial Numbers" item shows a list of serial numbers of access devices that have connected to the vSpace software. For each serial number, it shows the number of licenses required for that access device, the station number (if available), whether or not it is registered and the location of the serial number record.

Before PCI Card Registration

AFTER PCI Card Registration
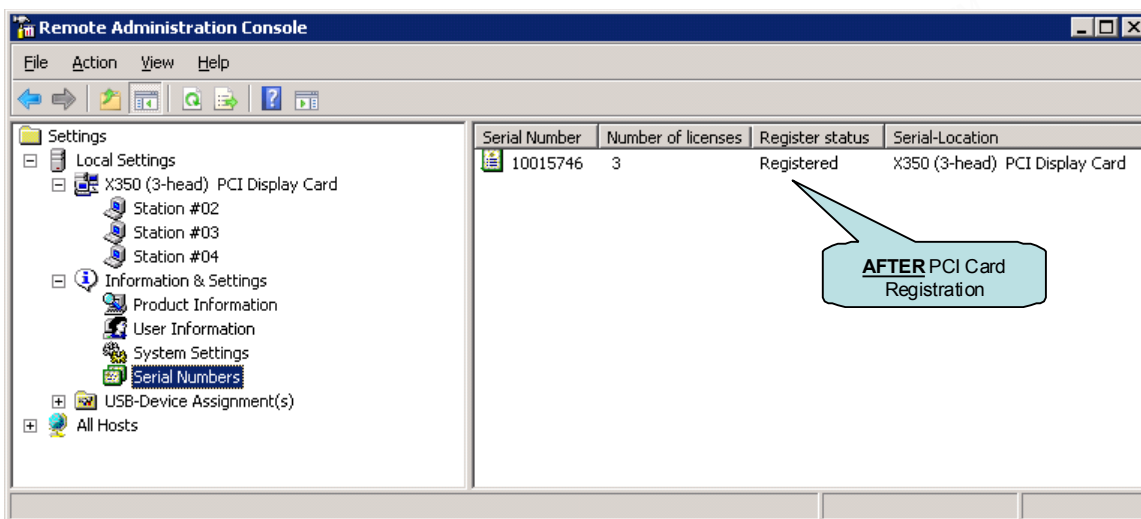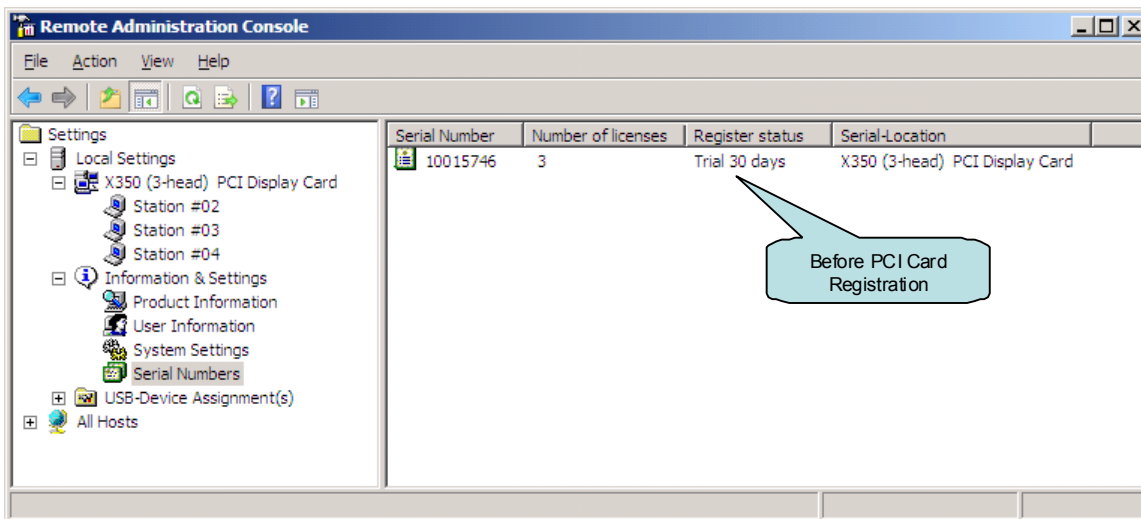
USB-Device Assignment(s)
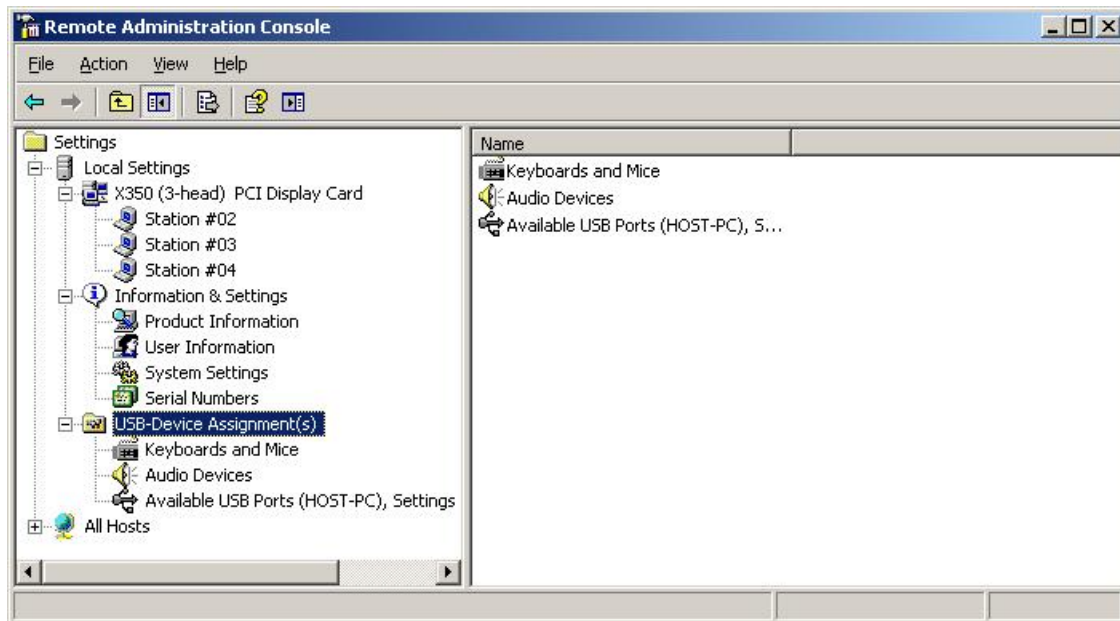
In the "USB-Device Assignment(s)" item, you can control which USB ports on the host PC are connected to which access device (station). To use this function, navigate the tree to select a connected USB device. After selecting a device, the following information will be displayed in the right-hand window.

- The device's name.

- The device's description.

- A check box for "Allow all users access to every USB port." When this is selected, all stations are connected, as if on one hub. When it is not selected, a list of "station IDs" is displayed and you may select which station(s) can connect to the device.
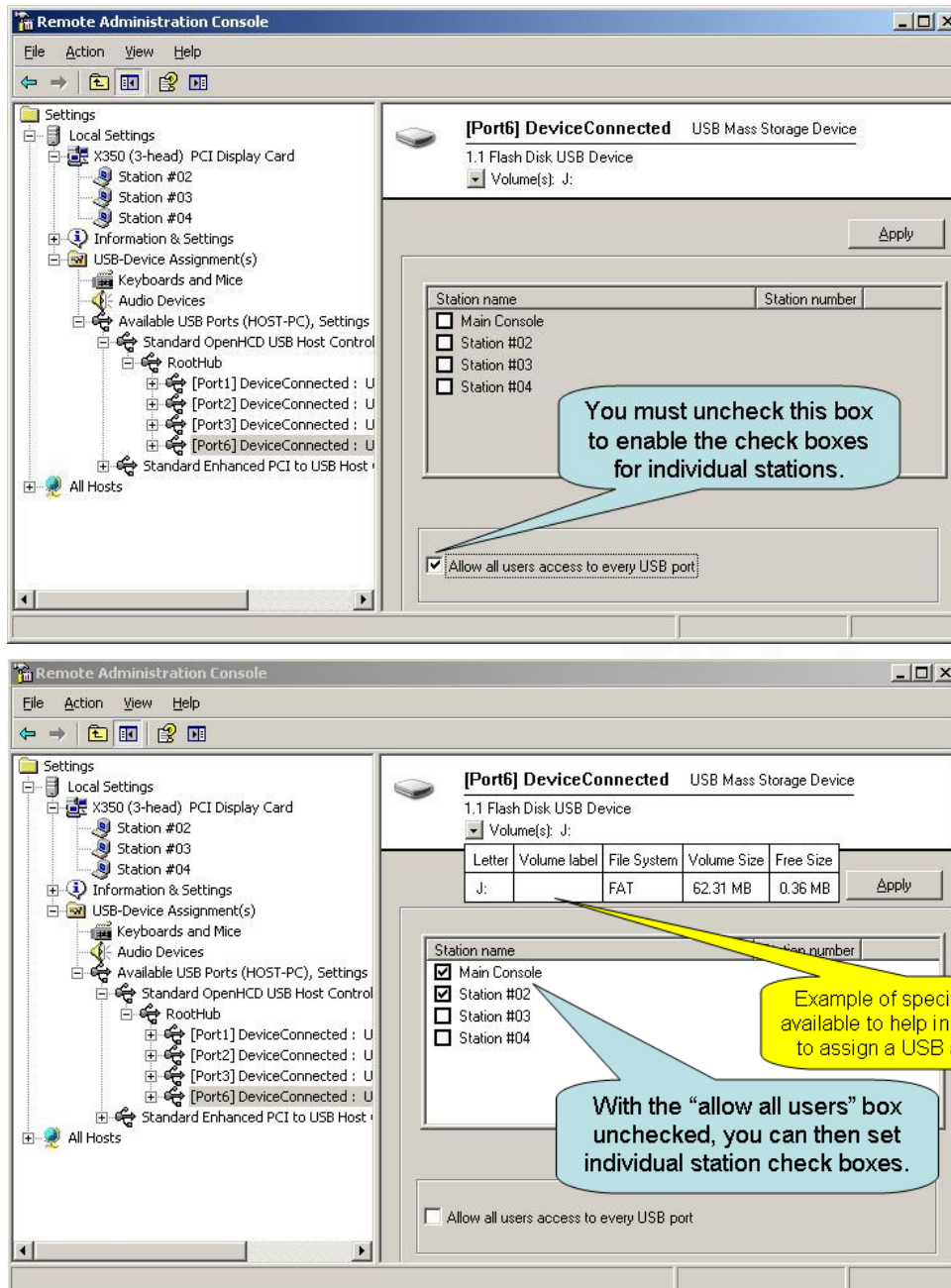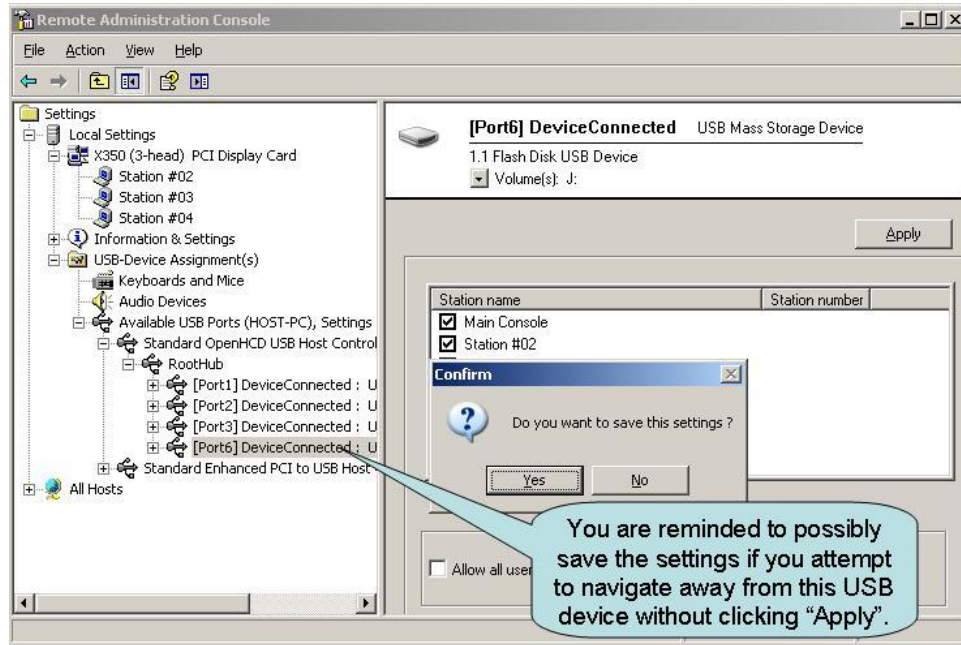
When you click on the "Apply" button, changes to the USB-device assignments are saved. To discard changes, simply navigate to another tree item or close the console without clicking on the "Apply" button, but you will be reminded that you may wish to save the settings you made.

Note: In order to view the current status of USB devices connected to the system (for example, after you've added a new USB device), you must press the "F5" key or click on "Refresh" from the drop-down menu to get an updated list of USB devices.

Using the Management Console in vSpace 6

Previous versions of the console on vSpace 4 and 5 have been based on the Windows MMC platform, and were limited in their appearance and capabilities. To enable an improved feature set across wider deployment scenarios, vSpace 6 uses a new, independent console architecture.
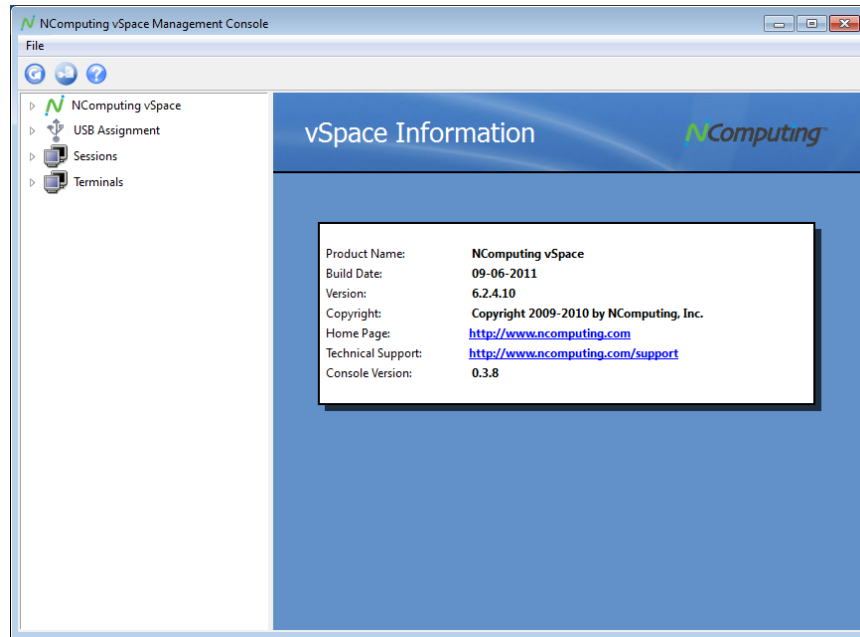

When launching the new vSpace console, the user interface is different from the console in vSpace 4 and 5. However, the same features are still present; they are just organized in a different way. The following describes the navigation items in the left pane of the console:
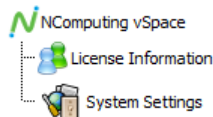

License Information and System Settings are available by expanding the "NComputing vSpace" list. License Information displays the status and details on registration. System Settings lets you control several global parameters for the system.

Click on "System Settings" to display the System Settings screen, which lets you control the following:
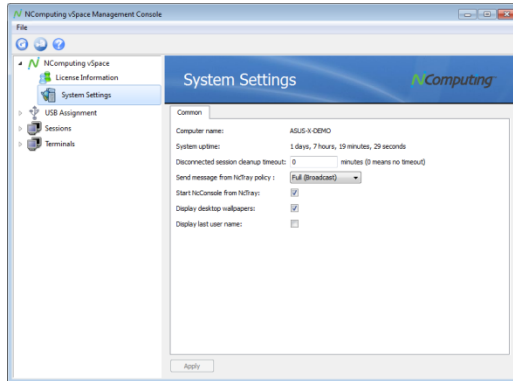
- Define the disconnected session cleanup timeout

- Send messages from the NCTray in each session

- Define whether or not the Console can be started from the NCTray

- Allow or prohibit desktop wallpaper

- Allow or prohibit the display of the name of the user who last logged into the session
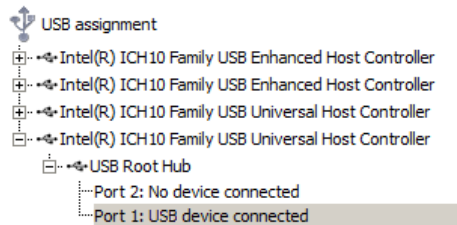
Expand the USB Assignment list to select a USB port on the host and configure it to be assigned to all stations, just the host or to a specific station.
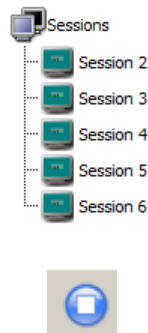
Stop icon at top of screen.

Expand the Session list to select a session in order to identify the user that is logged in, when the session started and what applications are running. You can log-off and stop a session by clicking on the "Stop" icon at the top of the screen. (To restart the session, navigate to the Station in the Terminal tree, right-click on the Station and select "Start Session" – see below for more information.)
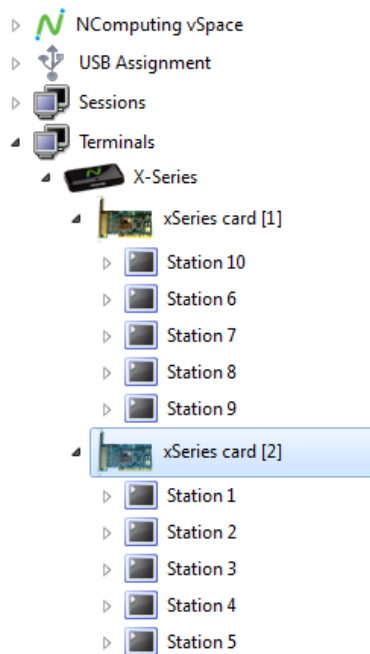
The Stations are listed under the Terminal icon and show how each PCI card connects to the stations (access devices) and their associated sessions.

To stop or start all sessions at the same time, right-click on the access device icon named "X-series" or the PCI card icon.

To start/stop a Station's session or access the station settings (shown below), right-click on a Station.

Finally, to send a message to a station or disconnect a station, expand the Terminals/Station list and right-click on the Session for a specific Station.

Note: "Disconnecting" a session will leave its programs running in the background, while "Stopping" a session ends all programs and logs the session out.
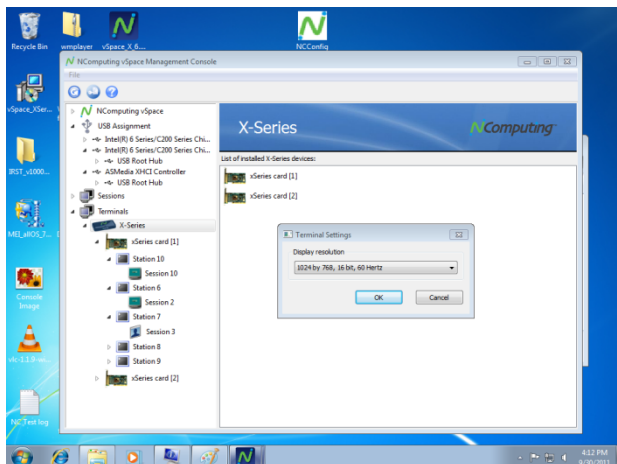
Setting Screen Resolution: You can set the screen resolution for all Stations connected to a PCI-card. To do this, click on the desired X-series PCI-card in the Terminals list. Right-click on the X-series card on the right side of the screen and choose "Terminal Settings" from the pop-up menu that is displayed. Choose the desired screen resolution from the drop-down menu and then click OK.

To view device-specific configurations, including Auto Logon and Monitor Power-off, expand the Terminals list, right-click on the desired Station and choose "Station Settings."
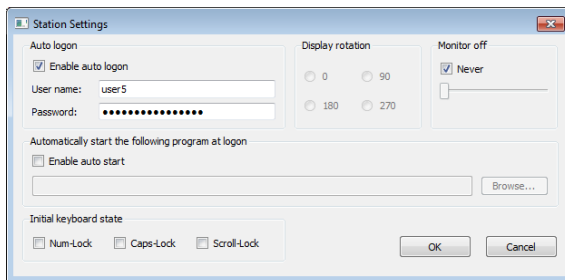
Check the "Enable Auto Logon" checkbox, type in the desired user credentials and click "OK" to enable this feature (this can also be set from the NC Tray).

Note: For Domain environments, enter credentials in the following format: **domain\username.**

The Monitor off feature lets you set a time for each station after which the signal to the monitor is shut-off, allowing the monitor to enter its power saving mode (if applicable). This is a useful energy-saving feature.

The three buttons at the top of the console are:

- Refresh – this refreshes the data shown in the console
- Registration – this launches the vSpace Registration Wizard
- Help – this connects to the NComputing Support web page
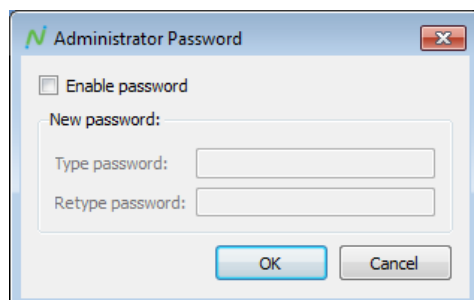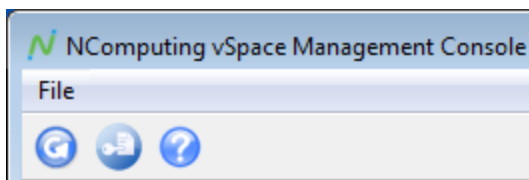
At the top of the screen, click "File" and choose "Administrator Password" to set a password for the console.

NCTray Interface

Several tasks are also available in the vSpace task tray icon from within each user's session. From this tray icon, you can configure auto-logon settings (as in the console) and send messages to other users. Note that the figure below shows the NCTray that is available on the host PC.
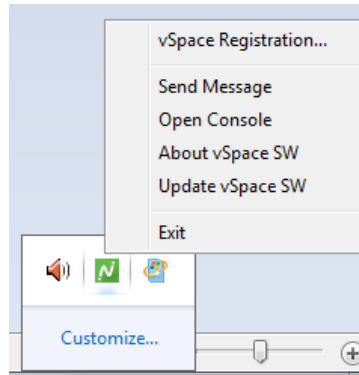
In some environments, you may not want every user to access the NCTray. To disable the NCTray for user stations, please refer to the article titled http://www.ncomputing.com/kb/How-to-remove-the-vSpace-6-NCtray-icon-from-the-Windows-SystemTray_305.html in the NComputing Knowledge Base for information.

Troubleshooting

**Error message: "Station x. stopped!"**

This message appears on the access device when the station is not yet logged in or has logged off.

I can't connect to the host PC.

Make sure the access device's cable is connected to the host PC, the host PC is running and the X350/X550 card has been registered.

Checking that the X350/X550 PCI Card and software are installed correctly.

On the host PC, open the Control Panel and then open the "System" item. Select the "Device Manager" tab and expand the "Multifunction adapters" item. You can check the installation status of the drivers here.
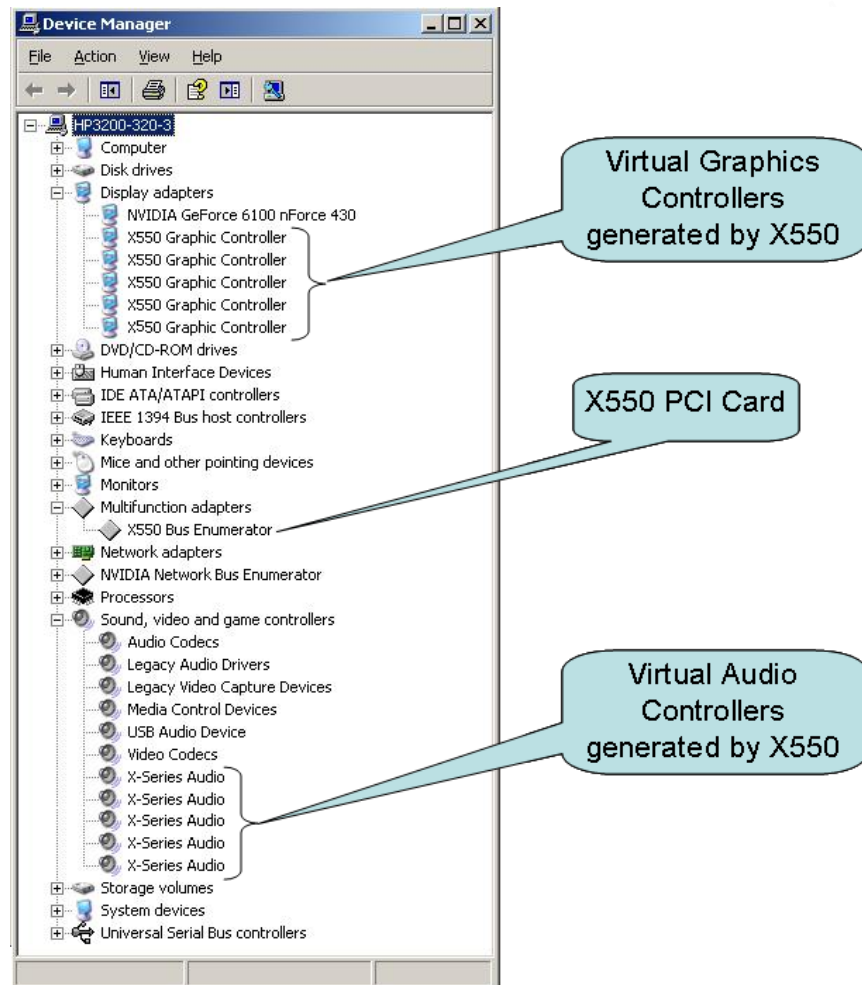
For more troubleshooting information, visit the NComputing knowledge base in the support section of the NComputing website at www.ncomputing.com.

Glossary

Access device (XD2): a multi-user computing station using NComputing patented technology. It doesn't use a CPU, VGA or main chipsets. It shares the resources of the host PC using NComputing vSpace software and a PCI card containing a system-on-a-chip (SoC).

Administrator: a person who is responsible for managing a multi-user computing environment, such as a local area network (LAN). Administrator responsibilities typically include: installing and configuring system hardware and software, establishing and managing user accounts, upgrading software and performing backup and recovery tasks.

Download: the network transmission of a file from one computer system to another.

Ethernet: the most widely-installed local area network (LAN) technology - specified in a standard, IEEE 802.3.

Firewall: a set of related programs that protect the resources of a private network from users on other networks and control what outside resources local users have access to.

Gateway: a network point that acts as an entrance to another network. On the Internet, a node can be either a gateway node or a host (end-point) node.

Host PC: a computer in which the vSpace software has been installed.

Internet: a worldwide system of computer networks in which users at any one computer can, if they have permission, get information from other connected computers (and sometimes talk directly with users at other computers).

LAN: local area network (LAN) is a group of computers and associated devices that share a common communications line or wireless link and typically share the resources of a single processor or server within a small geographic area (for example, within an office building). Usually, the server has applications and data storage that are shared in common by multiple computer users. A local area network may serve as few as two or three users (for example, in a home network) or as many as thousands of users (for example, in an FDDI network).

Log on: logon is the procedure by which an entity (person, program or system) exchanges credentials with an operating system or application in order to be allowed access to the OS or application. Almost always, a logon requires that the user has (1) a user ID and (2) a password. Often, the user ID must conform to a length requirement, such as eight characters or more, and the password must contain at least one digit and not match a natural language word.

User: a person who uses a computer system. Users need to identify themselves to be able to access the computer system. In order to ensure unique identities, the system administrator usually assigns each user a username associated with a defined set of computer resources.

USB: (Universal Serial Bus) is a standard designed to allow peripherals to connect and identify themselves to a computer via a standardized interface socket. USB allows devices to connect and disconnect from a computer without forcing the computer to be restarted.

vSpace: NComputing Desktop Virtualization software