

This guide is intended to identify the steps required to install this software on the Intel[®] Hybrid Cloud platform, and does not replace the manufacturer’s instructions for third-party products. Before completing the instructions below, you will need to install the respective software on the server using the Store feature in the Intel[®] Hybrid Cloud Management Portal (<https://hybridcloud.intel.com>).

LICENSE ALERT: Purchased keys may not be used on this product.

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Product Version

This package reflects Nirvanix* CSS Version 2.5.0.16, installed on a base of Windows 2008 Web R2.

Dependencies / Requirements

Nirvanix CSS is installable on Intel® Hybrid Cloud Server (IHC) version 3.1, and on version 3.5 or later.

Appliance Default Passwords

Nirvanix CSS has no default passwords. You will need to set the initial administrator user name and password when the product is installed.

Product Description

This implementation of Nirvanix Cloud Storage Services (Nirvanix CSS) provides a persistent cloud-based copy of any file copied to the Nirvanix *cloudnasservice* network share, offered by the Nirvanix CSS appliance. Files copied to this share are buffered onto a local 250GB cache drive and then persisted to cloud-based storage in a Nirvanix storage pool. Once a file is written to the cloud, it can be recovered even if the IHC server that it comes from is completely destroyed. The amount of time needed to finish writing a file to the cloud will vary depending on network speed and ISP connection bandwidth.

If a failure occurs while a file is in the process of being uploaded to the cloud, the file will be written when connectivity is restored.

Files that have been written to the network share can also be read at any time. Files that are in the local cache are available immediately. Files that are not in the local cache will take longer to appear, depending on network load and the bandwidth of the ISP connection.

Because files are written to the local cache drive, the largest file that can be written or read is a complex function of the available space on the drive and of the limits of the NTFS file system.

Recovery options

Once data has been written to the Nirvanix cloud, there are two primary options for recovering data: the first option is to do an in-place recovery on the same IHC server. The second is to do an Asset Tag recovery onto a second server.

In-place Recovery

Perform in-place recoveries by re-installing the Nirvanix CSS software onto the box where it was originally installed. This recovery type is suitable when the installation of Nirvanix CSS has been lost but the local hardware is sound or has been repaired. In this scenario, the (internal) Asset Tag of the box is used to identify and recover the CSS account containing archived data.

Recovery Onto a Second Server

When recovery cannot be done onto the original box, the Asset Tag of that box (now called the Recovery Tag) is entered during product installation. This causes the installer to connect the new box to the account originally generated for the first box. *(While multiple boxes could theoretically be connected to a single account in this way, this practice is not recommended and will likely lead to corrupted data.)*

Please refer to the installation section of this guide for further discussion of recovery options.

Storage Pools

Each installation of Nirvanix CSS is associated with a Nirvanix Storage Pool. Storage pools have policies that define the number of data copies kept, the location where the copies are based, and a default service region.

The Intel AppUp® SMB Service store version of Nirvanix CSS automatically assigns the requirement that two copies of data be kept and that they be geographically “near” the point of use. For some types of data, the default policy will not be acceptable; in this case, contact Nirvanix Customer Service after Nirvanix CSS is installed. They will be able to help establish appropriate policies for your data pool.

Recommended Usage

Nirvanix CSS is recommended for use as a backup or archive target, not as an active file system. Back-up software can be configured to write to the Nirvanix CSS drive, and the backups will automatically be protected in the Nirvanix Cloud.

Not for Active or Rapidly Changing Files

Nirvanix CSS is not suitable for storing files that are currently being modified or are modified frequently (e.g., database files, log files). Open files can prevent the CSS process from completing an upload to the cloud.

Not Designed for Use With Many Small Files

It is recommended that the Cloud Storage environment be used with files that are greater than 1MB in size. Files smaller than 1MB should be packaged using an archive utility (i.e., Zip, tar, etc.) for storage in the cloud.

Making the share Available

The Nirvanix CSS cloudnasservice share is created with default Windows* share properties. This means that users will be asked to authenticate when they access the share. If the credentials provided correspond to an existing account on the Nirvanix CSS appliance, then access will be controlled by rights granted to the user in each subdirectory.

Initially, only the (local) administrator will be able to use the cloudnasservice share. The strategies outlined below provide access to other users.

Best Practice: Join the Nirvanix CSS Appliance to a Domain

A best practice is to use a Windows*-based domain to administer users and to grant network access rights to the cloudnasservice share via the domain. This provides a single point of rights management and ensures that user passwords stay in sync. It also makes security management independent of any single appliance in the domain.

NOTE: If a domain is used, maintaining it does have a cost: there should be at least two domain controllers for mutual backup. Also, the security provided by a domain can leave some users feeling constrained.

To join a domain:

1. Log in to the Nirvanix CSS appliance and join it to a domain.
2. Log in to the domain and assign user and group access rights as needed for the directory structure you created on the cloudnasservice share.

The Microsoft TechNet site provides instructions for joining a computer to an existing domain at <http://technet.microsoft.com/en-us/library/bb456990.aspx>. The instructions explain how to set user rights on a share: <http://technet.microsoft.com/en-us/library/cc726004.aspx>.

Alternate Method: Local Users

Another way to make the cloudnasservice share available to users is to create duplicate users in the Nirvanix CSS appliance and to assign them rights on the share. They can then access the share by providing their login credentials from another appliance or computer on the network.

This strategy has the benefit of being easy to understand and it requires little planning. However, it does not scale well, and user passwords can easily get out of sync. Also, if something happens to the Nirvanix CSS appliance, while the data could easily be recovered, the security access settings may not.

Ad-Hoc Method

Users can be created on the appliance and used to grant access to others, but this does not represent an administrative best practice because passwords on different appliances can easily get out of sync, and each user must be maintained separately by the administrator of each appliance.

Little or no planning is required to implement this strategy, but over time it becomes bulky and prone to errors when managing or auditing for security.

Important Cautions

Do NOT install other applications onto the Nirvanix CSS Appliance!

Although it may seem that there are enough resources to add other functionality to the Nirvanix CSS appliance by installing applications or by using it for other purposes, it is strongly recommended that you DO NOT do so, for the following reasons:

- **Legal:** CSS is running in a Windows-based environment, and the CSS license includes Windows Server 2008 R2 licensed for this purpose only.
- **Reliability:** Storage and backup is a business-critical function; adding other applications to the CSS appliance makes the software environment more complex and more prone to failure. This can *only* adversely impact the reliability of CSS.
- **No Support:** If something you do to the appliance adversely impacts its performance, then neither Nirvanix nor Intel will be able to provide support for the modified appliance.

Do NOT tamper with the CSS Appliance D: drive!

Nirvanix CSS uses the space and directory structure on the D: drive to buffer data as it is sent to and read from the cloud. To maintain the integrity and the reliability of CSS operation, do not modify or tamper with D: drive (CloudNAS) of the appliance.

Features

The following information comes Nirvanix literature:

Reasons to backup/archive data to the Nirvanix Cloud Storage Network

The Cloud Storage Network delivers proven second-generation technology that enables you to handle the proliferation of unstructured files, comply with regulatory requirements, and satisfy backup and archiving needs, while taking advantage of:

- Usage-based pricing, billed per month or an annual pre-paid contract
- Cloud storage fully managed as a service by Nirvanix
- Elastic flexibility for unlimited scaling
- Multi-level, military-grade security at the user, storage and data centers
- 24x7 data availability enabling access from anywhere
- Data consistency and integrity for all files
- Live replicas for immediate recovery

Secure Data

Nirvanix implements multiple layers of security at the user, data storage, and physical data center levels to protect against unauthorized access and help companies comply with regulatory requirements for long-term archiving and eDiscovery.

System Security Features	Physical Security Features
Strong password authentication	On-site 24x7 security
Data protected in-flight and optionally at rest by SSL for data transfer and AES 256-bit encryption	All doors, including cages, secured with biometric hand geometry readers
Obfuscated physical file architecture requiring 3-step key to link files to users	Kinetic locks on all closed cabinets
Token based authentication with server side session management	CCTV digital camera coverage of the entire center, including cages, with detailed surveillance and audit logs
Multi-tenancy architecture logically and physically segregates each customer's data and establishes separate firewalled areas	Bullet-resistant exterior walls
Data access limited to customer-authorized personnel and by Nirvanix at the customer's direction or to perform services and maintenance as agreed to by the customer	Concrete bollards/planters as outer perimeter boundaries
24x7 monitoring, mobile and e-mail alerts to sys admin staff for all processes	CCTV integrated with access control and alarm system

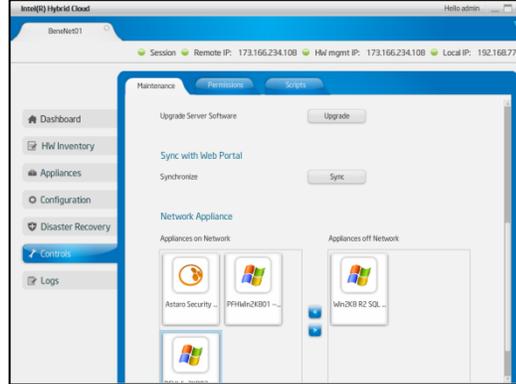
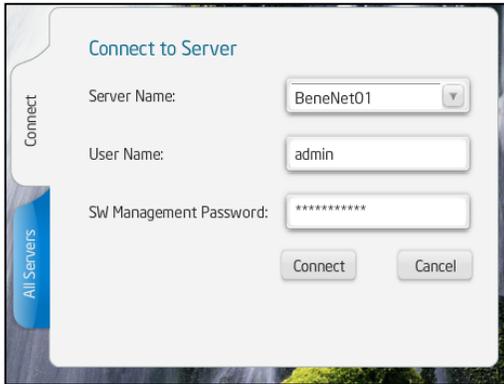
How Data is Backed Up and Recovered

Nirvanix geo-dispersed data centers allow access to data, anytime, from everywhere in the Cloud Storage Network. Data is backed up and retrieved from the application used to write/copy to the CloudNAS gateway software pre-installed on the Intel Hybrid Cloud appliance.

Download and Install Nirvanix CSS

To download the Nirvanix CSS appliance:

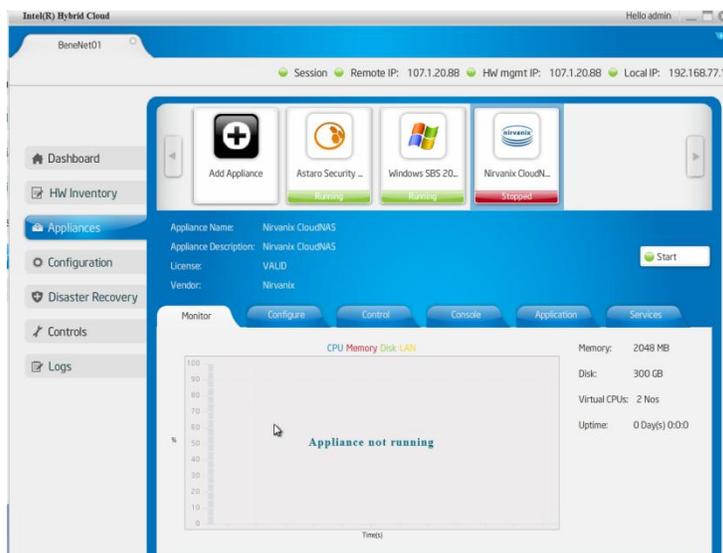
1. Go to the Intel AppUp® SMB Service store at <https://store.intelhybridcloud.com>.
2. Log in using your MSP ID and password.
3. Search for and select the desired Nirvanix Cloud Storage appliance.
4. Select the target Intel Hybrid Cloud server to install to.
5. Click **Add to Order** and then complete the ordering process. The appliance will download within 12 hours.
6. Log in to the IHC server manager, go to the Controls/Maintenance tab and click on "Sync" to initiate the download.



During download, you can monitor progress on the Appliances/Applications page of the appliance:



When the download and install have completed, the appliance will show as Stopped.



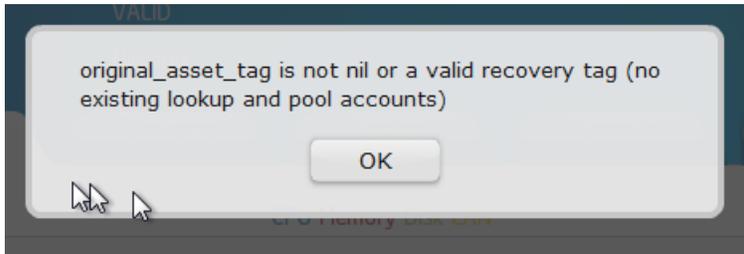
Configure Nirvanix CSS

1. After the download completes, log in to the IHC server manager.
2. Click the **Appliances** button to open the Appliances page.
3. Select the Nirvanix CSS appliance.
4. If the appliance is Stopped, click the **Start** button.
5. In the Appliance Auto Configuration Information screen, enter information into the following fields, using the table below as a guide.

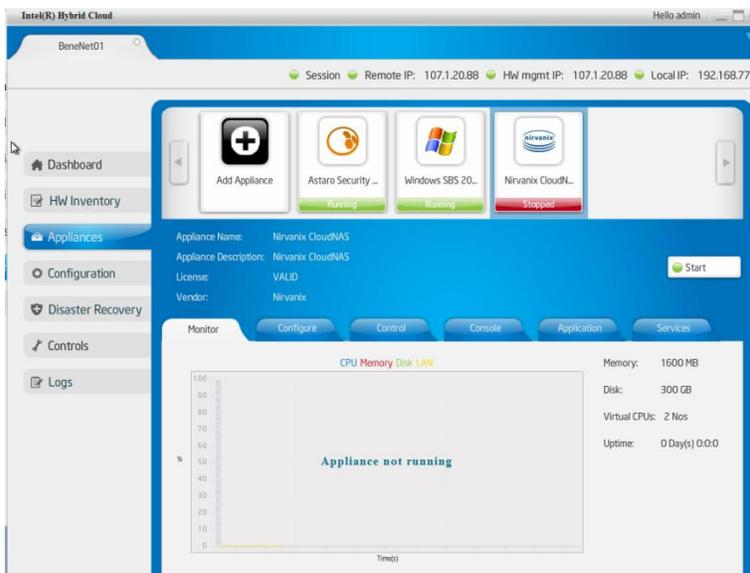
Field	Instruction
Recovery Asset Tag	If this is a first-time install, or a re-install on the same IHC server, leave this field empty. The asset tag of the IHC machine will be used to create a new Nirvanix account, or to recover one if it already exists. If you are recovering data from a previous installation on another IHC server, enter the asset tag of that server.
Server Name	Server name, 15-character max. Composed of a-z followed by any sequence of a-z, 0-9 and "-". For example, CloudNAS-1
Business Name	Business name, no restrictions on the name
Network Administrator	Name of administrative user; 15-character max; any sequence composed of a-z, 0-9, or one of "_#%&'-.^{}~!", for example admin.cloud-9.
Domain Name	Valid domain name (15-character name, max; first character must be alpha with the remainder alpha-numeric or hyphen.)
Password	Password and password check—both must match. Password is alphanumeric with punctuation "@\$!%^()*#&". Password must include lower AND uppercase alpha, number, punctuation to be accepted.

6. Click **Apply**.

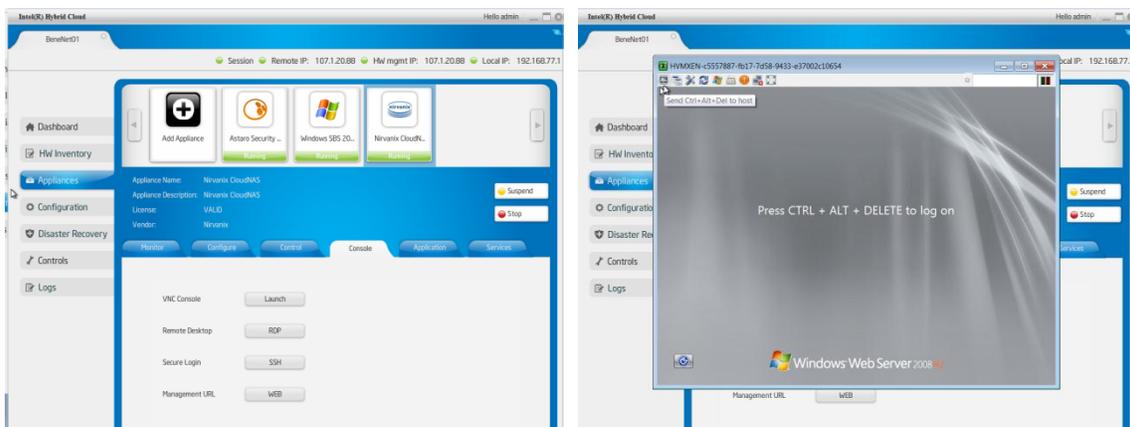
7. If information is missing, or if there are any entry errors, a dialog box displays, describing the error and directing you to correct it. For example, the sample error below occurs if you try to specify a recovery tag that does not exist:



After validating the information you entered, the appliance begins automatic configuration. When the appliance once again displays as “Stopped,” this configuration step has completed (about an hour).



8. To complete the configuration, the appliance must be started one more time and you must log in as the Administrator.

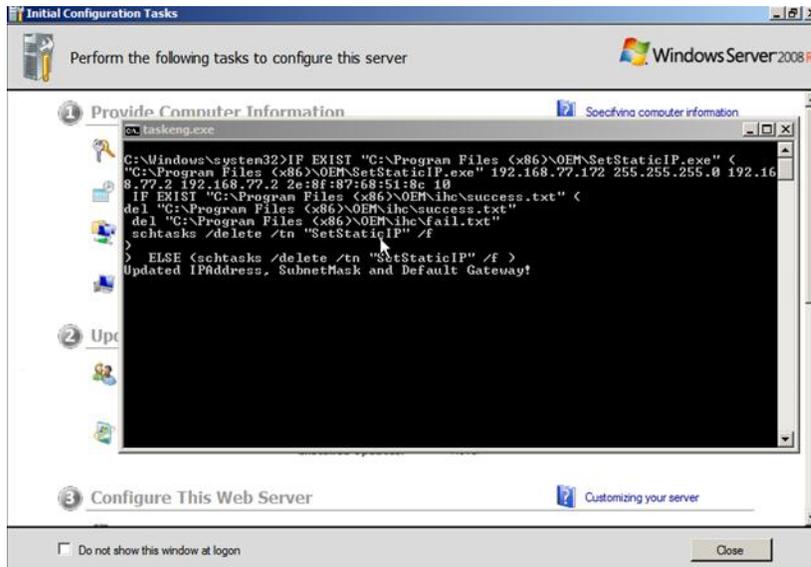


9. Click on **Launch** to open the VNC console, then click on the upper left icon to send CTRL+ALT+DEL to log into the appliance.

10. Enter the password and click the blue arrow button:



After a couple of minutes, the final configuration step launches automatically:



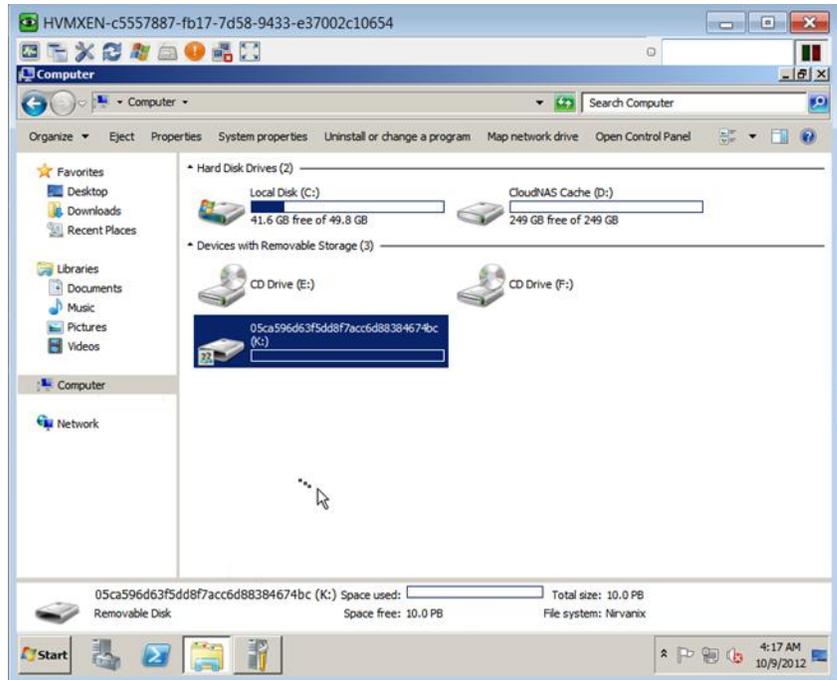
Configuration is now complete.

Verify the Nirvanix CSS Installation

1. Open Windows Explorer: click the file folder icon in the toolbar, then click **Computer**. You should see a screen similar to the one below:

In the example at right, the K: drive indicates that Nirvanix CSS has successfully connected to the Nirvanix backend through the network. Note that it may take up to three minutes for this drive to appear for the first time.

For future reference, the long volume label on the drive is the Nirvanix account name and is derived from the IHC Server Asset Tag.



2. Right-click on the **K:** drive and select **Properties**, then click the **Sharing** tab. It should show that K: is shared.

NOTE: It can take several minutes (usually less than 5 minutes) from the time of start-up for the K: drive to become active and for it to be shared on the network.

Connect to the Appliance

Under normal circumstances, users will not connect to this appliance, except to administer it. The IHC server manager and VNC console are the recommended tools for accessing the appliance.

Licenses / Configuration

This is licensed software. All licenses required for operation are installed when the product is configured.

Uninstall

To remove Nirvanix CSS from your IHC Server:

1. Open the Intel Hybrid Cloud server manager.
2. Use your login credentials to connect to the target server.
3. Select the **Appliances** tab.
4. Click the **Nirvanix CSS** appliance to select it.
5. Select the **Control** tab.
6. Click the **Uninstall** button and let the uninstall complete.

This completes the uninstall of Nirvanix CSS from your IHC server.

Troubleshooting

Listed below are some common error conditions that you might encounter, along with explanations and suggestions to correct them.

No K: Drive

Failure of the K: drive is most likely due to one of the following:

- Network issues. Check connectivity to the Internet by pinging services.nirvanix.com or some other site known to respond to ping. If this fails, resolve connectivity issues before proceeding further.
- Possible firewall issues: CSS uses well-known ports 80 and 443 for communications with the Nirvanix backend.
- Authentication failure/account lockout (missing cred file or changed password): reinstall the application.
- Check to see that the Nirvanix CSS service is enabled and running. Also look in the Windows system error log for errors.
- The Nirvanix client keeps a log file that may be helpful. The log files are kept at D:\Nirvanix\Nirvanix CloudNAS\log and are named according to <Year>-<Month>-<Day>-<Hour>-<Min>.log. Note that the date and time are local to the appliance and may not be what you expect.

The Share cloudnasservice is Not Created or is Unavailable

- If the CSS K: drive did not come up, then the share cannot be created. Verify that the K: drive is present and looks normal; proceed accordingly.
- The CSS share is recreated at startup by a command file that runs when the appliance boots. Check the log file at C:\Program Files (x86)\OEM\ihc\share_drive.log.

“Invalid Recovery Tag” (Install)

You will only see this message if you have entered a correctly formatted 32-character asset tag into the Recovery Tag field of the configuration dialog box. This means that Nirvanix CSS was never installed on a machine with the asset tag that you have specified. Consequently, you cannot recover data from that machine. You should check and correct the asset tag you are using for recovery.

Troubleshooting Installation

If the Nirvanix CSS product has installed successfully, the most likely scenarios are that either the K: drive failed to come up, or that the cloudnasservice share has not been created.

Strangely Formatted Errors (During Install)

When unexpected errors occur during the initial CSS configuration validation step, the text of the Nirvanix error response is displayed rather than a user-friendly message that would be less helpful for diagnosis.

When the error occurs, write down the text of what you see and retry (restart) the configuration step. If the error persists, please contact Intel Customer Support for further assistance.

Troubleshooting Resources

For troubleshooting, log files provide information about what is happening. These first two files are on the Nirvanix CSS appliance:

- D:\Nirvanix\Nirvanix CloudNAS\cloudnas.log
- C:\Program Files (x86)\OEM\ihc\share_drive.log

The following files are available only to Intel ICS and would contain information pertaining only to a failed installation:

- /opt/hybridcloud/<resource dir>/lib/MS320-Nirvanix.log
- /opt/hybridcloud/bin/sw/log/lm_debug.log

Under normal circumstances, there is no reason to access or monitor these files.

Technical Support

- Nirvanix technical support:

For issues with the Intel Hybrid Cloud server, including access to the Virtual Machine or network connectivity, please contact Intel Customer Support.

If the following checklist has been met and you are still experiencing problems with Nirvanix CSS, please contact Nirvanix customer support:

Prerequisites for Nirvanix Support

- a. The Intel appliance is functioning properly.
- b. The VM hosting Nirvanix CSS is on and accessible using a remote desktop solution.
- c. Ports 80 and 443 (http and https) must be open for traffic to and from *.nirvanix.com (for example to services.nirvanix.com.)
- d. There is no web proxy blocking traffic.

Nirvanix Support Email: customersupport@nirvanix.com

Nirvanix Support Phone: 866-751-1098

Intel and Nirvanix support organizations will work with you to resolve the problems appropriately.

- For questions pertaining to this guide, contact Intel Customer Support:
<http://www.intel.com/support/progserv/appupsbs/hybrid/sb/CS-032313.htm>
- In the event that you (the Managed Service Provider) are unable to resolve a technical support issue by providing first level support for the Software, you may obtain second level support from the help desk of the Software manufacturer, pursuant to the terms and conditions accompanying the Software. Technical Support contact information is provided at the following location:
<http://www.intel.com/support/progserv/appupsbs/hybrid/sb/CS-032313.htm#Software>
- Intel® Hybrid Cloud Platform User Guide
<http://www.intel.com/support/motherboards/server/hybrid/sb/CS-031729.htm>
- Appliance and Application Initial Setup Guides
<http://www.intel.com/support/progserv/appupsbs/hybrid/sb/CS-032880.htm>