Viewing the Storage Console

The Storage Console allows you to view cluster-wide information, such as the number of nodes, cluster status, number of errors, number of streams, and capacity data. The Storage Console can be accessed by clicking the **View Storage Console** button on the **Configuration**, **Licensing**, or **User Access** tabs of the Netmail Store **Content Storage** object. When you click **View Storage Console**, the Storage Console is presented in a new dialog box.

On this page:

- Node IP Search
- Node Status Search
- Print
- Cluster Actions
    - Cluster Settings
    - Cluster Shutdown
    - Cluster Restart
- License Information
- Cluster Name
- Cluster Multicast Address
- % Used Indicator
- Cluster Node List
- Node Details

The top of the Storage Console provides a convenient way to both get a summary view of the cluster as a whole as well as perform cluster-wide actions like editing cluster log settings, restarting and shutting down the cluster.

Node IP Search

For large clusters, the Node IP search allows you to find a node in the list without having to scroll to find it. Enter the IP address and click **Search** to find all matching records.

Node Status Search

The node **Status** dropdown list allows you to find nodes or volumes that have a particular status, like an Alert, Warning, or Idle status. The Idle status denotes volumes or nodes that are in power saving mode during a period of configurable inactivity (see Node Configuration for additional details). Only matching results will appear in the console when you select a value from the dropdown list. When you are finished looking at the

searched node(s), select **View All** from the dropdown list to view all nodes in the cluster again.

Print

Click **Print** option at the top of the Storage Console to display a printer-friendly version of the console. After the popup displays, you will need to click the print button at the top of the page to actually print it. To include a portion of the console in an email, simply select the text, copy it to the clipboard, and paste it in to an HTML-formatted email. You can also paste a portion of the print formatted page into Excel and then copy it from there for a cleaner view if you are not using HTML-formatted email**.**

> *Note: For some browsers, like Firefox, it may be necessary to change the print settings to print in landscape view to ensure data does not get cut off in the right margin.*

Cluster Actions

The cluster actions at the top of the Storage Console provide a mechanism for an administrator to update log settings and shutdown or restart all nodes in the cluster.

Authentication

The following cluster-wide actions require authentication:

- Shutting down or restarting the cluster
- Changing cluster settings, which include:
    - Managing tenants
    - Changing the logging host configuration
    - Setting the replication multicast percentage
    - Suspending or resuming volume recovery
    - Setting the power saving mode

To be able to commit any of the preceding, you log in with credentials of a user in the *CAStor administrators* security realm. This realm is defined in the node and/or cluster configuration files. By default, there is one user in the realm: *admin*, and this user authenticates with Basic authentication (that is, the password is sent from your browser to the Admin Console in clear text). It is strongly recommended that you change *ad min*'s password immediately, that you use the names of real users, and that you encrypt users' passwords using Digest authentication. For more information, see Securing the Administrator and Operator Passwords.

Your user name and password remain valid for 60 seconds on most browsers and will then need to be re-entered. Safari and Chrome, however, do not time out the authentication and should therefore be used with caution if security is a concern.

Cluster Settings

To configure cluster-wide settings, click **Settings** at the top of the Storage Console. The **Cluster Settings** dialog box allows you to make runtime changes to several configuration parameters and have these changes persisted in the cluster across reboots. The first time you save settings in the **Cluster Settings** dialog box, the **Cluster Settings UUID** field displays the UUID of the anchor stream that contains cluster settings.

You can optionally create an empty anchor stream in the cluster during initial configuration and set that UUID as the *clusterSettingsUUID* in advance of any actual updates.

> *Warning: If you are using a CSN, immediately enter cluster settings UUID on the Configuration page under the Content Storage tab page of the CSN Console. If you are not using a CSN, immediately enter the cluster settings UUID in your node or cluster configuration file. Not saving the UUID can result in unpredictable behavior, including losing all your cluster-wide settings when you reboot the node.*

> *Note: It is recommended that the persisted settings parameters NOT be set in individual node configuration files as they are cluster-wide settings that require a single value for the whole cluster. Any values specified in a node configuration file will be overridden by the cluster settings from the console.*

Cluster Settings UUID

The *clusterSettingsUUID* parameter enables all nodes in the cluster to use the same settings every time they reboot. Cluster nodes broadcast cluster settings over multicast. The reason *clusterSettingsUUID* is in your node or cluster configuration file is to enable the cluster to remember the settings UUID when all nodes are rebooted at once (for example, after certain upgrades, after a power outage, or after a network outage).

Logging

The logging Host, Port and Level can be updated to either temporarily or permanently redirect the cluster logs to a different location or a different log level. This can be particularly useful when troubleshooting an issue in the cluster that requires a more granular report of cluster activity.

Replication

The frequency of the cluster's multicast broadcasts can be modified by changing the Replication Multicast %. The higher this percentage, the more frequently the cluster will communicate UUIDs to other nodes and other services, like Content Router.

Suspend

This option allows an administrator to temporarily suspend volume recovery efforts in the cluster for scenarios in which data is not actually at risk but a network or power outage has taken one or more nodes or perhaps even a whole sub-cluster offline. Suspending volume recovery prevents cluster activity churn and reduces the risk of capacity issues due to over-replication during an outage or upgrade. Volume recovery will remain suspended until it is manually reset by an administrator. This feature should never be set to suspend indefinitely as this would hamper one of Netmail Store's primary data protection layers.

Power

Netmail Store, by default, supports an adaptive power conservation feature that allows a node to spin down its disks after a specified sleep time and to wake up to check disk and content integrity after a specified wake time. Please see Adaptive Power Conservation for full details. Administrators may update the default sleep and wake after times in the **Settings** dialog box. Additionally, administrators may set a percentage of the maximum potential power consumption the cluster should utilize for instances when strict power usage is required. If the **Full Performance Mode** option is selected, all power saving values remain as previously set but they are ignored and the cluster runs at full power.
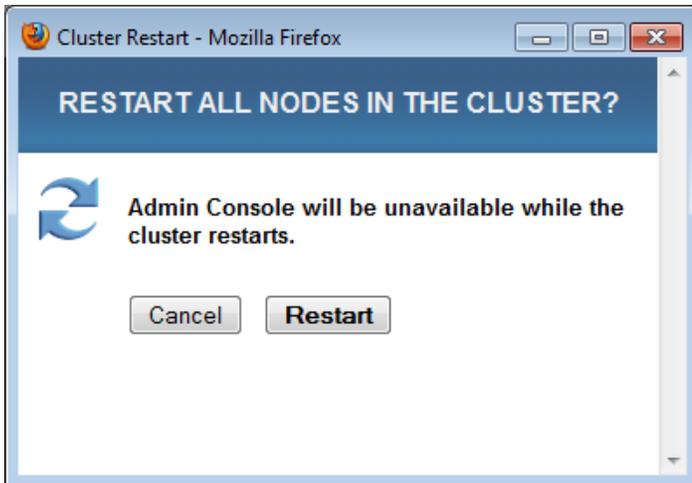
Cluster Shutdown

The **Shutdown Cluster** button provides an administrator with a mechanism to shutdown all nodes in the cluster. It may take a several minutes for the nodes to shut down.
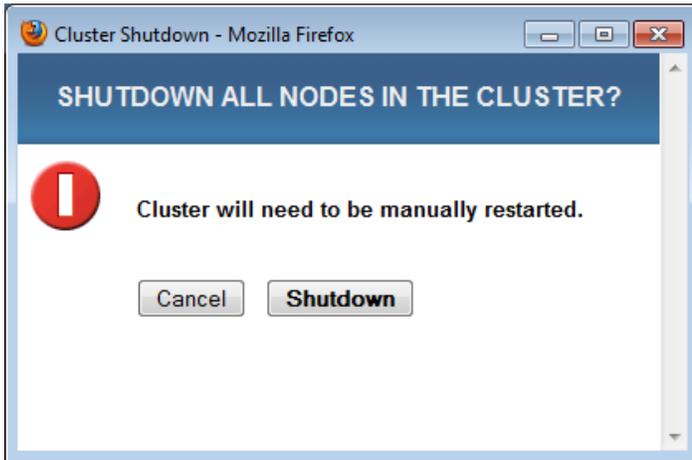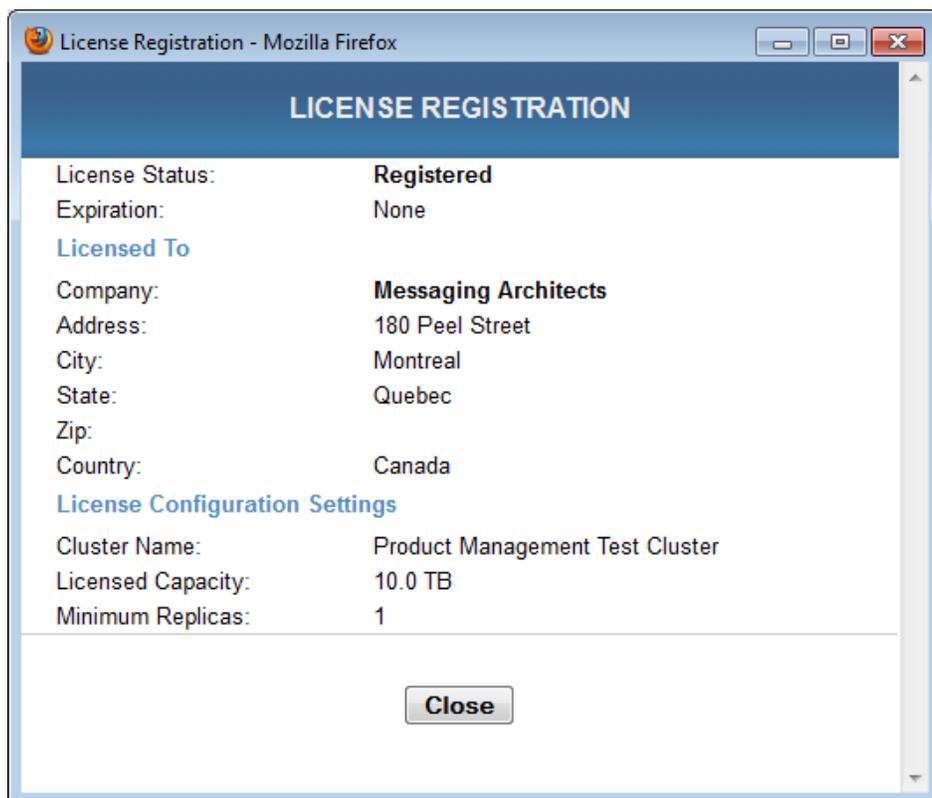

Cluster Restart

The **Restart Cluster** button provides an administrator with a mechanism to reboot all nodes in the cluster. It may take a several minutes for the nodes to restart.

License Information

This area displays the name of the company to whom the cluster's license file is registered. If the cluster does not have a valid license, this will display as 'Unregistered'. When you click on the licensee's name next to **Licensed to** at the top of the Netmail Store Admin Console, the **License Registration** dialog box appears, displaying the name, contact information and configuration settings contained in the license file.

Cluster Name

The name of the cluster is configurable through the node and/or cluster configuration files and cannot be modified at runtime.

Cluster Multicast Address

Nodes in the cluster use a multicast address to broadcast cluster wide messages. There is a single multicast address for the cluster. The multicast address cannot be modified at runtime and is configurable through the node and/or cluster configuration files.

% Used Indicator

The % Used indicator provides a helpful computation of cluster available, licensed and total physical space for monitoring purposes. The indicators include color highlighting as described in the table below. Space used is calculated against the lesser of the total physical space or the licensed space. For instance, in a cluster with 4TB of physical space but only 2TB of licensed space where 1.5TB of space is used, the console would report 75% Space Used.

Logical Threshold	Description	Default Threshold Value
OK (green)	Space used is less than the "spaceWarnLevel" configuration threshold.	At or above 75%.
Warning (yellow)	Space used is greater than "spaceErrLevel" and more than "spaceWarnLevel" configurable thresholds.	Above 75% but at or below 90%.
Error (red)	Space used is greater than or equal to "spaceErrLevel" configurable threshold.	Above 90%.

Cluster Node List

The cluster node list provides a high level view of the active nodes in the system.

Node Details

The display of the cluster nodes and their status information is transmitted periodically. Therefore, there can be a delay of up to two minutes before node transitions are recorded on the admin console. This also means that the admin console view may differ slightly when two nodes are compared to each other. If practical, it is best to remain connected to the same node when using the Netmail Store Admin Console in order to avoid confusion with this status propagation delay.

The volume labels next to each Netmail Store node in the Netmail Store Admin Console are listed in arbitrary order. The Netmail Store Admin Console labels do not correspond to physical drive slots in the machine chassis. However, the volume names do match the physical drives in the machine chassis. If the cluster is configured to use subclusters, as shown in the preceding figure, you must expand each subcluster name to display volume information.

Note: From a version 2010.1 or later console, nodes running older software versions in a mixed version configuration may not display some information, like stream counts. Nodes running version 2010.1 or later will have all the information necessary to populate the Netmail Store Admin Console fields.

The Node Details window enables you to view information specific to that node, such as hardware status, health processor status, uptime, and Netmail Store software version. If, as shown in the preceding figure, the cluster is configured to use subclusters, you must expand a subcluster node name to display IP addresses, and then click one of those IP addresses to display node information.

netmail

Support   Log Out admin

Configuration | Licensing | User Access

Configuration

Object Storage Configuration Settings

‹Cluster

Node IP	Status	Errors	Streams	Used	Trapped	Capacity	Licensed	Uptime	Version	Actions
10.10.5.51	Alert	1	92136	232.5 GB	926.0 MB	233.4 GB	10.00 TB	28 days, 1 hr	6.1.2	Retire Node
Vol 0: /dev/sda ID: dc8396802f2ce70986ee338fec130247	Ok	0	92136	232.5 GB	926.0 MB	233.4 GB				Retire | ○ Identify
Vol 1: /dev/sdb ID: f803ea98835e486aa74f69803cdd2ee0	Unavailable	200	0	0 bytes	0 bytes	0 bytes				

Node Details

Errors (Last 10) [Clear Errors...]

Apr 28, 2013   15:25:55   [/dev/sdb] Too many IOErrors (200/200) - marking unavailable

Announcements (Last 10) [Clear Announcements...]

Apr 28, 2013   15:25:58 Finished ECR for remote volume F803EA98835E486AA74F69803CDD2EE0, all done
Apr 28, 2013   15:25:55 Remote volume F803EA98835E486AA74F69803CDD2EE0 is down; no FVR; initiating ECR against 1 local volumes
Apr 2, 2013   19:36:18 Remote volume DF7C93DF7083A95EC214676E8E3CF304 returned, stopped recovery against 2 local volumes
Apr 2, 2013   19:36:18 Remote volume 7912511DB8F283DECF1B19ED5BBC982F returned, stopped recovery against 2 local volumes
Apr 2, 2013   19:34:51 Finished ECR for remote volume 7912511DB8F283DECF1B19ED5BBC982F, all done
Apr 2, 2013   19:34:51 Finished ECR for remote volume DF7C93DF7083A95EC214676E8E3CF304
Apr 2, 2013   19:34:47 Remote volume 7912511DB8F283DECF1B19ED5BBC982F is down; initiating FVR against 2 local volumes; initiating ECR against 2 local volumes
Apr 2, 2013   19:34:47 Remote volume DF7C93DF7083A95EC214676E8E3CF304 is down; initiating FVR against 2 local volumes; initiating ECR against 2 local volumes
Apr 2, 2013   19:34:10 License space updated from 0 bytes to 10.00 TB. Feature status: ErasureCoding=no ContentIndexing=no.
Apr 2, 2013   19:33:55 Available: 33.43 million index slots, 147.6 GB capacity

[+] **Node Info**
[+] **Node Configuration**
[+] **Node Operations**
[+] **Hardware Status**

✉ Messaging Architects.

Volume Identify

The Identify function allows an administrator to select a particular volume and light the LED disk light for it, which can be helpful in identifying a failed or failing drive. Simply select the volume you wish to identify and how long to leave the light on. In the Node Details window, an Identify light will display next to the volume that is lit so the administrator can easily recognize it if they would like to turn the identify off prior to the timeout. Please refer to Drive Identification API for information on using a plugin API for the drive light mechanism. If a hardware-specific API is not used, Netmail Store will revert to a default mechanism to flash the light.

Errors and Announcements

The last 10 errors and announcements will appear in the Node Details window if there are critical messages or high level announcements that an administrator should know about. If there are no errors or announcements, these sections will not appear. The error count in the node summary grid corresponds to the list of errors in the error section.

Additional Node Status Information

Beneath any node errors and announcements, additional detailed level node information is available in the expandable Node Info, Node Configuration, Node Operations, and Hardware Status sections. The information in these sections can be helpful when working with support.

Hardware Status Reporting

The expandable Hardware Status section of the Node Details window contains status and operational reporting if available for various hardware components installed on the node. Hardware status reporting is dependent on hardware that supports and populates IPMI sensors, SMART status, and in some cases manufacturer-specific components like SAS or iDRAC. Consumer-grade and/or older hardware might report blanks for the majority of the fields if these utilities are not supported. The hardware status values are scanned and populated for each node independently, allowing for variations in supported utilities on a node by node basis.