

UVS Manager v2.14.17 Release Notes

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We are glad to announce the release of UVS manager v2.14.17. v2.14.17 is our second release this year. New features include RBD Mirroring, management of Prometheus, and exporters. From this version, UVS supports updated UVS software sub-versions. Customers can upgrade new features or bugs fixed when they are generally available without waiting for the full version UVS release. In this release, we also update the Ceph version to Nautilus v14.2.9 to improve the stability. Please read this release note carefully before you upgrade the UVS manager.

Major Changes in v2.14.17

- **Upgrade Ceph from Nautilus 14.2.5 to 14.2.9. Some critical issues are fixed and listed as follows. Please refer to the Ceph [Nautilus Release Notes](#).**
 - Fix the ceph-mgr heartbeat issue.
 - Fix a couple of security issues.
 - Improve the ceph-osd usage of memory.
 - Improve the stability of Cephfs.
- **UVS manager new features**
 - RBD Mirroring**
 - Add installation wizard.
 - Add/Del rbd-mirroring daemons.
 - Add/Del RBD Mirroring peers.
 - Support RBD Mirroring promotion & demotion.
 - Deployment**
 - Users can change the timezone of the UVS Manager and push the timezone setting to all nodes.
 - Support subversion firmware update of UVS.
 - Cleanup OSD disk and swap while removing OSD.
 - RADOS Gateway**
 - Enable Object Gateway function in the Ceph-MGR dashboard when the user creates an RGW service.
 - Ceph Cluster**
 - Restrict the user to create a pool with a PG number power of 2.
 - Restrict the user to select the “rbd application” pool while creating RBD images.
 - Monitoring**
 - UVS Prometheus and node, ceph exporter service.
 - Support the Ceph-MGR Zabbix module.
 - UVS now collects output logs to the operations.
- **Other Enhancements**
 - UVS mounts the M.2 SSD disk on the path /m2, and put more data into the SSD instead of the eMMC flash.
 - Show the Ceph-MGR status on the Dashboard page.
 - Add the “restart” button for the Ceph-MGR daemons for the case Ceph-MGR service stuck.
 - Use ETCD to sync the notification counts.
 - Limit resources to Ceph service with systemd.
- **Bugs Fixed**
 - Firmware update function should avoid installing .upd files design for another distro.
 - Fail to move Ceph monitor data to M.2 SSD.
 - Tune the TCP behavior for improvement of Ceph slow requests & TCP read block issue.
 - Failed to activate ceph-mon after removing an unhealthy mon node.

- Mars400 network has slow performance and holds lots of time_wait at monitor node.
- Check the SSD alignment.
- The function “Push RPM” can’t push itself.
- Fix updateetcd service logs a large unused message in the journal.
- Fix sysusage, and cepusage services log unused error message.
- Remove unused RPM packages.
- Update firmware function fails when ms model time is inaccurate.
- Extend the timeout period when upgrade.
- Improve the compatibility of external RGW SSL.
- The CephX user's name didn't match the real user's.
- UVS Openstack feature didn't set the pool application.
- Fix updateetcd service error.

Upgrade Guide

Upgrade from Version 2.14.16 to 2.14.17

There are three major software upgrades. Please read this upgrade notes carefully before you start to upgrade your Mars 400 appliance software.

1. **UVS manager:** Upgrade from version 16 to version 17 with many new features and bugs fixed.
2. **Upgrade the Ceph:** Upgrade Ceph version from Nautilus 14.2.5 to Nautilus 14.2.9. The UVS manager upgrade assistant will automatically restart the Ceph daemons after push the upgrade package to the specified nodes.
3. **RBD Mirroring:** We are proud to present the RBD Mirroring implementation in the UVS manager. Users can deploy rbd-mirroring easily to replicate their RBD images between two Ceph clusters. UVS RBD mirroring features enables you to quickly re-activate your storage service without waiting for the primary site recovery when there is a disaster. RBD mirroring provides your storage a higher availability.

You can select multiple nodes for one push. UVS will do the rolling update one node at a time. There will have no downtime during the upgrade. But, please do follow the following procedure.

The steps to completely upgrade the software are

1. Upgrade the first monitor node by the firmware update feature of the UVS manager. The first monitor node is the node you are using UVS manager for the upgrade.
2. Upgrade the rest of the monitor & OSD nodes.
3. Upgrade MDS nodes if you have MDS nodes in use.
4. Check the UVS software versions.
5. Upgrade the external RADOS gateways.
6. Upgrade the external iSCSI gateways.
7. Update the cluster timezone.
8. Finally, please upgrade your ceph clients.

Please follow the following sections for details of each step. Also, we put a video about the upgrade on youtube. Here is the link <https://youtu.be/6aCplqCfb6o>.

Step1: Upgrade the First Monitor Node

1. Open your UVS manager on a browser.
2. Please upload “2.14-17.upd” package to this monitor node by using the UVS “**Upload Firmware**” feature.
3. After uploading the .upd file, select the current monitor node and press “**Push Update**”, then push the .upd file for the updating.
4. A few minutes later, you’ll see the current node has been updated to version 2.14.17.

Upload New Firmware ✕

Select File*:

2.14-17.upd

Existing Firmware in Cache

2.12-16.upd 🗑️

<input type="checkbox"/>	Node Name	IP Address	Role	UVS Version	Version
<input checked="" type="checkbox"/>	demo151-1174	10.240.82.151	mon mds mgr	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo152-1176	10.240.82.152	mon mds mgr	2.14-16.20200317	CEPH: 14.2.5 KERNEL: 4.12.14
<input type="checkbox"/>	demo153-1178	10.240.82.153	mon mds mgr	2.14-16.20200317	CEPH: 14.2.5 KERNEL: 4.12.14

Step 2: Upgrade Other Monitors and OSD nodes

1. Please upgrade all other monitors by pushing updates to all of the monitors at the same time. One monitor will take 5 minutes to complete the update.
2. Then after you have upgraded monitors, please push the update to OSD nodes.

You can enter the role name in the search box to filter the nodes you want to push updates. For example, enter mon will show only monitor nodes on the list. Select the nodes that you want to update the firmware.

mon

<input type="checkbox"/>	Node Name	IP Address	Role	UVS Version	Version
<input type="checkbox"/>	demo151-1174	10.240.82.151	mon mds mgr	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input checked="" type="checkbox"/>	demo152-1176	10.240.82.152	mon mds mgr	2.14-16.20200317	CEPH: 14.2.5 KERNEL: 4.12.14
<input checked="" type="checkbox"/>	demo153-1178	10.240.82.153	mon mds mgr	2.14-16.20200317	CEPH: 14.2.5 KERNEL: 4.12.14

Showing 1 to 3 of 3 rows

3. Choose the rolling push mode, and select the 2.14-17.upd file.

Push UPD to Selected Nodes ×

Select Push Mode*:

Rolling Push (Push One By One) ▼

Select Push UPD File*:

2.14-17.upd ▼

Step 3: Upgrade the MDS Nodes

If you have MDS in use, you shall also upgrade the MDS nodes after the OSD. Select the MDS nodes and upgrade them by rolling push.

Step 4: Check the software version after upgrade.

After you complete the upgrade and reboot, please check the firmware version of each node by navigating to the Settings -> Firmware Update.

The correct software versions after this upgrade shall be

1. UVS: 2.14.17
2. Ceph : 14.2.9
3. Kernel: 4.12.14

The screenshot shows the UniVirStore Manager interface. At the top, there are navigation tabs: Dashboard, CEPH, Object Storage, Storage, OpenStack, and Settings. A user profile 'admin' is visible in the top right. Below the navigation, there are three main action buttons: 'Upload Firmware' (green), 'Push Update' (blue), and 'Push RPM' (light blue). A search bar is located on the right side of the table area.

<input type="checkbox"/>	Node Name	IP Address	Role	UVS Version	Version
<input type="checkbox"/>	demo151-1174	10.240.82.151	mon mds mgr	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo152-1176	10.240.82.152	mon mds mgr	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo153-1178	10.240.82.153	mon mds mgr	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo154-117a	10.240.82.154	osd	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo155-117c	10.240.82.155	osd	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo156-117e	10.240.82.156	osd	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo157-1180	10.240.82.157	osd	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14
<input type="checkbox"/>	demo158-1182	10.240.82.158	mds	2.14.17	CEPH: 14.2.9 KERNEL: 4.12.14

Showing 1 to 8 of 8 rows

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Step 5: Upgrade the external RADOS Gateway.

During the firmware update, we've updated the internal RADOS Gateway daemons collocated with monitor nodes. If you have external RADOS gateways, you can upgrade the external RGW one by one by deleting and re-deploying them. The UVS manager "Delete" external gateway feature purges only the ceph information on RGW container; no RADOS data will be deleted. Please refer to the UVS document section "[Creating RADOS Gateways on x86 servers](#)" for details about pulling the new docker image for Ceph Nautilus.

Step 6: Upgrade the external iSCSI Gateway.

During the firmware update, we've updated the internal iSCSI Gateway daemons collocated with monitor nodes. For the external iSCSI gateways, you could upgrade your Ceph packages manually. You don't have to re-deploy the iSCSI sessions.

- CentOS: # yum update ceph-common
- Debian/Ubuntu: # sudo apt upgrade ceph-common

Step 7: Change cluster timezone

UVS uses "UTC" as the UVS default timezone. Since UVS 2.14.17, UVS provides a new function for changing your timezone of the Ceph cluster & UVS. After changing the timezone, the logs and services' time will match your local timezone. For your convenience, please go to the "**Settings**" >> "**NTP**" page and set the cluster timezone as the last step for the upgrade.

Appendixes

Upgrade from UVS version before v2.12.16

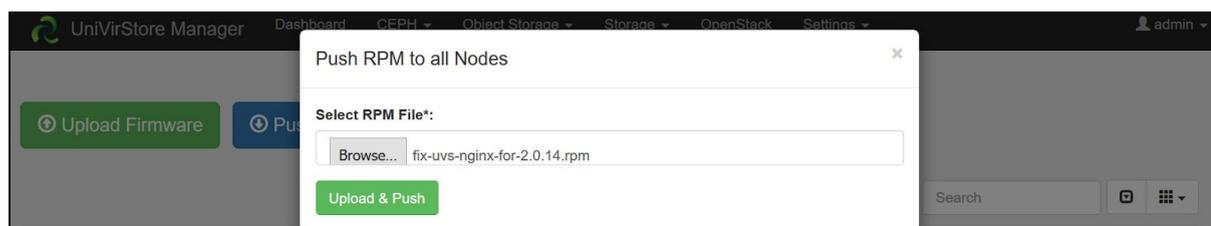
Upgrading From Version Before 2.0.13

If your UVS Manager version is 2.0.13 or older, please upgrade UVS to the next version of yours' in order before you upgrade to 2.14.16. For example, if your current version is 2.0.11, you have to upgrade version like 2.0.11 >> 2.0.12 >> 2.0.13 >> 2.0.14 >> 2.12.15 >> 2.14.16

Upgrading From Version 2.0.14 to 2.12.15

UVS Manager v2.12.15 is the next version of v2.0.14. In v2.12.15, we upgraded the **Ceph version** from 12.2.7 to 12.2.11 & **kernel version** from 4.16.9 to 4.19.52. It's a huge upgrading and please read the following instructions carefully.

1. First, you should **push the RPM patch** for v2.0.14 before you upgrade with the 2.0-15.upd file. Go to "**UVS Manager**" >> "**Settings**" >> "**Push RPM to all Nodes**" >> upload "**fix-uvn-nginx-for-2.0.14.rpm**"



2. Upload "**2.0-15.upd**" and push update by following the section [Firmware Update](#). Once UVS has been upgraded, the UVS version should display 2.12-15, not 2.0.15.

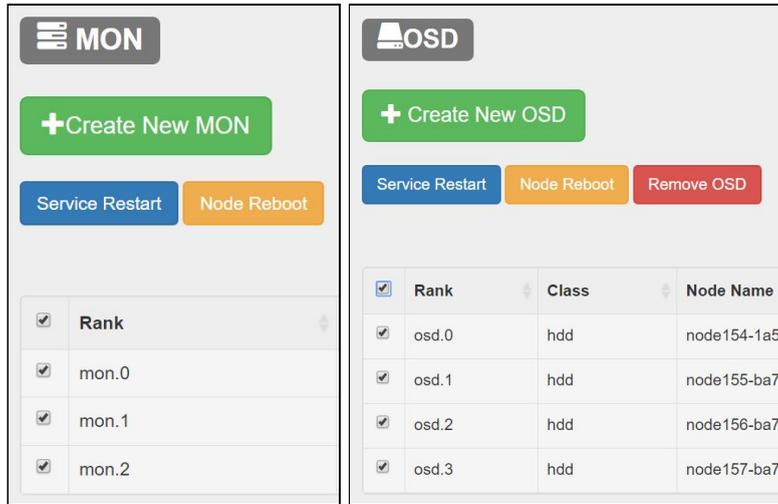
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3. After upgrading, you should **rolling reboot** all of the MON, OSD & MDS nodes in order to apply it. The sequence of the reboot is reboot MON first, then reboot OSD, lastly, reboot the MDS nodes. Please use the UVS manager node page to make the rolling reboot on MON and OSD nodes. The rolling reboot will reboot nodes one by one. After the first MON reboot completely and cluster become healthy again, the UVS manager will reboot the next MON and so on until all MONs are rebooted. The reboot of each monitor shall take around 1 to 2 minutes. During the reboot, the cluster will be temporarily unhealthy. If you have more than 3 MONs, the rolling reboot will not halt the client services.

Warning: While MON rebooting, **internal services** such as **iSCSI & RadosGW would be disconnected** for a few minutes. Please make sure your application data are stored and synchronized.

OSD rolling reboot is similar to the MON reboot. UVS manager will reboot the OSD one after the other. The duration of reboot one OSD till the cluster becomes healthy will be about five minutes. If you have more than 3 OSDs, the rolling reboot will not halt your client services. Please follow the steps in section 3.1 & 3.2. to reboot MON, OSD, and MDS.

- 3.1. For MON & OSD nodes, choose nodes by clicking the checkbox beside Rank and click "**Node Reboot**". Please complete the reboot of MON nodes before reboot the OSD node.



3.2. For MDS nodes, please follow this section [Access node console through BMC](#), login to MDS node as “admin” and choose “2. Reboot” in the main menu.

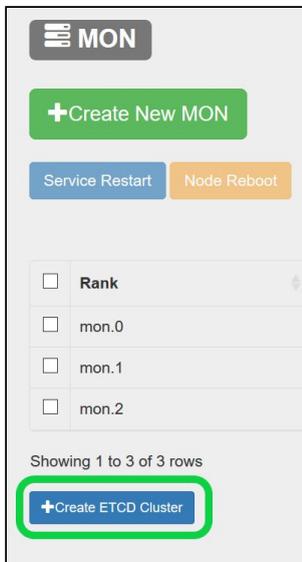
```

Wed, 24 Jul 2019 02:41:54 +0000

MARS400 Version 2.0-14
Node: node148-4f41d 192.168.1.148
Node Number(Board ID): 7

Main Menu
 0. Quit
 1. Shutdown
 2. Reboot
 3. Change Password
 4. Network Configuration
 5. Change Time Zone
 6. Update
 7. Network Diagnostics
 8. CEPH Diagnostics
Enter Option :
  
```

4. Since UVS Manager v2.12.15, ETCD cluster is used to accelerate UI operations. Please go to the “Node” page, and you’ll see the “+Create ETCD Cluster” button below MON Nodes. After you reboot all the Ceph cluster nodes, click it and install the ETCD Cluster.



5. After you complete the upgrade and reboot. Please check the firmware version of each node by navigating to the **Settings -> Firmware Update**.

Upgrading From Version 2.12.15 to 2.14.16

There are four major software upgrades from v2.12.15 to 2.14.16. Please read this upgrade notes carefully before you start to upgrade your Mars 400 appliance software.

1. **Upgrade PHP version from PHP5 to PHP7:** PHP is the major software language for the UVS manager front end web-based user interface. We have to upgrade one of the UVS managers running on the Monitor node before you can proceed with other upgrades.
2. **UVS manager:** Upgrade from version 15 to version 16 with many new features and bugs fixed.
3. **Upgrade the Ceph:** Version from Luminous 12.2.11 to Nautilus 14.2.5. The UVS manager upgrade assistant will automatically restart the Ceph daemons after push the upgrade package to the specified nodes.
4. **Update Linux kernel:** For the OS stability. We've upgraded the Linux kernel to 4.12.14. Hence, the UVS nodes have to reboot for loading the new kernel.

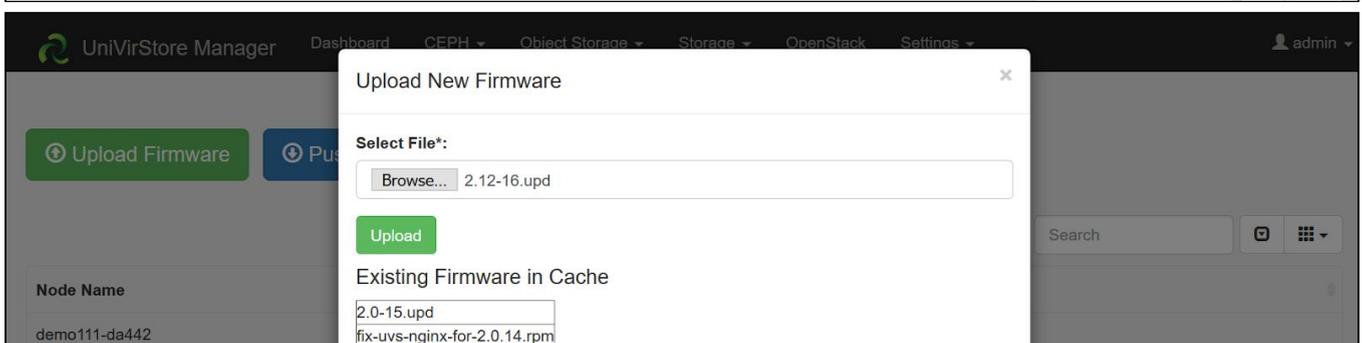
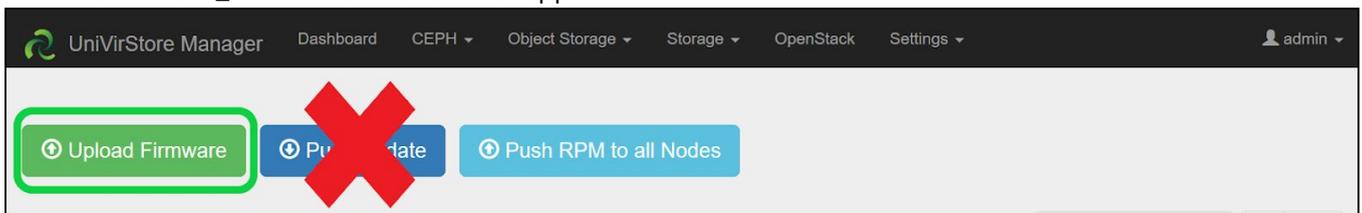
The steps to completely upgrade the software are

1. Upgrade the first monitor node by login node admin console. The first monitor node means the monitor node you are going to use for the rest of the upgrade steps by UVS manager.
2. Upgrade rest of monitors
3. Upgrade OSD nodes
4. Upgrade MDS nodes if you have MDS nodes in use.
5. Upgrade the external RADOS gateways
6. Finally, upgrade your Ceph clients

Please follow the following sections for details of each step. Also, we put a video about the upgradations on youtube, here is the link <https://youtu.be/h9KvTco6cJM>

Step1: Upgrade the First Monitor Node

1. Open your UVS manager on a browser.
2. For upgrading to UVS v2.14-16, we have to update the PHP version from version 5 to version 7. Please upload "2.12-16.upd" package to this monitor node by using the UVS "Upload Firmware" feature.
3. After you upload the .upd file, logout and close the UVS manager. PLEASE DON'T PUSH UPDATE BY UVS MANAGER AT THIS MOMENT.
4. Login admin console of the monitor node that you just used for uploading the .upd file, by ssh admin@IP_ADDRESS on a terminal app.



5. Use the update function 6 and enter the IP address of this node to update the firmware. It may take 5 minutes to complete the upgrade.

Tue, 24 Dec 2019 03:29:18 +0000

MARS400 Version 2.12-15

Node: demo111-da442 192.168.1.111

Node Number(Board ID): 0

Main Menu

- Q. Quit
- 1. Shutdown
- 2. Reboot
- 3. Change Password
- 4. Network Configuration
- 5. Change Time Zone
- 6. Update
- 7. Network Diagnostics
- 8. CEPH Diagnostics
- 9. Default Restore Check

Enter Option : 6

Update Server Name/IP? :127.0.0.1_

87150K	.....	.....	.....	.....	.....	99%	83.4M	0s
87200K	.....	.....	.....	.....	.....	99%	88.9M	0s
87250K	.....	.....	.....	.....	.....	99%	80.0M	0s
87300K	.....	.....	.....	.....	.....	99%	96.3M	0s
87350K	.....	.....	.....	.....	.....	99%	83.3M	0s
87400K	.....	.....	.....	.....	.....	99%	92.4M	0s
87450K	.....	.....	.....	.....	.....	99%	93.8M	0s
87500K	.....	.....	.....	.....	.....	99%	95.3M	0s
87550K	.....	.....	.....	.....	.....	100%	68.7M	=5.5s

2019-12-24 03:30:06 (15.6 MB/s) - '/tmp/2.12-16.upd' saved [89670893/89670893]

Exit status : 0

Done

Decrypting Update...Done

Extracting Update...Done

Running Pre Execution Task...Done

Updating Files...Done

Running Post Execution Task...[3757.664236] systemd: 61 output lines suppressed due to ratelimiting

Done

Updated Successfully to Version 2.12-16...Done

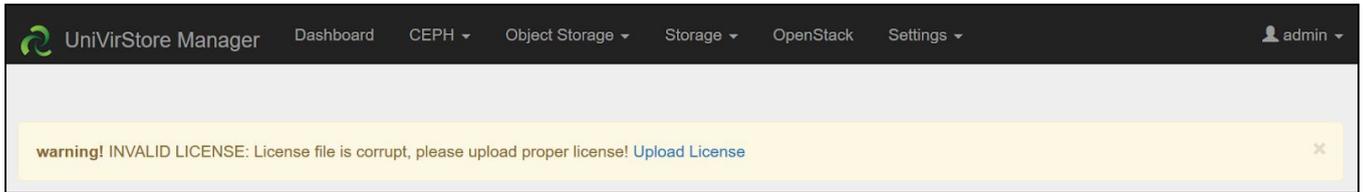
Final Cleanup...Done

Press enter key to continue....

Step 2: Upload the Temporary UVS License

Because the PHP of new UVS uses PHP7, the old UVS license for PHP5 can not work for the new UVS manager. You have to upgrade the UVS license too. Please upload a temporary license provided by Ambedded. The temporary license is valid until 2020 Jun. 30th. **You have to request a new license from Ambedded for UVS version 2.14.16 and future versions.**

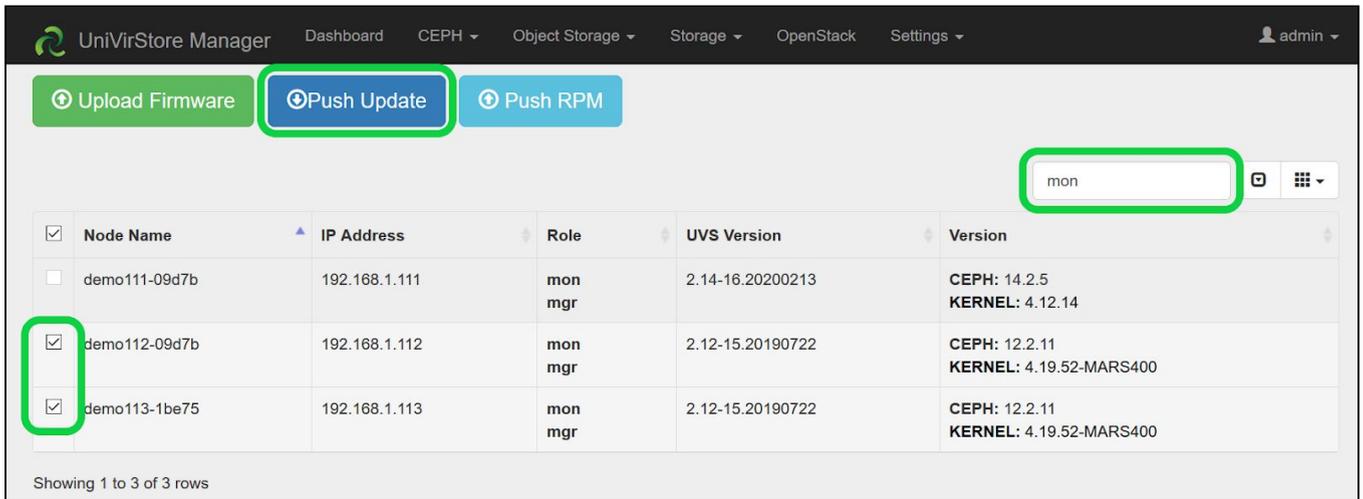
1. Open the UVS manager on this node and navigate to the "Firmware Update" page.
2. Upload the temporary license. After checked the license, you shall see the first monitor node has been upgraded to UVS v2.14-16.



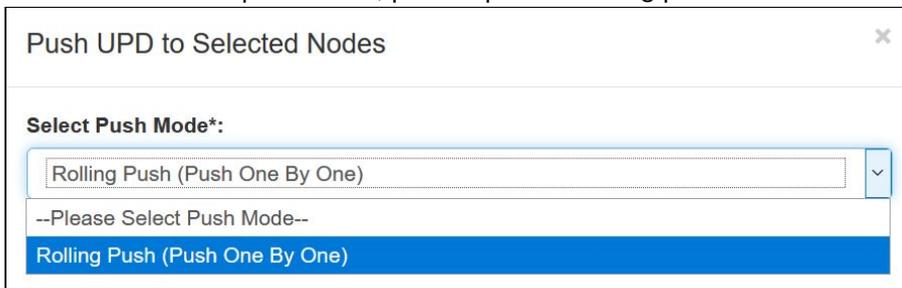
Step 3: Upgrade Other Monitor and OSD

After you upload the temporary license, you could use the “**push update**” function and update the remaining nodes by following the section [Firmware Update](#). We recommend pushing all the monitor nodes first at the same time. **Then rolling push the OSD nodes.** After Ceph monitor & OSD nodes have been upgraded, please push the MDS & remaining node at the same time.

1. Select the nodes that you want to update the firmware. You can enter the role name in search box to filter the nodes you want to push update. For example, enter mon will show only monitor nodes on the list.



2. Choose the push mode, parallel push or rolling push.



Step 4: Upgrade the MDS

If you have MDS in use, you shall also upgrade the MDS nodes after the OSD. Select the MDS nodes and push upgrade by Parallel Push. After the upgrade, UVS will also deploy standby MDS on all monitor nodes.

Step 5: Check the software version after upgrade.

After you complete the upgrade and reboot. Please check the firmware version of each node by navigating to the Settings -> Firmware Update.

The correct software versions after this upgrade shall be

1. UVS: 2.14.16
2. Ceph : 14.2.5
3. Kernel: 4.12.14

UniVirStore Manager Dashboard showing a table of nodes. The table has columns: Node Name, IP Address, Role, UVS Version, and Version. The Version column shows CEPH: 14.2.5 and KERNEL: 4.12.14 for all nodes.

Node Name	IP Address	Role	UVS Version	Version
demo111-09d7b	192.168.1.111	mon mgr	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo112-09d7b	192.168.1.112	mon mgr	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo113-1be75	192.168.1.113	mon mgr	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo114-6a5bf	192.168.1.114	osd	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo115-9ce91	192.168.1.115	osd	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo116-a55f1	192.168.1.116	osd	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14
demo117-fd9b1	192.168.1.117	osd	2.14-16.20200213	CEPH: 14.2.5 KERNEL: 4.12.14

Showing 1 to 7 of 7 rows

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Step 6: Upgrade the external RADOS Gateway

During the firmware update of monitor nodes, we've updated the internal RADOS Gateway daemons collocated with monitor nodes.

If you have external RADOS gateways, you can upgrade the external RGW one by one by deleting and re-deploying them. The UVS manager "Delete" external gateway feature purges only the ceph information on RGW container; no RADOS data will be deleted.

Please refer to the section "[Creating RADOS Gateways on x86 servers](#)" for details about pulling the new docker image for Ceph Nautilus.

While re-creating RGW, you have options for non-SSL/SSL support. As the original RGW pools already exist, the new features of selecting CRUSH rules and the number of PG will be ignored while creating new RGW, as shown in Figure A & B. Once you re-create the new external gateway, users can start to access data via RGW.

Step 7: Request a new UVS manager license from Ambedded

Remember to request a new license from Ambedded as the temporary license is valid only before 2020 Jun. 30th.

Create External Rados Gateway

External RGW IP Address*:
192.168.1.245

Select Crush Rule*:
replicated_rule [Default]

Select RGW Bucket Data Pool PG*:
128

Figure A

SSL Encryption Option*:

- No SSL Encryption**
- Self Signed Certification**
- Upload CA & SSL Key**

Create

Close

Figure B