STORAGE SUPPORT

NAS PROVISIONING PROCEDURES

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REVISION HISTORY

Name	Date	version	Summary of changes
Shrinath Kurdekar	21-April-2017	0.1	Initial – Separated Provisioning procedures from Main PCM
Shrinath Kurdekar	25-April-2017	0.2	Minor updates to post checks based on updates from Bharath for ESX allocation and Issue document
Shrinath Kurdekar	30-June-2017	0.3	Added Note on Cross Site Mounts for NFS exports procedures
Shrinath Kurdekar	18-Aug-2017, 06-Oct-2017	0.4	Added additional pre-requisite steps for key standards check like TRP load, Overcommit checks other key standard thresholds. Added updates based on internal review

REVIEW HISTORY

Reviewer Name	Doc Version Reviewed	Date Sent for review	Date Review Filed	Approved/Rejected (with Reasons)
Storage-support	0.2	26-April-2017		
Storage-Support	0.3	30-June-2017		
Storage-Support, DCO-STO-SUPP-MGMT	0.3	13-Sep-2017		
Storage-Support, DCO-STO-SUPP-MGMT	0.4	06-Oct-2017		Approved

Note	It is the author's responsibility to send this document out for review, making entries into columns 1-3

Note	It is the reviewers' responsibility to complete columns 4-5 and return the reviewed document to the author

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ABOUT THIS DOCUMENT

.1 INTENDED READERSHIP

This document is intended for use by Storage Support staff and also to limited usage by the Storage Altitude team at Thomson Reuters. This document outlines the process and procedures to be followed at the time of provisioning NAS Storage on 7-mode and c-DOT. Following the steps outlined in the document will ensure we have a consistent way of performing changes to our infrastructure and avoid the following:

- Misconfigurations in the environment resulting from a missed execution step

- Reduce risk/impact to the infrastructure

- Human Errors

It is imperative the process and steps outlined in here are expected to be followed by every individual in the team. Any deviation to the processes outlined here will need email approval from DCO-STO-SUPP-MGMT.

.2 IN THIS GUIDE

This document describes the NAS Storage provisioning procedures to be followed by Storage Support Staff at Thomson Reuters. This will include but not limited to

- 7-mode provisioning

- c-DOT provisioning

- Use of WFA workflows

- Standard provisioning methods through WFA

- Standard provisioning methods through Service Now Automation workflows

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2   STORAGE PROVISIONING PROCEDURES

The following are links for the WFA service
   a. [WFA CIS –](#) CIS instance
   b. [WFA CPS](#) – CPS instance

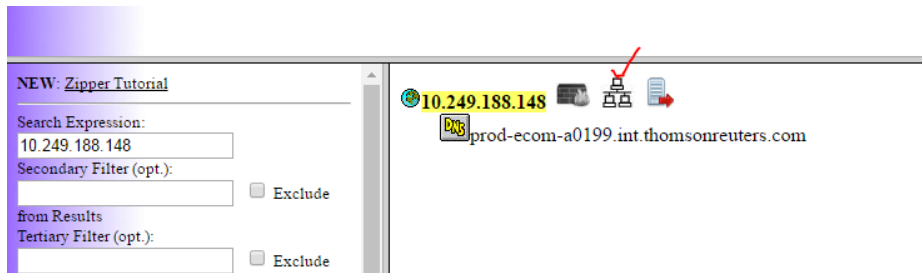## 2.1   GUIDELINES TO BE STRICTLY FOLLOWED FOR ALL PROVISIONING:

a. **WFA workflow and Service Now Automation Workflows should be used where applicable as documented in the PCM to avoid human errors.**

b. **Ensure the Filer Aggregate utilization is below standard thresholds (standard thresholds are 75% for primary and 85% for backup filers) post migration. Ideally utilization should not exceed 65% for primary filers.**

c. **Ensure the Aggregate Overcommit is below thresholds (200%) for all filers except Backup and Dedicated filers. Ideally this should be ~190% for all filers except backup filers. On Dedicated filers overcommit should NOT cross 100%.**

d. **Ensure the performance checks are on the filers.**

   i.   Validate the physical Filer has sufficient room to accommodate the IOPS and throughout for new vfiler/volume. IOPS and throughput requirements should be available from requester or existing source vfiler if this is part of a migration.

   ii. For 7-Mode, ensure the TRP load script (perfinfo.pl) along with NMC is checked to determine if the filer has room to accommodate the new request.

   iii. For c-DOT use OPM/Grafana to review the performance on the target filer.

e. **DO NOT combine Different BU data in the same vfiler. Escalate if we are closer to hitting vfiler limits.**

f. **Review the performance on Source Vfiler/volume and ensure destination has room to accommodate this workload. For c-DOT ensure the IOPS are within standard 6k QOS values. If exceeding then review with D&E for exceptions.**

g. **Ensure the vfiler count is as per Standard thresholds. Standard thresholds are <65 for 7-mode and 128 for c-DOT.**

h. **Ensure volume counts are as per standards.**

i. **Ensure the target Filer is from same Site, Module, Environment and Tier type and has same VLAN as requested.**

2.2   PREREQUISITES WHEN CREATING A NEW VFILER

- Check the vlan information for existing vfiler if this is for a migration event or vlan of the host that needs new vfiler. Please make sure the same vlan is available on the destination filer. Pay special care to any secure VLANs that exist in the environment like TAX secure ECOM, Clear Secure VLAN etc. To check the vlan:

   o Connect to https://zipper.int.thomsonreuters.com/

   o To find the VLAN of the source IP.

      Enter the IP in the search expression and click on the below highlighted Icon

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It will populate the VLAN, IP, Gateway and Netmask details.

IP Address = 10.249.188.148
Network = 10.249.188.0 (HZL-ECOM-CORE-RTA2,HZL-ECOM-CORE-RTA1)
Netmask = 255.255.254.0
Gateway = 10.249.189.254
VLAN = VLAN #2004 - HZL-ECOM-INFRA-VFILER-1
Notes = [Jumbo Frames] [HZL (Hazelwood)] HZL CPS PROD V-FILERS

The IP address 10.249.188.148 is part of the following "organizational" subnets:
- 10.249.128.0/17 (CPS HZL DATACENTER)
- 10.249.128.0/18 (Servers)
- 10.249.188.0/22 (Storage)

Above example shows a ECOM vlan#2004. We have ECOM, CORP, MGMT, COLO,SECURE ECOM Networks.

- Check the vfiler count on the physical filer. As per standards the maximum limit for # of vfilers is < 65 for 7-mode and 128 for c-DOT. Do not provision new vfiler if we are hitting this limit.

- Determine a vfiler name. Refer to section "Vfiler Naming" within the 7-mode Filer naming standards document here or "vserver Naming" within the c-DOT Filer naming standards document here

- Make sure you have the IOPS requirement for the vfiler being created. If migrating an existing vfiler this can be obtained from the NMC tool.

- Make sure the physical filer has sufficient storage capacity and sufficient room to accommodate the vfiler IOPS and throughput. This can be done through NMC and the TRP load check script. **Run the perfinfo script on the DFM server to validate if the filer has room for additional IOPS. If there is no room then make sure the aggregates are marked as FULL_PERF. This script is typically run by Delivery team for new builds and they will raise a ticket to storage-support to rename the aggregates. Support Engineers should also check this for emergency builds that do NOT go through delivery**

How to check performance through NMC on 7-mode

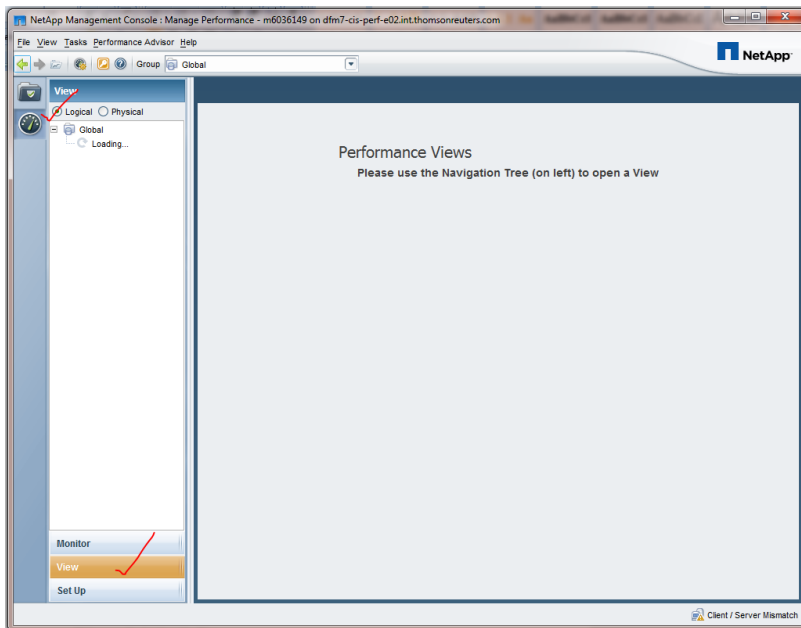- o Download the NMC tool to your desktop from the Netapp Support site.
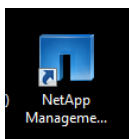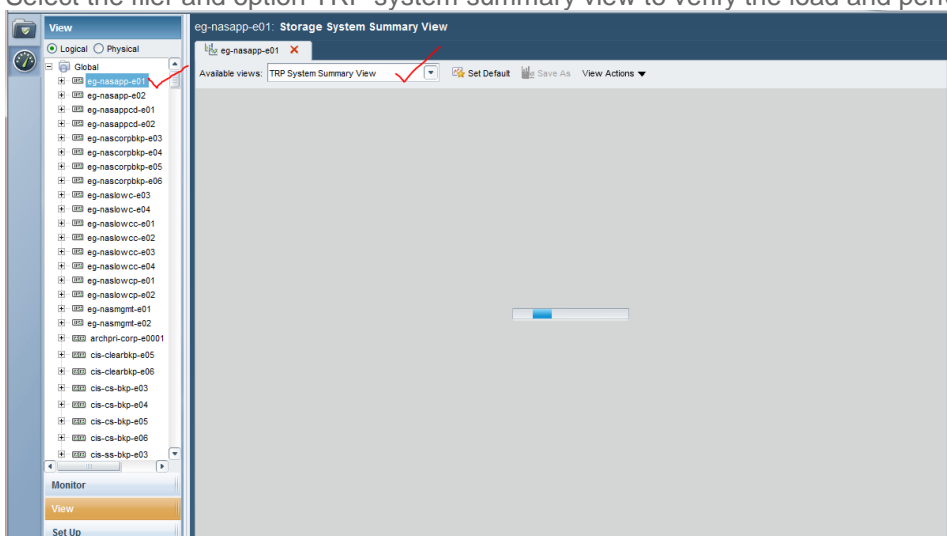

- o Use MGMT\M-account to login to the NMC console.
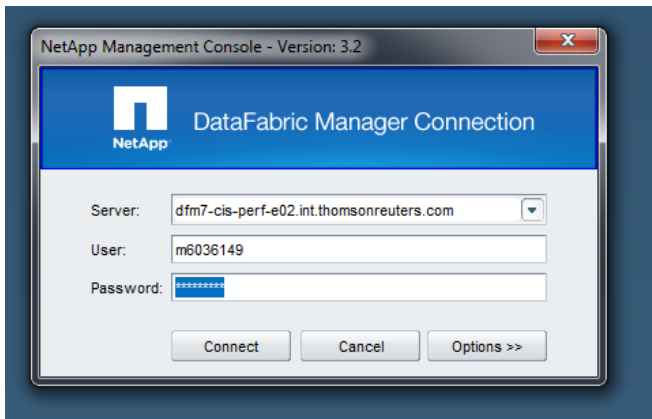
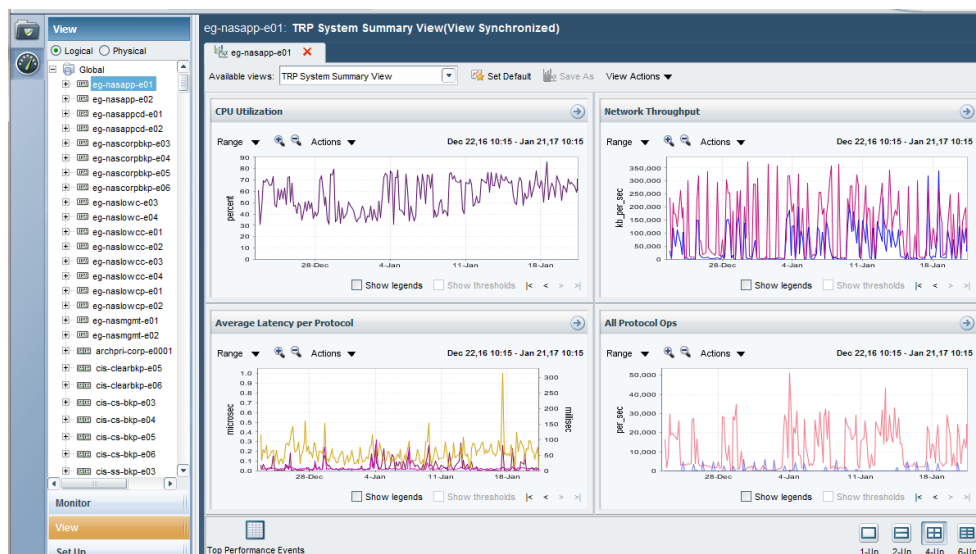o Enter the performance DFM name for the site where the filer is located.

We have to select the above options to view the performance of the filer.

o Select the filer and option TRP system summary view to verify the load and performance on the filer

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o The following graphs will be shown. Please select 1 month duration to review filer performance.

o

o **Key things to check:**

- The CPU utilization should be average of 50 to 60%

- Read Latency should be < 20 milliseconds write should be < 5 milliseconds

- Refer Architecture standards section for 7-mode Filer IOPS limits. For c-DOT the threshold should be at 6000 IOPS as per the standard QOS policy

o Check the current filer performance using systat. Make sure the disk are not busy and there are no back to back CP's

```
nerstrand:~ # ssh eg-nasapp-e01  sysstat -x 1
root@eg-nasapp-e01's password:
 CPU   NFS   CIFS  HTTP   Total   Net    kB/s   Disk   kB/s   Tape   kB/s   Cache  Cache    CP  CP  Disk   OTHER   FCP  iSCSI    FCP   kB/s  iSCSI   kB/s
                                  in     out    read  write   read  write   age    hit   time  ty  util                         in    out    in    out
 45%     0   3774     0    3782  9542 185492  223031     0      0      0      1     96%    0%   -   73%      5     0      3       0      0      4      0
 45%     0   2909     0    2933  7229 227190  256333    24      0      0    >60     96%    0%   -   75%      7     0     17       0      0      4      0
 50%     0   2862     0    2866  7335 165353  197123     0      0      0      2     95%    0%   -   67%      0     0      4       0      0      4      0
 50%     0   2971     0    3006  6466 137377  175846     0      0      0      2     96%    0%   -   74%      3     0     32       0      0    176      0
 51%     0   2376     0    2398  6514 180326  214229    32      0      0      2     96%    0%   -   61%      3     0     19       0      0      4      0
 49%     0   2434     0    2718  3854 167802  189708     0      0      0      2     95%    0%   -   72%    280     0      4       0      0     12      0
 43%     0   2214     0    2217  2963 282631  306919     0      0      0      2     97%    0%   -   54%      0     0      3       0      0      4      0
 48%     0   3247     0    3269 13667 176549  198610    24      0      0      1     92%    0%   -   66%      3     0     19       0      0     11      0
Killed by signal 2.
```

o Check the Current CPU utilization:

```
nerstrand:~ # ssh eg-nasapp-e01  sysstat -m 1
root@eg-nasapp-e01's password:
 ANY   AVG  CPU0 CPU1 CPU2 CPU3 CPU4 CPU5 CPU6 CPU7
100%   61%   50%  51%  51%  68%  67%  68%  67%  67%
100%   58%   48%  48%  48%  65%  65%  64%  64%  64%
100%   48%   39%  34%  36%  58%  54%  52%  53%  54%
100%   45%   33%  32%  34%  54%  52%  52%  52%  50%
100%   43%   33%  31%  31%  53%  49%  50%  49%  49%
100%   46%   34%  35%  33%  56%  53%  51%  53%  53%
100%   46%   36%  32%  35%  54%  55%  53%  52%  53%
100%   52%   40%  39%  39%  61%  60%  59%  58%  58%
100%   51%   39%  38%  40%  60%  57%  56%  57%  58%
Killed by signal 2.
```

The average should be always below 60.

How to check this on c-mode

<TBA>

- Determine the aggregate to be used. This should not be more than 65% used for primary filers and more than 190% overcommit as our standards are 75% for primary filers and 200% overcommit threshold.

  Ex: Below is the aggregate which we can use as the utilization is below threshold even after adding the new vfiler and required volumes and overcommit below thresholds.

  How to check this on 7-mode

  ```
  nerstrand:~ # ssh fr-nasecom-u04 df -Ag
  root@fr-nasecom-u04's password:
  Aggregate             total      used     avail capacity
  aggr1_thin           62013GB    20135GB   41877GB    32%
  aggr1_thin/.snapshot     0GB        0GB       0GB     0%
  ```

  How to check this on c-mode

  <TBA>

2.3   REQUESTING A NEW IP FOR VFILER CREATION THROUGH BANANA TOOL

1. Launch the tool using a browser: https://zipper.int.thomsonreuters.com/
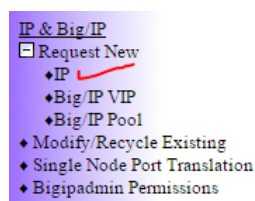
2. Once logged in you click on below BANANA ICON at the left top of the page.

3. You will see different options for both IP and DNS. Click on Request NEW under IP & Big/IP as shown below:
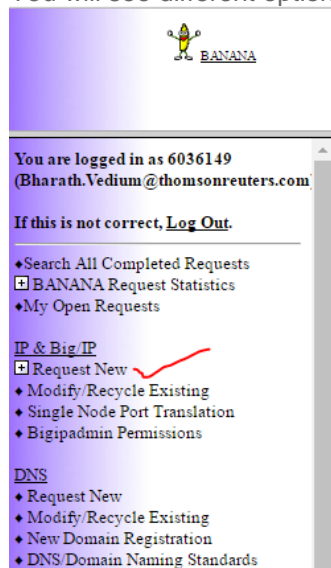
4. Click on the IP as high-lighted below

5. Enter the following details and click next to continue:

   a. *Device type:* Select Vfiler

   b. *Device name:* Enter new vfiler name which we will be creating

   c. *Owner:* Enter STORAGE-SUPPORT

   d. *Additional server info:* Enter the CR number for this change

   e. *Email Addresses to cc on this request:* Enter storage-support@thomsonreuters.com

Request for New IP Address

Device Type - vfiler
Device Name - prod-ecom-u0200
Owner - STORAGE-SUPPORT
Other Owner -
Additional Server Info - Thin Mitigation
MAC Address -

○ Static(DHCP)
● Static(Client)

Email addresses to cc on this request (comma-delimited): storage-support@thomsonreuters.com   ☐ Add your groups to CC list

Next

If the device is a server or a printer, the Owner field should contain the group that is responsible for that device. If the device is a workstation, then the Owner field should contain the Peoplesoft ID of the user utilizing the IP address.

6. Here it will compare the new vfiler name which you had entered with the existing vfilers to avoid the conflicts. If there are no conflicts, click on continue else select a different vfiler name.

A search for prod-ecom-u0200 returns no results, so there should be no conflicts.

Continue

7. Enter the Vlan info in Vlan tab and hit enter.

Choose the correct subnet below. **This is the last page of this request, so clicking a subnet here will result in an IP assignment.**

Search Filter - [   ]   VLAN # - [2004]   Subnet Function - [▼]
Subnet Classification - [▼]

Subnet Location - [▼]   Subnet Utilization - [▼]   Subnet Type - [physical ▼]   Search

8. It will list all the vlan details and IPs. Select the subnet and it will assign an IP automatically.

10.54.60.0/23 IP Usage = 179/512 (35.0%)	nas	CPS	255.255.254.0	10.54.61.254	FAR-ECOM-CORE-RTA1 FAR-ECOM-FILER1-SWA2 FAR-ECOM-CORE-RTA2 FAR-ECOM-FILER4-SWA1 FAR-ECOM-FILER3-SWA2 FAR-ECOM-FILER3-SWA1 FAR-ECOM-FILER4-SWA2 FAR-ECOM-FILER1-SWA1 FAR-ECOM-FILER2-SWA2 FAR-ECOM-FILER2-SWA1	VLAN #2004 - FAR-ECOM-INFRA-VFILER-1	10.54.2.1 10.234.64.1	[Jumbo Frames] [FAR (UK1)] FAR CPS Pro Filers

9. The IP request is now complete. An email confirmation will be sent from FLS-Network with the details

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BANANA Request Confirmation

Vedium, Bharath (TR Technology & Ops)

Sent: Mon 1/9/2017 12:22 AM
To: Vedium, Bharath (TR Technology & Ops)

Request Type: newip
Device Type: vfiler
Device Name: prod-ecom-u0200
Owner: STORAGE-SUPPORT
Additional Info: Thin Mitigation
IP assigned: 10.54.60.176
Network: 10.54.60.0
Netmask: 255.255.254.0
Gateway: 10.54.61.254
VLAN: VLAN #2004 - FAR-ECOM-INFRA-VFILER-1

Your request has been completed. The IP assigned is 10.54.60.176.

Click here to request a corresponding DNS entry.

IP Address: 10.54.60.176
Network: 10.54.60.0
Netmask: 255.255.254.0
Gateway: 10.54.61.254
VLAN: VLAN #2004 - FAR-ECOM-INFRA-VFILER-1

You will receive an e-mail confirmation that your request has been submitted. Please review it to ensure correctness. "Reply to All" on the email
if you have any problems or questions.

10. Next we need to add DNS to the vfiler. Click on the link "click here to request a corresponding DNS entry".

11. Click on continue

◉ A-record   ○ AAAA-record   ○ CNAME-record   ○ MX record   ○ SRV record   ○ TXT record

IP Address: 10.54.60.176
2nd IP Address:
3rd IP Address:
4th IP Address:
5th IP Address:
6th IP Address:
7th IP Address:
8th IP Address:

Continue
Enter the IP address for which you need to create a DNS entry.

12. Enter the new vfiler name to complete the DNS request and hit continue.

DNS Name to Create: prod-ecom-u0200 . int.thomsonreuters.com

The two boxes above are "host name" followed by "domain name". For example: [dryden].[int.westgroup.com]

Selected Target:
10.54.60.176
Continue

What follows shows the most recent Zipper information for the target(s) you've selected. Please review and ensure that you have selected the correct target(s).

13. Submit the request. Enter the team DL once the request completed.

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Execute during normal evening maintenance window
○ Execute change ASAP
○ Make this change at a scheduled time

For Network Groups Only to use:
☐ Add DNS name to network monitoring tools

Email addresses to cc on this request (comma-delimited): storage-support@thomsonreuters.com   ☐ Add your groups to CC list
These email addresses will be notified after your request is processed, so you should include someone who is capable of performing checkouts after the change is made.

Submit Request

What follows shows the Zipper information for entries that have aspects that are similar to the DNS name you've selected. Please review and ensure that you have not selected a name that's already being used in the environment.

14. FLS-Network will send confirmation mail once the DNS request completed.

RE: BANANA Request queue.newdns.170108125523.16992

FLS-Networks
Sent: Mon 1/9/2017 12:35 AM
To: Vedium, Bharath (TR Technology & Ops); **STORAGE-SUPPORT**

This is notification that the following DNS request has been completed.

Create an A-record for prod-ecom-u0200.int.thomsonreuters.com and point it to 10.54.60.176.

2.4   HOW TO PROVISION STORAGE ON 7-MODE?

2.4.1   Create a new 7-mode vfiler

All new vfiler creation requests should go through the standard delivery process. Storage Support team should create a new vfiler only under the below circumstances:

- Tech refresh migrations

- Thin mitigation
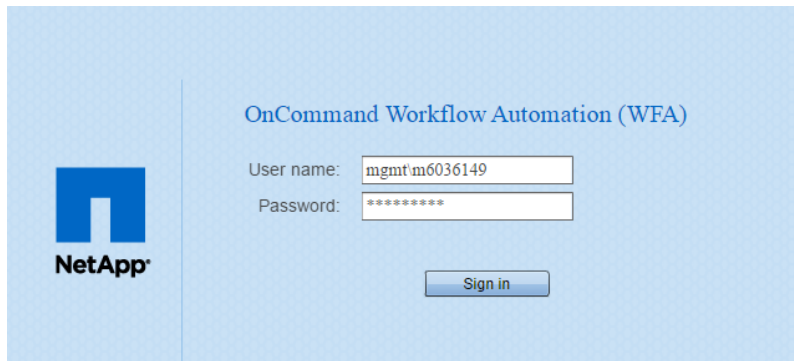
- Migrations due to Performance Issues

Pre-requisites:

Review and follow the guidelines as outlined here:

Steps to create a new vfiler:

1. Complete the vfiler prerequisites and IP request as documented.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.

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4. Select "7M vfiler only" to list available workflows. Select the appropriate workflow for NFS, CIFS or ISCSI. In this example we will build a NFS vfiler.
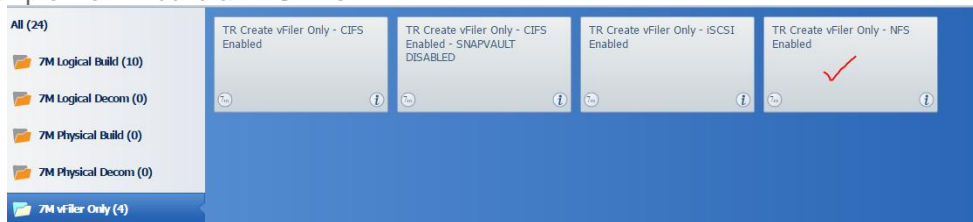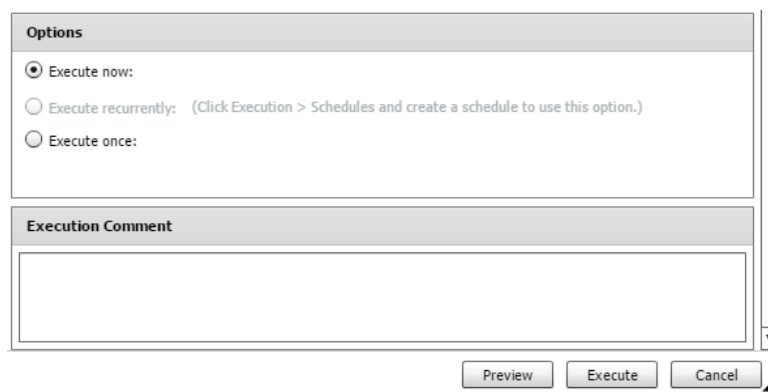

5. Enter all fields and use the Banana Request confirmation email for the IP/DNS details.

- *Array type:* Select primary filer if creating vfiler on the shared filer. Select Secondary Filer if creating vfiler on backup filer.
- *Primary Array:* We have to slect the filer in which we creating the vfiler. If we select the filer it will automatically populate available aggregates on the filer in Vfiler aggregate field.
- P*rimary Vfiler:* Input the vfiler name which you are creating.
- *Vfiler Interface:* We have to select the Vlan in which we are tagging our Vfiler to the Vlan. Before selecting the Vlan we need to verify the VLAN exists on the filer.
- *Vifler IP and Vfiler Netmask:* Input these details from the banana Request which was raised.
- *Vfiler IPspace:* once the Vfiler interface is selected in the previous step it will automatically populate the IP space
- *DNS Environment:* Select based on filer location and module/environment. Do NOT select different site/module DNS
- *DNS Domain & DNS server :* Automatically populates *DNS domain* and *DNS server* once the DNS Environment is selected.

6. Execute the workflow.

If there is an error, "clear reservations" for that job and check the "user input" tab for errors. The most common reasons for failure are the vfiler/volume name is already in use, or entries in the user inputs reverted to their default values.

If the Workflow failed after the first task completes, you may need to manually offline and delete the new vserver before attempting to create it again.

7. Complete the below post checks:
   1. Ssh <physical filer> vfiler status –r <vfiler>

   ```
   nerstrand:~ # ssh fr-nasecom-u04 vfiler status -r prod-ecom-u0109
   root@fr-nasecom-u04's password:
   prod-ecom-u0109                running
      ipspace: ecom-2004
      IP address: 10.54.60.97 [ecomvif0-2004]
      Path: /vol/prod_ecom_u0109_root [/etc]
      Path: /vol/ct_cmddsmessaging_snap
      UUID: 78364d0d-d3a0-11e4-b88c-123478563412
   ```

   The above output will cover all the details of the vfiler. It has IP details,VLAN,IP space and the volume existing in the vfiler.

   2. Ping the Vfiler from the DFMs

   ```
   nerstrand:~ # ping prod-ecom-u0109
   PING prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97) 56(84) bytes of data.
   64 bytes from prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97): icmp_seq=1 ttl=238 time=112 ms
   64 bytes from prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97): icmp_seq=2 ttl=238 time=112 ms
   64 bytes from prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97): icmp_seq=3 ttl=238 time=112 ms
   64 bytes from prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97): icmp_seq=4 ttl=238 time=112 ms
   64 bytes from prod-ecom-u0109.int.thomsonreuters.com (10.54.60.97): icmp_seq=5 ttl=238 time=112 ms

   --- prod-ecom-u0109.int.thomsonreuters.com ping statistics ---
   5 packets transmitted, 5 received, 0% packet loss, time 4003ms
   rtt min/avg/max/mdev = 112.656/112.728/112.808/0.427 ms
   ```

   Ping the vfiler from the DFM to test the communication between the vfiler and the DFM server.

   3. Perform nslookup to confirm IP to DNS and DNS to IP resolution

   ```
   nerstrand:~ # nslookup prod-ecom-u0109
   Server:        167.68.251.92
   Address:       167.68.251.92#53

   Name:   prod-ecom-u0109.int.thomsonreuters.com
   Address: 10.54.60.97
   ```

   4. ssh < physical filer > rdfile /etc/rc (verify the vfiler settings in RC file on both nodes in the cluster. Below example is on one node only)

```
nerstrand:~ # ssh fr-nasecom-u04 rdfile /etc/rc
root@fr-nasecom-u04's password:
hostname fr-nasecom-u04
ifgrp create lacp ecomvif0 e0c e0e -b ip
ifgrp create lacp colovif0 e0d e0f -b ip
vlan create ecomvif0 2004
vlan create colovif0 2004
ifconfig e0c flowcontrol none
ifconfig e0e flowcontrol none
ifconfig e0a `hostname`-e0a mediatype auto flowcontrol none netmask 255.255.254.0 partner e0a
ifconfig ecomvif0-2004 10.54.60.89 netmask 255.255.254.0 mtusize 9000 partner ecomvif0-2004
ifconfig ecomvif0-2004 alias 10.54.60.97 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.98 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.99 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.100 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.94 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.117 netmask 255.255.254.0
ifconfig colovif0-2004 10.53.128.15 netmask 255.255.254.0 mtusize 9000 partner colovif0-2004
ifconfig ecomvif0-2004 alias 10.54.60.126 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.127 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.102 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.130 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.128 netmask 255.255.254.0
ifconfig colovif0-2004 alias 10.53.128.12 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.132 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.134 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.131 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.146 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.150 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.152 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.151 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.160 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.163 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.42 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.173 netmask 255.255.254.0
ifconfig ecomvif0-2004 alias 10.54.60.177 netmask 255.255.254.0
vfiler run fr-nasecom-u04-ecomvsip-2004 route add default 10.54.61.254 1
vfiler run fr-nasecom-u04-colovsip-2004 route add default 10.53.129.254 1
route add default 10.59.33.254 1
routed on
options dns.domainname int.thomsonreuters.com
options dns.enable on
options nis.enable off
priv set -q diag; setflag wafl_reclaim_threshold_m 80; priv set
priv set -q diag; setflag wafl_reclaim_threshold_l 80; priv set
priv set -q diag; setflag wafl_reclaim_threshold_xl 80; priv set
priv set diag; setflag smb_enable_2_1 0; priv set
savecore
```

2.4.2   Create a LION (oracle on NFS) 7-mode allocation:

All new LION vfiler/volume provisioning requests should go through the standard delivery process. Storage Support team should create a new vfiler only under the below circumstances:

- Tech refresh migrations

- Thin mitigation

- Migrations due to Performance Issues

Pre-requisites:

Below pre-checks are required before starting a LION allocation:

- Validate the vfiler details:

    a. Review and follow the guidelines as outlined here

    b. If this requires a new vfiler then, Complete the prerequisites and IP request as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.

    c. If the request is to add space to existing vfiler, make sure you have the vfiler details. **DO NOT COMBINE DIFFERENT BU VOLUMES in SAME VFILER.**

- Check if the request is for CIS or CPS environment.

- As per standards three volumes need to be created n01, s01 and s01oraadmin. check if all these 3 volumes are specified in the request with relevant qtrees.

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- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.

- Check if retention period has been specified for the snap volumes.

Steps to complete the LION provisioning:

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.
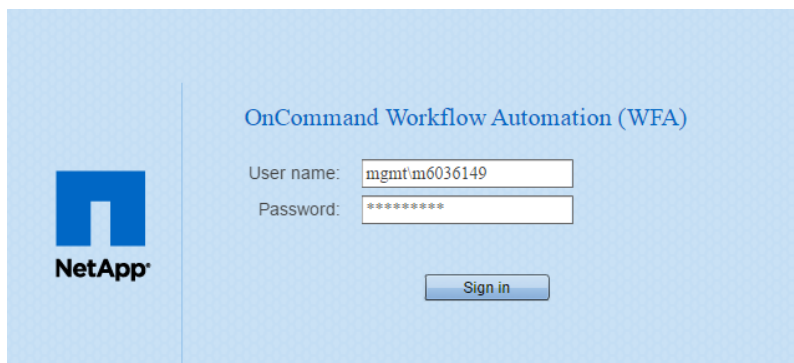
4. If the request is to create a volume per LION standards on an existing vfiler select the below template and go to step 7.
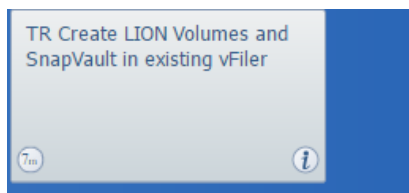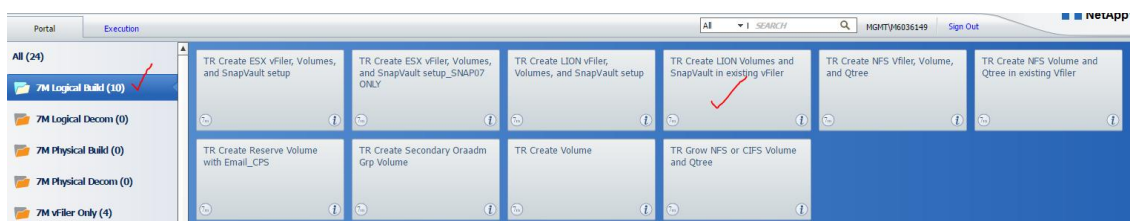
The only difference between the two templates "**TR create LION volumes and snapvault in existing Vfiler**" and "**TR Create LION vFiler, Volumes and snapvault**" is that when volumes are being created in an

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existing vfiler the existing vfiler details are input as shown below:

Rest of the inputs will be the same for both the templates.

5. If this is a complete new build that includes vfiler creation too, then choose the below template.

6. Enter the vfiler details using the Banana request email that was completed for requesting a new IP.
    *   *Array type:* Select primary filer if creating vfiler on the shared filer. Select Secondary Filer if creating vfiler on backup filer.
    *   *Primary Array:* We have to slect the filer in which we creating the vfiler. If we select the filer it will automatically populate available aggregates on the filer in Vfiler aggregate field.
    *   *Primary Vfiler:* Input the vfiler name which you are creating.
    *   *Vfiler Interface:* We have to select the Vlan in which we are tagging our Vfiler to the Vlan. Before selecting the Vlan we need to verify the VLAN exists on the filer.
    *   *Vifler IP and Vfiler Netmask:* Input these details from the banana Request which was raised.
    *   *Vfiler IPspace:* once the Vfiler interface is selected in the previous step it will automatically populate the IP space
    *   *DNS Environment:* Select based on filer location and module/environment. DO NOT select different site/module DNS.
    *   *DNS Domain & DNS server :* Automatically populates *DNS domain* and *DNS server* once the DNS Environment is selected.

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7. If, there is an existing vfiler given, proceed to enter the other details as below.

   - Choose the aggr, enter the volume name, size and host names that need to be given RW/RO permissions as below.

   - Check and uncheck the qtrees, which need to be created, as per the build request (Note: If you are adding volumes to existing vfiler select the relevant volumes/qtree that need to be created)

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Storage Details

Oracle Aggregate*:	aggr1_thin
Volume BU Prefix:*:	tta
Volume App Prefix:*:	barossa1p
s0/n0 Ora Number*:	1
Provision Ora1 Snap Volume? :	☑
Ora1 snap volume size (GB)*:	127
Provision Oraadm1 Snap Volume? :	☑
Oraadm1 snap volume size (GB)*:	10
Provision Ora1 NoSnap Volume? :	☑
The n01oraadmin1 qtree size (GB)*:	30
The n01oradata1 qtree size (GB)*:	57
Create oracluster qtree?*:	☑
The n01oracluster1 qtree size (GB)*:	2
Create oraggs qtrees?*:	☑
The n01oraggsbin qtree size (GB)*:	10
The n01oraggsdata qtree size (GB)*:	30
Create oraflash qtree?*:	☐
The size of the n01oraflash1 qtree (GB)*:	0
Enable Thin Provisioning*:	Enabled
Hosts with Read/Write and Root Access*:	uters.com,c619qka.int.thomsonreuters.com

8. Enter the snapvault details for the snap volumes: Choose the appropriate backup vfiler/filer and retention period details.

Key points to note while selecting the backup filer:

- The Backup filer should be in the same site/datacenter as the source filer.
- Cross site backups should not be configured. (i.e Eagan E to F as this will traverse firewalls and could impact firewall traffic).
- Some sites may have multiple backup filers. Choose the correct one based on whether this is dedicated, ECOM or CORP.
  - Below are few examples for backup filers.
    - CORP backup filer: eg-nascorpbkp-e03
    - ECOM backup filer: ln-nasecombkp-d01
    - Dedicated backup filer: eg-nasappbk-f01
- For dedicated environments always use the dedicated Backup filer.
- For SECURE ECOM or COLO there are NO dedicated backup filers. Please select the filer that has VLAN tagged to support these modules.

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Above is an example of a backup filer which has vlans for ECOM, CORP and SECURE ECOM (TAX) environment. Select the appropriate vfiler.

9. If it is an s01oraadmin, choose the relevant group volume as below.

10. Skip the Primary and Secondary Archive log volume/qtree creation. Select NA for Primary Oraarch and DO NOT select checkbox for Secondary Oraarch as shown below:

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11. After all the details, have been entered, click on preview. If the workflow goes green, click on execute.

12. If the workflow goes red, re-check if all the details mentioned are correct or not.

13. Once, the WFA has been executed completely, the output will be sent to your email ID.

14. Check the output and validate the results, if everything required has been created. Check if the volumes have been created as per the build with the appropriate sizes.

    ssh <physical filer> vfiler run <vfiler> df -g

15. Verify if the server permissions are correct, with the *exportfs* command as above.

    ssh <physical filer> vfiler run <vfiler> exportfs

16. Verify if the quotas have been created, with the *quota report* command as below.

    ssh <physical filer> vfiler run <vfiler> exportfs

17. Verify if the snapvault has been created accordingly with the *snapvault status* command as below.

    ssh <physical filer> vfiler run <vfiler> snapvault status

```
nidaros:~ # ssh eg-nasecom-h12 vfiler run prod-ecom-h0491 snapvault status
root@eg-nasecom-h12's password:

===== prod-ecom-h0491
Snapvault primary is ON.
Source                                          Destination                                                         State     Lag        Status
prod-ecom-h0491:/vol/tta_barossa1p_s01oraadm1_snap   cps-cs-bkp-e04:/vol/sv_45_cps_oraadm_grp01/tta_barossa1p_s01oraadm1_snap   Source   01:44:09   Idle
prod-ecom-h0491:/vol/tta_barossa1p_s01ora1_snap    cps-cs-bkp-e04:/vol/sv_45_tta_barossa1p_s01ora1_snap/1             Source   01:45:40   Idle
```

18. Next step is to provision the archive log volumes. Proceed to section for <u>Archive log.</u>
19. Request Platforms to Mount the volumes and close your tasks and CR.

2.4.3   Create Primary/Secondary Archive log:

<u>What are Archive logs?</u>

Oracle Database lets you save filled groups of redo log files to one or more offline destinations, known collectively as the archived redo log, or more simply the archive log. The process of turning redo log files into archived redo log files is called archiving. Achieve logs mainly use for database at the time of restoration

<u>Standards:</u>

- As per the new standards the Arch volume will be created on CDOT filers. We have two arch volumes one is primary other one is secondary one. Please ensure you have read through the <u>c-DOT Archive log standards</u>
- Primary archive log is should be created on dedicated c-DOT archive log filers.
    - o The dedicated Archive log c-DOT filer name will have **claa** in the cluster. Ex: eg-cis-**claa**-e01
    - o The Vserver will have **oracle** name in the Vserver name. Ex: cis**oracle**-e0001
    - o Refer to the <u>c-DOT Filer naming standards</u> for more information.
- Secondary archive log should be created on shared c-DOT filers where available. Note: This should not be on the same dedicated archive log filers as Primary Archive. In some locations this will be on 7-mode filers.
- For locations where dedicated c-DOT archive log filers are unavailable the primary and secondary should be split across different filer heads. Check existing setup and confirm with D&E/leads.
- For the Primary volume exports, it should be at volume level and the secondary volume exports should be at qtree level.

    Example Primary volume: cpsoracle-h0031:/ cb0289_trta_provision8provision_45_n01oraarch1_nosnap
    Ex Secondary volume: cpsprod-h0080:/ infra_oraarchalt_cps_nosnap/
    cb0289_45_trtaprovision8provision_n01oraarch2

- Retention standard for archive logs is (7,14,30 & 45 days) and should be set as per the BU request

<u>*Pre-requisites:*</u>

Below pre-checks are required before starting Archive Log volume creation:

- Identify the archive log filers where the primary and secondary volumes will be created
- Identify the name of the existing vserver to be used.
- Check if the request is for CIS or CPS environment.
- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.
- Check if retention period has been specified for the snap volumes.
- Review and follow the guidelines as outlined here

<u>*Steps to create the Archive log volume:*</u>

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.
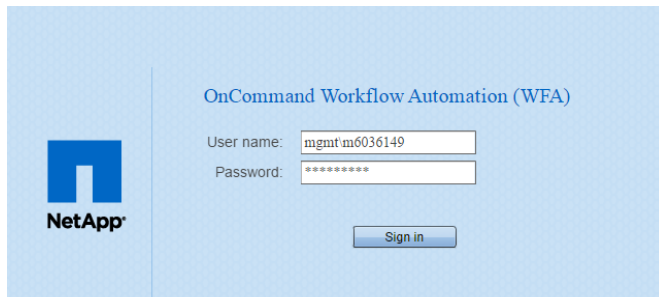
4. Use the below template to start creating the Volume.
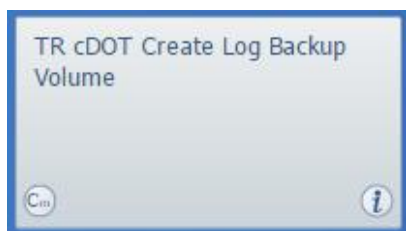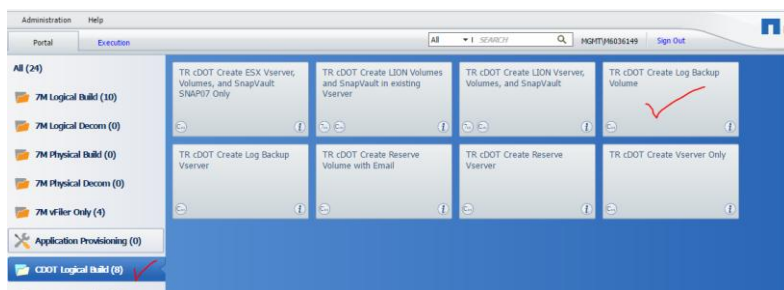
5. Provide the CR/ BCS number as well your email address to get the workflow commands.

6. Enter the Cluster Details:
   - CIS\CPS: choose the environment in which we are creating the volume either CPS\CIS.
   - DNS Environment: Datacenter of the Archive log filer. This should always be the same site and Module DNS.
   - Volume\DB type: chose NFS-Oracle for LION, CIFS-MSSQL for WISP and NFS-MySQL for MySQL
   - Cluster: Choose the cluster in which we are creating the volume. It will automatically populate available selections for the fields Node, Vserver, Vserver lifs and the aggregate.
   - Node: Select the node on the cluster where we are creating the vfiler.

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- **Vserver:** select the vserver which we are creating the vfiler (Make sure you distribute the volumes across all available vservers)
- **Vserver LIFs:** Populated based on the selected Vserver
- **Aggregate:** Populated based on the selected node.

7. Enter the Volume details:
   - **Volume Prefix:** Enter the volume prefix.
   - **Days of Retain logs:** Archive log retention period (7/14/30/45 as per request)
   - **Volume size:** 70000
   - **Oracle servers to export volume to:** Input FQDN of servers which you are exporting
   - **Instance number:** Number of instance running on the DB (provided by DB team)
   - **Compression start hour:** Input after business hours (between 20:00 to 03:00 local DC time)
   - **DFM server:** Provide the DFM server located in the same datacentre used to manage the filer.

8. Execute the work flow

9. Now proceed to create the secondary log volume.

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a. As per the new standards, Secondary will be on shared cluster. We have dedicated volume for all the data centers for both the CPS and CIS environment. (one volume for CIS and one volume for CPS per data center).

b. In secondary archive, we will not be creating new volumes. We will add the qtrees to the existing secondary archive volume.

c. Steps involved are as below

    i. Identify the vfiler and volume for the corresponding CPS/CIS site from the link below: https://theshare.thomsonreuters.com/sites/ie/storage/Lists/Archive%20Log%20Locations1/Archive%20Log%20Locations.aspx

    ii. Create a new qtree.
#qtree create –vserver <vserver_name> -volume <Volume_name> -qtree <qtree_name>

```
eg-cps-clsp-h01::>
eg-cps-clsp-h01::> qtree create -vserver cpsprod-h0080 -volume Infra_oraarchalt_cps_nosnap -qtree cb0289_45_trtaprovision10provision_n01oraarch2
eg-cps-clsp-h01::>
```

    iii. Create export policy.
Here the export policy should be the qtree name. We need to create the policyname as qtree name.

```
eg-cps-clsp-h01::> vserver export-policy create -vserver cpsprod-h0080 -policyname cb0289_45_trtaprovision10provision_n01oraarch2
eg-cps-clsp-h01::>
```

    iv. Modify the qtree.
#qtree modify -vserver <vserver_name> -volume <volume_name> -qtree <qtree_name> -export-policy <policy_name>

```
eg-cps-clsp-h01::> qtree modify -vserver cpsprod-h0080 -volume Infra_oraarchalt_cps_nosnap -qtree cb0289_45_trtaprovision10provision_n01oraarch2 -export-policy cb0289_45_trtaprovision10provision_n01oraarch2
```

    v. Export the server to the policy. Add servers to the default/export policy:

#export-policy rule create -vserver <vserver name> -policyname default –clientmatch <server name> -rorule sys –rwrule none –superuser none

```
eg-cps-clsp-h01::> export-policy rule create -vserver cpsprod-h0080 -policyname default -clientmatch c454znkotp.int.thomsonreuters.com -rorule sys -rwrule none -superuser none
```

#export-policy rule create -vserver <vserver name> -policyname <policy_name> –clientmatch <server name> -rorule sys –rwrule sys –superuser sys.

```
eg-cps-clsp-h01::>
eg-cps-clsp-h01::>  export-policy rule create -vserver cpsprod-h0080 -policyname cb0289_45_trtaprovision10provision_n01oraarch2 -rorule sys -rwrule sys -superuser sys
```

10. Complete Post Checks for Primary Archive volume:
    1. Check the newly created volume:

```
eg-cps-claa-h01::>  vol show -vserver cpsoracle-h0031 -volume cb0289_trta_provision8provision_45_n01oraarch1_nosnap
   (volume show)
```

    2. Check the Export policy:

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```
eg-cps-claa-h01::> export-policy rule show -vserver cpsoracle-h0032 -policyname cb0350_nv_wlnv38p_7_n01oraarch1_nosnap
  (vserver export-policy rule show)
                  Policy          Rule    Access    Client                  RO
Vserver           Name            Index   Protocol  Match                   Rule
-----------  ---------------  ------   --------  -------------------  ---------
cpsoracle-h0032 cb0350_nv_wlnv38p_7_n01oraarch1_nosnap 1
                                  any       c775vjupndb.int.        sys
                                            thomsonreuters.com
```

3. Snap settings: As it is no-snap volume the snapshot-policy should be none to avoid snap-overflow.

```
eg-cps-claa-h01::> vol show -vserver cpsoracle-h0031 -volume cb0289_trta_provision8provision_45_n01oraarch1_nosnap -fields snapshot-space-used,snapshot-policy
  (volume show)
vserver          volume                                             snapshot-space-used snapshot-policy
--------------  ---------------------------------------------  ------------------- ---------------
cpsoracle-h0031 cb0289_trta_provision8provision_45_n01oraarch1_nosnap 0%                  none
```

4. Step to validate archive log pruning is working?

11. Complete Post Checks for Secondary Archive destination:
    a. Verify the newly created qtree. Check the volume name and qtree name.
        #qtree show –vserver <vserver_name> -volume <Volume_name> -qtree <qtree_name>

```
eg-cps-clsp-h01::> qtree show -vserver cpsprod-h0080 -volume Infra_oraarchalt_cps_nosnap -qtree cb0289_45_trtaprovision10provision_n01oraarch2

                       Vserver Name: cpsprod-h0080
                        Volume Name: Infra_oraarchalt_cps_nosnap
                         Qtree Name: cb0289_45_trtaprovision10provision_n01oraarch2
    Actual (Non-Junction) Qtree Path: /vol/Infra_oraarchalt_cps_nosnap/cb0289_45_trtaprovision10provision_n01oraarch2
                     Security Style: unix
                        Oplock Mode: enable
                   Unix Permissions: ---rwxr-xr-x
                           Qtree Id: 199
                       Qtree Status: normal
                      Export Policy: default
           Is Export Policy Inherited: true
```

    b. Verify the export-policy. Verify the policy name has been configured correctly or not.

```
eg-cps-clsp-h01::>
eg-cps-clsp-h01::> export-policy show -vserver cpsprod-h0080 -policyname cb0289_45_trtaprovision10provision_n01oraarch2
  (vserver export-policy show)

    Vserver: cpsprod-h0080
Policy Name: cb0289_45_trtaprovision10provision_n01oraarch2
```

    c. Verify the servers has been exported correctly.

```
eg-cps-clsp-h01::> export-policy rule show -vserver cpsprod-h0080 -policyname cb0289_45_trtaprovision10provision_n01oraarch2
  (vserver export-policy rule show)
                  Policy          Rule    Access    Client                  RO
Vserver           Name            Index   Protocol  Match                   Rule
-----------  ---------------  ------   --------  -------------------  ---------
cpsprod-h0080
             cb0289_45_trtaprovision10provision_n01oraarch2
                                  1       any       c454znkotp.int.        sys
                                            thomsonreuters.com
cpsprod-h0080
             cb0289_45_trtaprovision10provision_n01oraarch2
                                  2       any       c668yfgotp.int.        sys
                                            thomsonreuters.com
2 entries were displayed.
```

    d. Check the servers have correct permission from storage end.

```
eg-cps-clsp-h01::> export-policy check-access -vserver cpsprod-h0080 -volume Infra_oraarchalt_cps_nosnap -qtree cb0289_45_trtaprovision10provision_n01
oraarch2 -client-ip 10.216.100.1 -authentication-method sys -protocol nfs3 -access-type read-write
  (vserver export-policy check-access)
                                  Policy    Policy       Rule
Path                        Policy   Owner     Owner Type   Index Access
---------------------------  ----------  ---------  ---------  ------ ----------
/                           default  cpsprod_h0080_root
                                               volume       284 read
/Infra_oraarchalt_cps_nosnap default   Infra_oraarchalt_cps_nosnap
                                               volume       284 read
/Infra_oraarchalt_cps_nosnap/cb0289_45_trtaprovision10provision_n01oraarch2
                            default   Infra_oraarchalt_cps_nosnap
                                               volume       284 read-write
3 entries were displayed.
```

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2.4.4 Create a WIP or WISP 7-mode allocation:

<TBA in next version>

Review and follow the guidelines as outlined here

2.4.5 Create a non-LION NFS 7-mode allocation:

All new NFS(non LION) vfiler/volume provisioning requests should go through the standard delivery process. Storage Support team should create a new NFS vfiler only under the below circumstances:

- Tech refresh migrations

- Thin mitigation

- Migration to another 7-mode filer due to Performance Issues
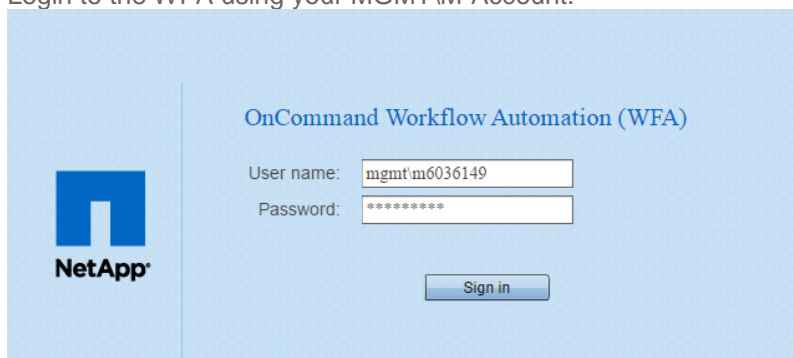
Pre-requisites:

Below pre-checks are required before starting a NFS (non LION) allocation:

- Review and follow the guidelines as outlined here
- Validate the vfiler details:

    a. If this requires a new vfiler then, Complete the prerequisites and IP request as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.

    b. If the request is to add volume/qtree to existing vfiler , make sure you have the vfiler details. **DO NOT COMBINE DIFFERENT BU VOLUMES UNDER THE SAME VFILER.**
- Check if the request is for CIS or CPS environment.
- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.
- Check you have information about the volume and their sizes
- Check if retention period has been specified for the snap volumes.

Steps to create new vfiler, volume/qtree for NFS (non-LION) provisioning:

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.

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4. If this request involves new vfiler and volume creation then Choose "TR Create NFS vfiler, volume and qtree" template, shown below.
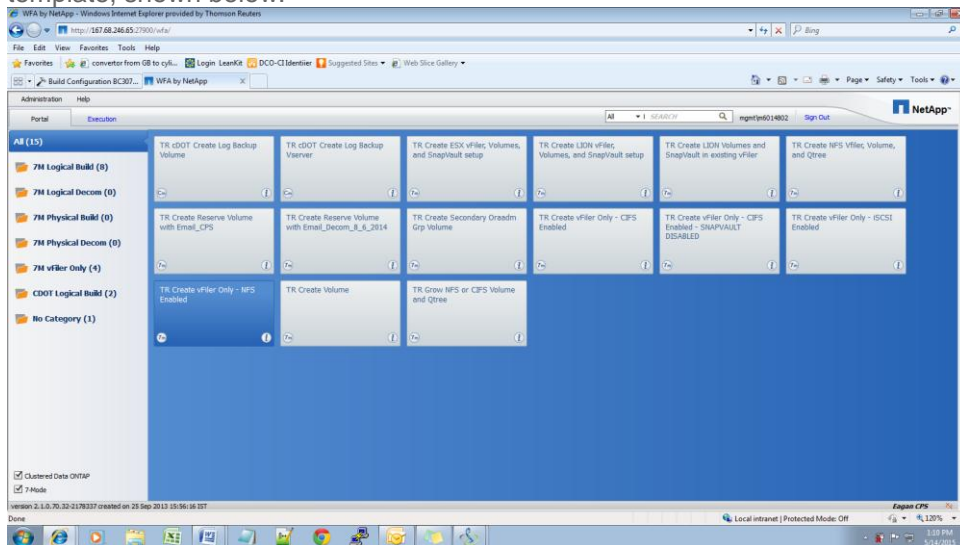
5. Enter all the necessary details, such as: Vfiler name, Vfiler IP, subnet,VLAN from the Banana request confirmation email

- NOTE: always double check the DNS environment.The DNS should be from same site and datacentre module.

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DNS Environment*:	Singapore_SG1_CPS
DNS Domain *:	int.thomsonreuters.com
DNS Servers*:	159.220.18.253,159.220.18.254

6. Enter the aggregate, volume/qtree details and volume size details as shown below.)

   Note: Only add the chargeback and the application name (first two words) for volume details, do not add snap or nosnap suffix to the volume, as you can choose this option in the snapvault retention field shown further below.

   For example: cb0659_intergratedbatchqp

Storage Details

Volume Aggregate*:	aggr1_thin
Volume Name*:	cb0289_ooxpappsattx
Qtree Name*:	appdata
Qtree Size (GB)*:	100
Second Qtree Required? :	☐
Second Qtree Name*:	
Second Qtree Size (GB)*:	0
Third Qtree Required? :	☐
Third Qtree Name*:	
Third Qtre Size (GB)*:	0
Fourth Qtree Required? :	☐
Fourth Qtree Name*:	

7. Add the RW/RO permissions for the hosts given in the build.

Enable Thin Provisioning*:	Enabled
Read Only Hosts :	
Read Write Hosts :	

8. Next, choose if the volume is a nosnap or snap volume from the drop-down list (Snapvault retention needs to be selected for the snap volume) and the TRP load design matrix.
   Note: TRP load design matrix can be fetched by mousing over this field in WFA. This provides the instruction to get the TRP. **The TRP load check should be completed as outlined in the pre-requisites.**

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Aggregate overcommit and aggregate utilization are automatically populated. Once you mouseover these two fields you can find the threshold limits, beyond which we cannot provision the storage.

9. Click on preview and then execute the template accordingly.

10. Once the template is successfully executed an email with all the necessary outputs are sent.

Steps to create new volume/qtree on existing NFS vfiler (non LION) provisioning:

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.

4. Choose "TR Create NFS volume and qtree in existing vfiler" template, shown below.

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TR Create NFS Volume and
Qtree in existing Vfiler

5. Enter the vfiler details and Storage details (new volume/qtree) as shown below

Execute Workflow 'TR Create NFS Volume and Qtree in existing Vfiler'

User Inputs

BCS Number*:	40634
Post-Provisioning Command Results Emailed To*:	nivasan@thomsonreuters.com

vFiler Details

CIS\CPS*:	cis
Primary Array*:	o-p04.int.thomsonreuters.com
Primary vFiler*:	clnt-corp-p0124
vFiler Aggregate*:	aggr1_thin
DNS Environment*:	Plano_CIS

Storage Details

Volume Aggregate*:	aggr1_thin
Volume Name*:	cb0289_ooxpappsattx_nosnap
Qtree Name*:	appdata
Qtree Size (GB)*:	100
Second Qtree Required? :	☐

6. Next, choose if the volume is a nosnap or snap volume from the drop-down list (Snapvault retention needs to be selected for the snap volume) and the TRP load design matrix.
Note: TRP load design matrix can be fetched by mousing over this field in WFA. This provides the instruction to get the TRP.

SnapVault Retention Details

SnapVault Secondary Retention*:	nosnap

+ SnapVault Details

Metrics

Controller Hardware Model*:	FAS6220
TRP Load Design Metric*:	10
Aggregate OverCommit (%)*:	144.0
Aggregate Utilization (%)*:	22.0233
D&E Approved Exception*:	No

7. Click on preview and then execute the template accordingly.

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8. Once the template is successfully executed an email with all the necessary outputs are sent.

2.4.6 Create a 7-mode ESX allocation:

Pre-requisites:

Below pre-checks are required before starting a ESX allocation:

- Review and follow the guidelines as outlined here
- Complete the prerequisites and IP request as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.

- Check if the request is for CIS or CPS environment.

- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.

- Check if retention period has been specified for the snap volumes.

Steps to complete the ESX provisioning:

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA as below. We have to use MGMT\M-Account to login to the WFA.

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4. Select the below highlighted one which will take care of (ESX- Vfiler / Volume/Snapvault creation)
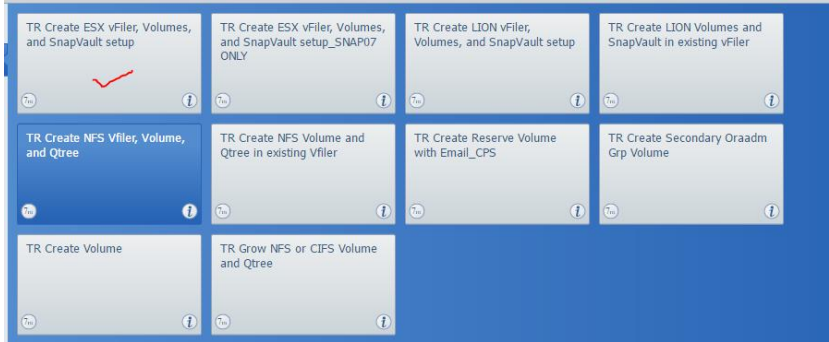
5. Please update correct BCS/CR# in BCS Number column. Input your email address to be notified via email from WFA upon Vfiler creation. The email contains all the command which are executed in background.

6. Next input the vfiler details. Please refer the email confirmation from FLS-Network for the Banana request to input the details

Update the below details:
- *CIS or CPS:* Input the correct environment as per the request
- *Primary Array:* We have to select the filer in which we creating the vfiler. If we select the filer it will automatically populate available aggregates on the filer in Vfiler aggregate field.
- *Primary Vfiler:* Input the vfiler name which you are creating.
- *Vfiler Aggregate:* Select aggregate that you identified during the prerequisites.
- *Vfiler Interface:* We have to select the Vlan in which we are tagging our Vfiler to the Vlan. Before selecting the Vlan we need to verify the VLAN exists on the filer.
- *Vifler IP and Vfiler Netmask:* Input these details from the banana Request which was raised.
- *Vfiler IPspace:* once the Vfiler interface is selected in the previous step it will automatically populate the IP space
- *DNS Environment:* Select based on filer location and module/environment. DO NOT select different site and module DNS.
- *DNS Domain & DNS server:* Automatically populates *DNS domain* and *DNS server* once the DNS Environment is selected.

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7. Next Input the volume details.

   a. ESX Aggregate: Select the aggregate which you identified as part of pre-requisites and has space.

   b. Provide the sizes of the volumes. 3TB is the current standard size for ESX volumes.

   c. Enable Thin Provisioning: Select "Enabled" as Thin provisioning should be enabled

   d. Host with Read Write and Root Access: Input the ESX hosts with FQDN that need access.

   e. Primary De-Dupe hour: Dedupe (data duplication) should always be scheduled after local business hours. Select after 18:00.

8. Next Input the Snapvault Backup configuration details:

   a. Are Snapvaults Required: Select yes if snapvault backup was requested.

   b. Secondary vFiler:

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c. Secondary Array: This is the physical filer where the vfiler is hosted. Ensure total volume count on the filer is <500.

d. Secondary Aggregate: This will be the aggregate on the backup filer that has sufficient space. Ensure aggregate is <85% full.

e. Primary Snapshot Hour: Primary snapshot hour should be after business hours during backup maintenance window (20:00 to 03:00 local DC time)

f. Snapvault Transfer Hour: Snapvault transfer should be always one hour later than primary snapshot.

SnapVault Details	
Are SnapVaults Required :	Yes
Secondary vFiler*:	cps-ss-bkp-u01
Secondary Array*:	fr-nasecombkp-u01.int.thomsonreute
Secondary Aggregate*:	aggr1_64
Primary SnapShot Hour*:	20
Snapvault Transfer Hour*:	20

Note: The snapvault Transfer Hour should not be the same as Primary Snapshot Hour

9. Execute the workflow.

If there is an error, "clear reservations" for that job and check the "user input" tab for errors. The most common reasons for failure are the vfiler/volume name is already in use, or entries in the user inputs reverted to their default values.

If the Workflow failed after the first task completes, you may need to manually offline and delete the new vserver before attempting to create it again.

10. Complete Post checks and send email to dco-sto-supp-nas team:

a. Check vfiler status using "ssh <physical filer> vfiler status –r <new vfiler>"
```
ssh fr-nasecom-u04 vfiler status -r prod-ecom-u0200
```

b. Check volume status using "ssh <physical filer> vfiler run <new vfiler> df -h"
```
ssh fr-nasecom-u04 vfiler run prod-ecom-u0200 df -h
```

c. Check host exports using "ssh <physical filer> vfiler run <new vfiler> exportfs"
```
ssh fr-nasecom-u04 vfiler run prod-ecom-u0200 exportfs
```

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d. Check snap reserve configuration using "ssh <physical filer> vfiler run <new vfiler> snap reserve"

```
ssh fr-nasecom-u04 vfiler run prod-ecom-u0200 snap reserve
```

e. Check snapvault configuration using "ssh <physical filer> vfiler run <new vfiler> snapvault status"

```
ssh fr-nasecom-u04 vfiler run prod-ecom-u0200 snapvault status
```

f. Check snapshot schedule using "ssh <physical filer> vfiler run <new vfiler> df -h"

```
ssh fr-nasecom-u04 vfiler run prod-ecom-u0200 snapvault snap sched
```

2.4.7   Create a CIFS 7-mode allocation:

All new CIFS vfiler/volume provisioning requests should go through the standard delivery process. Storage Support team should create a new CIFS vfiler only under the below circumstances:

- Tech refresh migrations

- Thin mitigation

- Migration to another 7-mode filer due to Performance Issues

Pre-requisites:

Below pre-checks are required before starting a CIFS allocation:

- Review and follow the guidelines as outlined here
- Validate the vfiler details:
    c. If this requires a new vfiler then, Complete the prerequisites and IP request as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.

    d. If the request is to add volume/qtree to existing vfiler, make sure you have the vfiler details. **DO NOT COMBINE VOLUMES FROM DIFFERENT BU.**
- Check if the request is for CIS or CPS environment.
- Check you have information about AD groups to which permissions should be added.
- Check you have information about the volume and their sizes .
- Check if retention period has been specified for the snap volumes.

Steps to provision a new CIFS vfiler and volume/share:

1. Complete the prerequisites.

2. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
      http://167.68.250.87:27900/wfa/   -- CIS
      http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.

OnCommand Workflow Automation (WFA)

User name: mgmt\m6036149
Password: *********

Sign in

NetApp

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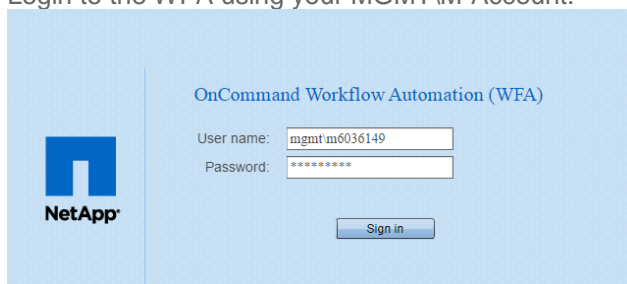
4. Select the "7M vFiler Only" on the left pane. Once the available workflows are shown on the right pane, select the "TR Create vFiler Only – CIFS Enabled" for requests with snapvault backup and "TR Create vFiler Only – CIFS Enabled – SNAPVAULT DISABLED" for requests WITHOUT snapvault backup.
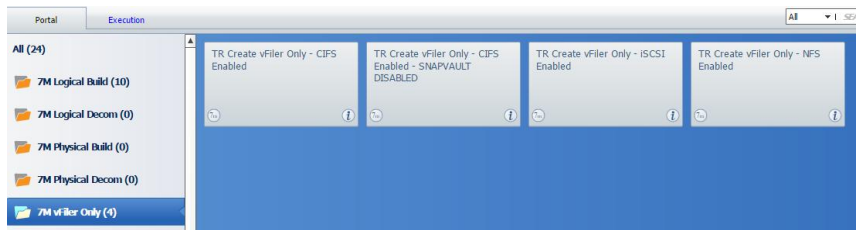
5. In this example, we have selected "TR Create vFiler Only – CIFS Enabled". Next input the vfiler details. Please refer the email confirmation from FLS-Network for the Banana request to input the details

   - *Primary Array:* We have to select the filer in which we creating the vfiler. If we select the filer it will automatically populate available aggregates on the filer in Vfiler aggregate field.
   - *Primary Vfiler:* Input the vfiler name which you are creating.
   - *Vfiler Aggregate:* Select aggregate that you identified during the prerequisites.
   - *Vfiler Interface:* We have to select the Vlan in which we are tagging our Vfiler to the Vlan. Before selecting the Vlan we need to verify the VLAN exists on the filer.
   - *Vifler IP and Vfiler Netmask:* Input these details from the banana Request which was raised.
   - *Vfiler IPspace:* once the Vfiler interface is selected in the previous step it will automatically populate the IP space
   - *DNS Environment:* Select based on filer location and module/environment. This should always be the same site and module DNS.
   - *DNS Domain & DNS server:* Automatically populates *DNS domain* and *DNS server* once the DNS Environment is selected.

6. Execute the workflow.

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If there is an error, "clear reservations" for that job and check the "user input" tab for errors. The most common reasons for failure are the vfiler/volume name is already in use, or entries in the user inputs reverted to their default values.

If the Workflow failed after the first task completes, you may need to manually offline and delete the new vserver before attempting to create it again.

7. Perform post checks as outlined below to verify the new vfiler.

    a. Nslookup and ping the vfiler

    b. Check the vfiler status

       #ssh <filer_name> vfiler status –a <vfiler_name>

    c. Check the filer's "/etc/rc" file for the vfiler entry

    d. Repeat Step c on partner node

8. Add the vfiler to Active Directory domain

    a. Login into Active Directory Management Server - 10.205.69.101

       Login into our Laptop / Desktop → Start → Run → type "mstsc -v 10.205.69.101"

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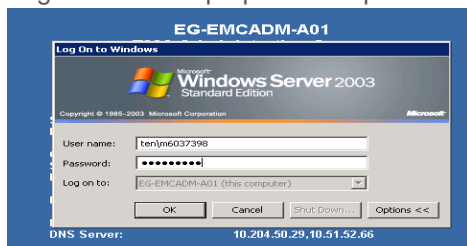
Login with our "TEN\M" credentials.

b. <u>Procedure to add vfiler to "TLR" (depreciated) domain:</u>

  i. After getting the server desktop click on Start → run → dsa.msc. Now, you will get your "Active Directory and Computers" dialogue box → Expand "TLR.Thomson.com → West-TLRCorp → Storage → NAS
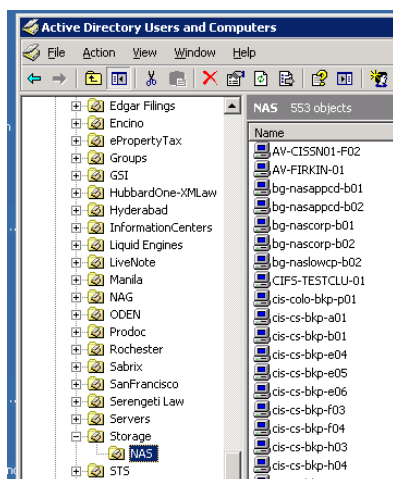
  ii. Right click on NAS → new → computer → Give your Vfiler name→ next.

  Note: A DNS (FQDN) name is not needed to add a vfiler or filer to AD (both ECOM and CORP). However, you should pre-create the computer account.
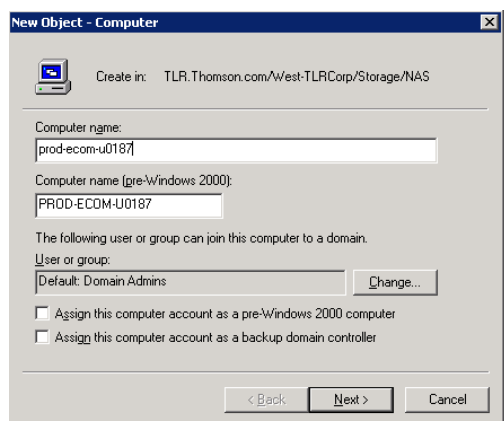
  iii. After adding the VFiler to respective AD, need to setup the CIFS from the vfiler (CLI)

c. <u>Procedure to add vfiler to "TEN" (Standard) domain:</u>

  i. After getting the server desktop click on Start → run → dsa.msc. Now, you will get your "Active Directory and Computers" dialogue box → Expand "ten.thomsonreuters.com" side menu → MSP01 → Servers → NAS

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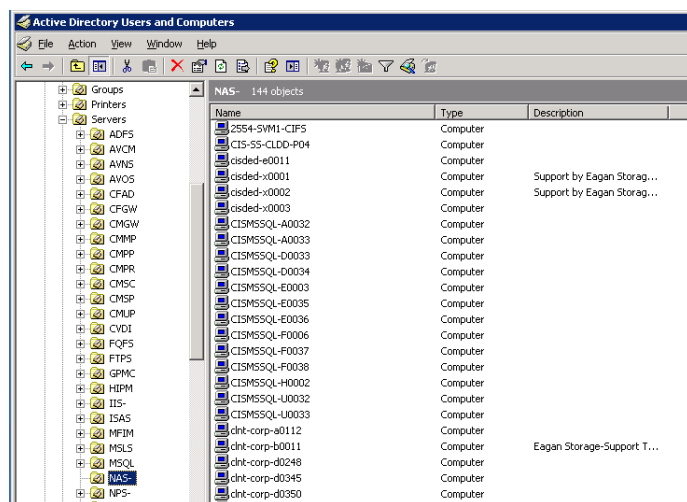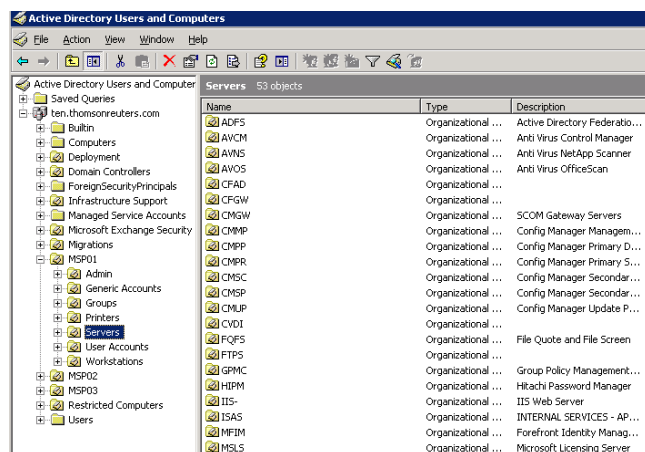
ii. Right click on NAS → new → computer → Give your VFiler or Filer name → next.

(Please follow same TLR procedure screen shot for "New Object – Computer" creation)

iii. After adding the VFiler to respective AD, need to setup the CIFS from the vfiler (CLI)

d. Procedure to add to "MGMT" domain:

i. Login to MGMT Citrix Jump box using your MGMT\m account

https://eg.mgmtcitrix.thomsonreuters.com/Citrix/XenApp/auth/login.aspx?CTX_FromLoggedo
utPage=1

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ii. In Applications menu, select the "Active Directory Users and Computers" and get the dialogue box.
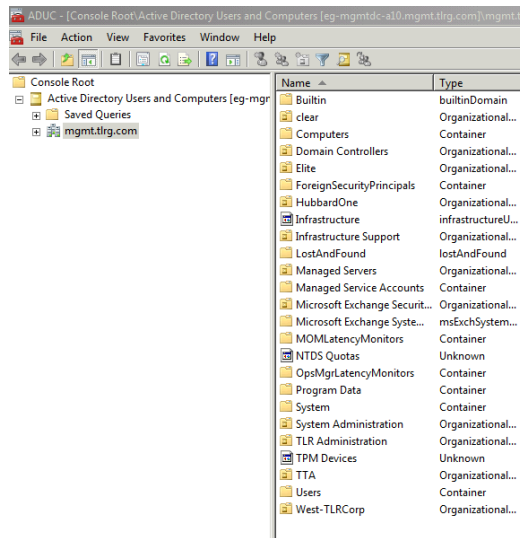
iii. Now, you will get your "Active Directory User and Computers " → Expand the "mgmt.tlrg.com" → West-TLRCorp → Storage → NAS

iv. Right click on NAS → new → computer → Give your vfiler name → next
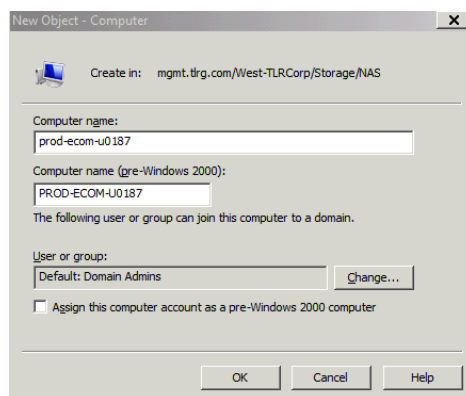
v. After adding the vfiler to respective AD, need to setup the CIFS from the vfiler (CLI), please follow the steps as above mentioned.

9. Login to the physical filer to complete the CIFS setup

ssh <physical filer>

<physical filer>>vfiler context <vfiler name>

<vfiler name>@<physical filer>>cifs setup

Example:

ssh fr-naslowep-u02

fr-naslowep-u02 >vfiler context prod-ecom-u0187

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prod-ecom-u0187@fr-naslowep-u02>cifs setup

10. Input the details as requested:

This process will enable CIFS access to the filer from a Windows(R) system.
Use "?" for help at any prompt and Ctrl-C to exit without committing changes.

Your filer does not have WINS configured and is visible only to
clients on the same subnet.
→**Do you want to make the system visible via WINS?:enter**
A filer can be configured for multiprotocol access, or as an NTFS-only
filer. Since multiple protocols are currently licensed on this filer,
we recommend that you configure this filer as a multiprotocol filer
(1) Multiprotocol filer   – A logical partition of N/W and storage resources in Data ONTAP.
(2) NTFS-only filer   – A logical partition for Windows only.
Which option/type of VFiler required, please select the respective
number.
→**Selection (1-2)? [1]:enter**
The default name for this CIFS server is 'PROD-ECOM-U0187'.
→**Would you like to change this name? [n]:enter**
Data ONTAP CIFS services support four styles of user authentication.
Choose the one from the list below that best suits your situation.
(1) Active Directory domain authentication (Active Directory domains only)
(2) Windows NT 4 domain authentication (Windows NT or Active Directory domains)
(3) Windows Workgroup authentication using the filer's local user accounts
(4) /etc/passwd and/or NIS/LDAP authentication
→**Selection (1-4)? [1]:enter**
→**What is the name of the Active Directory domain? [int.westgroup.com]**: int.thomsonreuters.com *<- The AD domain*
where the vfiler is being created
In order to create an Active Directory machine account for the filer,
you must supply the name and password of a Windows account with
sufficient privileges to add computers to the ECOMQC.TLRG.COM domain..
→**Enter the name of the Windows user [Administrator@TENADLDAP.INT.THOMSONREUTERS.COM]**: **mgmt\mxxxxx**
← *your mgmt\m account*
→**Password for MGMT\mxxxxx**:give the password
CIFS - Logged in as MGMT\mxxxxx.
This filer does not seem to be a member of any Active Directory Site
(see Site definitions using the 'Active Directory Sites and Services'
tool.) CIFS works best in an Active Directory domain when its subnet
is part of a defined Site that contains localized domain controllers.
Specify how CIFS should treat Active Directory Site information.

(1) Ignore Active Directory Site information when choosing domain controllers
(2) Choose a site name from the list of available sites
→**Selection (1-2)? [1]:enter**
An account that matches the name 'PROD-ECOM-U0187' already exists in
Active Directory: 'cn=prod-ecom-u0187,ou=nas,ou=storage,dc=ecomqc,dc=tl
rg,dc=com'. This is normal if you are re-running CIFS Setup. You may
continue by using this account or changing the name of this CIFS
server

→**Do you want to re-use this machine account? [y]:enter**
Welcome to the TENADLDAP.INT.THOMSONREUTERS.COM (TENADLDAP) Active Directory(R) domain.
prod-ecom-u0187@fr-naslowep-u02>Thu Jan 5 14:54:15 GMT [prod-ecom-u0187@fr-naslowep-
u02:cifs.startup.local.succeeded:info]: CIFS: CIFS local server is running.

11. Verify CIFS setup status:

Check if CIFS setup has already been run, and if filer computer name has already been added to the domain

Output when Cifs setup has been run:

prod-ecom-u0187@fr-naslowep-u02> cifs sessions

===== prod-ecom-u0187

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Server Registers as 'PROD-ECOM-U0187' in Windows domain 'TLR'

Filer is using en_US for DOS users

Will search for DC on next connection

===

PC IP(PC Name) (user)   #shares   #files

Output when Cifs setup has not been run:

prod-ecom-u0187@fr-naslowep-u02> cifs sessions

Server Registers as 'WAFLCHECK2' in workgroup 'WORKGROUP'

Filer is using en_US for DOS users

Using Local Users authentication

===

PC IP(PC Name) (user)   #shares   #files

12. Add domain user accounts:

    After completing the CIFS setup to the vfiler, we have to add domain user accounts:

    ssh <physical filer> vfiler run <vfiler name> useradmin domainuser add TLR\M-EaganServerAdmins –g Administrators

    ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 useradmin domainuser add TLR\M-EaganServerAdmins –g Administrators

13. To check the Administrators, use:

    ssh <physical filer> vfiler run <vfiler name> useradmin domainuser list -g Administrators

    ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 useradmin domainuser list -g Administrators

```
-bash-3.2$ ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 useradmin domainuser list -g Administrators

===== prod-ecom-u0187
List of SIDS in Administrators
S-1-5-21-1056704885-7496938-1483624536-500
S-1-5-21-1042883198-748202677-1346798384-512
S-1-5-21-1042883198-748202677-1346798384-6787
S-1-5-21-1042883198-748202677-1346798384-4893
S-1-5-21-1042883198-748202677-1346798384-121310
For more information about a user, use the 'cifs lookup' and 'useradmin user list' commands.
-bash-3.2$
```

14. Create a Volume for the newly created CIFS Vfiler through WFA

    Login into respective WFA and from Portal Menu (left side), select the "7M Logical Build" and select "TR Create Volume" button for making new volume.

15. Input the volume name and size after selecting the aggregate your identified as part of the pre-requisites and Execute the workflow

16. After executing the Volume created, cross-check the volume details and CIFS status through CLI.

   a. Check the volume details:

   #ssh <filer_name> vfiler name <vfiler_name> df –h <volume_name>

   b. List the SIDs of the domain Admins:

   ssh <filer_name> vfiler run <vfiler_name> useradmin domainuser list -g Administrators

   c. List the local administrators:

   ssh <filer_name> vfiler run <vfiler_name> useradmin group list Administrators -u

   d. List the Local Users:

   ssh <filer_name> vfiler run <vfiler_name> useradmin user list

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e. List the local groups:

ssh <filer_name> vfiler run <vfiler_name> useradmin group list

f. List the CIFS shares:

ssh <filer_name> vfiler run <vfiler_name> cifs shares

g. List the CIFS domain details :

ssh <filer_name> vfiler run <vfiler_name> cifs domaininfo

```
-bash-3.2$ ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 useradmin group list

===== prod-ecom-u0187
Name: Administrators
Info: Members can fully administer the filer
Rid: 544
Roles: admin

Name: Backup Operators
Info: Members can bypass file security to backup files
Rid: 551
Roles: backup

Name: Compliance Administrators
Info: Members can perform compliance operations
Rid: 131072
Roles: compliance

Name: Guests
Info: Users granted Guest Access
Rid: 546
Roles: none

Name: iscsi-admin
Info:
Rid: 131075
Roles: iscsi

Name: iscsisv-admin
Info:
Rid: 131073
Roles: iscsisv

Name: Power Users
Info: Members that can share directories
Rid: 547
Roles: power

Name: Replicators
Info: not supported
Rid: 552
Roles: none

Name: Users
Info: Ordinary Users
Rid: 545
Roles: audit

-bash-3.2$
```

```
-bash-3.2$ ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 cifs shares

===== prod-ecom-u0187
Name            Mount Point                     Description
----            -----------                     -----------
ETC$            /vol/prod_ecom_u0187_root/etc   Remote Administration
                        BUILTIN\Administrators / Full Control
HOME            /vol/prod_ecom_u0187_root/home  Default Share
                        everyone / Full Control
C$              /                               Remote Administration
                        BUILTIN\Administrators / Full Control
cb0492_varintsqlbackupsprdu_snap$ /vol/cb0492_varintsqlbackupsprdu_snap
                        everyone / Full Control
ccverintsqlbackup$ /vol/cb0492_varintsqlbackupsprdu_snap/ccverint/sqlbackup Share created by John Szwec(m0124223) on 1/20/2017 12:38 PM for BCS45816-02
                        NT AUTHORITY\Authenticated Users / Change
                        BUILTIN\Administrators / Full Control
-bash-3.2$
```

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```
-bash-3.2$ ssh fr-naslowep-u02 vfiler run prod-ecom-u0187 cifs domaininfo

===== prod-ecom-u0187
NetBIOS Domain:                          TLR
Windows Domain Name:                     tlr.thomson.com
Domain Controller Functionality:         Windows 2008 R2
Domain Functionality:                    Windows 2003
Forest Functionality:                    Windows 2003
Filer AD Site:                           none

Current Connected DCs:                   \\C676MKGDCGC01
Total DC addresses found:                32
Preferred Addresses:
                                         None

Favored Addresses:
                                         None

Other Addresses:
                                         10.55.2.20      C676MKGDCGC01   PDC
                                         10.55.2.21                      PDC
                                         10.52.130.29                    PDC
                                         10.52.130.28                    PDC
                                         10.116.67.144                   PDC
                                         10.51.2.5                       PDC
                                         10.51.2.20                      PDC
                                         10.198.200.15                   PDC
                                         10.204.56.69                    PDC
                                         10.184.2.21                     PDC
                                         10.184.2.20                     PDC
                                         10.205.40.135                   PDC
                                         10.204.32.153                   PDC
                                         10.176.8.254                    PDC
                                         10.206.16.83                    PDC
                                         10.205.40.134                   PDC
                                         10.202.83.10                    PDC
                                         10.202.83.2                     PDC
                                         10.192.4.33                     PDC
                                         10.192.4.34                     PDC
                                         10.222.170.9                    PDC
                                         10.30.106.17                    PDC
                                         10.223.234.215                  PDC
                                         10.238.136.18                   PDC
                                         10.238.136.22                   PDC
                                         10.218.184.10                   PDC
                                         10.238.72.2                     PDC
                                         10.238.72.3                     PDC
                                         10.197.8.206                    PDC
    ...
```

```
Connected AD LDAP Server:                \\c852vfsdcgc02.tlr.thomson.com
Preferred Addresses:
                                         None

Favored Addresses:
                                         None

Other Addresses:
                                         10.55.2.21
                                          c852vfsdcgc02.tlr.thomson.com
                                         10.55.2.20
                                          c676mkgdcgc01.tlr.thomson.com
                                         10.52.130.29
                                          c111gzv.tlr.thomson.com
                                         10.52.130.28
                                          c111ewq.tlr.thomson.com
                                         10.116.67.144
                                          cyb-tlrdc-03.tlr.thomson.com
                                         10.51.2.5
                                          c618shm.tlr.thomson.com
                                         10.51.2.20
                                          c318hbv.tlr.thomson.com
                                         10.198.200.15
                                          man-tlrdc-01.tlr.thomson.com
                                         10.204.56.69
                                          c111knet1reag.tlr.thomson.com
                                         10.184.2.20
                                          c816tnx.tlr.thomson.com
                                         10.184.2.21
                                          c682nuz.tlr.thomson.com
                                         10.205.40.135
                                          c111psat1reag.tlr.thomson.com
                                         10.176.8.254
                                          c111ymztlrxo.tlr.thomson.com
                                         10.204.32.153
                                          c111geet1reag.tlr.thomson.com
                                         10.205.40.134
                                          c111ceat1reag.tlr.thomson.com
                                         10.206.16.83
                                          c111geft1reag.tlr.thomson.com
                                         10.202.83.2
                                          cr-tlrdc-v02.tlr.thomson.com
                                         10.202.83.10
                                          cr-tlrdc-v01.tlr.thomson.com
    ...
-bash-3.2$
```

h. Check AV configuration: AV scanning should be enabled as per standards

2.4.8   Adding Space to existing 7-mode volume:

All space add provisioning requests should go through the standard delivery process. The only time storage support will add space to existing volume is for loaner and emergency space adds as outlined in section Emergency/Loaner Storage Provisioning

All 7-mode space adds should be completed through Service now Automation workflow as it takes into account utilization and overcommit checks.

Submit a pre-approved CR as outlined below:

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1. Review the guidelines outlined in section [Emergency/Loaner Storage Provisioning](#)

2. If the request qualifies as an Emergency/Loaner request then raise CR in SM9 tool with following categories, select <Storage>

3. Then within the CR, select <Configuration> for the "Subcategory" section

4. Then select <Storage Increase>

5. Fill in rest of CR with correct details related to the change and put in schedule to suit. Storage Add's should typically be made outside of business hours. However if there is pending outage then the CR can be scheduled to start asap.

6. Once the CR is saved, associate the CR with the IM requesting the Storage Add/Decrease

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7. Next the CR needs to be approved before executing, this needs to be done by a storage-support peer.

8. Once approved, you are good to execute the CR. Once completed, close down CR as per normal standards (less than 5 hours after scheduled end to avoid violation).

Step to increase the Storage

Step 1: Check the utilization

ssh <pfiler> vfiler run <vfiler> df -g <vol name>

Step 2: Check how many qtrees are available for the volume

ssh <pfiler>   vfiler run <vfiler> qtree status <vol name>

step 3: Check if the quotas are enabled for the given volume.

ssh <pfiler> vfiler run <vfiler> quota status <vol name>
 Ex: if the quotas are off

 If the quotas are on

Note: if the quotas are off for the given volume proceed to step 11.

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Step 4: If Quotas is ON for the given volumes. Check quota report and validate the current utilization of the qtree (it will give in KB convert that in GB by dividing it with 1024)

ssh <pfiler> vfiler run <vfiler> quota report | grep <<volume>>

```
===== clnt-corp-d0226
                        K-Bytes            Files
Type      ID    Volume    Tree  Used     Limit     Used    Limit   Quota Specifier
-----  -------- -------- -------- --------- --------- ------- ------- ---------------
tree         1 ips_tcm857t_s01ora1_snap s01oradata1 375724284 429916160     250       - /vol/ips_tcm857t_s01ora1_snap/s01oradata1
tree         1 ips_tcm857t_s01oraadm1_snap s01oraadmin1  2606024 10485760    229       - /vol/ips_tcm857t_s01oraadm1_snap/s01oraadmin1
tree         1 ips_tcm857t_n01ora1_nosnap n01oradata1   5587800 41943040     10       - /vol/ips_tcm857t_n01ora1_nosnap/n01oradata1
tree         2 ips_tcm857t_n01ora1_nosnap n01oraadmin1  2721656 31457280    3476      - /vol/ips_tcm857t_n01ora1_nosnap/n01oraadmin1
tree         1 ips_tcm858t_s02ora1_snap s02oradata1 46587540 60817408        16       - /vol/ips_tcm858t_s02ora1_snap/s02oradata1
tree         1 ips_tcm858t_s02oraadm1_snap s02oraadmin1  1497792 10485760     52       - /vol/ips_tcm858t_s02oraadm1_snap/s02oraadmin1
tree         1 ips_tcm858t_n02ora1_nosnap n02oradata1   5651244 11534336      9       - /vol/ips_tcm858t_n02ora1_nosnap/n02oradata1
tree         2 ips_tcm858t_n02ora1_nosnap n02oraadmin1   114288 31457280    2610      - /vol/ips_tcm858t_n02ora1_nosnap/n02oraadmin1
tree         1 ips_tcm859t_s03ora1_snap s03oradata1 39082948 50331648        19       - /vol/ips_tcm859t_s03ora1_snap/s03oradata1
```

Step 5: Create a directory to mount the vfiler root volume (**etc directory)**

Step 6: mount the root volume the vfiler to the above created volume
Sudo mount <<vfiler name>>:/etc <<mount directory>>

Step 7: change the directory to the mount directory
 # cd <<mount directory>>

Step 8: under this directory you will find quotas file (/etc/quotas)

Step 9: create a copy of the quota file and modify the quota size for the given volume/qtree.
#cp quotas quotas.<<ddmmyy>>

Step 10: Change the size of the quota as per the customer request using vi editor

Step 11: Set the vol size to the requested value via service now.

      Go to the below link:

      https://thomsonreuters.service-now.com/dcis/req_spec.do?sysId=a3d8c70e905c1e0072752eaf361fedfasplitpage=com.glideapp.servicecatalog_cat_item_view

      Fill the below fields like Request type, vfiler name, volume name, current volume size,
      As shown below

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In the new size of volume field enter the new total size of the volume:

Ex: if the request is to grow the volume by 100GB and the current size is 50 GB. enter the new size of the volume as 150GB

Step 12: Resize the quota so that it will get updated

ssh <pfiler> vfiler run <vfiler> quota resize <vol name>

Step 13: After resizing the quota check the quota report to ensure the new size is reflected.
ssh <pfiler> vfiler run <vfiler> quota report | grep <vol name>

<mark>NOTE</mark>:
1. In-Case of any issue with Service Now, please follow the below manual process to grow the volume.
2. Please refer to Table 1&2 for snap and nosnap volume size calculations respectively.

The following steps should be used only when there is an issue with Service Now:

**Note: Aggregate should NOT exceed 200% overcommit and 75% full upon adding new provisioning. Upon provisioning, new storage aggregate utilization should be at ~65% and overcommit ~190%
. If this is an emergency request to mitigate the issue and the overcommit and utilization is above thresholds then please ensure the utilization does not go over 80% and create an Incident ticket to plan the thin mitigation.**

Step 1:check the current size of the volume.
ssh <pfiler> vol size <vol name>

step 2: Increase the volume to the new desired size.

ssh <pfiler> vol size <vol name> <new size of the volume>

Step 3: Resize the quota so that it will get updated

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ssh <pfiler> vfiler run <vfiler> quota resize <vol name>

Step 4: After resizeing the quota check the quota report it will get updated there

Calculation of new volume size for snap volume: (considering the growth request is for 50G)

EX: To: add 50Gb Space to <u>**snap**</u> volume:

Table 1:

		Size	New Size
Vol Size	80%	128	178
Snap Reserve	20%	32	45
Total Vol Size	100%	160	223

EX: To add 50Gb Space to <u>**nosnap**</u> volume:

Table 2:

		Size	New Size
Vol Size	100%	128	178
Snap Reserve	0%	0	0
Total Vol size	100%	128	178

2.4.9   Adding Exports to existing volumes in 7-mode

Summary

Typically, BU/Platforms team will raise SR to request an edit to the exports file for permissions to storage. A Change Request ticket will then need to be raised by Storage-Support Team in preparation for this change. The pre-approved change template in service now should be used to create the change with a task to Unix Support to mount the qtree/volume.

All exports changes should be performed after business hours only. Any change that needs to be done during business hours should be created as an EMERGENCY CHANGE.

NOTE: PLEASE NOTE CROSS-SITE MOUNTS ARE NOT A STANDARD AND NOT ALLOWED. A storage volume/qtree located in Site A should not be exported to server located in different site/datacentre. Ex: Storage/volume in Eagan Site E should not be exported to Server in Eagan Site F or DTC etc.

If an exception is required then this should have BU Architecture approvals in place and should be attached to the change ticket.

Process to edit the Export file:

Step 1: Identify the root volume of the vfiler to which exports needs to added.
CMD> ssh <Pfiler_name> vfiler status –r <vfiler_name> | grep etc

```
-bash-3.2$ ssh eg-nasclnt-f05 vfiler status -r  clnt-corp-f0583 | grep etc
   Path: /vol/clnt_corp_f0583_root [/etc]
```

Step 2: Check which client has mount permission to mount the etc folder of vfiler root volume.

CMD> ssh <Pfiler_name> vfiler run <vfiler_name> exportfs –q <etc folder path in root volume>

```
-bash-3.2$ ssh eg-nasclnt-f05 vfiler run clnt-corp-f0583 exportfs -q /vol/clnt_corp_f0583_root

===== clnt-corp-f0583
/vol/clnt_corp_f0583_root      -sec=sys,(ruleid=13735),rw=dfmj-dco-jump-d01.int.thomsonreuters.com:dfmj-dco-jump-k01.int.thomsonreuters.com:dfmj-dco-jump-e01.int.thomsonreuters.com,anon=
0
```

Step 3: Login to any one of the above servers and create a folder in your home dir to mount the etc folder of vfiler root volume.

```
c659xxa:/home/m6042365 # pwd
/home/m6042365
c659xxa:/home/m6042365 # mkdir mnt
c659xxa:/home/m6042365 # chmod 777 mnt
c659xxa:/home/m6042365 # ls -l
total 4
drwxrwxrwx 2 root root 4096 Oct 13 10:26 mnt
```

Step 4: Mount the etc folder of vfiler root.

```
c659xxa:/home/m6042365 # mount clnt-corp-f0583:/vol/clnt_corp_f0583_root/etc mnt
c659xxa:/home/m6042365 # df -h mnt
Filesystem            Size  Used Avail Use% Mounted on
clnt-corp-f0583:/vol/clnt_corp_f0583_root/etc
                      820M  5.4M  814M   1% /home/m6042365/mnt
c659xxa:/home/m6042365 #
```

Step 5: cd to mnt folder and look for exports file.

```
c659xxa:/home/m6042365/mnt # ls exports
exports
c659xxa:/home/m6042365/mnt # ls -l exports
-rw-r--r-- 1 u0173152 g0173152 3032 Oct 13 09:41 exports
```

Step 6: Take the backup of exports file (name the backup file as exports_current date (exportfs_backup_ddMMMyyyy)

```
c659xxa:/home/m6042365/mnt #  cp exports exports_13OCT2016
c659xxa:/home/m6042365/mnt #
c659xxa:/home/m6042365/mnt #
```

Step 7: Open the exports file in vi editor and add an entry for requested volume or qtree path along with the hosts that need requested access. Prior to adding the entry validate and check for any Global RW, RO exports that may already exist.

Please go through the following link for how to add entry in exports file.
https://library.netapp.com/ecmdocs/ECMP1196979/html/man5/na_exports.5.html

Step 8: Issue the following command to export the added path in exports file.

CMD> ssh <Pfiler_name> vfiler run <vfiler_name> exportfs <exported volume or qtree path>

```
-bash-3.2$ ssh eg-nasclnt-f05 vfiler run clnt-corp-f0583 exportfs /vol/cb0029_findlawdataqaf_nosnap/pview

===== clnt-corp-f0583
```

Step 9: Use the following command to check if the export was successful and the hosts have required permission.
CMD> ssh <Pfiler_name> vfiler run <vfiler_name> exportfs –c <IP of the host added in exports file> <exported volume or qtree path> <options(rw|ro|root)>

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```
You have new mail in /var/spool/mail/svcstg_scriptuser
-bash-3.2$ ssh eg-nasclnt-f05 vfiler run clnt-corp-f0583 exportfs -c 10.205.140.102 /vol/cb0029_findlawdataqaf_nosnap/pview
exportfs [clnt-corp-f0583]: 10.205.140.102 has mount access to /vol/cb0029_findlawdataqaf_nosnap/pview

===== clnt-corp-f0583
-bash-3.2$ ssh eg-nasclnt-f05 vfiler run clnt-corp-f0583 exportfs -c 10.205.140.102 /vol/cb0029_findlawdataqaf_nosnap/pview ro
exportfs [clnt-corp-f0583]: 10.205.140.102 has ro access to /vol/cb0029_findlawdataqaf_nosnap/pview

===== clnt-corp-f0583
-bash-3.2$ ssh eg-nasclnt-f05 vfiler run clnt-corp-f0583 exportfs -c 10.205.140.102 /vol/cb0029_findlawdataqaf_nosnap/pview rw
exportfs [clnt-corp-f0583]: 10.205.140.102 has rw access to /vol/cb0029_findlawdataqaf_nosnap/pview

===== clnt-corp-f0583
```

Step 10: Close the CR and update the SR.

2.5   HOW TO PROVISION STORAGE ON C-DOT?

2.5.1   Create a new c-DOT vserver:

All new vserver creation requests should go through the standard delivery process. Storage Support team should create a new vserver only under the below circumstances:

- Tech refresh migrations
- Thin mitigation
- Migrations due to Performance Issues

Pre-requisites:

> Review and follow the guidelines as outlined here

Steps to create a new vserver:

1. Complete the prerequisites and IP request as documented.

2. Next, proceed to vserver creation using WFA. Note: **CLI should not be used.**
   > http://167.68.250.87:27900/wfa/   -- CIS
   > http://167.68.246.65:27900/wfa/   -- CPS

3. Login to the WFA using your MGMT\M-Account.
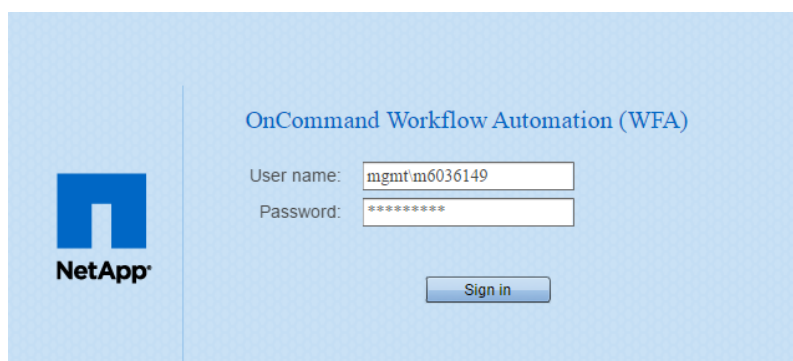
4. In the menu to the left, select "No Category" and uncheck the "7-Mode" box.

   a. Click the workflow titled "TR cDOT Create Vserver Only".

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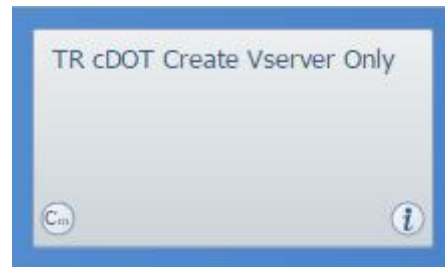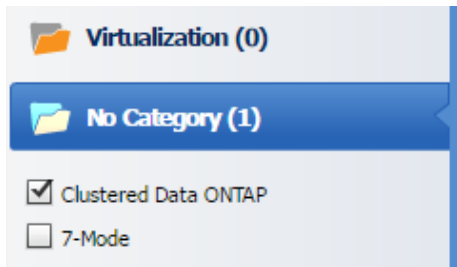
5. In the BCS Number box, enter the BCS Number or CR number

6. Next, select either CPS or CIS the drop-down menu.

> Note: Although you are allowed to select either option, if the selection does not match the instance of WFA you are in (step 1), the vserver will not be created successfully.

7. In the "ClusterType*" box select the correct option for your vserver. Usually Primary.

8. Select the cluster for the new vserver. Then select the correct "Node Name".

9. The aggregate name will auto populate.

> Note: Sometimes it populates the incorrect aggregate. If this happens, choose a different node, and then choose the correct one. It will fix the aggregate name entry.

10. Enter the name assigned to the new vserver.

11. Click the dropdown menu for "Vserver Type" and select the type of vserver you are creating.
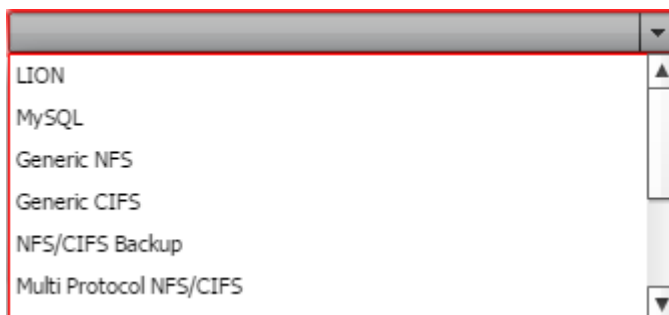
12. The "CIFS Server Domain" and "CIFS Server OU" will only be required if you selected "Generic CIFS" or "Multi Protocol NFS/CIFS".

> If you are migrating from an old vfiler, ssh to the source filer and run the following command: vfiler run <vfiler> cifs domaininfo, then choose the corresponding CIFS domain from the dropdown menu.

> The "CIFS Server OU" will auto populate according to the domain selected.

13. For the "DNS Environment", select one that corresponds with the cluster selected.

> Choose the "int.thomsonreuters.com" option when available.

> The DNS Domains/Servers will auto populate for you.

14. Next is the "Data Logical Interface Details" section:

Data LIF 1 Address*:	
Data LIF 1 Netmask*:	
Data LIF 1 Gateway*:	
Data LIF 1 Node*:	▼
Data LIF 1 Port*:	▼
Data LIF Failover Group*:	

      b. Fill in the Address, Netmask, and Gateway with the information given after requesting an IP for the new vserver.

      c.   Enter the Failover group and then select the "Data LIF 1 Port" from the drop down.

      d. Check the "Data LIF 1 Node" for the correct node. Sometimes it does not update correctly.

15. Finally, check for any fields that updated incorrectly.

      The common ones to change are "Node/Aggregate Name", "LIF Node", and "LIF Port"

16. Execute the workflow.

      If there is an error, "clear reservations" for that job and check the "user input" tab for errors. The most common reasons for failure are the vserver name is already in use, or entries in the user inputs reverted to their default values.

      If the Workflow failed after the first task completes, you may need to manually offline and delete the new vserver before attempting to create it again.

2.5.2   NFS (LION Storage Provisioning) on c-DOT:

Pre-requisites:

Below pre-checks are required before starting a LION allocation:

- Review and follow the guidelines as outlined [here](#)
- Validate the vfiler details:
  - a. If this requires a new vfiler then, Complete the [prerequisites](#) and [IP request](#) as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.
  - **b.** If the request is to add space to existing vfiler , make sure you have the vfiler details. **DO NOT COMBINE DIFFERENT BU VOLUMES in SAME VFILER.**

- Check if the request is for CIS or CPS environment.

- As per standards three volumes need to be created n01, s01 and s01oraadmin. check if all these 3 volumes are specified in the request with relevant qtrees.

- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.

- Check if retention period has been specified for the snap volumes.

At the time of writing this PCM the WFA workflow is still under testing. Follow the steps outlined in the document [here.](#) Please ensure all the steps outlined in this document are followed diligently.

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2.5.3 NFS (non-LION Storage Provisioning) on c-DOT:

<TBA in next release>

Review and follow the guidelines as outlined here

2.5.4 ESX Storage Provisioning on c-DOT:

Pre-requisites:

Below pre-checks are required before starting a ESX allocation:

- Review and follow the guidelines as outlined here
- Complete the prerequisites and IP request as documented to obtain a vfiler name and (IP, DNS, Vlan) network details.

- Check if the request is for CIS or CPS environment.

- Check you have information about hosts that need the volume exported and their FQDN/domain names are correct.

- Check if retention period has been specified for the snap volumes.

Steps to complete the ESX provisioning:

1. Make sure you have read through the ESX deployment Standards.

2. Complete the prerequisites.

3. Next, proceed to vfiler creation using WFA. Note: **CLI should not be used.**
   http://167.68.250.87:27900/wfa/   -- CIS
   http://167.68.246.65:27900/wfa/   -- CPS

4. Login to the WFA as below. We have to use MGMT\M-Account to login to the WFA.

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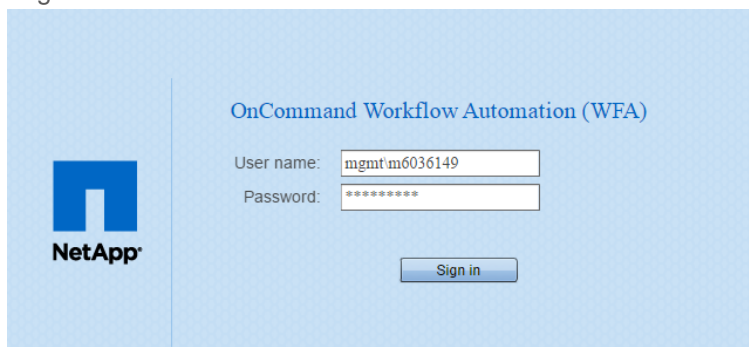
5. Select the below highlighted ICON to start creating the ESX vserver, volume
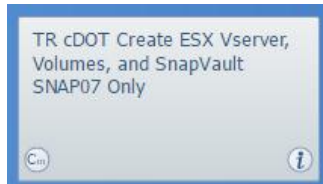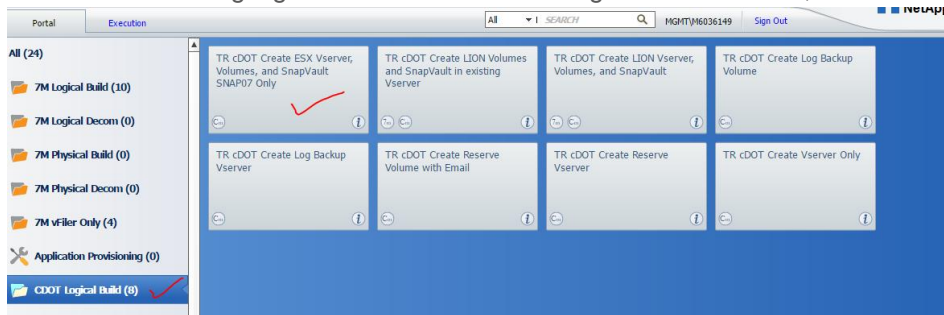
6. Provide BCS/ CR as well the email to get the workflow commands.

7. Input the Vserver Details:

- *CIS/ CPS:* Please select the respected environment in which you are creating the Vserver.
- *Cluster:* Select the cluster where we creating the Vserver.
- *Node:* Select the node in which you are creating the Vserver.
- *Vserver Name:* Input the Vserver name which you are creating.
- *Vserver Aggregate:* Automatically selected based on the Node.
- *DNS Environment:* Select the DNS environment based on the DC location.DO NOT USE A DIFFERENT SITE/MODULE DNS.
- *DNS Domain & DNS server:* Once the DNS environment is selected it will automatically populate the DNS domain and DNS server.

8. Enter the Data Logical Interface details:

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- *Address, Netmask & Route gateway:* Input the details based on the Banana IP request.
- *Port:* This will be the Vlan of the Vserver which you are creating.
- *Failover Group:* Input the Failover group as shown below

Login to the cluster:

```
eg-cis-clsn-e01::> failover-groups show
```

This will list all failover groups. we have to select the failovergroup which points to the port

Ex: If the port is a0a-2051 the failover group will be data-2051

9. Next Input the Storage Details:

- *Aggregate:* It will be selected by default when you select the node during the Vserver details.
- *Volume CB Number:* Update the charge back number.
- *Enter the volume size:* Select 07, 14, 45 and nosnap volumes and provide the sizes of the volume. 3TB is the current volume size standard for ESX.
  a. *If the BU requested for 07 snap volumes mean checking snap07 only and uncheck the remaining ones.*
- *Hosts with Read/Write and Root Access:* Enter comma (,) separated FQDN of the hosts that need access
- *Enable thin provisioning:* Enable thin provisioning.
- *Primary Dedupe hours:* It should be always be non-business hours i.e. 22:00 to 03:00 irrespective of time zones.

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10. Next Enter the Snapvault details:

- *Snapvault Backup Cluster:* We have to provide the backup cluster for Snapvault configuration. Before that login to the cluster and verify backup clusters connected to the source cluster.

  Ex: See example below


```
eg-cis-clsn-e01::> cluster peer show
Peer Cluster Name         Cluster Serial Number Availability
------------------------- -------------------- --------------
eg-cis-clbk-e01           1-80-033043          Available
```

- *Snapvault Backup Vserver:* Select the vserver in the cluster where we are configuring the backup. Select a vserver that is on the same vlan as the source vserver.
- *Snapvault Backup Node & Snapvault Backup:* Aggregate will be populated automatically based on the previous selection.
- *Snapvault transfer hour:* It should be always in non-business hours i.e., 22:00 to 03:00 irrespective of time zones.

11. Execute the Workflow:

If there is an error, "clear reservations" for that job and check the "user input" tab for errors. The most common reasons for failure are the vfiler/volume name is already in use, or entries in the user inputs reverted to their default values.

If the Workflow failed after the first task completes, you may need to manually offline and delete the new vserver before attempting to create it again.

12. Complete Post checks

a) Verify the Vserver which was created.


```
hz-cps-clsp-a01::> vserver show -vserver cpsprod-a0005
```

b) Verify the volumes created under the Vserver:

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```
hz-cps-clsp-a01::> vol show -vserver cpsprod-a0005
  (volume show)
Vserver   Volume      Aggregate      State       Type        Size  Available Used%
--------- ----------- ------------- ---------- ---- ---------- ---------- -----
cpsprod-a0005 cb0780_infra_virtual_ppa0005_nosnap aggr1_data_h01 online RW 6.67TB 1.70TB  74%
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap07 aggr1_data_h01 online RW 3.14TB 1.52TB  51%
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap14 aggr1_data_h01 online RW 1.22TB 901.5GB  27%
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap45 aggr1_data_h01 online RW 1.22TB 1000.0GB  20%
cpsprod-a0005 cpsprod_a0005_root aggr1_data_h01 online RW  1GB     972.5MB     5%
5 entries were displayed.
```

c) Verify the volume settings on all volumes that were created:

```
hz-cps-clsp-a01::> vol show -vserver cpsprod-a0005 -volume cb0780_infra_virtual_ppa0005_snap07
```

Things need to check is

- Export Policy

  Verify all the servers are exported to default policy. Repeat this for all the volumes which is created now.

  ```
  hz-cps-clsp-a01::> export-policy rule show -vserver cpsprod-a0005 -policyname default
  ```

  Verify all the servers are exported to policy. Repeat this for all the volumes which is created now.

  ```
  hz-cps-clsp-a01::> export-policy rule show -vserver cpsprod-a0005 -policyname cb0780_infra_virtual_ppa0005_snap07
  ```

- Verify Junction Path is created correctly.

  ```
  hz-cps-clsp-a01::>  vol show -vserver cpsprod-a0005 -volume cb0780_infra_virtual_ppa0005_snap14 -fields junction-path,qos-policy-group,snapshot-policy,percent-snapshot
    (volume show)
  vserver       volume                              junction-path                              percent-snapshot-space snapshot-policy qos-policy-group
  ------------- ----------------------------------- ------------------------------------------ ---------------------- --------------- -----------------------------------
  cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap14 /cb0780_infra_virtual_ppa0005_snap14 20%                         daily2          cb0780_infra_virtual_ppa0005_snap14
  ```

  The above command will give all the major characteristics of the volume. Per standards the volume name, export-policy and the junction path should be same for the volume. If we find the Junction path is not configured, please find steps below to configure the junction path:

  o Mount the volume with Junction path

    volume mount -vserver <vserver> -volume <vserver> -junction-path /<vserver>
  o Verify the junction path now.

- QoS Policy Group Name

  ```
  hz-cps-clsp-a01::> qos policy-group show -vserver cpsprod-a0005 -policy-group cb0780_infra_virtual_ppa0005_nosnap

            Policy Group Name: cb0780_infra_virtual_ppa0005_nosnap
                    Vserver: cpsprod-a0005
                      Uuid: 5adc3ca8-9ac2-11e6-9559-00a0989e9dfe
          Policy Group Class: user-defined
            Policy Group ID: 101
         Maximum Throughput: 6000IOPS
        Number of Workloads: 1
          Throughput Policy: 0-6000IOPS
  ```

  By default, QOS is set to 6000IOPs for shared filers for new build requests. For tech refresh, thin mitigation migrations etc. from 7-mode check the source peak IOPS and set QOS to 6000IOPS if source IOPS were lower. If the source IOPS was higher than 6k review with D&E and set to the peak IOPS.

  For any dedicated cluster QOS should be set to INF.

  ```
  hz-cps-clsp-a01::> qos policy-group modify -policy-group cb0780_infra_virtual_ppa0005_nosnap -max-throughput 6000IOPS
  hz-cps-clsp-a01::>
  ```

d) Verify the Quota. It should be off for the ESX volumes

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```
hz-cps-clsp-a01::> quota show -vserver cpsprod-a0005
                                                 Scan
Vserver      Volume         State           Status
---------    -----------    ---------------  ------
cpsprod-a0005  cb0780_infra_virtual_ppa0005_nosnap  off  -
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap07  off  -
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap14  off  -
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap45  off  -
cpsprod-a0005  cpsprod_a0005_root  off        -
5 entries were displayed.
```

e) Verify the Dedupe status and if it has the dedup policy assigned:

```
hz-cps-clsp-a01::> sis show -vserver cpsprod-a0005
Vserver      Volume              State    Status     Progress          Policy
---------    ----------------    -------  ---------  ----------------  ----------
cpsprod-a0005 cb0780_infra_virtual_ppa0005_nosnap Enabled Idle Idle for 17:07:25 dedupe_daily23
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap07 Enabled Idle Idle for 17:09:41 dedupe_daily23
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap14 Enabled Idle Idle for 17:56:23 dedupe_daily23
cpsprod-a0005 cb0780_infra_virtual_ppa0005_snap45 Enabled Idle Idle for 17:59:28 dedupe_daily23
4 entries were displayed.
```

f) Verify the snapshot policy as per the inputs.
   Note: For nosnap volume the default policy should be none

```
hz-cps-clsp-a01::> vol show -vserver cpsprod-a0005 -volume * -fields snapshot-policy,snapshot-space-used,snapshot-count,
  (volume show)
vserver        volume                                  snapshot-space-used snapshot-policy snapshot-count
-------------  --------------------------------------  ------------------- --------------- --------------
cpsprod-a0005  cb0780_infra_virtual_ppa0005_nosnap 0%                      none            0
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap07 50%                     daily2          7
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap14 6%                      daily2          7
cpsprod-a0005  cb0780_infra_virtual_ppa0005_snap45 0%                      daily2          7
cpsprod-a0005  cpsprod_a0005_root                  4%                      default         10
5 entries were displayed.
```

g) Verify the Snapvault status:
   o Identify the destination path from the source cluster:

```
hz-cps-clsp-a01::> snapmirror list-destinations -source-path cpsprod-a0005:cb0780_infra_virtual_ppa0005_snap07
                                                                    Progress
Source                  Destination            Transfer  Last            Relationship
Path          Type  Path              Status Progress  Updated      Id
------------- ----- ----------------- ------ --------- ------------ ---------------
cpsprod-a0005:cb0780_infra_virtual_ppa0005_snap07
              XDP   cps-ss-clbk-a01:sv_07_cb0780_infra_virtual_ppa0005_snap07
                                      Idle   -         -            ec7b393e-9ac0-11e6-8513-00a0989c40b6
```

   o Cluster peer show to identify the backup cluster:

```
hz-cps-clsp-a01::> cluster peer show
Peer Cluster Name               Cluster Serial Number Availability
------------------------        --------------------- ----------------
hz-cps-clbk-a01                 1-80-045280           Available
```

   o Login to the backup cluster. Verify the SV status

```
hz-cps-clbk-a01::> snapmirror show -destination-path cps-ss-clbk-a01:sv_07_cb0780_infra_virtual_ppa0005_snap07

                    Source Path: cpsprod-a0005:cb0780_infra_virtual_ppa0005_snap07
               Destination Path: cps-ss-clbk-a01:sv_07_cb0780_infra_virtual_ppa0005_snap07
              Relationship Type: XDP
             SnapMirror Schedule: daily2
                    Tries Limit: -
              Throttle (KB/sec): unlimited
                    Mirror State: Snapmirrored
            Relationship Status: Idle
              Transfer Snapshot: -
              Snapshot Progress: -
                 Total Progress: -
            Snapshot Checkpoint: -
               Newest Snapshot: daily.2017-04-23_0200
      Newest Snapshot Timestamp: 04/23 02:17:22
              Exported Snapshot: daily.2017-04-23_0200
    Exported Snapshot Timestamp: 04/23 02:17:22
                        Healthy: true
               Unhealthy Reason: -
       Constituent Relationship: false
         Destination Volume Node: hz-cps-clbk-a01-b01
                Relationship ID: ec7b393e-9ac0-11e6-8513-00a0989c40b6
                  Transfer Type: -
                 Transfer Error: -
               Current Throttle: -
       Current Transfer Priority: -
             Last Transfer Type: update
            Last Transfer Error: -
             Last Transfer Size: 48.64GB
         Last Transfer Duration: 0:7:26
             Last Transfer From: cpsprod-a0005:cb0780_infra_virtual_ppa0005_snap07
    Last Transfer End Timestamp: 04/23 02:17:26
          Progress Last Updated: -
        Relationship Capability: 8.2 and above
                       Lag Time: 10:25:2
              SnapMirror Policy: XDP07
```

2.5.5   MySQL storage provisioning on c-DOT:

Pre-requisites:

Review and follow the guidelines as outlined here

At the time of writing this PCM the WFA workflow is still under testing. Follow the steps outlined in the document here. Please ensure all the steps outlined in this document are followed diligently.

2.5.6   ISCSI storage provisioning for WISP on c-DOT:

Pre-requisites:

Review and follow the guidelines as outlined here

At the time of writing this PCM the WFA workflow for WISP is still under testing. Follow the steps outlined in section 3 and 4 of the document here. Please ensure all the steps outlined in this document are followed diligently.

Note: Please note WISP on c-DOT is still under SI for new version of SMSQL. Any new deployments or migration of WISP to c-DOT should be signed off by the DBA team.

Pay extra caution to the retention the backup filer as the DBA team takes multiple snapshots per day.

Complete the QA checklist to validate all configuration steps were completed.

2.5.7   Multiprotocol Storage Provisioning on c-DOT:

Pre-requisites:

Review and follow the guidelines as outlined here

Follow the steps outlined in the document here. Please ensure all the steps outlined in this document are followed diligently.

2.5.8   How to deploy NFS4 on c-DOT for MQ:

Pre-requisites:

Review and follow the guidelines as outlined here

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There is no WFA workflow for NFS4 deployment. For the steps for creating a vserver with NFS4 refer [here.](#) Please ensure all the steps outlined in this document are followed diligently.

2.5.9   Add Hosts to Exports on c-DOT:

Summary

Typically, BU/Platforms team will raise SR to request an edit to the exports file for permissions to storage. A Change Request ticket will then need to be raised by Storage-Support Team in preparation for this change. The pre-approved change template in service now should be used to create the change with a task to Unix Support to mount the qtree/volume.

All exports changes should be performed after business hours only. Any change that needs to be done during business hours should be created as an EMERGENCY CHANGE.

NOTE: PLEASE NOTE CROSS-SITE MOUNTS ARE NOT A STANDARD AND NOT ALLOWED. A storage volume located in Site A should not be exported to server located in different site/datacentre. Ex: Storage/volume in Eagan Site E should not be exported to Server in Eagan Site F or DTC etc.

If an exception is required then this should have BU Architecture approvals in place and should be attached to the change ticket.

Netgroups and qtree level exports are not allowed in c-DOT. If the source is configured to use a netgroup or Open Global exports then individual server level exports should be configured as part of any migrations after approval from D&E and BU.

Steps to update exports on c-DOT:

1. Verify the current export-policy that is assigned to the volume as shown below and make a note of policy that shows in output.
    Command**:** *volume show -vserver <vserver_name> -volume cb0669_trc_saneeppe_snap -fields policy*

    ```
    eg-cis-clsn-e01::> volume show -vserver cisclnt-e0104 -volume cb0669_trc_saneeppe_snap -fields policy
    vserver         volume                      policy
    ------------- ---------------------- -----------------------
    cisclnt-e0104 cb0669_trc_saneeppe_snap cb0669_trc_saneeppe_snap
    ```

    Note: The volume policy name should be same as volume name except for arch volumes.

2. Verify whether the required host is already added in default policy of vserver and volume export-policy.

    Comand to check whether the host entry is added in default policy of vserver:
    *export-policy rule show -vserver <vserver_name> -policyname default -clientmatch *<host name>**

    ```
    eg-cis-clsn-e01::> export-policy rule show -vserver cisclnt-e0104 -policyname default -clientmatch *c58ntwsesw02*
      (vserver export-policy rule show)
    There are no entries matching your query.
    ```

    Command to check whether the host entry is added in export-policy of volume:
    *export-policy rule show -vserver <vserver_name> -policyname <volume export-policy name> -clientmatch *<host name>**

    ```
    eg-cis-clsn-e01::> export-policy rule show -vserver cisclnt-e0104 -policyname cb0669_trc_saneeppe_snap -clientmatch *c58ntwsesw02*
      (vserver export-policy rule show)
    There are no entries matching your query.
    ```

3. Add the host if it is not already in default or volume export-policy. Add the host name in default policy with ready-only authentication of sys, read-write as never and superuser as none.

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Command**:** *export-policy rule create -vserver <vserver_name> -policyname default -rorule sys -rwrule never -superuser none -protocol any -clientmatch <host name with FQDN>*

Add the host name in volume export-policy with read/read-write/supersuer security type of 'sys'. This provides read-write access to the host.

Command: *export-policy rule create -vserver <vserver_name> -policyname <volume policy name> -rorule sys -rwrule sys -superuser sys -protocol any -clientmatch <host name with FQDN>*

Note: Host name should be added in both default policy of vserver as well as volume policy.

4. Verify the access of the host that is given as shown below:

Command**:***export-policy check-access -vserver <vserver_name> -volume <volume_name> -qtree <qtree_name> -client-ip <host ip> -authentication-method sys -protocol nfs3 -access-type read-write*

```
eg-cis-clsn-e01::> export-policy check-access -vserver cisclnt-e0104 -volume cb0669_trc_saneeppe_snap -qtree appdata -client-ip 10.204.192.84 -authentication-method sys -protocol nfs3 -access-type read-write
  (vserver export-policy check-access)
                              Policy    Policy       Rule
Path                         Policy    Owner     Owner Type  Index Access
---------------------------- --------- --------- ---------- ------ ----------
/                             default   cisclnt_e0104_root volume 1 read
/cb0669_trc_saneeppe_snap        cb0669_trc_saneeppe_snap cb0669_trc_saneeppe_snap volume 2 read
/cb0669_trc_saneeppe_snap/appdata cb0669_trc_saneeppe_snap cb0669_trc_saneeppe_snap volume 2 read-write
```

Note: If there is no qtree in the volume we can remove '-qtree' section to verify access at volume level.

5. Close the CR and update the SR/IM.