About This User Guide

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Volume Expansion User Guide

With ThecusOS™ 5.0, one of the greatest feature is Dynamic Volume Expansion. With Volume expansion, the user has the choice to expand its storage capacity whenever required. A total of 8 physical volumes can be added for expansion and become on large logical volume to be managed under one system only.

To start with volume expansion, in the user UI, go to the **Storage** menu, choose the ***Volume Expansion Management*** item and the ***Volume Expansion Management*** screen appears. From here, you can see 2 major categories, **"Expansion Management"** and **"Expansion Member Creation"**.

Expansion Management: This is going to manage the joined volume members.

Expansion Member Creation: This one is to create a volume member from the current system. Each system is only allowed to create one volume member.

The volume expansion is only supported with 10G NIC, installed and connected. If no 10G NIC is found, the message below will appear.


> **NOTE**
>
> Volume expansion requires 10G environment to work. It could be either connected through a 10G switch or connected as peer to peer in between systems. The total of members that can be created in a volume expansion group is 8.

> **NOTE**
>
> Volume expansion with a single additional system contains 2 elements: "Expansion Management" and "Expansion Member Creation". It is not necessary to have a member belonging to the system which manages the volume expansion group.

Expansion Member Creation

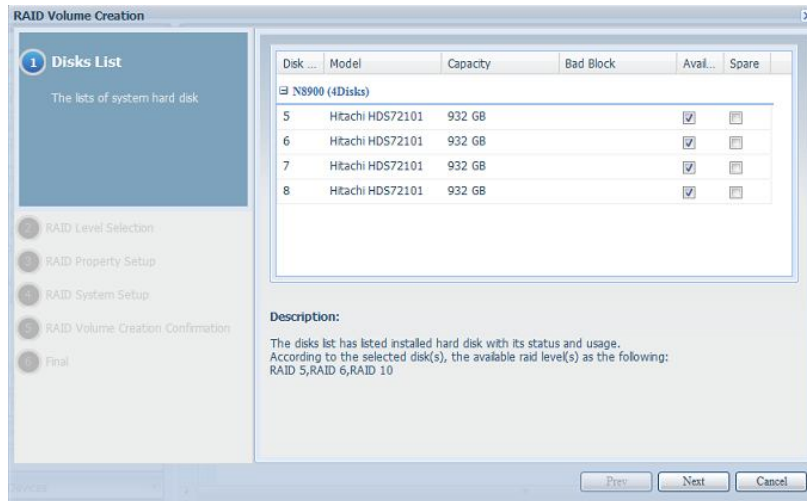If your 10GbE is installed and connected then let's start with volume member creation.
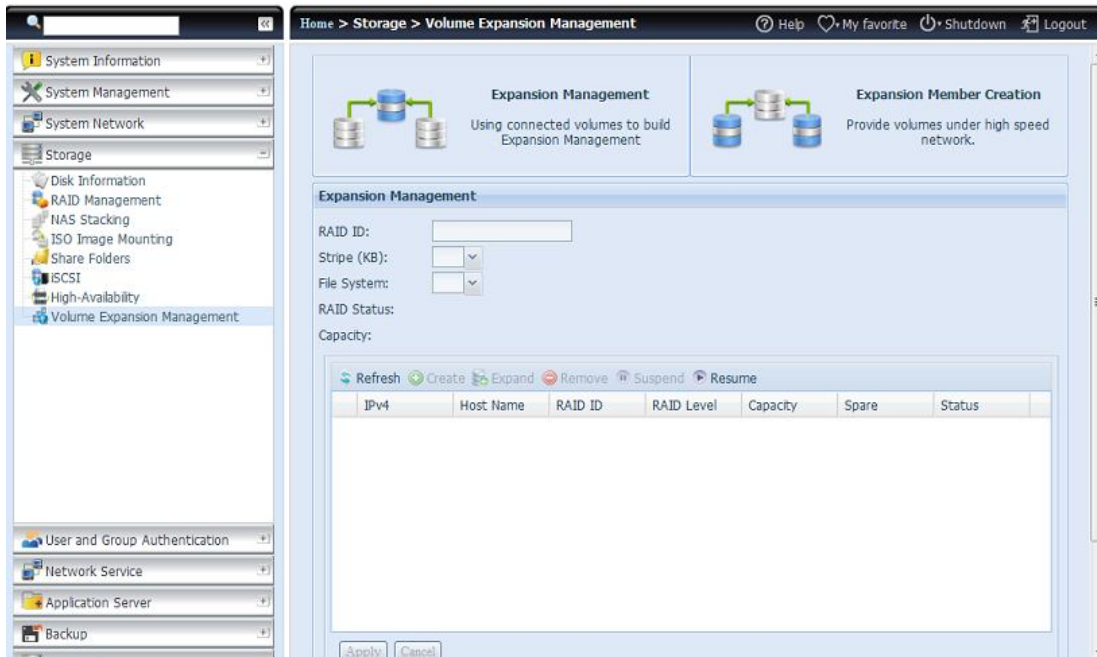
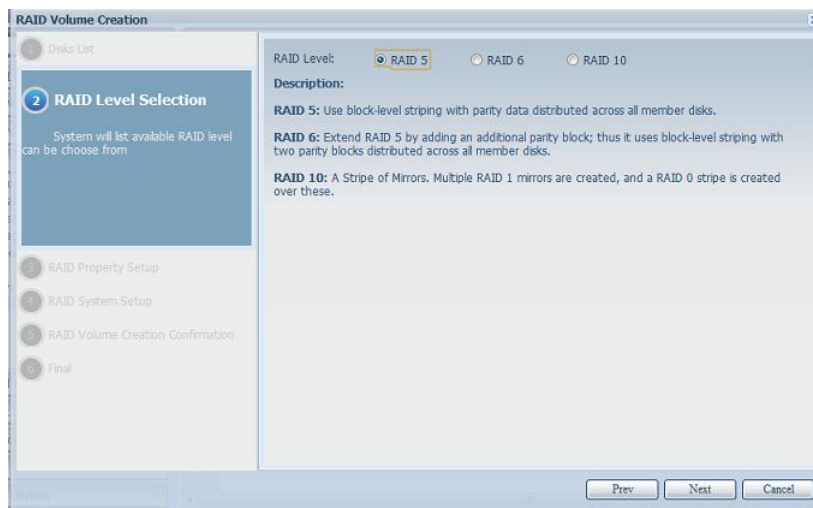Click on "Expansion Member Creation", and then select "Create" to start.
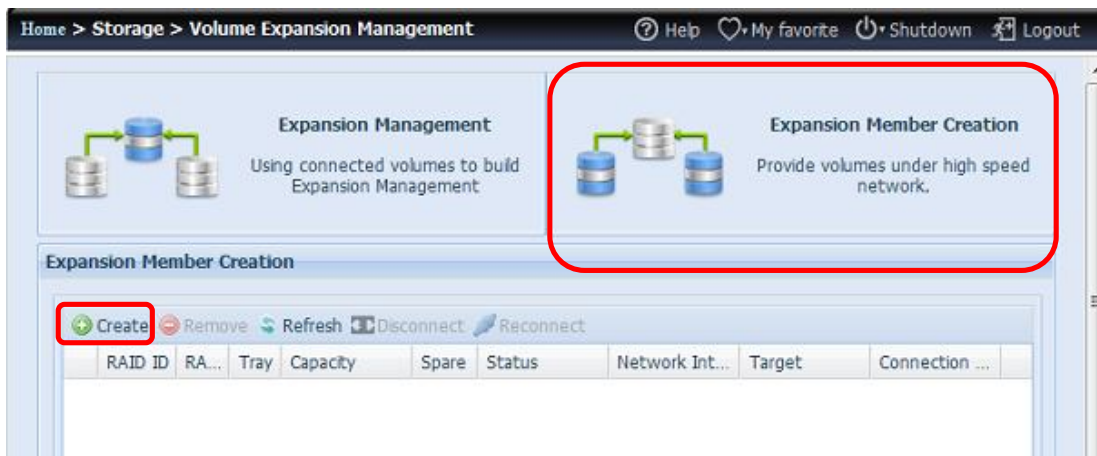
The volume creation wizard appears and leads you to complete the volume creation.
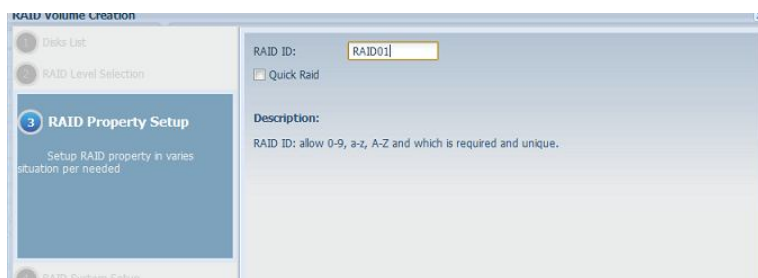
1. Select the available disks from the system. Please be notified that the volume has to be RAID5, RAID6, RAID10, RAID50 or RAID60.
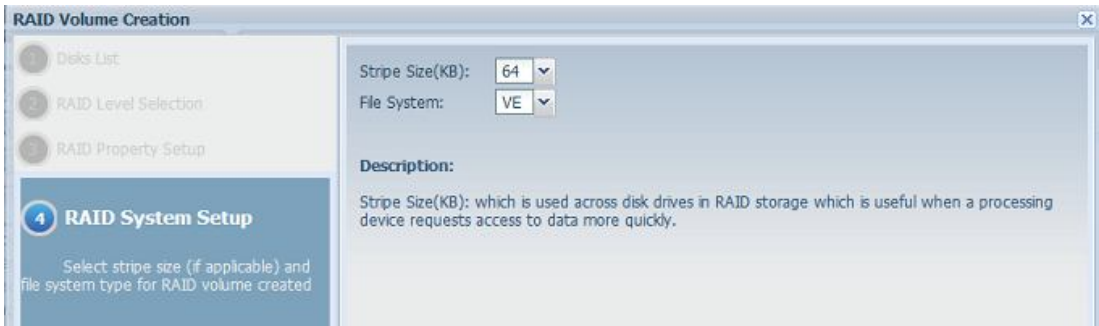
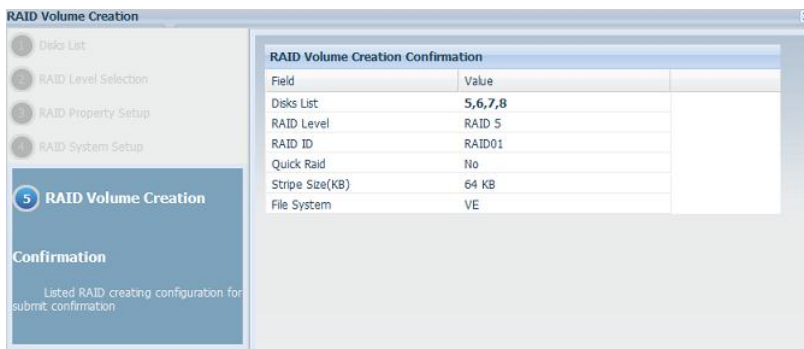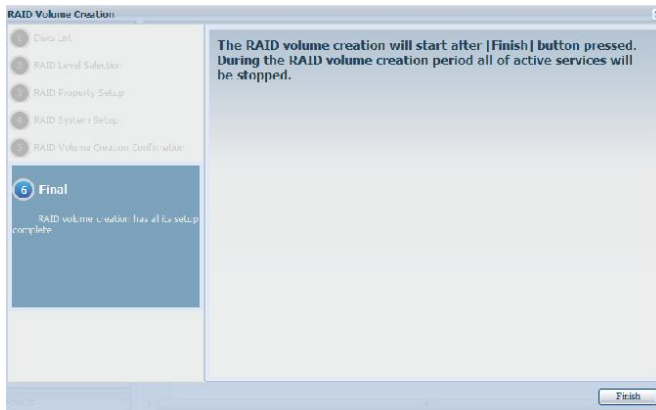2. Choose the desired RAID mode from the available RAID type.

3. Give a name to the RAID ID.

4. Specify the stripe size. The file system is "VE" as default and can't be changed.

5. After confirmation, the RAID volume settings information will appear.

6. Click finish to confirm the RAID volume creation.

7. Volume creation is started. It may take a few hours depending on the HDD capacity.
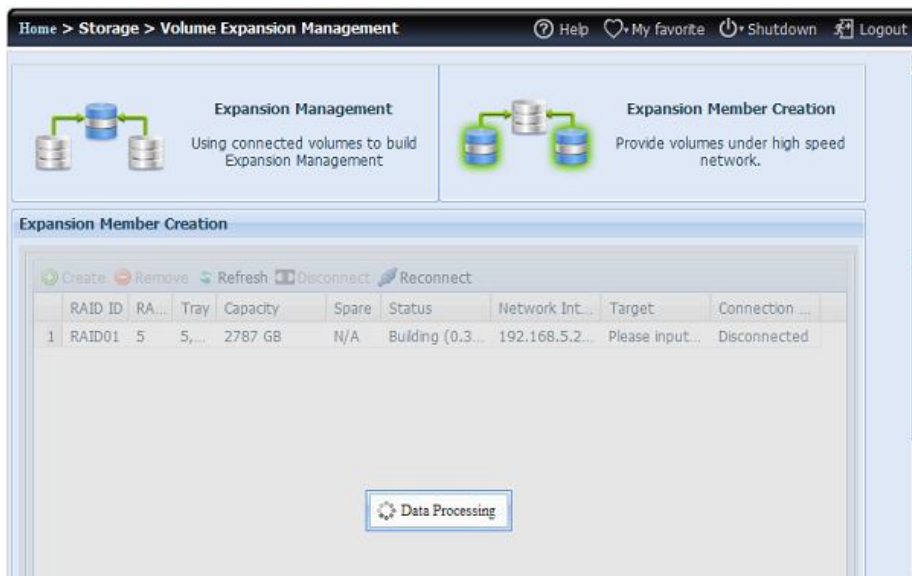
8. After volume creation is completed, the volume will be listed as below and ready to join as a member on the volume expansion group.

Now, we have successfully created a volume expansion member. This will be our sample unit 1, WAN/LAN1 IP 172.16.64.191, 10G NIC IP 192.168.5.254 and RAID5.
Since the volume expansion function only works in a 10G environment, a 10G IP will be needed as a key to manage the volume expansion group.
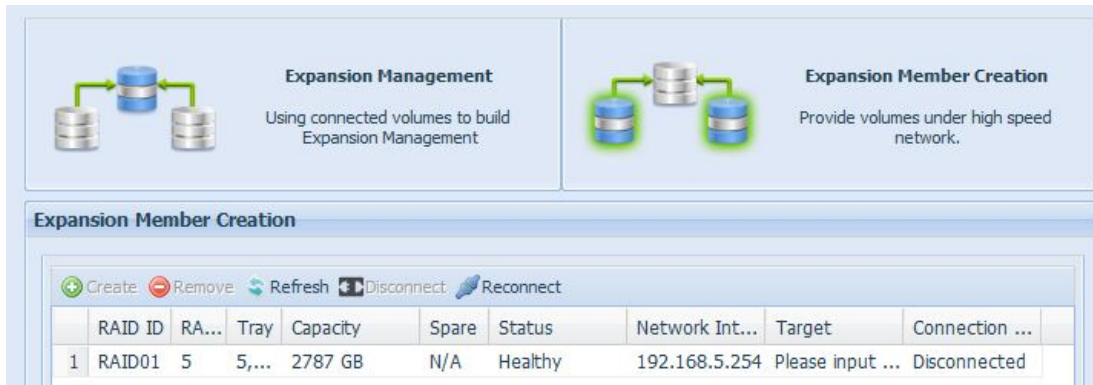
Our sample unit 2 is WAN/LAN1 IP 172.16.66.111, 10G NIC IP 192.168.5.250 and the volume used for volume expansion is created in RAID10.
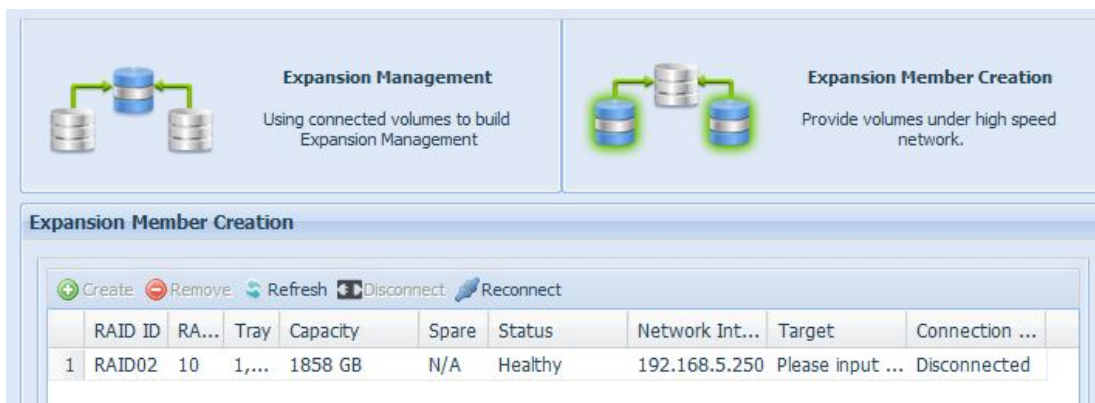
Volume Expansion Management

Since the volume expansion function only works in a 10G environment, a 10G IP will be needed as a key to manage the volume expansion group. Let's use our

sample unit 2 with 10G IP 192.168.5.250 to manage the volume expansion group. The screen shot below shows the installed and connected 10G NIC with the IP 192.168.5.250.
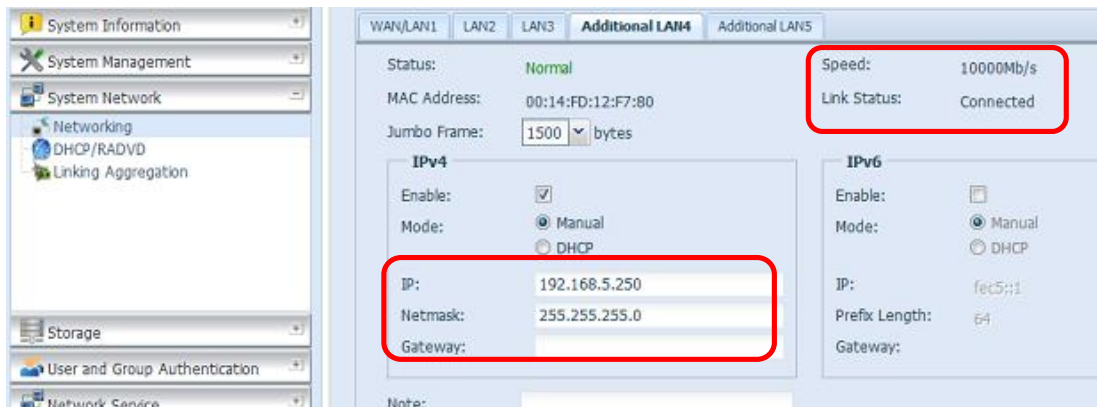
Let's add a 1st expansion volume group member. From the expansion volume created, fill in the "Target" IP address "192.168.5.250". It means that this expansion volume is going to join the associated volume group.

Please make sure that the joined member has the same network subnet.

Press "Apply" to confirm the setting.
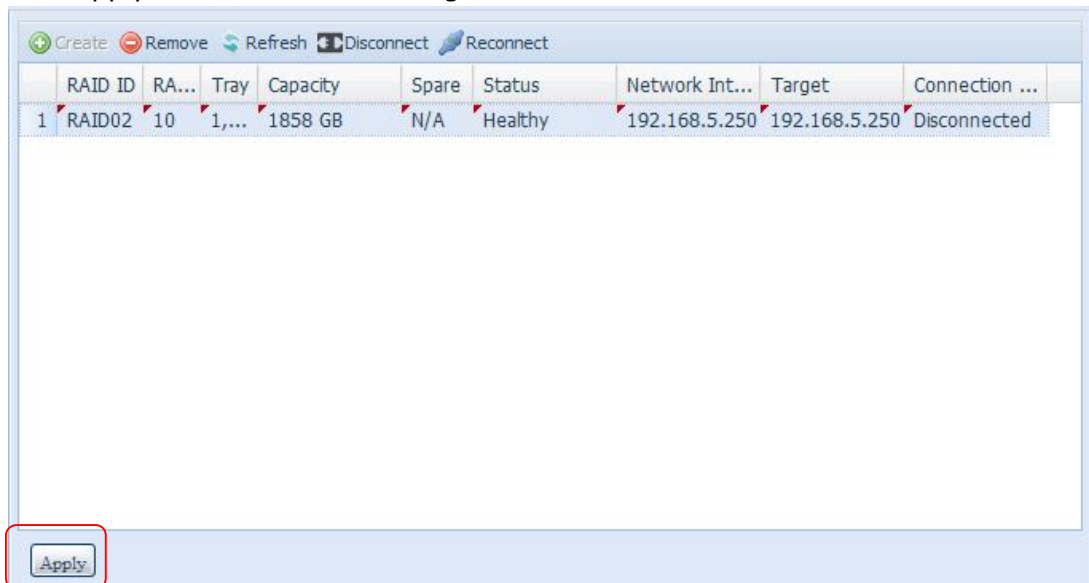
After confirmation, the connection status will change from "Disconnected" to "Connected".

Go to the "Expansion Management" screen, click on "Create", a member is ready to be joined.

Next, input the RAID ID (We used "ve01" as our example) and select the member to be joined by clicking on it. Confirm by pressing "Apply" to complete the Volume Expansion creation.
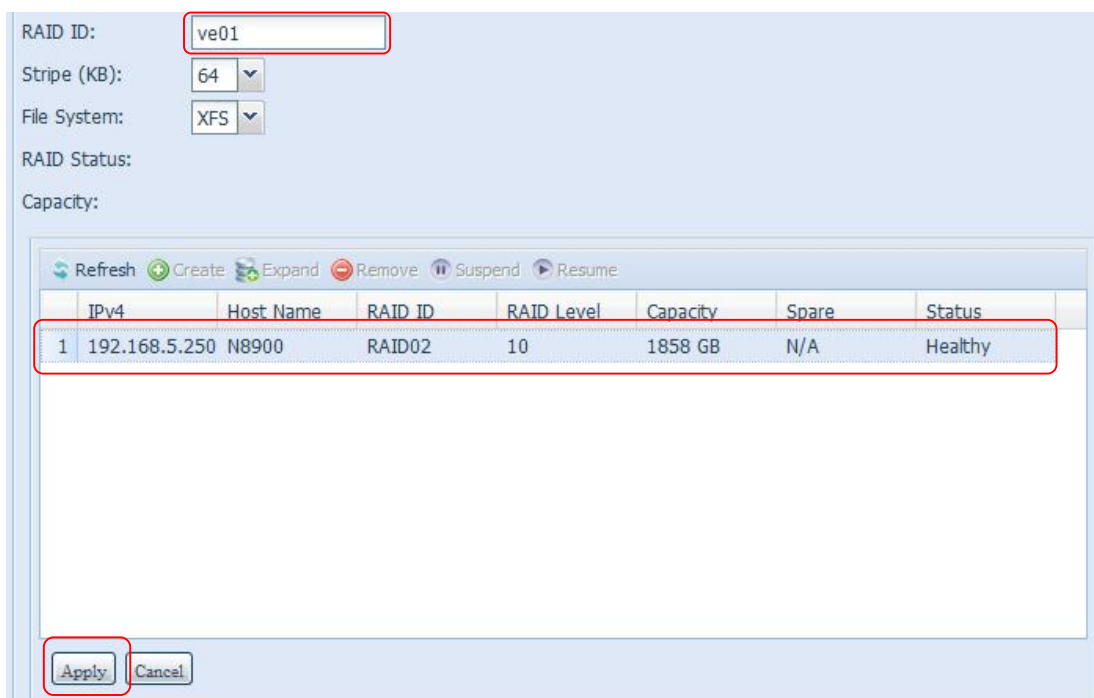
After the volume expansion management has successfully created and a member joined, then the VE volume "ve01" will display the information as shown below. The volume size is noted to be 1855.2GB with an Healthy RAID. The joined member is listed with information about its capacity and status.

Now let's add more members to the volume "ve01". Let's take our sample unit 1 and add the created volume from it. Please follow the procedure below.

Select the created VE volume from the system.

Input the "Target" IP address for which VE volume this unit is going to join. Click on "Please input….."

In this case, this unit is going to join the "ve01" which the IP is 192.168.5.250. So simply input 192.168.5.250, then click "Apply" to confirm.

After confirmation, the status will changed from "Disconnected" to "Connected"

Now, go back to the system 192.168.5.250 which is our volume expansion management unit and open the volume expansion management page, click on "Expand". The available volume which can be joined as a member will be listed.

As shown in the screen shot below, it is listed that there is a VE volume from the system N8900pm (sample unit 1) available. This is the VE volume that was just generated to join "ve01", this unit IP address is 192.168.5.254.

Click "Apply" to confirm and the display will be as shown in the screen shot below.

The volume expansion has successfully expanded its size from 1855.2GB to 4639.5GB. The volume expansion group ve01 now contains 2 members (2 units).

Suspend Volume Expansion

If for any reason, the volume expansion volume needs to be stoped, simply click "Suspend".

Once "Suspend" is clicked, all of its members will become offline and the VE RAID info will become blank.
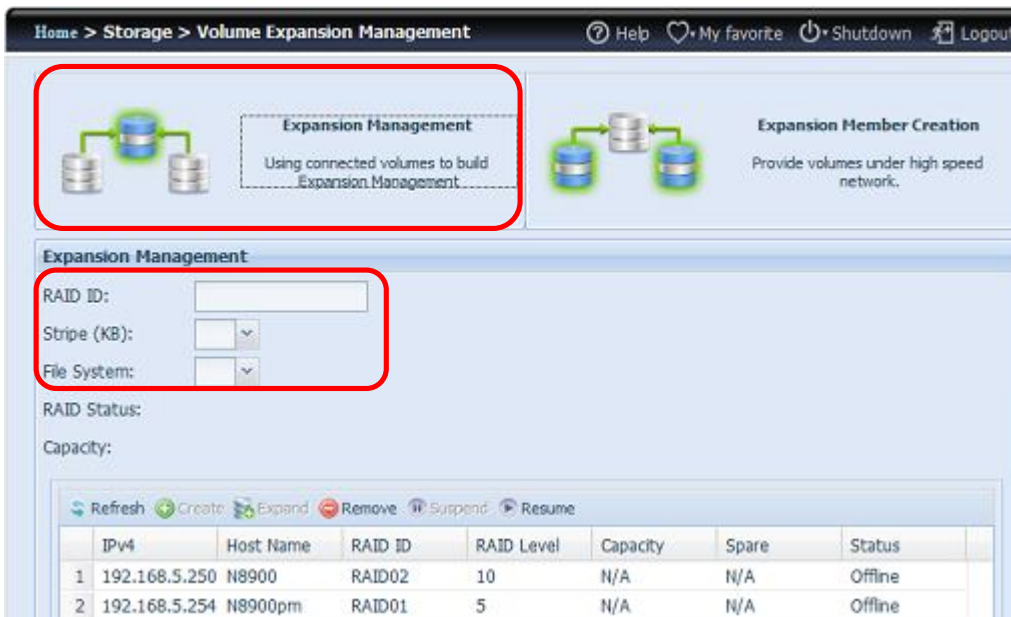
The members will also be shown as "Disconnected" after the volume is suspended.


At this point, all of the joined members are off-line and their data is inaccessible.

Resume Volume Expansion
To resume the volume expansion volume, there are two ways.
1. Click on "Resume" and the system will automatically reconnect to the members every 5 minutes. If all its members can be reconnected, then the volume will resume.

Please click on "Refresh" if the information does not show in time.
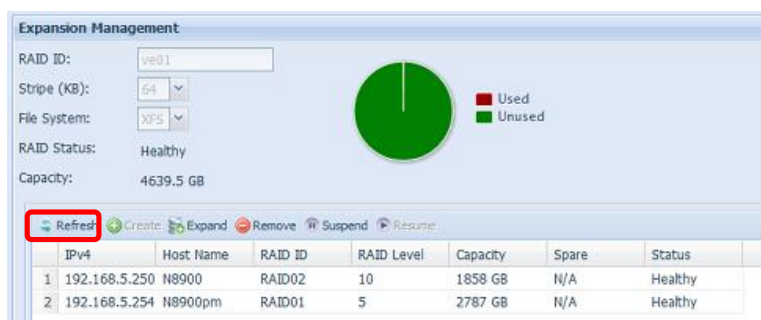
2. Click on "Resume" then manually go to each member and click on "Reconnect".

The volume expansion is back and ready to perform.