Qsan Document - White Paper

How to use QReplica 2.0

Version 2.0
March 2015

Prerequisites

Here are the prerequisites.

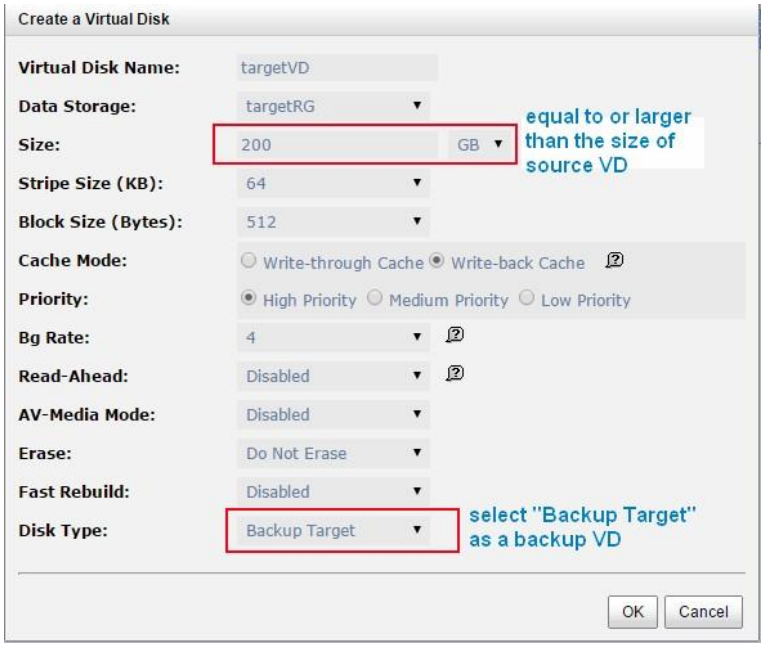
1. Make sure the controller firmware version of source and target SAN storage is above than V3.2.2.
2. Make sure there is enough space on the RIAD group of the **Source** virtual disk so that the snapshot space can be successfully allocated automatically after the replication job created, otherwise user has to allocate the snapshot space manually before creating the replication job.
3. Make sure the snapshot space on the RIAD group of **Target** virtual disk has been allocated before executing any replication job. The target SAN storage will automatically take a snapshot on the BACKUP VD after each replication job finishes.

Configuration

How to Create a Replication Job

The QReplica function copies data from the virtual disk of source SAN storage to the target over LAN or WAN. You may follow the steps as listed below to finish the creation of first replication job

1. Make sure which virtual disk on the source SAN storage is the one you want to backup
2. Create a virtual disk on the target SAN storage as a backup virtual disk



3. The backup virtual disk will need to be attached with an iSCSI LUN ID so that it could be discovered by the source SAN storage and the replication job could be established successfully

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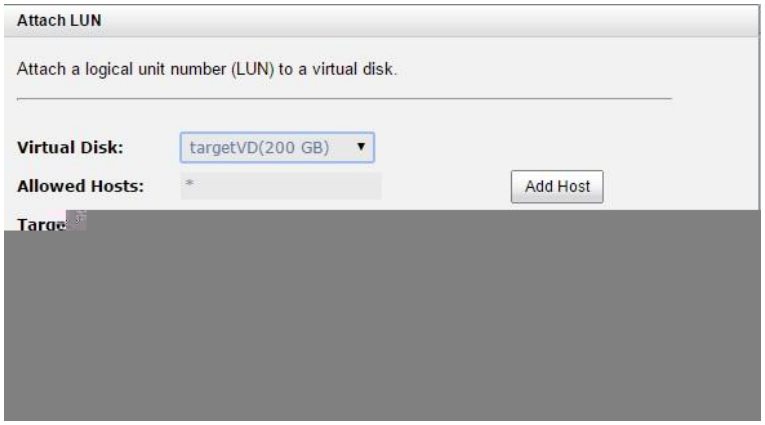

4. Go to **Volume Configuration -> QReplicas** on the web interface of source SAN storage and create the first replication job via clicking **Create** button.

5. In the pop-up window, select the virtual disk you want to backup data and then click **Next** button.

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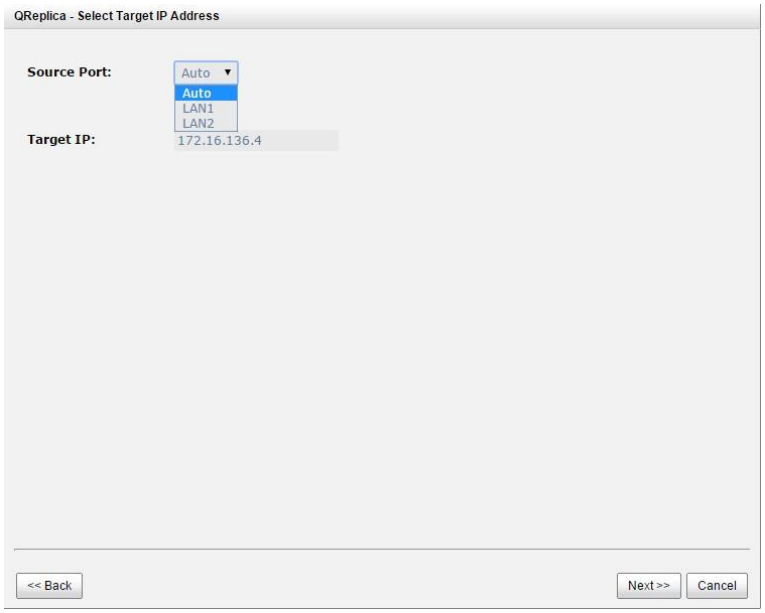
6. Select the portal which you would like to use as the transferring port from the source SAN storage, and specify the IP address of the portal that you want to use as receiving port on the target SAN storage. If **Auto** is selected, system will choose one available portal automatically



7. Select the iSCSI target that just attached on the target SAN storage

8. Select the available virtual disk which attached to this target, and finish the creation of replication job

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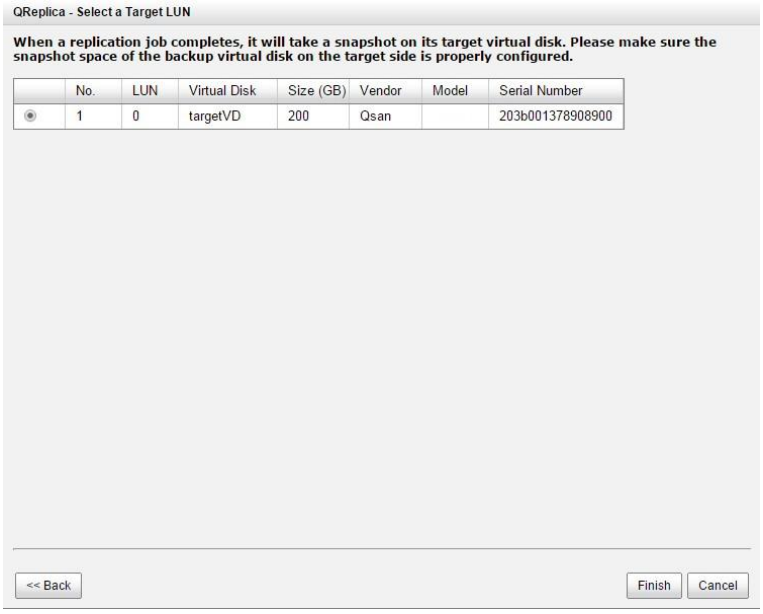
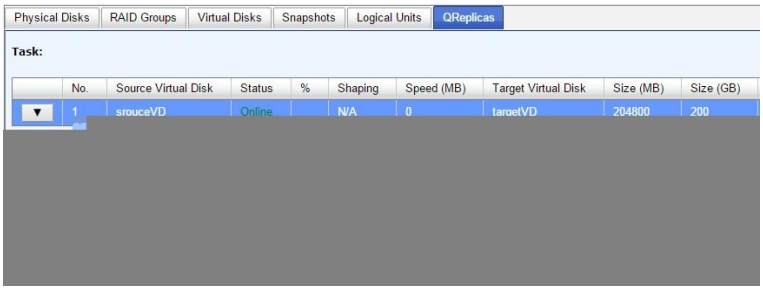


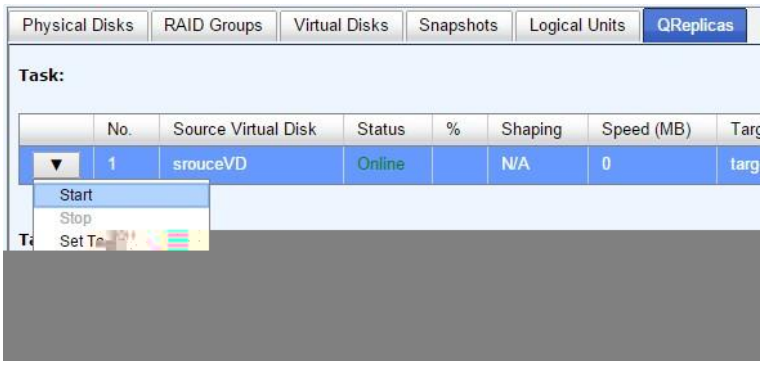
9. The task will be listed and the path of session will be displayed for monitoring the status of replication job



The Operation of Replication Job

Start the job manually

1. Click on the▼ -> **Start** to execute the replication job



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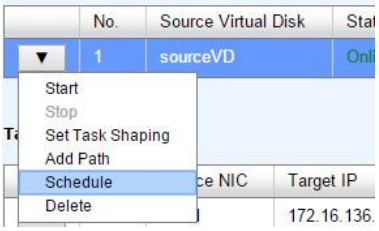
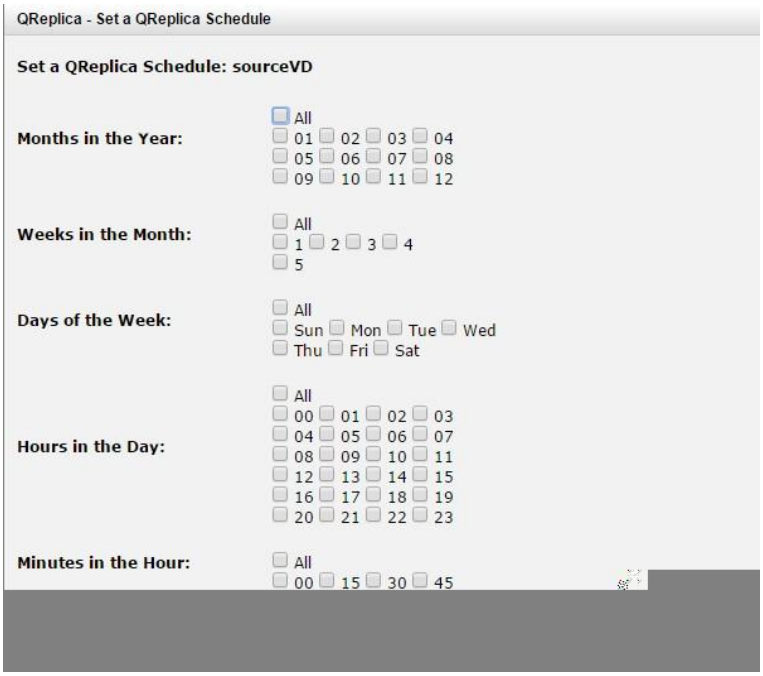


2. And select the time point you want to execute the replication job



3. Please note that if you would like to set each single day at 00:00 to execute the replication job, check the hours in the **Hours in the Day** column will be enough. For example if you selected like below:

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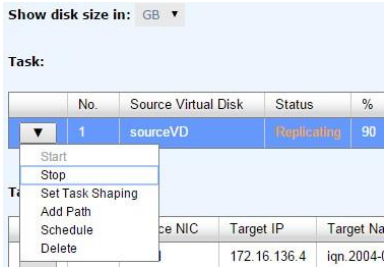
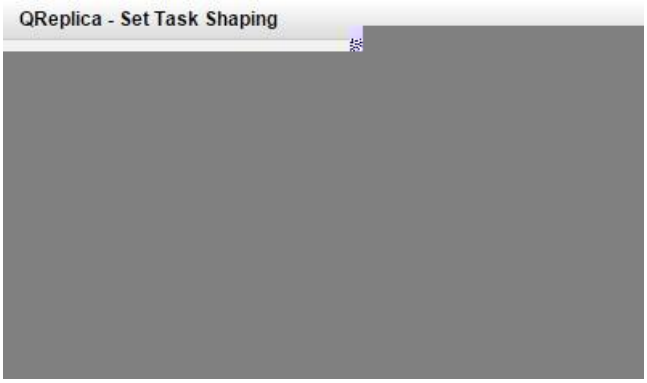
In this example, the [Shaping Group1] is selected, and from Monday to Friday 07:00 ~ 19:00, the replicating speed will be limited within 50MB/s in this group. But for the rest of time, the replicating speed will not be limited. Click OK to finish.

3. Click ▼ -> **Set Task Shaping** on the task.



4. Select the **Shaping Group1** in the drop-down menu and click **OK** button.



5. There will be an additional column showed and indicating the current applied Shaping group for this replication job.

TIP:
There are up to 8 shaping groups in the system for users to apply. If two replication jobs apply to the same shaping group, the limited replicating speed will be shared. For example, if there are two replication jobs created applied to the same shaping group which the limited replicating speed is 100MB/s, they will be running in the same time, the maximum speed for each replication

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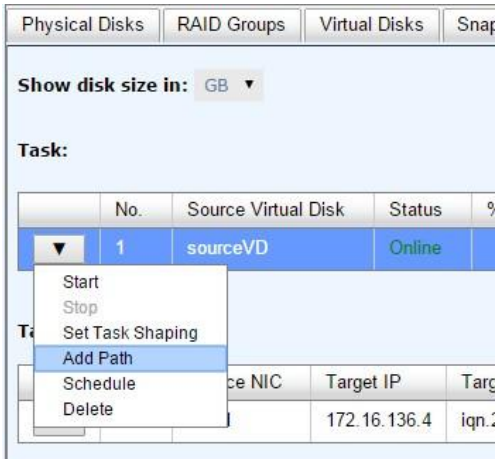
Add Path to Setup the Redundancy of Replication Job

1. Click▼ -> **Add Path** on the existed replication job



2. Select the source port which is the same port that used to create this replication job, and enter the IP address of controller2 on the target SAN storage

3. Follow the wizard to finish the creation of second path, and you may see the target name is the same one but comes from the controller2

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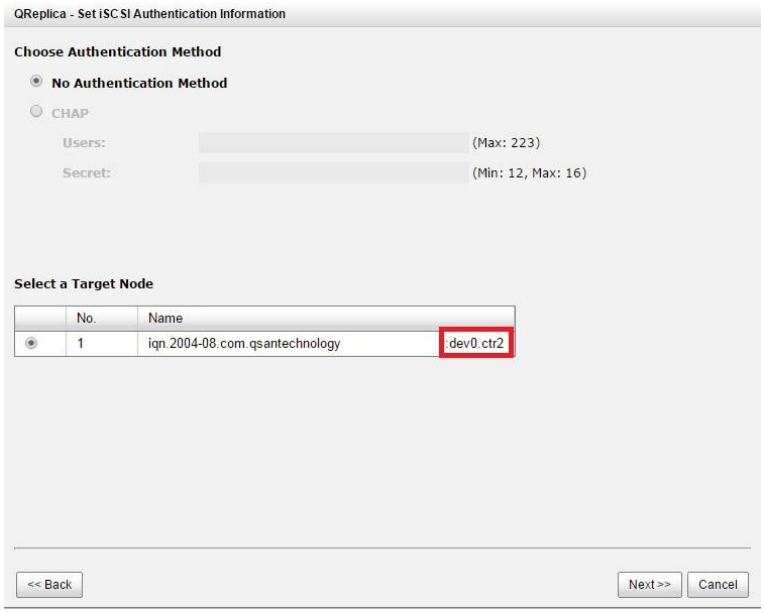

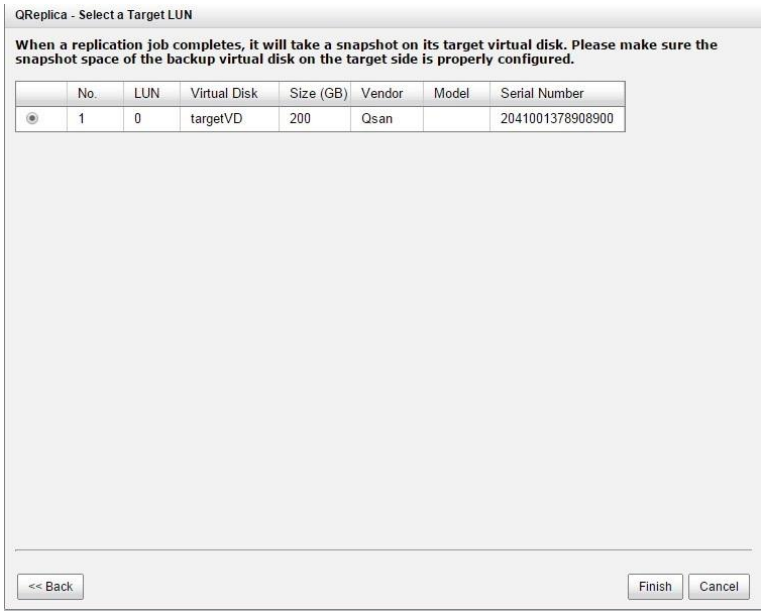

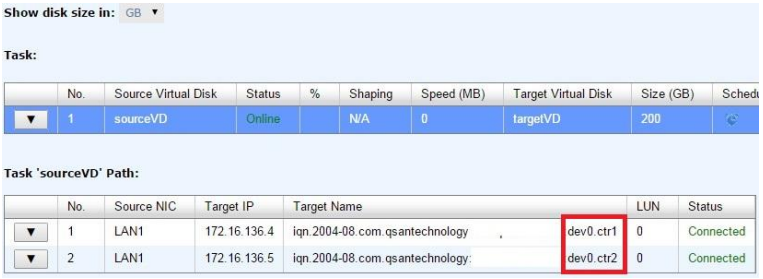

You may see there are two paths for one replication job to replicate data from source to target VD. One is from controller1 of the source SAN storage to the controller1 of target SAN storage, the

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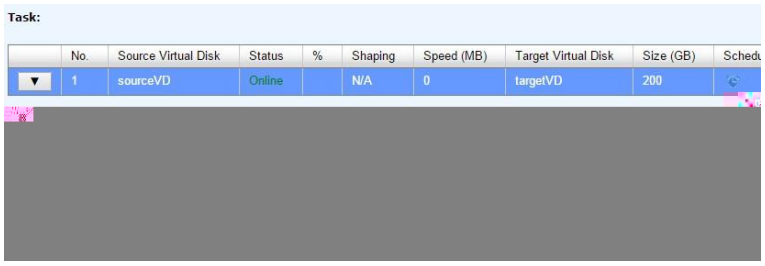
other is to the controller2 of target SAN storage. According to the mechanism we mentioned above for multipath policy of QReplica, the replicating speed will be within one path at a time.

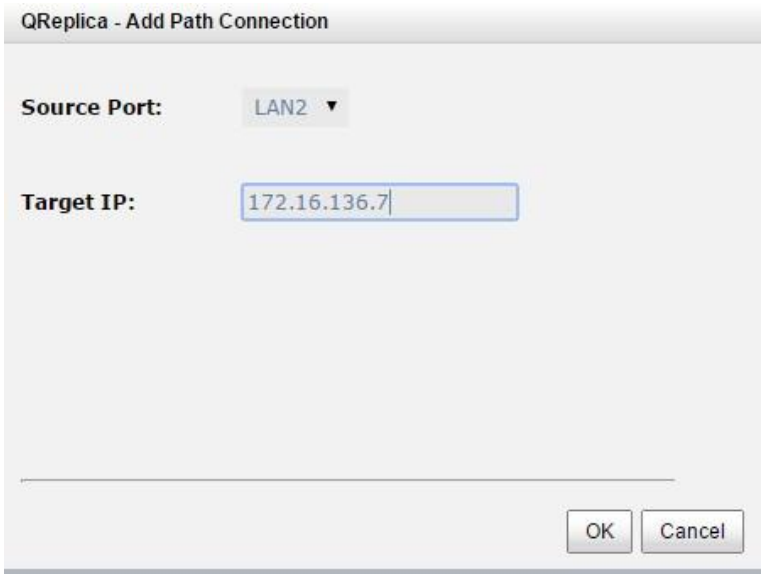
Add Connection in One Path to Increase the Performance of Replication Job

This is a new added feature in the QReplica 2.0, and this feature is just like the MC/S feature when using the iSCSI initiator on Windows series OS. If there is one or more iSCSI port available on the same controller of source SAN storage, and it may ping to the other iSCSI IP address of controller on the target SAN storage, you may consider to add more connections for increasing the replicating speed.

1. Click ▼ -> **Add Connection** on the exsiting path.



2. Choose another available port on the controller1, and enter the IP address of other available iSCSI port on target SAN storage



3. There will be an additional connection added under this path

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In theory, with two connections under one path for one replication job, the replicating speed can reach two times comparing to the condition of one connection. But just to remind that if the outgoing transmitting speed of your location is limited, the replicating speed might not be increased at the moment.

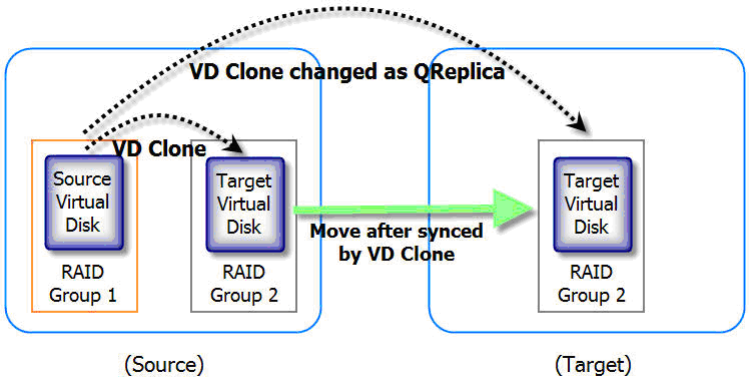
Clone Transfers to QReplica

It is always being a problem that to do full copy over LAN or WAN when the replication task is executed at the first time. It may take days or weeks to replicate data from source to target site with limited network bandwidth. We provide two methods to help user shorten the time of executing full copy.

1. One is to skip full copy on a new, clean virtual disk. The term "clean" means that the virtual disk has never been written data since created. For a new created virtual disk which has not been accessed, the system will recognize it and skip full copy automatically when the replication task is created on this virtual disk at the first time.

TIP:
Any I/O access to the new created virtual disk will make it "not clean", even though executing "Erase" function when a virtual disk is created. The full co will take place in such a case

2. The other way is to use virtual disk clone function, which is a local data copy function between virtual disks to execute full copy at the first time. Then move the physical drives of the target virtual disk to the target system and then turn the cloning job into replication task with differential copy afterward.



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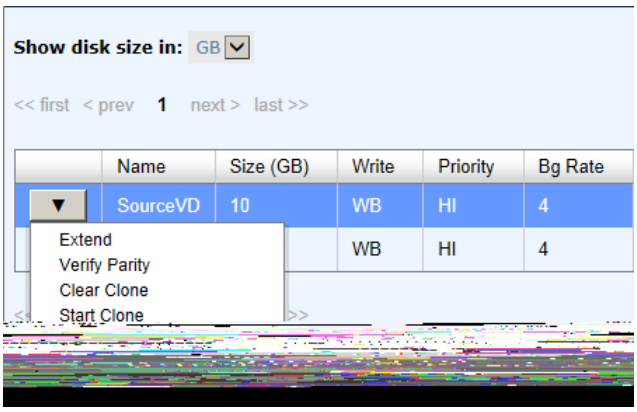
To do that virtual disk clone transfers to QReplica, please follow the procedures.

1. Create a clone job on an existing virtual disk with data stored already.
2. It is better that there is no host connected to the source virtual disk. Then set **Clone**, **Start Clone** to synchronize the data between source and target virtual disks.
3. After the data is synchronized, change the cloning job to a QReplica task. Select the source virtual disk, and then click ▼ **-> Change QReplica Options**.



4. The **Clone** column of the source virtual disk will be changed from the name of target virtual disk into **QRep**.

CAUTION:
Changing a cloning job to a replication task is only available when the cloning job has been finished. This change is irreversible.

5. Deactivate the RAID group which the target virtual disk resides in and move all disks of the RAID group to the target system. Then activate the RAID group in the target system. Remember to set snapshot space for the target virtual disk. And then attach the target virtual disk to a LUN ID.
6. In **QReplicas** tab of the source side, click **Rebuild** button to rebuild the replication task which is changed from a cloning job formerly.
7. Rebuild the clone relationship, select a source virtual disk.

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Conclusion

The QReplica is a block-level copy which can provide more efficient way in differential copy than file-level copy. Because the changes on a volume are calculated by block, it copies the modified blocks only but not whole file.

It is very important to plan the snapshot space usage. Snapshot can be used for regular snapshot, s^^ Z Œ Á Œ ‰ Œ}À] ŒU À]Œšµ o]•l o}v Y š X Z • ŒÀ] Users have to be careful to prevent running out of snapshot space, otherwise it will cause any service failed. So user should arrange the proper snapshot space. The most conservative way is reserve two or three times larger than virtual disk space for snapshot.

Applies To

- AegisSAN LX FW 2.30
- AegisSAN Q500: FW 1.10

Obsolete

- Qsan White Paper QWP20100505-P300H-How_to_use_the_QReplica.v1.0.pdf

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