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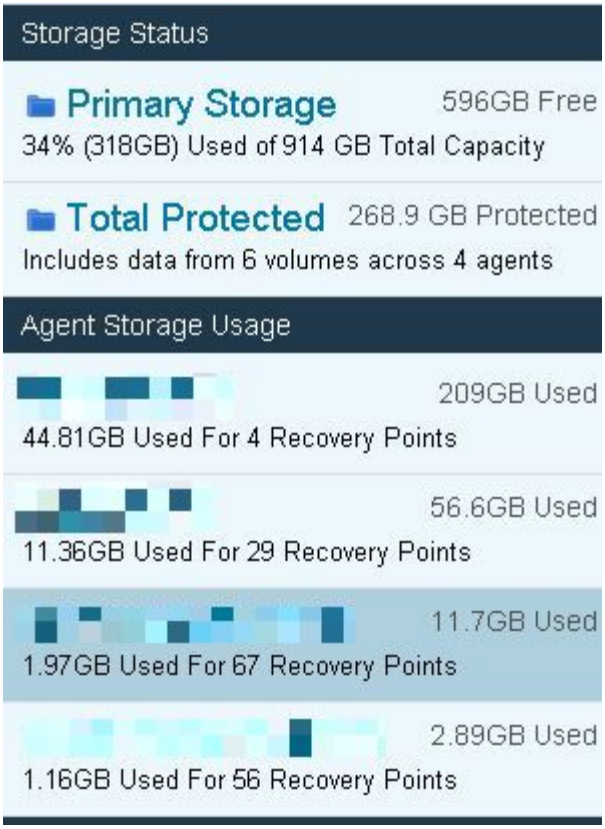
PROPERLY SIZING A QBR-S DEVICE

WHAT HAPPENS IF I DON'T HAVE A LARGE ENOUGH DEVICE?

The consequences of not having a large enough device are immediate and can greatly affect your experience with your QBR-S device.

- Devices fill quickly after deployment, not allowing for backups to be performed on a regular basis.
- Not enough space, even after clearing off of snapshots.
- Inability to maintain local and off-site backup chains.

While QBR Technical Support Engineers may be able to provide a temporary remedy, this situation will quickly come back and will remain persistent until a larger device is deployed or agents are removed from the device.



ASSESSING YOUR DEVICE'S SIZE

The QBR Remote Web interface provides a quick glimpse into the storage allocations of your device. The screenshot below can be found under the **Agents** tab of the QBR-S device. For this example, the devices is protecting four systems/Agents.

Primary Storage represents the total space consumed on the QBR-S device. The used space is compared against the total available space for the calculated percentage.

- **Total Protected** is the current size of all partitions that are currently selected for backup to the device.
- Each agent is further broken down to their space requirements. The number to the right of the agent name is the total space used per agent (Base plus recovery point snapshots)
- The amount of space occupied by the associated recovery points is listed below the agent name.

QUESTIONS TO BE CONSIDERED WHEN SIZING A DEVICE:

When qualifying clients for a QBR-S device, it is important to not only consider current space requirements but also future space requirements.

- How many agents are projected to be protected by the QBR-S device?
- Are these agents workstations or servers?
- What is each agent's total protected size (Calculate the currently utilized space on the device to determine this statistic.)
- How much block level change can be estimated on a system? (Databases, separate database backups, log files, application and file changes on a daily basis).

Note: Underestimating this number is recommended as block level changes take into account many more factors than just files changing, it also involves disk sectors changing

How often should this particular agent be backed up? (Typical, exchange likely needs an hourly backup, terminal servers a daily backup, backup domain controllers may only require a few backups a week.)

How far back would a client desire to go back for local, expedient restoration of files, folders, or entire operating systems?

If virtualized, how long would I need to run this client off of the QBR device?

Does the client have expansion plans in place to possibly include additional servers or workstations?

What type of files are being backed up? Certain file types are suspect to large change when accessed for utilization or updating. Large databases, media files, or production workspaces can have large sizes and therefore may be suspect to larger images.

While some of these questions may not have immediate answers, they are certainly good points of consideration to have for discussing a properly accommodating BDR solution. Simply put, the necessary size for a device is not just factored by initial size of the data.

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QBR BEST PRACTICES

The base recommendation for a QBR-S appliance is two times the total protected space of the agents that are to be protected, the “2x Multiplier Rule”. The 2x multiplier ensures that the QBR-S will have the storage space needed to:

- Store the first backup which becomes the initial base image and later continuously roll this base image to the front of the chain with each backup.

When the stored backups in the primary storage of a QBR-S or QBR-S Lite device reaches 100% of its capacity the backups will start to fail.

- Provide storage space for backups to be stored according to QBR recommended rentention policy:
    - One backup for each of the 90 days in the previous week
    - One backup from each day for 7 days
    - One backup for each week for 60 days (~8 weeks).)

Devices that fill up before the end of the retention policy for the device is reached result in failed backups.

- Provides ample storage for local virtualization of agents.

When an agent is virtualized on a QBR-S device, the ShadowShap OS continues to backup the virtualized system that is on the network. Since this is a technically a “new” device on the network, the next backup will be new base image. Depending on the size of the agent virtualized and the amount of local data change made during virtualization, your device could be filled very quickly if the 2x Multiplier rule is not being heeded correctly.

- Ensure that space is available for the QBR-S device's cloud synchronization.

If there is not enough available space to create the offsite transfer file the QBR-S could potentially have stalled cloud synchronization.

- Provides a slight safety buffer for cases in which mild unexpected data growth could potentially occur over time.

When a QBR-S device's Primary Storage Space reaches maximum capacity the optional resolution paths may be more difficult.

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"Real World" Sizing Scenario

A small client network has 4 machines that need to be protected

- Exchange Server: 250 GB
- Application Server: 45GB
- Terminal Server: 60 GB
- Workstation: 100 GB

The total protected space here comes out to 455 GB. This is on the border of an S1000 device with a terabyte of storage. For local backups, this should be a suitable purchase. There are considerations to take into account:

How long do they want to maintain local data?

- Do they have enough upstream bandwidth to get the images synced with the cloud on a consistent basis?
- The recommendation is to have a **MINIMUM** of 100Kb/s upstream on a consistent, uninterrupted basis per terabyte of local storage. More is always advisable.

What happens if Exchange goes down?

- If the Exchange server goes down and needs to be brought up locally on the QBR device via an instant virtualization, once that machine has been established on the network, the next backup will be a base image as the hardware platform has changed.
- Factor in the next Exchange backup being 250GB. That will cause your device to quickly fill up with an additional base image being present, not counting incremental changes subsequently
- This may not be as pressing of a factor for smaller agents as there is less to backup should the machine need to be virtualized.

What kind of performance are they expecting to get out of these machines?

- Considerations need to be made for the resources of the given machines
- Depending on the resources of the protected machines, should they need to be virtualized, what kinds of processing power and RAM will be required for the machines to operate?
- What is the daily activity level on each of the machines? How many people are accessing the machines on a regular basis?
- Could the client survive with a virtual machine in an underpowered state that is being used in production.

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QBR Hardware Resource Limitations

After device's storage has been During virtualization QBR-S Devices are only able to provide the amount of resources that are available on the local device.

Devices don't just need to be sized properly for storage. When choosing a proper device size, you need to make sure that the specifications of the QBR-S device are in line with the machines that are to be backed up to it. Failure to do this can severely affect local virtualizations, as the virtualized machine will be seeking resources that are not physically available. This can lead to virtual machines running extremely slow and even high-resource programs crashing.

For example,

- Client has a single server environment (Small Business Server) and the server runs the daily operations of the entire organization.
- This server has 4 quad cores and 24 GB of RAM and the space that the server occupies is using an average of 225GB.
- If sizing the device on storage alone, the first reaction would be to purchase an S500 device to accommodate the space of the server. An S500 fits within the 2x multiplier perfectly, and even provides ample space for data growth.
- However, should the server go down and clients need to run off of the server, the resources provided on the machine may not be able to power the machine in a sufficient state in order to allow for operations to continue.
- An S500 has 16GB of RAM and 4 CPUs total. The best possible scenario for the server to run would be 12GB of RAM and taxing all 4 cores.
- Since other device operations may need to continue (backups and other base device processes) there needs to be some resources still given to the device.

In order to ensures all of the QBR-S devices features function properly, the client will want to consider a larger device that has more resources in order to allow for more resources to be considered for virtualization.

When is it time to upgrade?

If you are experiencing failed local backups and are constantly sacrificing local backup retention in order to keep your system protected, it may be time to upgrade your device to the next size up.
As a rule of thumb, if your device is utilizing 85% of more of its local storage by backups, OR, if you do not have enough space to virtualize the volume of your largest agent of the remaining space, it may be time to discuss upgrading options.