Monitor usage and increase capacity

ASA r2

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Monitor cluster and storage unit performance on ASA r2 storage systems

Use ONTAP System Manager to monitor the overall performance of your cluster and the performance of specific storage units to determine how latency, IOPS and throughput are impacting your critical business applications. Performance can be monitored over various spans of time ranging from one hour to one year.

For example, suppose a critical application is experiencing high latency and low throughput. When you view cluster performance for the last five business days, you notice a decrease in performance at the same time each day. You use this information to determine that the critical application is competing for cluster resources when a non-critical process begins running in the background. You are then able to modify your QoS policy to limit the impact of the non-critical workload on system resources and to ensure that your critical workload meets minimum throughput targets.

Monitor cluster performance

Use cluster performance metrics to determine whether you need to shift workloads to minimize latency and maximize IOPS and throughput for your critical applications.

Steps

1. In System Manager, select **Dashboard**.
2. Under **Performance**, view the latency, IOPS, and throughput for the cluster by hour, day, week, month, or year.
3. Select  to download the performance data.

What's next?

Use your cluster performance metrics to analyze if you need to modify your QoS policies or make other adjustments to your application workloads to maximize your overall cluster performance.

Monitor storage unit performance

Use storage unit performance metrics to determine the impact of specific applications on latency, IOPS and throughput.

Steps

1. In System Manager, select **Storage**.
2. Select the storage unit you want to monitor; then select **Overview**.
3. Under **Performance**, view the latency, IOPS, and throughput for the storage unit by hour, day, week, month, or year.
4. Select  to download the performance data.

What's next?

Use your storage unit performance metrics to analyze if you need to modify the QoS policies assigned to your

storage units to decrease latency and maximize IOPS and throughput.

Monitor cluster and storage unit utilization on ASA r2 storage systems

Use ONTAP System Manager to monitor your storage utilization to ensure you have the storage capacity you need to serve current and future workloads.

Monitor cluster utilization

Regularly monitor the amount of storage consumed by your cluster to ensure that, if needed, you are prepared to expand the cluster capacity before running out of space.

Steps

1. In System Manager, select **Dashboard**.
2. Under **Capacity**, view the amount of physical used space and the amount of available space on your cluster.

   The data reduction ratio represents the amount of space saved through storage efficiency.

What's next?

If your cluster is running low on space or if it doesn't have the capacity to meet a future demand, you should plan to add new drives to your ASA r2 system to increase your storage capacity.

Monitor storage availability zone utilization

Each HA pair in an ASA r2 system uses a common pool of storage called a *storage availability zone*. The storage availability zone has access to all available disks in the storage system and is visible to both nodes in the HA pair.

If you have 4 or more nodes in your cluster, you can view the amount of space used by the storage availability zone for each HA pair. This metric is not available for 2-node clusters.

Steps

1. In System Manager, select **Cluster**; then select **Overview**.

   A summary of the storage availability zone utilization is displayed for each HA pair in the cluster.

2. If you want more detailed metrics, select a specific storage availability.

   Under **Overview**, the capacity of the storage availability zone, the amount of used space, and the data reduction ratio is displayed.

   Under **Storage units** a list of all the storage units in the storage availability zone is displayed.

What's next?

If your storage availability zone is running low on space, you should plan to move storage units to another storage availability zone to balance the storage utilization across the cluster.

Monitor storage unit utilization

Monitor the amount of storage consumed by a storage unit so that you can proactively increase the size of the storage unit based on your business needs.

Steps

1. In System Manager, select **Storage**.
2. Select the storage unit you want to monitor; then select **Overview**.
3. Under **Storage**, view the following:
   - Size of your storage unit
   - Amount of used space
   - Data reduction ratio

     The data reduction ratio represents the amount of space saved through storage efficiency
   - Snapshot used

     Snapshot used represents the amount of storage used by snapshots.

What's next?

If your storage unit is nearing capacity, you should modify the storage unit to increase its size.

Increase storage capacity on ASA r2 storage systems

Add drives to a node or shelf to increase the storage capacity of your ASA r2 system.

Use NetApp Hardware Universe to prepare for installation of a new drive

Before you install a new drive to a node or shelf, use the NetApp Hardware Universe to confirm that the drive you want to add is supported by your ASA r2 system and to identify the correct slot for the new drive. The correct slots for adding drives vary depending on the system model and ONTAP version. In some cases, you need to add drives to specific slots in sequence.

Steps

1. Go the NetApp Hardware Universe.
2. Under **Products**, select your hardware configurations.
3. Select your ASA r2 system.
4. Select your ONTAP version; then select **Show Results**.
5. Beneath the graphic, select **Click here to see alternative views**; then choose the view that matches your configuration.
6. Use the view of your configuration to confirm that your new drive is supported and the correct slot for installation.

Result

You have confirmed that your new drive is supported and you know the appropriate slot for installation.

Install a new drive on the ASA r2

The minimum number of drives you should add in a single procedure is six. Adding a single drive might reduce performance.

About this task

You should repeat the steps in this procedure for each drive.

Steps

1. Properly ground yourself.
2. Gently remove the bezel from the front of the system.
3. Insert the new drive into the correct slot.
   a. With the cam handle in the open position, use both hands to insert the new drive.
   b. Push until the drive stops.
   c. Close the cam handle so that the drive is fully seated into the mid plane and the handle clicks into place.

      Be sure to close the cam handle slowly so that it aligns correctly with the face of the drive.
4. Verify that the drive's activity LED (green) is illuminated.
   - IF the LED is solid, the drive has power.
   - If the LED is blinking, the drive has power and I/O is in progress. The LED will also blink if the drive firmware is being updated.

     Drive firmware is automatically updated (nondisruptively) on new drives that do not have current firmware versions.
5. If your node is configured for drive auto-assignment, you can wait for ONTAP to automatically assign the new drives to a node. If your node isn't configured for drive auto-assignment or if preferred, you can assign the drives manually.

   The new drives are not recognized until they are assigned to a node.

What's next?

After the new drives have been recognized, verify that they have been added and their ownership is specified correctly.

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