StorageGRID best practices for FabricPool

StorageGRID 11.7

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Best practices for high availability (HA) groups

Before attaching StorageGRID as a FabricPool cloud tier, learn about StorageGRID high availability (HA) groups and review the best practices for using HA groups with FabricPool.

What is an HA group?

A high availability (HA) group is a collection of interfaces from multiple StorageGRID Gateway Nodes, Admin Nodes, or both. An HA group helps to keep client data connections available. If the active interface in the HA group fails, a backup interface can manage the workload with little impact on FabricPool operations.

Each HA group provides highly available access to the shared services on the associated nodes. For example, an HA group that consists of interfaces only on Gateway Nodes or on both Admin Nodes and Gateway Nodes provides highly available access to the shared Load Balancer service.

To learn more about high availability groups, see Manage high availability (HA) groups.

Using HA groups

The best practices for creating a StorageGRID HA group for FabricPool depend on the workload.

- If you plan to use FabricPool with primary workload data, you must create an HA group that includes at least two load-balancing nodes to prevent data retrieval interruption.
- If you plan to use the FabricPool snapshot-only volume tiering policy or non-primary local performance tiers (for example, disaster recovery locations or NetApp SnapMirror® destinations), you can configure an HA group with only one node.

These instructions describe setting up an HA group for Active-Backup HA (one node is active and one node is backup). However, you might prefer to use DNS Round Robin or Active-Active HA. To learn the benefits of these other HA configurations, see Configuration options for HA groups.

Best practices for load balancing for FabricPool

Before attaching StorageGRID as a FabricPool cloud tier, review the best practices for using load balancers with FabricPool.

To learn general information about the StorageGRID load balancer and the load balancer certificate, see Considerations for load balancing.

Best practices for tenant access to the load balancer endpoint used for FabricPool

You can control which tenants can use a specific load balancer endpoint to access their buckets. You can allow all tenants, allow some tenants, or block some tenants. When creating a load balance endpoint for FabricPool use, select **Allow all tenants**. ONTAP encrypts the data that is placed in StorageGRID buckets, so little additional security would be provided by this extra security layer.

Best practices for the security certificate

When you create a StorageGRID load balancer endpoint for FabricPool use, you provide the security certificate that will allow ONTAP to authenticate with StorageGRID.

In most cases, the connection between ONTAP and StorageGRID should use Transport Layer Security (TLS) encryption. Using FabricPool without TLS encryption is supported but not recommended. When you select the network protocol for the StorageGRID load balancer endpoint, select **HTTPS**. Then provide the security certificate that will allow ONTAP to authenticate with StorageGRID.

To learn more about the server certificate for a load balancing endpoint:

- Manage security certificates
- Considerations for load balancing
- Hardening guidelines for server certificates

Add certificate to ONTAP

When you add StorageGRID as a FabricPool cloud tier, you must install the same certificate on the ONTAP cluster, including the root and any subordinate certificate authority (CA) certificates.

Manage certificate expiration

> If the certificate used to secure the connection between ONTAP and StorageGRID expires, FabricPool will temporarily stop working and ONTAP will temporarily lose access to data tiered to StorageGRID.

To avoid certificate expiration issues, follow these best practices:

- Carefully monitor any alerts that warn of approaching certificate expiration dates, such as the **Expiration of load balancer endpoint certificate** and **Expiration of global server certificate for S3 and Swift API** alerts.
- Always keep the StorageGRID and ONTAP versions of the certificate in sync. If you replace or renew the certificate used for a load balancer endpoint, you must replace or renew the equivalent certificate used by ONTAP for the cloud tier.
- Use a publicly signed CA certificate. If you use a certificate signed by a CA, you can use the Grid Management API to automate certificate rotation. This allows you to replace soon-to-expire certificates nondisruptively.
- If you have generated a self-signed StorageGRID certificate and that certificate is about to expire, you must manually replace the certificate in both StorageGRID and in ONTAP before the existing certificate expires. If a self-signed certificate has already expired, turn off certificate validation in ONTAP to prevent access loss.

  See NetApp Knowledge Base: How to configure a new StorageGRID self-signed server certificate on an existing ONTAP FabricPool deployment for instructions.

Best practices for using ILM with FabricPool data

If you are using FabricPool to tier data to StorageGRID, you must understand the requirements for using StorageGRID information lifecycle management (ILM) with

FabricPool data.

> FabricPool has no knowledge of StorageGRID ILM rules or policies. Data loss can occur if the StorageGRID ILM policy is misconfigured. For detailed information, see Create an ILM rule: Overview and Create an ILM policy: Overview.

Guidelines for using ILM with FabricPool

When you use the FabricPool setup wizard, the wizard automatically creates a new ILM rule for each S3 bucket you create, adds that rule to a proposed policy, and prompts you to activate the new policy as part of completing the wizard. The automatically created rule follows the recommended best practices: it uses 2+1 erasure coding at a single site.

If you are configuring StorageGRID manually instead of using the FabricPool setup wizard, review these guidelines to ensure that your ILM rules and ILM policy are suitable for FabricPool data and your business requirements. You might need to create new rules and update your active ILM policy to meet these guidelines.

- You can use any combination of replication and erasure-coding rules to protect cloud tier data.

  The recommended best practice is to use 2+1 erasure coding within a site for cost-efficient data protection. Erasure coding uses more CPU, but offers significantly less storage capacity, than replication. The 4+1 and 6+1 schemes use less capacity than the 2+1 scheme. However, the 4+1 and 6+1 schemes are less flexible if you need to add Storage Nodes during grid expansion. For details, see Add storage capacity for erasure-coded objects.

- Each rule applied to FabricPool data must either use erasure coding or it must create at least two replicated copies.

  > An ILM rule that creates only one replicated copy for any time period puts data at risk of permanent loss. If only one replicated copy of an object exists, that object is lost if a Storage Node fails or has a significant error. You also temporarily lose access to the object during maintenance procedures such as upgrades.

- If you need to remove FabricPool data from StorageGRID, use ONTAP to retrieve all data for the FabricPool volume and promote it to the performance tier.

  > To avoid data loss, do not use an ILM rule that will expire or delete FabricPool cloud tier data. Set the retention period in each ILM rule to **forever** to ensure that FabricPool objects aren't deleted by StorageGRID ILM.

- Don't create rules that will move FabricPool cloud tier data out of the bucket to another location. You can't use a Cloud Storage Pool to move FabricPool data to another object store. Similarly, you can't archive FabricPool data to tape using an Archive Node.

  > Using Cloud Storage Pools with FabricPool is not supported because of the added latency to retrieve an object from the Cloud Storage Pool target.

- Starting with ONTAP 9.8, you can optionally create object tags to help classify and sort tiered data for easier management. For example, you can set tags only on FabricPool volumes attached to StorageGRID. Then, when you create ILM rules in StorageGRID, you can use the Object Tag advanced filter to select and place this data.

Other best practices for StorageGRID and FabricPool

When configuring a StorageGRID system for use with FabricPool, you might need to change other StorageGRID options. Before changing a global setting, consider how the change will affect other S3 applications.

Audit message and log destinations

FabricPool workloads often have a high rate of read operations, which can generate a high volume of audit messages.

- If you don't require a record of client read operations for FabricPool or any other S3 application, optionally go to **CONFIGURATION** > **Monitoring** > **Audit and syslog server**. Change the **Client Reads** setting to **Error** to decrease the number of audit messages recorded in the audit log. See Configure audit messages and log destinations for details.
- If you have a large grid, use multiple types of S3 applications, or want to retain all audit data, configure an external syslog server and save audit information remotely. Using an external server minimizes the performance impact of audit message logging without reducing the completeness of of audit data. See Considerations for external syslog server for details.

Object encryption

When configuring StorageGRID, you can optionally enable the global option for stored object encryption if data encryption is required for other StorageGRID clients. The data that is tiered from FabricPool to StorageGRID is already encrypted, so enabling the StorageGRID setting is not required. Client-side encryption keys are owned by ONTAP.

Object compression

When configuring StorageGRID, don't enable the global option to compress stored objects. The data that is tiered from FabricPool to StorageGRID is already compressed. Using the StorageGRID option will not further reduce an object's size.

Bucket consistency level

For FabricPool buckets, the recommended bucket consistency level is **Read-after-new-write**, which is the default setting for a new bucket. Don't edit FabricPool buckets to use **Available** or any other consistency level.

FabricPool tiering

If a StorageGRID node uses storage assigned from a NetApp ONTAP system, confirm that the volume does not have a FabricPool tiering policy enabled. For example, if a StorageGRID node is running on a VMware host, ensure the volume backing the datastore for the StorageGRID node does not have a FabricPool tiering policy enabled. Disabling FabricPool tiering for volumes used with StorageGRID nodes simplifies troubleshooting and storage operations.

Never use FabricPool to tier any data related to StorageGRID back to StorageGRID itself. Tiering StorageGRID data back to StorageGRID increases troubleshooting and operational complexity.

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