Network port reference

StorageGRID software

NetApp
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Network port reference

Internal grid node communications

The StorageGRID internal firewall allows incoming connections to specific ports on the Grid Network. Connections are also accepted on ports defined by load balancer endpoints.

> NetApp recommends that you enable Internet Control Message Protocol (ICMP) traffic between grid nodes. Allowing ICMP traffic can improve failover performance when a grid node can't be reached.

In addition to ICMP and the ports listed in the table, StorageGRID uses the Virtual Router Redundancy Protocol (VRRP). VRRP is an internet protocol that uses IP protocol number 112. StorageGRID uses VRRP in unicast mode only. VRRP is required only if high availability groups are configured.

Guidelines for Linux-based nodes

If enterprise networking policies restrict access to any of these ports, you can remap ports at deployment time using a deployment configuration parameter. For more information about port remapping and deployment configuration parameters, see:

- Install StorageGRID on Red Hat Enterprise Linux
- Install StorageGRID on Ubuntu or Debian

Guidelines for VMware-based nodes

Configure the following ports only if you need to define firewall restrictions that are external to VMware networking.

If enterprise networking policies restrict access to any of these ports, you can remap ports when you deploy nodes using the VMware vSphere Web Client, or by using a configuration file setting when automating grid node deployment. For more information about port remapping and deployment configuration parameters, see Install StorageGRID on VMware.

Guidelines for appliance nodes

If enterprise networking policies restrict access to any of these ports, you can remap ports using the StorageGRID Appliance Installer. See Optional: Remap network ports for appliance.

StorageGRID internal ports

Port	TCP or UDP	From	To	Details
22	TCP	Primary Admin Node	All nodes	For maintenance procedures, the primary Admin Node must be able to communicate with all other nodes using SSH on port 22. Allowing SSH traffic from other nodes is optional.

Port	TCP or UDP	From	To	Details
80	TCP	Appliances	Primary Admin Node	Used by StorageGRID appliances to communicate with the primary Admin Node to start the installation.
123	UDP	All nodes	All nodes	Network time protocol service. Every node synchronizes its time with every other node using NTP.
443	TCP	All nodes	Primary Admin Node	Used for communicating status to the primary Admin Node during installation and other maintenance procedures.
1055	TCP	All nodes	Primary Admin Node	Internal traffic for installation, expansion, recovery, and other maintenance procedures.
1139	TCP	Storage Nodes	Storage Nodes	Internal traffic between Storage Nodes.
1501	TCP	All nodes	Storage Nodes with ADC	Reporting, auditing, and configuration internal traffic.
1502	TCP	All nodes	Storage Nodes	S3- and Swift-related internal traffic.
1504	TCP	All nodes	Admin Nodes	NMS service reporting and configuration internal traffic.
1505	TCP	All nodes	Admin Nodes	AMS service internal traffic.
1506	TCP	All nodes	All nodes	Server status internal traffic.
1507	TCP	All nodes	Gateway Nodes	Load balancer internal traffic.
1508	TCP	All nodes	Primary Admin Node	Configuration management internal traffic.
1511	TCP	All nodes	Storage Nodes	Metadata internal traffic.

Port	TCP or UDP	From	To	Details
5353	UDP	All nodes	All nodes	Provides the multicast DNS (mDNS) service used for full-grid IP changes and for primary Admin Node discovery during installation, expansion, and recovery. **Note**: Configuring this port is optional.
7001	TCP	Storage Nodes	Storage Nodes	Cassandra TLS inter-node cluster communication.
7443	TCP	All nodes	Primary Admin Node	Internal traffic for installation, expansion, recovery, other maintenance procedures, and error reporting.
8011	TCP	All nodes	Primary Admin Node	Internal traffic for installation, expansion, recovery, and other maintenance procedures.
8443	TCP	Primary Admin Node	Appliance nodes	Internal traffic related to the maintenance mode procedure.
9042	TCP	Storage Nodes	Storage Nodes	Cassandra client port.
9999	TCP	All nodes	All nodes	Internal traffic for multiple services. Includes maintenance procedures, metrics, and networking updates.
10226	TCP	Storage Nodes	Primary Admin Node	Used by StorageGRID appliances for forwarding AutoSupport packages from E-Series SANtricity System Manager to the primary Admin Node.
10342	TCP	All nodes	Primary Admin Node	Internal traffic for installation, expansion, recovery, and other maintenance procedures.
18000	TCP	Admin/Storage Nodes	Storage Nodes with ADC	Account service internal traffic.
18001	TCP	Admin/Storage Nodes	Storage Nodes with ADC	Identity Federation internal traffic.
18002	TCP	Admin/Storage Nodes	Storage Nodes	Internal API traffic related to object protocols.
18003	TCP	Admin/Storage Nodes	Storage Nodes with ADC	Platform services internal traffic.

Port	TCP or UDP	From	To	Details
18017	TCP	Admin/Storage Nodes	Storage Nodes	Data Mover service internal traffic for Cloud Storage Pools.
18019	TCP	All nodes	All nodes	Chunk service internal traffic for erasure coding and replication
18082	TCP	Admin/Storage Nodes	Storage Nodes	S3-related internal traffic.
18083	TCP	All nodes	Storage Nodes	Swift-related internal traffic.
18086	TCP	All nodes	Storage Nodes	Internal traffic related to LDR service.
18200	TCP	Admin/Storage Nodes	Storage Nodes	Additional statistics about client requests.
19000	TCP	Admin/Storage Nodes	Storage Nodes with ADC	Keystone service internal traffic.

Related information

External communications

External communications

Clients need to communicate with grid nodes to ingest and retrieve content. The ports used depends on the object storage protocols chosen. These ports need to be accessible to the client.

Restricted access to ports

If enterprise networking policies restrict access to any of the ports, you can do one of the following:

- Use load balancer endpoints to allow access on user-defined ports.
- Remap ports when deploying nodes. However, you should not remap load balancer endpoints. See the information about port remapping for your StorageGRID node:
  - Port remap keys for StorageGRID on Red Hat Enterprise Linux
  - Port remap keys for StorageGRID on Ubuntu or Debian
  - Remap ports for StorageGRID on VMware
  - Optional: Remap network ports for appliance

Ports used for external communications

The following table shows the ports used for traffic into the nodes.

This list does not include ports that might be configured as load balancer endpoints.

Port	TCP or UDP	Protocol	From	To	Details
22	TCP	SSH	Service laptop	All nodes	SSH or console access is required for procedures with console steps. Optionally, you can use port 2022 instead of 22.
25	TCP	SMTP	Admin Nodes	Email server	Used for alerts and email-based AutoSupport. You can override the default port setting of 25 using the Email Servers page.
53	TCP/ UDP	DNS	All nodes	DNS servers	Used for DNS.
67	UDP	DHCP	All nodes	DHCP service	Optionally used to support DHCP-based network configuration. The dhclient service does not run for statically-configured grids.
68	UDP	DHCP	DHCP service	All nodes	Optionally used to support DHCP-based network configuration. The dhclient service does not run for grids that use static IP addresses.
80	TCP	HTTP	Browser	Admin Nodes	Port 80 redirects to port 443 for the Admin Node user interface.
80	TCP	HTTP	Browser	Appliances	Port 80 redirects to port 8443 for the StorageGRID Appliance Installer.
80	TCP	HTTP	Storage Nodes with ADC	AWS	Used for platform services messages sent to AWS or other external services that use HTTP. Tenants can override the default HTTP port setting of 80 when creating an endpoint.
80	TCP	HTTP	Storage Nodes	AWS	Cloud Storage Pools requests sent to AWS targets that use HTTP. Grid administrators can override the default HTTP port setting of 80 when configuring a Cloud Storage Pool.

Port	TCP or UDP	Protocol	From	To	Details
111	TCP/ UDP	RPCBind	NFS client	Admin Nodes	Used by NFS-based audit export (portmap). **Note:** This port is required only if NFS-based audit export is enabled. **Note:** Support for NFS has been deprecated and will be removed in a future release.
123	UDP	NTP	Primary NTP nodes	External NTP	Network time protocol service. Nodes selected as primary NTP sources also synchronize clock times with the external NTP time sources.
161	TCP/ UDP	SNMP	SNMP client	All nodes	Used for SNMP polling. All nodes provide basic information; Admin Nodes also provide alert data. Defaults to UDP port 161 when configured. **Note:** This port is only required, and is only opened on the node firewall if SNMP is configured. If you plan to use SNMP, you can configure alternate ports. **Note:** For information about using SNMP with StorageGRID, contact your NetApp account representative.
162	TCP/ UDP	SNMP Notifications	All nodes	Notification destinations	Outbound SNMP notifications and traps default to UDP port 162. **Note:** This port is only required if SNMP is enabled and notification destinations are configured. If you plan to use SNMP, you can configure alternate ports. **Note:** For information about using SNMP with StorageGRID, contact your NetApp account representative.
389	TCP/ UDP	LDAP	Storage Nodes with ADC	Active Directory/LDAP	Used for connecting to an Active Directory or LDAP server for Identity Federation.

Port	TCP or UDP	Protocol	From	To	Details
443	TCP	HTTPS	Browser	Admin Nodes	Used by web browsers and management API clients to access the Grid Manager and Tenant Manager. **Note**: If you close Grid Manager ports 443 or 8443, any users currently connected on a blocked port, including you, will lose access to Grid Manager unless their IP address has been added to the Privileged address list. Refer to Configure firewall controls to configure privileged IP addresses.
443	TCP	HTTPS	Admin Nodes	Active Directory	Used by Admin Nodes connecting to Active Directory if single sign-on (SSO) is enabled.
443	TCP	HTTPS	Storage Nodes with ADC	AWS	Used for platform services messages sent to AWS or other external services that use HTTPS. Tenants can override the default HTTP port setting of 443 when creating an endpoint.
443	TCP	HTTPS	Storage Nodes	AWS	Cloud Storage Pools requests sent to AWS targets that use HTTPS. Grid administrators can override the default HTTPS port setting of 443 when configuring a Cloud Storage Pool.
903	TCP	NFS	NFS client	Admin Nodes	Used by NFS-based audit export (`rpc.mountd`). **Note:** This port is required only if NFS-based audit export is enabled. **Note:** Support for NFS has been deprecated and will be removed in a future release.
2022	TCP	SSH	Service laptop	All nodes	SSH or console access is required for procedures with console steps. Optionally, you can use port 22 instead of 2022.
2049	TCP	NFS	NFS client	Admin Nodes	Used by NFS-based audit export (nfs). **Note:** This port is required only if NFS-based audit export is enabled. **Note:** Support for NFS has been deprecated and will be removed in a future release.

Port	TCP or UDP	Protocol	From	To	Details
5353	UDP	mDNS	All nodes	All nodes	Provides the multicast DNS (mDNS) service used for full-grid IP changes and for primary Admin Node discovery during installation, expansion, and recovery. **Note**: Configuring this port is optional.
5696	TCP	KMIP	Appliance	KMS	Key Management Interoperability Protocol (KMIP) external traffic from appliances configured for node encryption to the Key Management Server (KMS), unless a different port is specified on the KMS configuration page of the StorageGRID Appliance Installer.
8022	TCP	SSH	Service laptop	All nodes	SSH on port 8022 grants access to the base operating system on appliance and virtual node platforms for support and troubleshooting. This port is not used for Linux-based (bare metal) nodes and is not required to be accessible between grid nodes or during normal operations.
8443	TCP	HTTPS	Browser	Admin Nodes	Optional. Used by web browsers and management API clients to access the Grid Manager. Can be used to separate Grid Manager and Tenant Manager communications. **Note**: If you close Grid Manager ports 443 or 8443, any users currently connected on a blocked port, including you, will lose access to Grid Manager unless their IP address has been added to the Privileged address list. Refer to Configure firewall controls to configure privileged IP addresses.
8443	TCP	HTTPS	Browser	Appliances	Used by web browsers and management API clients to access the StorageGRID Appliance Installer. **Note**: Port 443 redirects to port 8443 for the StorageGRID Appliance Installer.
9022	TCP	SSH	Service laptop	Appliances	Grants access to StorageGRID appliances in pre-configuration mode for support and troubleshooting. This port is not required to be accessible between grid nodes or during normal operations.

Port	TCP or UDP	Protocol	From	To	Details
9091	TCP	HTTPS	External Grafana service	Admin Nodes	Used by external Grafana services for secure access to the StorageGRID Prometheus service. **Note:** This port is required only if certificate-based Prometheus access is enabled.
9092	TCP	Kafka	Storage Nodes with ADC	Kafka cluster	Used for platform services messages sent to a Kafka cluster. Tenants can override the default Kafka port setting of 9092 when creating an endpoint.
9443	TCP	HTTPS	Browser	Admin Nodes	Optional. Used by web browsers and management API clients to access the Tenant Manager. Can be used to separate Grid Manager and Tenant Manager communications.
18082	TCP	HTTPS	S3 clients	Storage Nodes	S3 client traffic directly to Storage Nodes (HTTPS).
18083	TCP	HTTPS	Swift clients	Storage Nodes	Swift client traffic directly to Storage Nodes (HTTPS).
18084	TCP	HTTP	S3 clients	Storage Nodes	S3 client traffic directly to Storage Nodes (HTTP).
18085	TCP	HTTP	Swift clients	Storage Nodes	Swift client traffic directly to Storage Nodes (HTTP).
23000-23999	TCP	HTTPS	All nodes on the source grid for cross-grid replication	Admin Nodes and Gateway Nodes on the destination grid for cross-grid replication	This range of ports is reserved for grid federation connections. Both grids in a given connection use the same port.

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