



# Deployment-specific networking considerations

StorageGRID 11.8

NetApp  
March 19, 2024

# Table of Contents

- Deployment-specific networking considerations ..... 1
  - Linux deployments ..... 1
  - Networking and ports for platform services and Cloud Storage Pools ..... 2
  - Appliance nodes ..... 3

# Deployment-specific networking considerations

## Linux deployments

For efficiency, reliability, and security, the StorageGRID system runs on Linux as a collection of container engines. Container engine-related network configuration is not required in a StorageGRID system.

Use a non-bond device, such as a VLAN or virtual Ethernet (veth) pair, for the container network interface. Specify this device as the network interface in the node configuration file.



Don't use bond or bridge devices directly as the container network interface. Doing so could prevent node start-up because of a kernel issue with the use of macvlan with bond and bridge devices in the container namespace.

See the installation instructions for [Red Hat Enterprise Linux](#) or [Ubuntu or Debian](#) deployments.

## Host network configuration for container engine deployments

Before starting your StorageGRID deployment on a container engine platform, determine which networks (Grid, Admin, Client) each node will use. You must ensure that each node's network interface is configured on the correct virtual or physical host interface, and that each network has sufficient bandwidth.

### Physical hosts

If you are using physical hosts to support grid nodes:

- Make sure all hosts use the same host interface for each node interface. This strategy simplifies host configuration and enables future node migration.
- Obtain an IP address for the physical host itself.



A physical interface on the host can be used by the host itself and one or more nodes running on the host. Any IP addresses assigned to the host or nodes using this interface must be unique. The host and the node can't share IP addresses.

- Open the required ports to the host.
- If you intend to use VLAN interfaces in StorageGRID, the host must have one or more trunk interfaces that provide access to the desired VLANs. These interfaces can be passed into the node container as eth0, eth2, or as additional interfaces. To add trunk or access interfaces, see the following:
  - **RHEL (before installing the node):** [Create node configuration files](#)
  - **Ubuntu or Debian (before installing the node):** [Create node configuration files](#)
  - **RHEL, Ubuntu, or Debian (after installing the node):** [Linux: Add trunk or access interfaces to a node](#)

### Minimum bandwidth recommendations

The following table provides the minimum LAN bandwidth recommendations for each type of StorageGRID node and each type of network. You must provision each physical or virtual host with sufficient network bandwidth to meet the aggregate minimum bandwidth requirements for the total number and type of StorageGRID nodes you plan to run on that host.

Type of node	Type of network		
	Grid	Admin	Client
	Minimum LAN bandwidth		
Admin	10 Gbps	1 Gbps	1 Gbps
Gateway	10 Gbps	1 Gbps	10 Gbps
Storage	10 Gbps	1 Gbps	10 Gbps
Archive	10 Gbps	1 Gbps	10 Gbps



This table does not include SAN bandwidth, which is required for access to shared storage. If you are using shared storage accessed over Ethernet (iSCSI or FCoE), you should provision separate physical interfaces on each host to provide sufficient SAN bandwidth. To avoid introducing a bottleneck, SAN bandwidth for a given host should roughly match the aggregate Storage Node network bandwidth for all Storage Nodes running on that host.

Use the table to determine the minimum number of network interfaces to provision on each host, based on the number and type of StorageGRID nodes you plan to run on that host.

For example, to run one Admin Node, one Gateway Node, and one Storage Node on a single host:

- Connect the Grid and Admin Networks on the Admin Node (requires  $10 + 1 = 11$  Gbps)
- Connect the Grid and Client Networks on the Gateway Node (requires  $10 + 10 = 20$  Gbps)
- Connect the Grid Network on the Storage Node (requires 10 Gbps)

In this scenario, you should provide a minimum of  $11 + 20 + 10 = 41$  Gbps of network bandwidth, which could be met by two 40 Gbps interfaces or five 10 Gbps interfaces, potentially aggregated into trunks and then shared by the three or more VLANs carrying the Grid, Admin, and Client subnets local to the physical data center containing the host.

For some recommended ways of configuring physical and network resources on the hosts in your StorageGRID cluster to prepare for your StorageGRID deployment, see the following:

- [Configure the host network \(Red Hat Enterprise Linux\)](#)
- [Configure the host network \(Ubuntu or Debian\)](#)

## Networking and ports for platform services and Cloud Storage Pools

If you plan to use StorageGRID platform services or Cloud Storage Pools, you must configure grid networking and firewalls to ensure that the destination endpoints can be reached.

## Networking for platform services

As described in [Manage platform services for tenants](#) and [Manage platform services](#), platform services include external services that provide search integration, event notification, and CloudMirror replication.

Platform services require access from Storage Nodes that host the StorageGRID ADC service to the external service endpoints. Examples for providing access include:

- On the Storage Nodes with ADC services, configure unique Admin Networks with AESL entries that route to the target endpoints.
- Rely on the default route provided by a Client Network. If you use the default route, you can use the [untrusted Client Network feature](#) to restrict inbound connections.

## Networking for Cloud Storage Pools

Cloud Storage Pools also require access from Storage Nodes to the endpoints provided by the external service used, such as Amazon S3 Glacier or Microsoft Azure Blob storage. For information, see [What is a Cloud Storage Pool](#).

## Ports for platform services and Cloud Storage Pools

By default, platform services and Cloud Storage Pool communications use the following ports:

- **80**: For endpoint URIs that begin with `http`
- **443**: For endpoint URIs that begin with `https`

A different port can be specified when the endpoint is created or edited. See [Network port reference](#).

If you use a non-transparent proxy server, you must also [configure storage proxy settings](#) to allow messages to be sent to external endpoints, such as an endpoint on the internet.

## VLANs and platform services and Cloud Storage Pools

You can't use VLAN networks for platform services or Cloud Storage Pools. The destination endpoints must be reachable over the Grid, Admin, or Client Network.

## Appliance nodes

You can configure the network ports on StorageGRID appliances to use the port bond modes that meet your requirements for throughput, redundancy, and failover.

The 10/25-GbE ports on the StorageGRID appliances can be configured in Fixed or Aggregate bond mode for connections to the Grid Network and Client Network.

The 1-GbE Admin Network ports can be configured in Independent or Active-Backup mode for connections to the Admin Network.

See the information about port bond modes for your appliance:

- [Port bond modes \(SGF6112\)](#)
- [Port bond modes \(SG6000-CN controller\)](#)

- Port bond modes (E5700SG controller)
- Port bond modes (SG100 and SG1000)

## Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

## Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.