Quick Start Guide

EMC ScaleIO

Version 2.0.1.x

Deploying ScaleIO on Linux Servers

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EMC²

Preface

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your EMC technical support professional if a product does not function properly or does not function as described in this document.

Note

This document was accurate at publication time. Go to EMC Online Support (https://support.emc.com) to ensure that you are using the latest version of this document.

Related documentation

The release notes for your version includes the latest information for your product.

The following EMC publication sets provide information about your ScaleIO or ScaleIO Ready Node product:

- ScaleIO software (downloadable as ScaleIO Software <version> Documentation set)
- ScaleIO Ready Node with AMS (downloadable as ScaleIO Ready Node with AMS Documentation set)
- ScaleIO Ready Node no AMS (downloadable as ScaleIO Ready Node no AMS Documentation set)
- VxRack Node 100 Series (downloadable as VxRack Node 100 Series Documentation set)

You can download the release notes, the document sets, and other related documentation from EMC Online Support.

Typographical conventions

EMC uses the following type style conventions in this document:

Bold	Used for names of interface elements, such as names of windows, dialog boxes, buttons, fields, tab names, key names, and menu paths (what the user specifically selects or clicks)
Italic	Used for full titles of publications referenced in text
`Monospace`	Used for: • System code • System output, such as an error message or script • Pathnames, filenames, prompts, and syntax • Commands and options
Monospace italic	Used for variables
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means “or”

{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate nonessential information omitted from the example

Where to get help

EMC support, product, and licensing information can be obtained as follows:

Product information

For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at https://support.emc.com.

Technical support

Go to EMC Online Support and click Service Center. You will see several options for contacting EMC Technical Support. Note that to open a service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to techpubcomments@emc.com.

Before you begin

This document describes prerequisites for deploying ScaleIO.

The procedures in the document apply to ScaleIO deployment in the following scenario:

- all management and data communication are on the same network
- one Protection Domain
- on a fully-converged system

For all other cases and customization options, use the full installation, as described in the *EMC ScaleIO Deployment Guide*. ScaleIO can be deployed in 3-node or 5-node MDM cluster mode. This document supports both modes.

Before Deploying ScaleIO, read this document in its entirety.

Note

ScaleIO installation enables unlimited use of the product, in non-production environments. To obtain a license for production use, and to receive technical support, open a service ticket with EMC Online Support at https://support.emc.com.

Deployment step overview:

1. Prepare the environment.
2. Start the deployment.
3. Monitor the deployment .
4. Run system analysis.
5. Enable storage.

System requirements

This section lists the requirements for system components.

This section is specific to ScaleIO software deployments.

For ScaleIO Ready Node or VxRack Node 100 Series systems, refer to your product's Hardware Configuration and Operating System Installation Guide.

ScaleIO cluster components

List of required ScaleIO servers.

- ScaleIO component servers:
  - 3-node cluster
    - One Master MDM
    - One Slave MDM
    - One TieBreaker
    - Minimum of three SDSs (on the same servers as the above components, or on three different servers)
    - SDCs, up to the maximum allowed (on the same servers as the above components, or on different servers)
  - 5-node cluster
    - One Master MDM
    - Two Slave MDMs
    - Two TieBreakers
    - Minimum of three SDSs (on the same servers as the above components, or on three different servers)
    - SDCs, up to the maximum allowed (on the same servers as the above components, or on different servers)
- ScaleIO Gateway server on a separate server, or together with an MDM or SDS. Do not install the Gateway on an SDC server or on an SDS on which RFcache will be enabled.

Physical server requirements

Table 1 Server physical requirements

Component	Requirement
Processor	One of the following: • Intel or AMD x86 64-bit (recommended) • Intel or AMD x86 32-bit (for Xen only)
Physical memory	ScaleIO component requirements: • 500 MB RAM for the Meta Data Manager (MDM) • 500 MB RAM for each ScaleIO Data Server (SDS)

Table 1 Server physical requirements (continued)

Component	Requirement
	• 50 MB RAM for each ScaleIO Data Client (SDC) DAS Cache memory requirements (ScaleIO Ready Node, non-XenServers only). Add to every SVM/node that will be using DAS Cache: • 1U1N servers—500 MB RAM • 2U1N servers—1 GB RAM
Disk space	• 1 GB for each physical node or Xen hypervisor

Connectivity	One of the following:
	• 1 GbE or 10 GbE (recommended) network
	• IP-over-InfiniBand network
	Dual-port network interface cards (recommended)
	Ensure the following:
	• There is network connectivity between all components.
	• Network bandwidth and latency between all nodes is acceptable, according to application demands.
	• Ethernet switch supports the bandwidth between network nodes.
	• MTU settings are consistent across all servers and switches.
	• The following TCP ports are not used by any other application, and are open in the local firewall of the server:
	  ▪ MDM: 6611 and 9011
	  ▪ TieBreaker: 9011
	  ▪ SDS: 7072. Multiple SDS (not supported on Windows): 7073-7076
	  ▪ Light Installation Agent (LIA): 9099
	  ▪ SDBG ports (used by ScaleIO internal debugging tools to extract live information from the system): MDM 25620, SDS 25640. Multiple SDS (not supported on Windows): 25641-25644 (not 25640).
	• The following UDP port is open in the local firewall of the server:
	  ▪ SNMP traps: 162
	Note
	You can change the default ports. For more information, see “Changing default ports” in the user documentation.

Supported operating systems

The list of operating systems supported by this version of ScaleIO.

For the most updated list, see the EMC Simple Support Matrix (ESSM) at https://elabnavigator.emc.com/eln/elnhome.

Table 2 Supported operating systems - ScaleIO components

Operating system	Requirement
Linux	Supported versions: • CentOS 6.x-7.x, Oracle Linux 6.5/7.x • Red Hat 6.x-7.x • SUSE 11.3, 11.4, 12, 12.1, 12.2 • Ubuntu 14.04, Ubuntu 16.04 **Note** Before deploying on Ubuntu servers, you must prepare the environment, as described in the *EMC ScaleIO Deployment Guide*. Packages required for all components, all Linux flavors: • numactl • libaio Additional packages required for MDM components: • bash-completion (for SCLI completion) • Latest version of Python 2.X When installing the MDM component on Linux CentOS 6 or RHEL 6 hosts (for software-only systems), set the shared memory parameter in the /etc/sysctl.conf file to at least the following value: kernel.shmmax=209715200. To use this value, type the `sysctl -p` command. To use the secure authentication mode, ensure that OpenSSL 64-bit v1.0.1 or later (v1.1, however, is not supported) is installed on all servers in the system. To use the secure authentication mode on SUSE 11.3/11.4 servers, ensure that the OpenSSL on the server is v1.0.1 or later (v1.1, however, is not supported), or install these packages (from the ISO in the Complete VMware SW download container) on the server: • `libopenssl1_0_0-1.0.1g-0.40.1.x86_64.rpm` • `openssl1-1.0.1g-0.40.1.x86_64.rpm` To use LDAP, ensure that OpenLDAP 2.4 is installed on all servers.
Hypervisors	• Red Hat KVM

GUI server requirements

Component	Requirement
Supported operating systems	Windows 7, 2008 R2, 10, 2012 or 2012 R2, 2016 (in v2.0.1.1 and later). Server Core editions are not supported.
Other	• Java 1.8 64-bit or later • Screen resolution: 1366 x 768 minimum

ScaleIO Gateway server requirements

Component	Requirement

Supported operating systems	• Windows 2008 R2, 2012 R2, or 2016, including the Visual C++ redistributable 2010 package, 64-bit. Server Core editions are not supported.
	• Linux:
	  ▪ CentOS 6.x-7.x
	  ▪ Oracle Linux 6.5/7.x
	  ▪ Red Hat 6.x-7.x
	  ▪ SUSE 11.3, 12, 12.1, and 12.2
	  ▪ Ubuntu 14.04, Ubuntu 16.04
	Every server requires 2 cores and a minimum of 3 GB available RAM.

Connectivity	The following TCP ports are not used by any other application, and are open in the local firewall of the server: 80 and 443 (or 8080 and 8443). You can change the default ports. For more information, see “Changing default ports” in the user documentation.
Supported web browsers	• Internet Explorer 10, or later • Firefox, version 42, or later • Chrome, version 45, or later
Java requirements	• 1.8 or later, 64-bit
Other	• For a Windows Gateway, the Windows Management Instrumentation service must be enabled on the IM server and on all Windows ScaleIO nodes. • Do not install the Gateway on a server on which RFcache will be enabled or on which SDC will be installed. • The Gateway server must have connectivity to all the nodes that are being installed. If you are using separate networks for management and data, the server must be able to communicate with both networks.

Other requirements

ScaleIO requires that you use a minimum of three SDS servers, with a combined free capacity of at least 300 GB. These minimum values are true per system and per Storage Pool.

NOTICE

ScaleIO installation enables unlimited use of the product, in non-production environments . To obtain a license for production use, and to receive technical support, open a service ticket with Customer Support at https://support.emc.com.

For complete information on licensing, see the *ScaleIO User Guide*.

Prepare the environment

Before deploying ScaleIO, you must prepare the environment.

Before you begin

Ensure that all ScaleIO component and ScaleIO Gateway servers meet the system requirements.

This step prepares the Gateway (GW) server. The Gateway includes the Installation Manager (IM), which is used to deploy the system in the next steps. To install ScaleIO on Linux nodes, the GW server can be a Windows or Linux server. To install ScaleIO on Windows nodes, or to install in a mixed-OS environment, the IM server must be a Windows server.

Procedure

1. Download (and extract) the ScaleIO packages, either from the product ISO or the EMC Support Site:

   a. Management files:

   - Gateway
     - Linux Gateway: `ScaleIO Gateway for Linux Download`
     - Windows Gateway: `ScaleIO Gateway for Windows Download`
   - GUI - `ScaleIO GUI for Windows Download`

   b. ScaleIO component files:

   - RHEL/CentOS: `ScaleIO <Operating System> Download` (for example ScaleIO 2.0 RHEL6 Download)
   - Ubuntu: `ScaleIO Ubuntu <Version> Download`

2. Create the Gateway server:

Operating system	Steps
RHEL/ CentOS	Run the following command (all on one line), where *new_GW_admin_password* is a password that you define to access the IM: `GATEWAY_ADMIN_PASSWORD=<new_GW_admin_password> rpm -U / tmp/ EMC-ScaleIO-gateway-2.0-14000.X.rpm --nodeps`
Ubuntu	Run the following command (all on one line), where *new_GW_admin_password* is a password that you define to access the IM: `GATEWAY_ADMIN_PASSWORD=<new_GW_admin_password> dpkg -i /tmp/ EMC-ScaleIO-gateway-2.0-14000.X.deb`

Operating system	Steps
Windows	a. From the extracted download file, copy the ScaleIO Gateway MSI to the IM server: `EMC-ScaleIO-gateway-2.0-14000.X-x64.msi` b. Run the file, and enter a new Gateway admin password that will be used to access the IM. c. Prepare disks for storage: a. Ensure that devices to be used are on-line, and initialized as MBR or GPT. b. On each disk, use the Windows Disk Management to create a new, simple volume. Assign a drive letter, and select **Do not format this volume**

The GW server is ready.

3. Log in to the GW server, by pointing your browser to this URL: `https://<GW_Server_IP_Address>`, where *GW_Server_IP_Address* is the IP address of the server where you installed the GW package.

   Use the default username, admin, and the GW admin password you created in the previous step.

4. If prompted, accept the certificate warning (or install your own certificate for the Tomcat server).

   The Installation Manager **Welcome to ScaleIO** window appears. If the Welcome window does not appear, see "Troubleshooting" in the *ScaleIO Deployment Guide*.

Start the deployment

Use the Installation Manager to start the ScaleIO deployment.

Procedure

1. Upload packages:

   a. From the **Welcome** screen, select the **Packages** tab.

      The **Manage Installation Packages** window appears.

   b. Click **Browse**, and select all the extracted ScaleIO component installation packages, for all relevant operating systems.

      Minimally, you must select these packages:

      - LIA
      - MDM
      - SDC
      - SDS (The SDSx packages are not needed.)

   c. Click **Open**.

   d. Click **Upload**.

   The packages are uploaded to the IM, and are displayed in the file table.

2. Click **Proceed to Install**.
3. In the **Provide Installation Topology** screen, click **Installation wizard**.
4. Select the format of the MDM cluster to create:

Option	Description
3-node cluster (default)	Configures a Master MDM, a Slave MDM, and a TieBreaker MDM.
5-node cluster	Configures a Master MDM, two Slave MDMs, and two TieBreaker MDMs.

   The **Installation Configuration** window appears.
5. Enter a new MDM password and LIA password.

   Passwords must meet the following criteria:

   - Length is between 6 and 31 (ASCII-printable) characters
   - No white spaces
   - Must include at least 3 of the following groups: [a-z], [A-Z], [0-9], or special chars (!@#$ ...).
6. Review, and accept, the end user license agreement.
7. In the **Topology** section, enter server information:

   The **Topology** section is populated with nodes, according to the MDM cluster chosen in the previous step. Each node is also defined as an SDS and an SDC.

   a. For each node, change the IP address, select the host operating system, and enter the host password (the password of the root user).

   b. To add more hosts, click **Clone host**.

      The assigned IP address is derived from the IP address of the previous host. Each cloned host is enabled to act as an SDS and an SDC.
8. Click **Start Installation**.

   A post-installation notice appears. Its content is described in this document.

Monitor the deployment

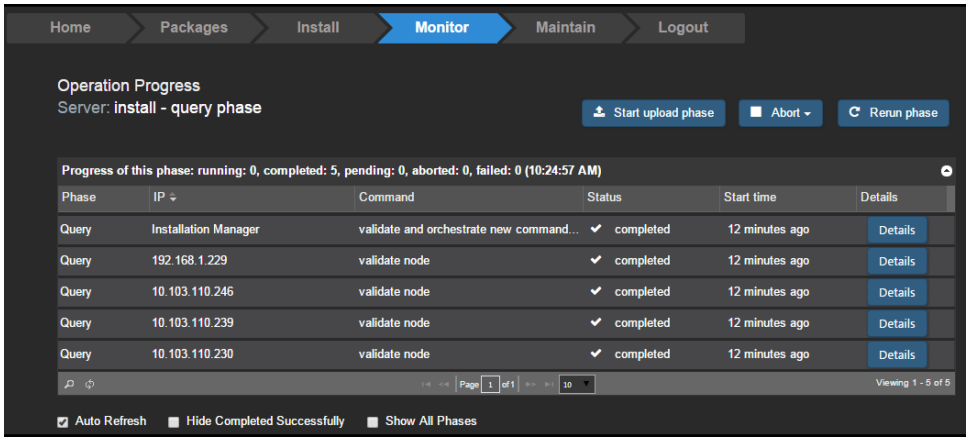
For the ScaleIO deployment to proceed, you must monitor and approve the deployment progress.

The deployment wizard performs the following phases: query, upload, install, and configure.

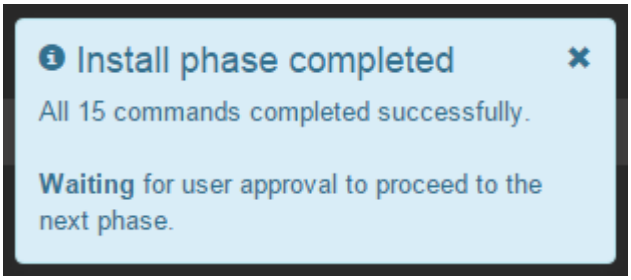
Procedure

1. Click the **Monitor** tab.

   The **Install-query** screen appears:



When each step completes, a message appears that describes the step progress:



2. When the Query phase is complete, click **Start upload phase**.
3. When the Upload phase is complete, click **Start install phase**.
4. When the Install phase is complete, click **Start configure phase**.
5. When the `Completed Install Operation` message is displayed, click **Mark operation completed**.

Results

The wizard installation creates one Protection Domain and one Storage Pool, both with the name `default`.

After you finish

Best practice is to use the ScaleIO System Analysis tool to analyze the ScaleIO system immediately after deployment, before provisioning volumes, and before using the system in production.

Post-deployment tasks

After ScaleIO has been deployed, there are steps to be done to use the system.

The rest of this document describes steps that may need to be done to use the ScaleIO system in your environment.

System analysis overview

This topic describes ScaleIO system analysis and the environment required to use it.

ScaleIO system analysis enables you to identify potential issues with your ScaleIO system which may prevent best performance. It is highly recommended to analyze the ScaleIO system immediately after deployment, before provisioning volumes, and

before using the system in production. You can also use it to check the health of a system that is already operational.

The system analysis is invoked from the ScaleIO Installation Manager (IM). The analysis checks the following:

- ScaleIO components are up and running
- Ping between two relevant nodes in the system
- Connectivity within the ScaleIO configuration (for example, connectivity between SDSs within a Protection Domain, connection of SDCs with the cluster virtual IP address)
- Network configuration
- RAID controller and device configuration

Using the system analysis, you can detect any potential issues in the system, then rectify them, before provisioning and using the system in a production environment.

Environment requirements and prerequisites:

- Supports only RHEL 6.x servers, with the following 3rd-party tools:
  - Netcat
  - StorCLI
  - PERCCLI
  - smartctl
- Requires a ScaleIO Gateway server:
  - On a Linux or Windows server. ScaleIO is tested on RHEL 6.x and RHEL 7.x as well as Windows2K12 servers.
  - With at least 1 GB of free disk space per node in the system
- A web browser, that is supported by the IM.
- Supports LSI RAID controller cards.
- Supports IPv4 network configuration.

Best-practice recommendation:

1. Deploy ScaleIO.
2. Analyze system to identify issues that should be fixed.
3. Fix issues.
4. Analyze system to verify that the issues have been fixed.
5. When the system meets your satisfaction, you can move it into production.

Limitations and compatibility:

- On servers with IPv4 and IPv6, the IPv6 (only) analysis is not conclusive; IPv6 is not supported.
- On servers with MegaRAID, the RAID function analysis is not supported; only StorCLI is supported.
- On servers with multiple SDSs, analysis is performed but it is not conclusive.
- RFcache analysis is not performed.
- Due to default Internet Explorer settings, to expand a report, you may need to grant permission for IE to run scripts. For more information, see the version release notes.

Creating the system analysis report

The topic describes how to create and display the ScaleIO system analysis report.

Before you begin

Ensure that you have access to the following:

- A web browser that is supported by the ScaleIO Installation Manager (IM)
- IP address of the ScaleIO Gateway server
- The Gateway admin username (default: admin) and password (defined during deployment)
- Master MDM IP address, username, and password (defined during deployment)
- LIA password

Procedure

1. Log in to the IM server:
   a. Point your browser to **https://*<IM_Server_IP_address>***

      where **<IM_Server_IP_address>** is the IP address of the server on which the Gateway package is installed.

      The **ScaleIO Installer** login screen is displayed.

   b. If a login banner is displayed, accept it to continue.

   c. Type the Gateway username (default is admin) and password.

   d. Click **Login**.

      The **ScaleIO Installer Home** screen is displayed.

2. Generate the system analysis report:
   a. Click the **Maintain** tab.

      The **Maintenance operation** screen is displayed.
      If a warning is displayed that indicates that a previous operation is not completed, it means that the last IM operation was not marked as complete. To continue, click the **Monitor** tab, mark the operation complete, then return to the **Maintain** tab.

   b. Enter the authentication credentials:
      - Master MDM IP address, user name, and password
      - LIA password

   c. Click **Retrieve system topology**.

      The system topology is displayed.

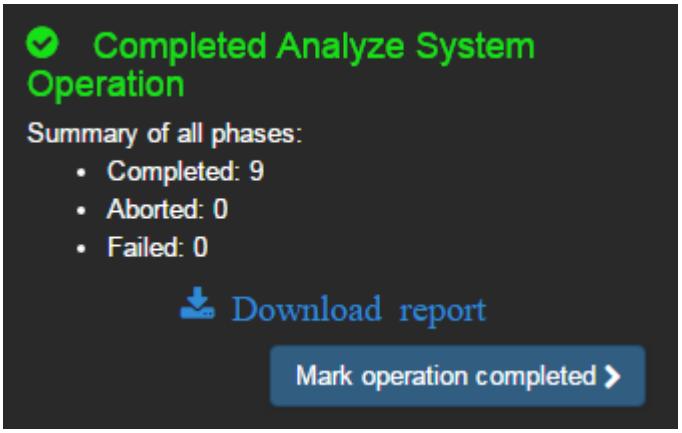
   d. Click **Analyze System**.

      The system analysis begins.

   e. Monitor the progress of the system analysis by clicking the **Monitor** tab.

      When the process completes (which could take several minutes), a **Download report** link is displayed.

   f. Click the **Download report** link.



The report is saved, in ZIP format, in the default download location of the server on which the report was run.

g. To enable the IM to be available for subsequent operations, click **Mark operation completed**.

3. Display the analysis report:

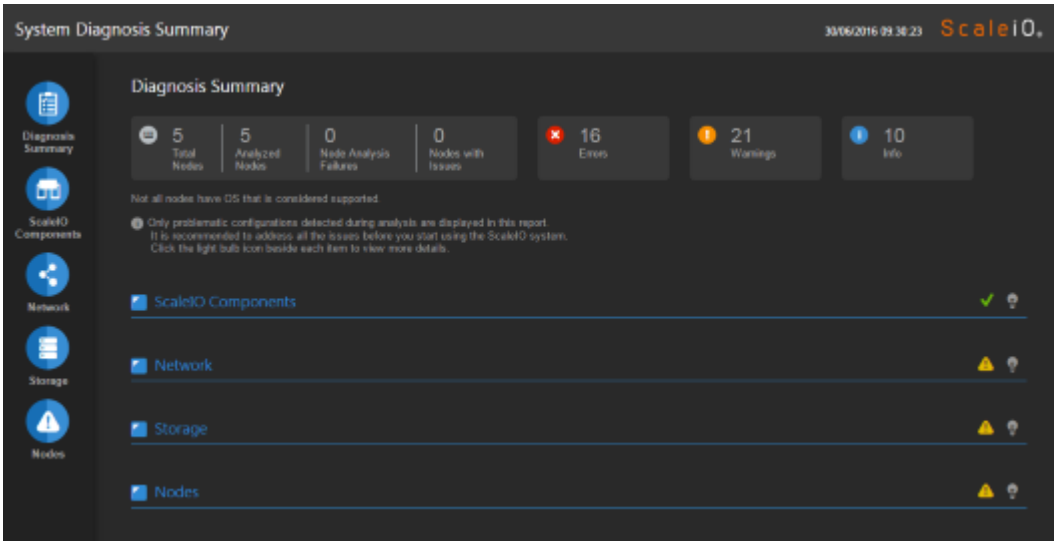
   a. Unzip the downloaded file.

   The file includes the `ScaleioSystemDiagnosisReport.html` analysis file, and several TGZ files (one for each node, in the `dumps` folder).

   b. Double-click `ScaleioSystemDiagnosisReport.html`.

Results

The **System Diagnosis Summary** report is displayed in the default web browser on your computer.



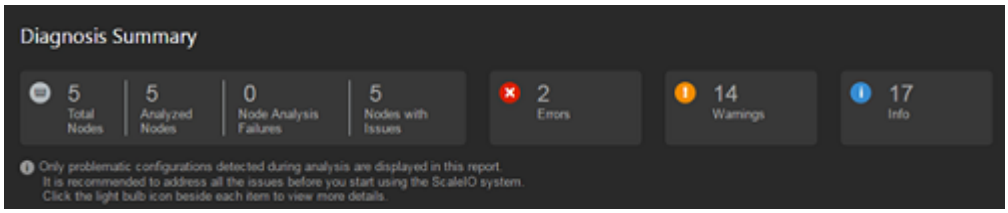
System analysis report description

This topic describes how to get the most benefit from the system analysis report.

At the top of the report, the Diagnosis Summary shows the number of the issues that have been detected system-wide. The summary shows the following categories:

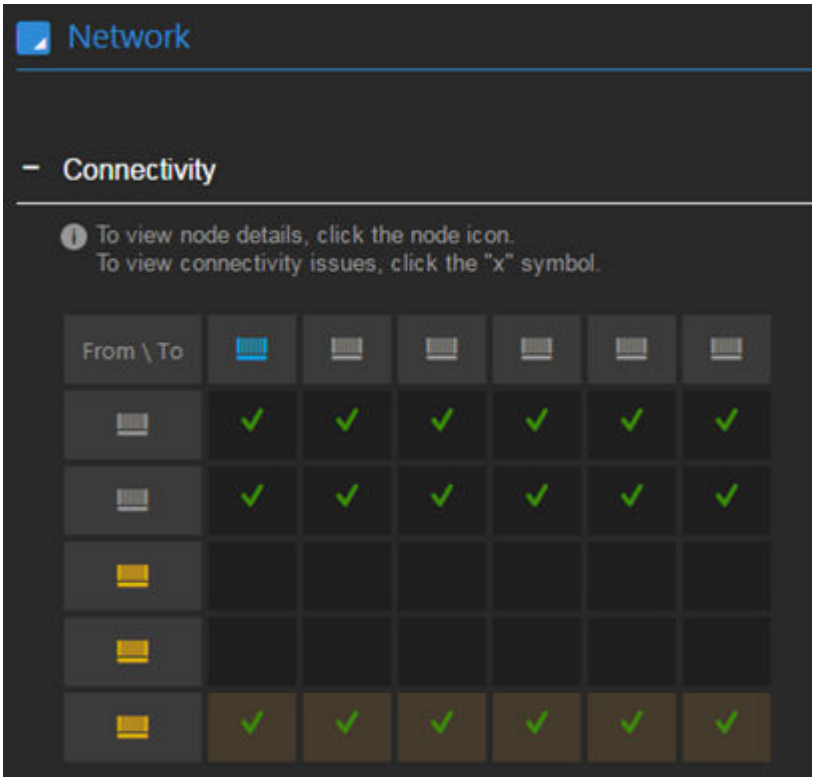
- Node analysis

  - How many nodes are analyzed
  - How many nodes could not be analyzed
  - How many nodes have issues
- Severity analysis
  - How many issues of each severity level were found



When the analysis first opens, the major sections are shown in summary form. You can expand them to show detailed diagnostic reports, as follows:

- ScaleIO components:
  This section of the report shows the non-running ScaleIO server components, that is, SDS, SDC, and MDM. Failure of these components may affect system performance and data availability. Each of the ScaleIO server components supports the following functionality:
  - SDS server
    The SDS (ScaleIO Data Server) manages the capacity of a single server and acts as the back-end for data access. The SDS is installed on all the servers contributing storage devices to the ScaleIO system. Failure of an SDS may affect the cluster performance and data availability.
  - SDC server
    The SDC (ScaleIO Data Client) server is installed on each server that needs access the ScaleIO storage and it is the gateway to the ScaleIO storage. Failure of an SDC server denies its application access to the ScaleIO storage.
  - MDM server
    The MDM (Meta Data Manager) server controls and monitors the ScaleIO system. Failure of an MDM may affect the cluster performance and data availability.
- Network:
  This section of the report checks the connectivity between various ScaleIO components, as well as the NIC configuration and performance. The network issues may impact the system performance and data availability.



- Connectivity
  Performing pings between ScaleIO components leads to detecting and resolving connectivity-related issues in the system. If the regular pings succeed, then the MTU pings, followed by the Ncat pings are performed to the ports used by the ScaleIO application.

  If virtual IP addresses are assigned to the MDMs in the cluster, a logical host, called *MDM cluster* is displayed (represented by a blue host icon) in the analysis report. The following issues are tested:

  - SDC connectivity with the virtual IP addresses.
  - All virtual IP addresses are configured.
  - Only one physical node is configured to use the virtual IP address.

  To view specific information:

  - To view the node details, click the node icon.
  - To view connectivity issues, click the X symbol
- NIC Configuration and Performance
  This section of the report displays the configurations that do not meet the best practice recommendations described in the user documentation.
- MDM cluster
  Shows status of virtual IP addresses assigned to the MDMs in the cluster.

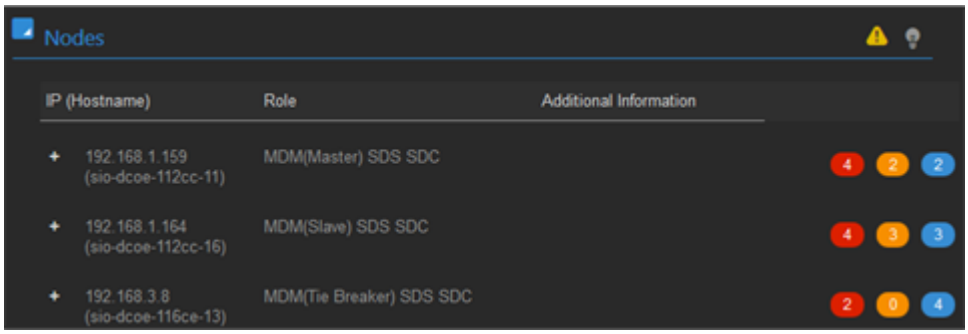
- Storage:
  The Storage section of the report describes the issues associated with the RAID controllers, storage devices, and Storage Pool configurations.
  - RAID Controller
    Describes the issues related to the physical disks
  - Devices
    Describes the list of problematic or potentially problematic storage devices

  - Storage Pool Uniformity
    Indicates Storage Pools with non-homogeneous disk performance
- Nodes (groups all of the reported issues per node): Describes the detected issues, as listed above, grouped by node

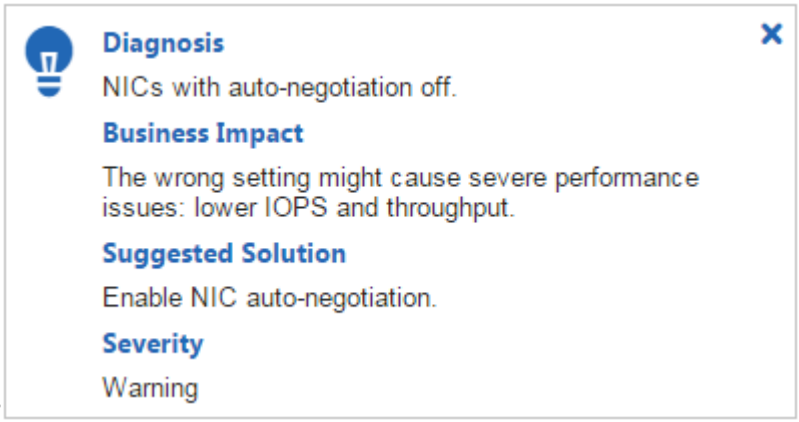
You can show more (or less) information, as follows:

- Use the Expand ( ) button and + symbol to drill down.
- Use the Collapse ( ) button and – symbol to hide information.

The following figure shows an example of the display when the report is expanded.



You can show additional details of an error by clicking the ( ) icon. A pop-up window similar to the following is displayed.

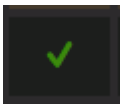
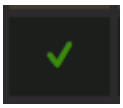
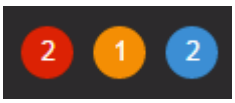


The following table describes how to navigate the analysis information:

To display this...	Click this symbol...
Diagnosis Summary	
ScaleIO component issues, sorted according to SDS, SDC, and MDM.	

To display this...	Click this symbol...
Network connectivity (including virtual IP address configuration) and NICs	
Storage, including RAID controller, devices, and Storage Pool uniformity	
Nodes, displayed according to IP address and system role	
Collapse a list	
Expand a list	
Open a pop-up containing Diagnosis, Business Impact, and Suggested Solution information.	

The following table describes other symbols and interface elements used in the analysis report display:

Symbol / Interface Elements	Description
	All connectivity tests passed
or	Connectivity issues were detected (for more information, click the symbol)
 (black background)	Connectivity matrix background: all pertinent connectivity tools are available
(brown background)	Connectivity matrix background: connectivity tests could not be performed, due to a missing tool
	Error counters: • Red - Error • Orange - Warning • Blue - Info
	All connectivity test tools are available for use on the node
	Some connectivity tests could not be performed on this node, due to missing tools (for more information, click the symbol)

Symbol / Interface Elements	Description
	A logical host, that represents the MDM cluster, when virtual IP addresses are configured

Note

An empty cell in the connectivity matrix indicates that no connectivity check was performed. In such cases, no connectivity is expected.

Enable the storage

After ScaleIO is deployed, you can enable storage.

Before you begin

You must issue these commands from the Master MDM node, either directly, or via SSH.

Ensure that you have the authentication credentials.
The ScaleIO CLI (SCLI) is installed as part of the MDM component and can be found in the following path:

- Linux — `scli`

After the ScaleIO system is installed, follow these steps to enable using the storage.

Procedure

1. Add SDS devices:

   You can also add devices with the ScaleIO GUI.

   - You must add at least one device to at least 3 SDSs, with a minimum of 100 GB free storage capacity per device.
   - Balance the total device capacity over all SDSs.

   a. Log in to the ScaleIO cluster:

   ```
   scli --login ---username <MDM_USERNAME> --password
   <MDM_PASSWORD>
   ```

   Note

   If bash completion isn't enabled, run: `/etc/bash_completion.d/scli`

   b. Add devices using the following command:

   ```
   scli --add_sds_device --sds_ip <IP> --
   protection_domain_name <NAME> --storage_pool_name <NAME> --
   device_path <DEVICE_PATH>
   ```

   Examples:

- Linux:

```
scli --add_sds_device --sds_ip 192.168.212.10 --
protection_domain_name default --storage_pool_name
default --device_path /dev/sdX
```

2. Add and map a volume:

   a. Add a volume using the following command:

```
scli --add_volume --protection_domain_name <NAME>--
storage_pool_name <NAME> --size_gb <SIZE> --volume_name
<NAME>
```

   Example:

```
scli --add_volume --protection_domain_name default --
storage_pool_name default --size_gb 16 --volume_name vol01
```

   b. Map a volume to an SDC using the following command:

```
scli --map_volume_to_sdc --volume_name <NAME> --sdc_ip <IP>
```

   Example:

```
scli --map_volume_to_sdc --volume_name vol01 --sdc_ip
192.168.212.19
```

Note

In Linux, mapped volumes appear to the SDC as `/dev/sciniX` where *X* is a letter, starting from "a". For more information, see "Mounting ScaleIO" in the ScaleIO documentation.

You can use the GUI or the CLI `--query_all` command to see the installed nodes and storage.

Results

Now you can start using your storage. For best results, it is recommended to review the *EMC ScaleIO User Guide*.

Installing and opening the ScaleIO GUI

You can open the GUI after it is installed on your workstation.

Perform the instructions in the following topics to install and open the ScaleIO GUI.

Install the ScaleIO GUI

You can install the ScaleIO GUI.

Before you begin

- Ensure that the workstation satisfies the requirements described in the "System Requirements" section of the documentation.

- Get the installation file, `ScaleIO GUI for Windows Software Download`, either from the product ISO or the EMC Support Site.

Procedure

1. Install the GUI:

```
EMC-ScaleIO-gui-2.0-14000.X.msi
```

After you finish

To log in to the GUI, see "Logging in to the ScaleIO GUI."

Log in to the ScaleIO GUI

Open and log in to the ScaleIO GUI.

Before you begin

Ensure that:

- The GUI software is installed on the workstation. To install the GUI, see "Installing the ScaleIO GUI."
- You have these credentials (available from the administrator):
  - MDM management IP address or hostname
  - Username (default: admin)
  - Password (defined during deployment)

Procedure

1. Open the GUI by selecting **Start** > **All Programs** > **ScaleIO GUI**.

   The initial login screen is displayed.
2. Type the IP address or hostname and click **Connect**.

   If a certificate notice is displayed, review and accept the certificate.

   If a login banner is displayed, confirm it to continue.
3. In the login screen, type the username and password, and click **Login**.

Results

The ScaleIO GUI is displayed.

After you finish

Users and passwords are configured with the ScaleIO CLI. For more information, see the "Security" chapter of the *ScaleIO User Guide*.

Associating ScaleIO volumes with physical disks

This section describes how to associate volumes with physical disks.

Contact ScaleIO Customer Support for access to the troubleshooting utility.

To get ScaleIO volume information, run the `scli --query_all_volumes` (or `--query_all` or `--query_volume`) command.

Output similar to the following appears:

```
Query-all-volumes returned 10 volumes
Protection Domain 0728185d00000000 Name: pd1
Storage Pool ad99eaab00000000 Name: default
<No volumes defined>

Storage Pool ad99eaac00000001 Name: sp1
Volume ID: fac22a6300000000 Name: vol0 Size: 152.0 GB (155648 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6400000001 Name: vol1 Size: 400.0 GB (409600 MB) Mapped to 1 SDC Thin-provisioned
Volume ID: fac22a6500000002 Name: vol2 Size: 80.0 GB (81920 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6600000003 Name: vol3 Size: 392.0 GB (401408 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6700000004 Name: vol4 Size: 96.0 GB (98304 MB) Mapped to 1 SDC Thin-provisioned
Volume ID: fac22a6800000005 Name: vol5 Size: 112.0 GB (114688 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6900000006 Name: vol6 Size: 96.0 GB (98304 MB) Mapped to 1 SDC Thin-provisioned
Volume ID: fac22a6a00000007 Name: vol7 Size: 176.0 GB (180224 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6b00000008 Name: vol8 Size: 272.0 GB (278528 MB) Mapped to 1 SDC Thick-provisioned
Volume ID: fac22a6c00000009 Name: vol9 Size: 360.0 GB (368640 MB) Mapped to 1 SDC Thin-provisioned
```

This output shows the Volume ID and name, as well as other volume information.

Volume information - Linux

On the SDC host, run the following command to get the operating system volume information that correlates to the ScaleIO scini device name:

```
ls -l /dev/disk/by-id/ |grep scini
```

Output, similar to the following appears:

```
lrwxrwxrwx 1 root root 12 Aug 25 19:40 emc-vol-62c093a52d14aec7-fac22a6300000000 -> ../../scinia
lrwxrwxrwx 1 root root 12 Aug 25 19:40 emc-vol-62c093a52d14aec7-fac22a6400000001 -> ../../scinic
lrwxrwxrwx 1 root root 12 Aug 25 19:40 emc-vol-62c093a52d14aec7-fac22a6500000002 -> ../../scinib
lrwxrwxrwx 1 root root 12 Aug 25 19:41 emc-vol-62c093a52d14aec7-fac22a6600000003 -> ../../scinie
lrwxrwxrwx 1 root root 12 Aug 25 19:41 emc-vol-62c093a52d14aec7-fac22a6700000004 -> ../../scinid
lrwxrwxrwx 1 root root 12 Aug 25 19:42 emc-vol-62c093a52d14aec7-fac22a6800000005 -> ../../scinif
lrwxrwxrwx 1 root root 12 Aug 25 19:42 emc-vol-62c093a52d14aec7-fac22a6900000006 -> ../../scinig
lrwxrwxrwx 1 root root 12 Aug 25 19:42 emc-vol-62c093a52d14aec7-fac22a6a00000007 -> ../../scinii
lrwxrwxrwx 1 root root 12 Aug 25 19:42 emc-vol-62c093a52d14aec7-fac22a6b00000008 -> ../../scinih
lrwxrwxrwx 1 root root 12 Aug 25 19:43 emc-vol-62c093a52d14aec7-fac22a6c00000009 -> ../../scinij
```

This output shows the scini volume name and the volume ID.

By matching the volume ID in both outputs, you can match the operating system names, sciniX, with the ScaleIO volume name.

For example:

- scinia = fac22a6300000000 = vol0
- scinic = fac22a6400000001 = vol1

Alternatively, run the `sg_inq /dev/sciniX` SCSI query command. The result of this command includes the EMC volume ID at the bottom of the output, as illustrated in the following figure:

```
Vendor identification: EMC
Product identification: ScaleIO
Product revision level: 1.3
Unit serial number: EMC-62c093a52d14aec7-fac22a6300000000
```

Note

The sg3_utils must be installed on the Linux host in order to run this command.

Mounting ScaleIO

The exposed ScaleIO volumes are connected to the servers via the network. To configure mounting options of ScaleIO devices, follow the instructions for your operating system.

Use persistent device names, described in full in Associating ScaleIO volumes with physical disks on page 21.

To mount ScaleIO:

Procedure

1. Determine the `/dev/disk/by-id` correlation to `/dev/sciniX`:

```
ls -l /dev/disk/by-id/ |grep scini
```

Output similar to the following appears:

```
lrwxrwxrwx 1 root root 12 Mar 2 05:35 emc-
vol-7ec27ef55b8f2108-85a0f0330000000a -> ../../scinia
lrwxrwxrwx 1 root root 12 Mar 2 05:35 emc-
vol-7ec27ef55b8f2108-85a0f03200000009 -> ../../scinib
lrwxrwxrwx 1 root root 12 Mar 2 05:35 emc-
vol-7ec27ef55b8f2108-85a0f02c00000003 -> ../../scinic
```

2. Run the mount command:

```
mount /dev/disk/by-id/<EMC-vol-id>
```

Example:

```
mount /dev/disk/by-id/emc-
vol-7ec27ef55b8f2108-85a0f0330000000a /mnt_scinia
```

3. To make the mount command persistent, edit the `/etc/fstab` file according to the instructions for your operating system:
   - RHEL 6.x:
     a. In `/etc/fstab`, use a text editor to add the ScaleIO mount lines:

```
/dev/disk/by-id/emc-
vol-7ec27ef55b8f2108-85a0f0330000000a /mnt_scinia ext4
defaults 0 0
```

     b. In `/etc/rc.local`, use a text editor to add the mount commands:

```
mount /mnt_scinia
```

   - RHEL 7.x:
     In `/etc/fstab`, use a text editor to add `_netdev` to the ScaleIO mount lines.

Example:

```
/dev/disk/by-id/emc-vol-7ec27ef55b8f2108-85a0f0330000000a /
mnt_scinia ext4 defaults,_netdev 0 0
```

Ensure that you comply with the `netdev` and syntax rules for your file system, as described in the `man` page.

- SLES:
  In `/etc/fstab`, use a text editor to add `nofail` to the ScaleIO Ready Node mount lines.

  Example:

```
/dev/disk/by-id/emc-vol-7ec27ef55b8f2108-85a0f0330000000a /
mnt_scinia ext3 nofail 0 0
```

  Ensure that you comply with the `nofail` and syntax rules for your file system, as described in the `man` page.

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