Technical Notes

EMC® ScaleIO®

Version 2.0.x

Analyzing a ScaleIO System

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This document describes how to use the ScaleIO System Analysis feature, to best prepare a ScaleIO system for production environments. Topics include:

- Preface 2
- System analysis overview 3
- Creating the system analysis report 4
- System analysis report description 7

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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.

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
- Root password (for ESX-based servers)
- IP addresses of ESX-based SDCs in your network that are running ScaleIO versions earlier than version 2.0.1

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.

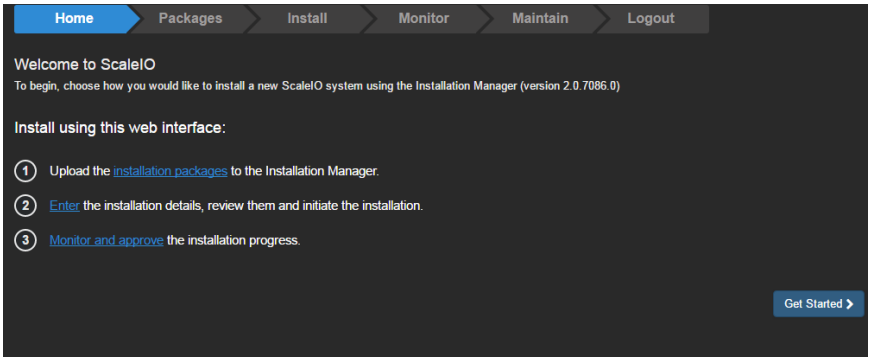
The **ScaleIO Installer** login screen is displayed:

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.

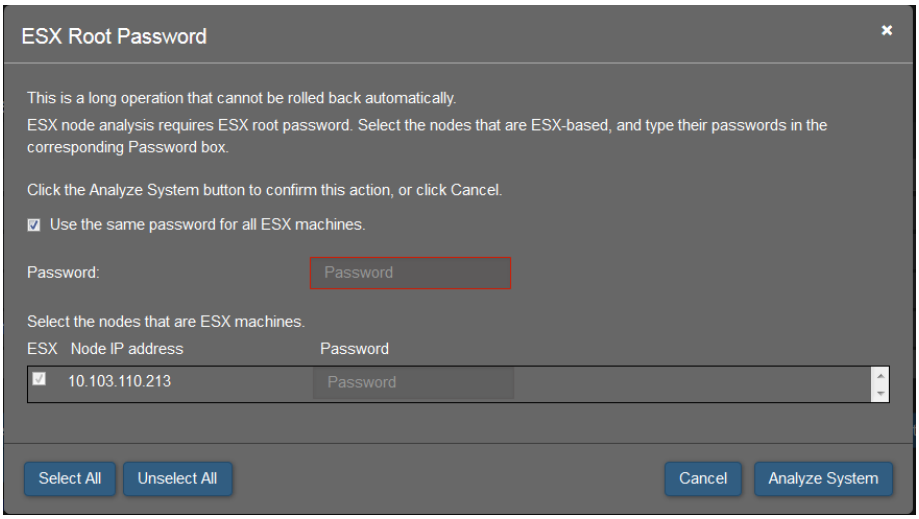
b. Enter the authentication credentials:

- Master MDM IP address, user name, and password
- LIA password (Linux-based systems only)

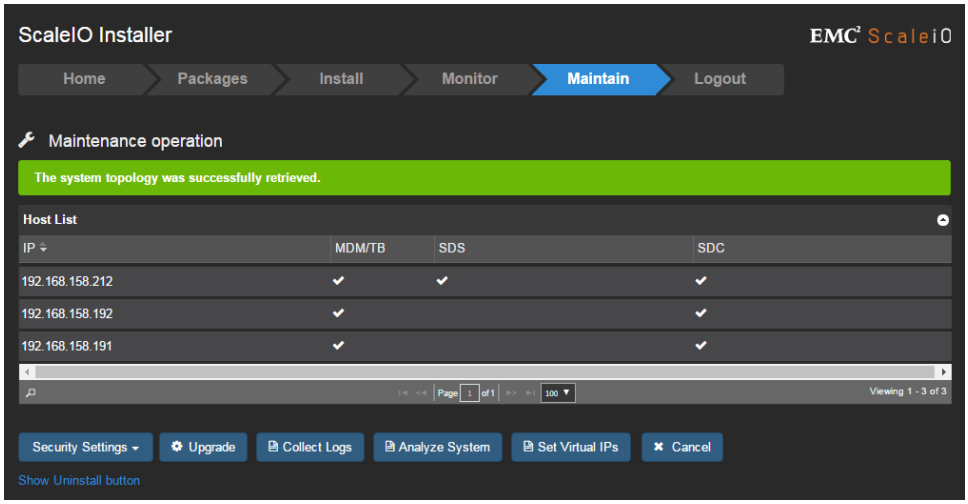
c. Click **Retrieve system topology**.

If ESX-based servers exist in the system, the following window appears. ESX servers that are automatically recognized are already selected. Other servers, on which SDCs from earlier ScaleIO versions are installed, may also

be shown. Select the ones that are ESX-based, and type their root passwords in the corresponding boxes.



If there are no ESX-based servers in the system, the system topology is displayed.



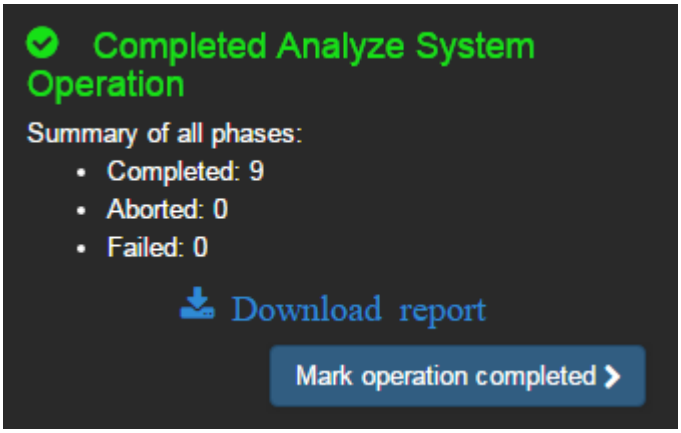
d. Click **Analyze System**.

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:

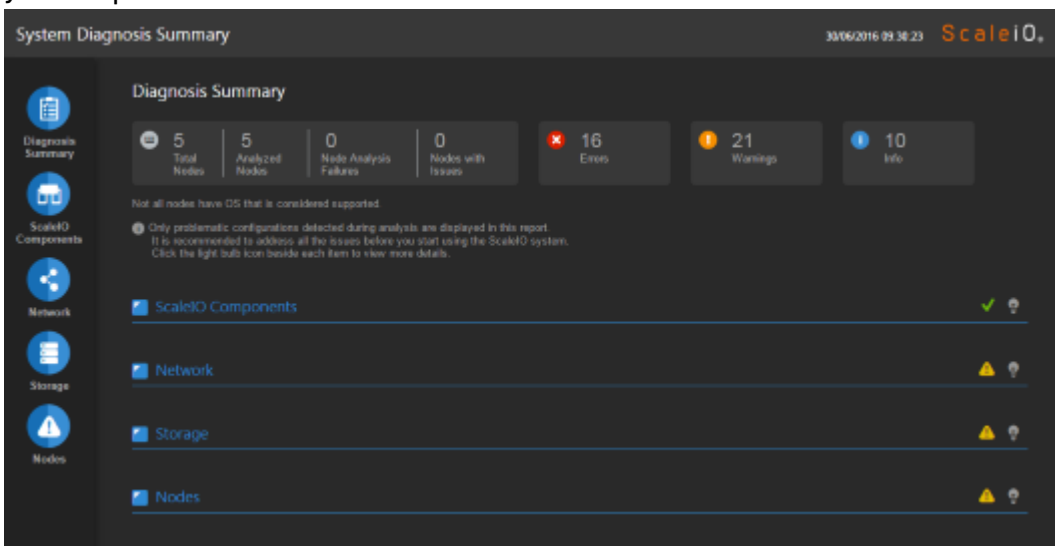
   a. Unzip the downloaded file.

   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.

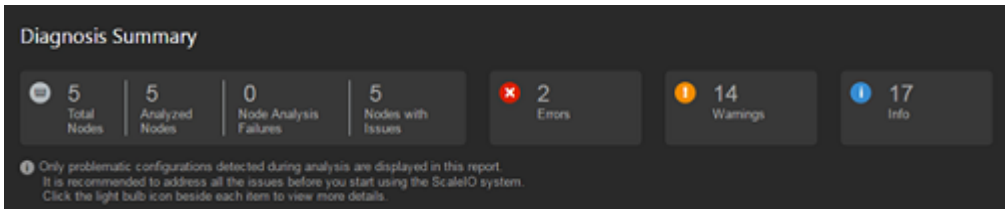


System analysis report description

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

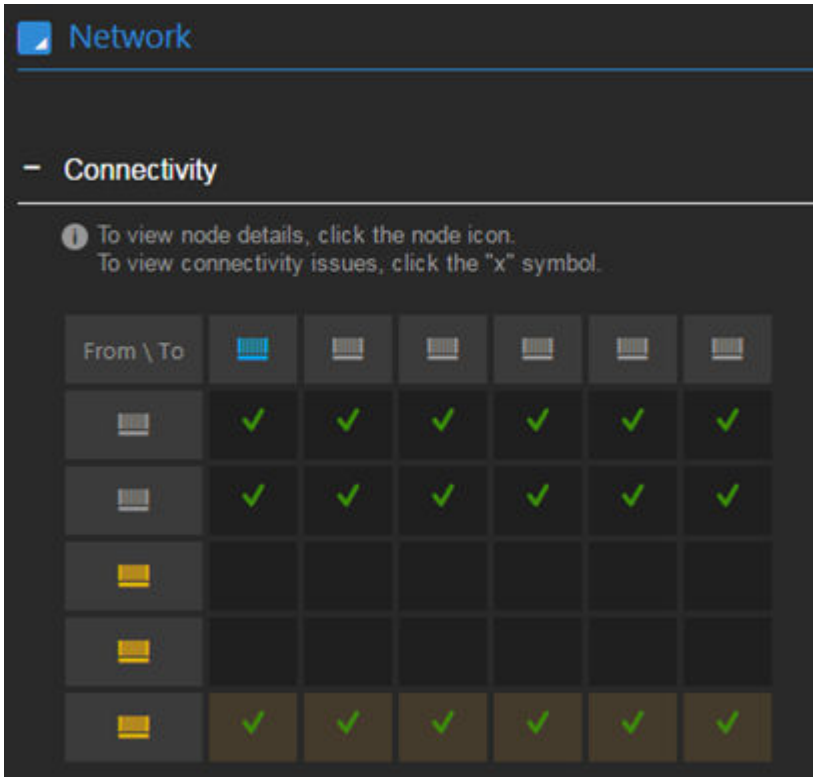
At the top of the report, the Diagnosis Summary shows the number of the issues that have been detected system-wide. The summary shows the following categories:

- 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.

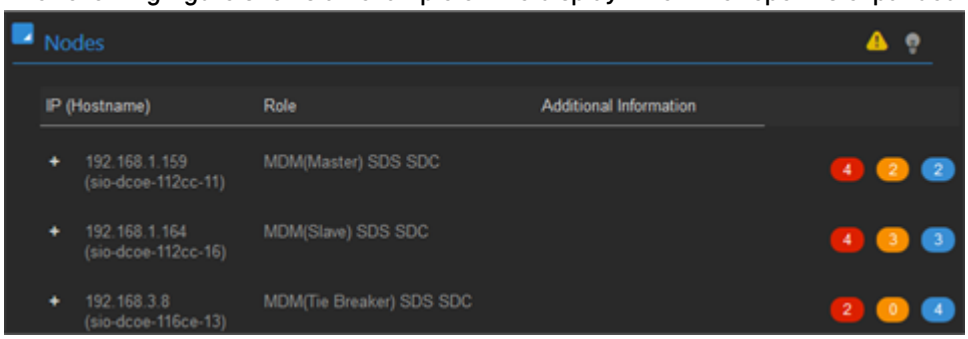
  - RAID Controller
    Describes the issues related to the physical disks

  - 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

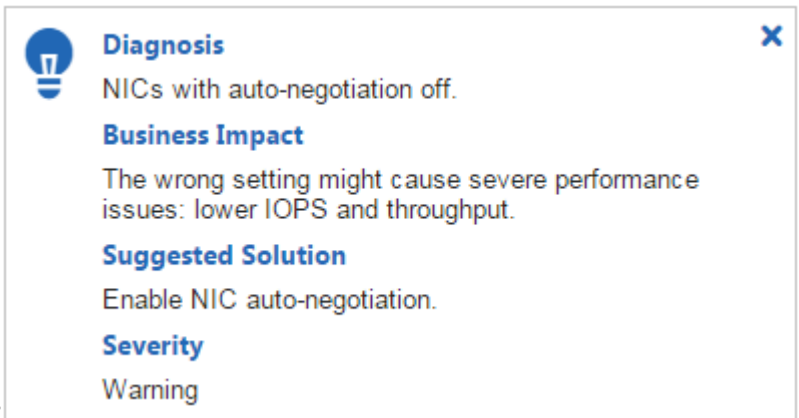
You can show more (or less) information, as follows:

- 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.

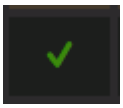
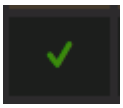
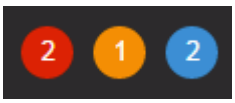


The following table describes how to navigate the analysis information:

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.

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