Installation Guide

Isilon

InsightIQ

Release number 3.2

InsightIQ Installation Guide

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EMC²

InsightIQ system requirements

To run InsightIQ, your environment must meet cluster, licensing, browser, and datastore requirements.

OneFS

The monitored cluster must be running OneFS 6.5 or later.

For monitored clusters running OneFS 7.0 and later, you must enable HTTPS port 8080. For monitored clusters running an earlier version of OneFS, you must enable HTTPS port 9443. To use the File System Analytics feature, you must enable the NFS service and ports 111, 300, 302, 304, and 2049 on all monitored clusters.

InsightIQ product license

Before installing the InsightIQ virtual appliance, you must obtain an InsightIQ license key for each cluster that you want to monitor. For more information, contact your EMC Isilon sales representative. After you obtain the license keys, you must enable licenses on each cluster that you want to monitor.

InsightIQ port

You must enable the port through which web browsers connect to InsightIQ over HTTPS or HTTP. By default, this is port 443 for HTTPS and port 80 for HTTP. For information about modifying this port, see the *InsightIQ User Guide*.

Web browser

You can access the Isilon InsightIQ application through any modern web browser. Examples of supported browsers include Microsoft Internet Explorer 10, Mozilla Firefox, Apple Safari 5, and Google Chrome.

The InsightIQ web application interface is optimized for a screen that is 1,280 pixels wide.

Storage space for the InsightIQ datastore

InsightIQ can store monitored-cluster data either locally or on an NFS-mounted server. If InsightIQ is installed as a virtual appliance, InsightIQ by default stores the monitored-cluster data locally on a virtual hard drive that is included with the InsightIQ virtual appliance. If you want to use this local virtual hard drive as the InsightIQ datastore, make sure that the virtualization host contains at least 70 GB of free disk space. If InsightIQ is installed on a Linux machine, InsightIQ stores data on the local machine by default. If you store InsightIQ data on the local machine, make sure that the machine contains at least 64 GB of free disk space.

As an alternative to storing InsightIQ data locally, you can configure InsightIQ to store monitored-cluster data on an Isilon cluster—either the monitored cluster itself or a different cluster—or on any NFS-mounted server. If you want to store InsightIQ monitored-cluster data on an Isilon cluster or another NFS-based server, you must provide adequate space in which to store the data. You must also verify that an NFS export rule is properly configured on the cluster or NFS-based server. For information about NFS datastore requirements, see .

Virtual appliance requirements

Before you install InsghtIQ as a virtual appliance, verify that your virtualization environment meets these requirements.

The Isilon InsightIQ virtual appliance can run on any of the following systems:

- VMware ESX version 4.x
- VMware ESXi version 5.x

- VMware Server 1.0 (Windows, Linux)
- VMware Server 2.0 (Windows, Linux)
- VMware Workstation (Windows, Linux)
- VMware Fusion (Mac OS)

For optimal performance, follow these virtualization-environment recommendations:

- Fully allocate at least 8 GB of RAM to the InsightIQ virtual appliance; this is the default setting. Although you can modify this setting, it is recommended that you do not allocate less than 8 GB. Allocating less RAM might significantly degrade the performance of InsightIQ.
- Ensure that the virtual machine disk is fast enough to allow for high read/write access.
- Install the InsightIQ virtual appliance on a virtualization environment host that is not oversubscribed.

Also, ensure that the virtual machine is connected to a network that can communicate with the monitored cluster.

Linux machine requirements

If you install InsightIQ on a Linux machine, your hardware and operating system must meet specific requirements.

Hardware requirements

You can install InsightIQ on machines that meet the following specifications:

- x86_64 instruction set (Intel 64 or AMD 64)
- 8 GB RAM
- 1 GB free disk space on the operating system (OS) partition
- 64 GB free disk space on either the local machine or an NFS datastore

Operating system requirements

You can install InsightIQ on machines running the following operating systems:

- CentOS 6 x86_64
- Red Hat Enterprise Linux (RHEL) 6 x86_64

InsightIQ is compatible with any installation package of either operating system, including the minimal installation packages. InsightIQ is compatible with all CentOS 6 and RHEL 6 software update patches.

Software package requirements

If they are not already installed, the following software packages are automatically installed on a machine during the InsightIQ installation process:

- blas
- blas-devel
- gcc-c++
- lapack
- lapack-devel
- libgfortran
- libstdc++
- nfs-utils
- openssh-clients
- openssl-devel
- postgresql93
- postgresql93-devel
- postgresql93-libs
- postgresql93-server
- python
- python-devel
- readline
- sqlite
- sssd
- wkhtmltox
- zlib

Also, make sure that the Linux machine is connected to a network that can communicate with the monitored cluster.

Upgrading InsightIQ

You can upgrade instances of InsightIQ.

During the upgrade process, you cannot monitor clusters, and InsightIQ will not be able to collect data about monitored clusters. Upgrading InsightIQ will require you to update the InsightIQ datastore. This process can take a long time to complete. We recommend that you upgrade InsightIQ at a time when cluster activity is minimal.

Upgrade InsightIQ

You can upgrade InsightIQ instances that are running InsightIQ 3.1 or later.

Before you begin

The root partition of the InsightIQ Linux or virtual machine must have at least 502 MB of free space.

Procedure

1. Obtain the InsightIQ installation script from https://support.emc.com in `.sh` format and download the file to the Linux or virtual machine that is currently running InsightIQ.

2. (Optional) We recommend that you update all software dependency packages by running the following command:

   ```
   yum update
   ```

3. On the Linux or virtual machine that you want to upgrade, run the following command.

   ```
   sudo sh <path>
   ```

   Specify *‹path›* as the file path of the `.sh` installation script.

4. Type **Y** and then press ENTER.

   InsightIQ displays a list of software dependencies that must be installed to continue the upgrade.

5. Type **Y** and then press ENTER.

6. (Optional) Specify any configuration changes that you would like to make to the datastore upgrade.

   • To specify where the updated datastore will be located, type **2** and then press ENTER.
   The default location is the directory of the current datastore.

   • To specify whether to enable downgrading after the upgrade is complete, type **3** and then press ENTER.
   Downgrading is enabled by default. Downgrading reverses the upgrade process and returns InsightIQ to the version that it was upgraded from. However, downgrading requires that you retain a copy of the earlier InsightIQ datastore. Disabling downgrades will save space on the InsightIQ datastore by automatically deleting the earlier datastore after that upgrade process is complete.

   ⚠ CAUTION

   We recommend that you do not disable downgrading.

7. (Optional) Delete old InsightIQ log files.

   If the root partition for InsightIQ becomes full, InsightIQ might encounter an `Out of diskspace` error. If this occurs, we recommend that you delete old InsightIQ log files by running the following commands:

   ```
   sudo rm -rf /var/log/insightiq*.log.*
   sudo rm -rf /var/log/insightiq_clusters/*/*.log.*
   ```

Results

After InsightIQ completes upgrading, the **Settings** › **Monitored Clusters** page displays the **Monitoring Status** of clusters as `Monitoring Starting` while InsightIQ completes post-upgrade tasks. During this time, InsightIQ is still monitoring clusters. However, you might see gaps of missing information in data modules. These gaps will be filled in after each cluster returns to a status of `Latest Data:<date>`.

Revert InsightIQ

You can revert an instance of InsightIQ back to the version it was running before the upgrade process.

Reverting InsightIQ does not cause any application data, such as InsightIQ data or performance reports, to be deleted. You can revert an instance, either after the upgrade process is complete, or when you are prompted to upgrade the InsightIQ datastore during the upgrade process.

Procedure

1. Obtain the installation file of the InsightIQ version that you want to revert to from https://support.emc.com in .rpm format, and download the file to the Linux or virtual machine that is running InsightIQ.

2. On the Linux or virtual machine you want to revert, run the following command:

   ```
   sudo yum downgrade <path>
   ```

   Where *‹path›* is the path of the .rpm file for the earlier version of InsightIQ.

Installing InsightIQ

The procedures for installing and setting up InsightIQ depend on whether you are installing InsightIQ on a Linux or virtual machine.

Obtain the installation image

The InsightIQ installation package is available in three different compressed-file formats. The particular installation image that you download depends on how you are installing InsightIQ.

Procedure

1. Obtain the appropriate InsightIQ installation files, available at https://support.emc.com

   - If you are installing InsightIQ on a Linux machine, download and save the installation script in .sh format.

   - If you are installing InsightIQ as a virtual appliance and are running VMware ESX, VMware ESXi, or VMware Workstation 8 or later, download the installation files in .ova format. Extract the files to a location where the VMware software can access them. You can deploy these files as an Open Virtualization Format (OVF) template.

   - If you are installing InsightIQ as a virtual appliance and are not running VMware ESX, VMware ESXi, or VMware Workstation 8 or later, download the installation files in .zip format. Extract the files to a location where the VMware software can access them.

Install and configure the InsightIQ virtual appliance

As an alternative to installing InsightIQ on a Linux machine, you can install InsightIQ as a virtual appliance.

Procedure

1. Add the InsightIQ virtual appliance to your virtual-machine inventory.

   Note

   Depending on which virtualization product you are running, you may also need to modify your network configuration settings to accommodate the InsightIQ virtual appliance. For example, in VMware Server, you might need to bridge the network adapters. For more information, see the applicable product documentation.

2. Open the virtualization-environment console for the InsightIQ virtual appliance.

3. Create a password for the administrator account.

   a. Type a password for the administrator account, and then press ENTER.

   b. Retype the password for the administrator account, and then press ENTER.

   - If InsightIQ is able to acquire an IP address through DHCP, the address appears on the console.

   - If InsightIQ is unable to acquire an IP address through DHCP, the system prompts you to configure a static IP address.

   - If InsightIQ cannot detect an interface, an error message appears and indicates that no interfaces are available. InsightIQ requires that one, and only one, interface be configured and connected in the virtualization environment. You must configure the virtualization environment, and then restart the InsightIQ virtual appliance.

4. Configure network settings.

Option	Description
To configure DHCP networking mode	Make a note of the IP address displayed on the screen. You will later need to enter this address in a web browser to access the InsightIQ application. If no IP address is displayed, InsightIQ was unable to acquire an IP address through DHCP. You must either configure your network to support DHCP or configure a static IP address.
	Note
	Running InsightIQ in DHCP mode can be convenient when you are setting up InsightIQ. However, for long-term, ongoing use, we recommend that you run InsightIQ in manual networking mode. The DHCP-generated IP address can expire without warning, causing interruptions in the data collection process or preventing you from logging in to the InsightIQ virtual appliance. In this case, each time the current DHCP IP address expires, you must return to your virtualization environment to view a newly obtained DHCP IP address.

Option	Description
To configure a static IP address	a. Log in to the InsightIQ virtual appliance through the administrator account. b. Run the following command: `sudo iiq_network` c. Follow the prompts to configure network settings. d. Exit the prompt. Type **1** and then press ENTER. e. Log out of the InsightIQ virtual appliance. Type **exit** and then press ENTER.

The virtualization-environment console for the InsightIQ virtual appliance appears.

5. Select **Set Timezone,** press ENTER, and then follow the prompts to configure the time zone of the virtual appliance.

Install InsightIQ on a Linux machine

As an alternative to installing InsightIQ as a virtual appliance, you can install InsightIQ on a Linux machine.

Procedure

1. Log in to a Linux machine through a user account with sudo access or the root user account.

2. Install InsightIQ by running the following command:

   ```
   sudo sh <path>
   ```

   Specify *‹path›* as the file path of the `.sh` installation script.

3. (Optional) Create a user account that you will use to access the InsightIQ web application.

   Note

   You cannot log in to the InsightIQ web application as the root user. If no other user account is configured on the machine, you must create another user account. To create a user and configure a password for the user, run the following commands in the order listed:

   ```
   sudo useradd <username>
   ```

   ```
   sudo passwd <username>
   ```

   ---

4. Enable access to HTTP port 80 or HTTPS port 443.

   The InsightIQ web application communicates with web browsers through port 80 or port 443. However, the default firewall settings of CentOS and RHEL prevent access through ports 80 and 443. You can allow access to these ports by completely disabling your firewall by running the following commands in the order listed:

   ```
   sudo /etc/init.d/iptables stop
   ```

   ```
   sudo chkconfig iptables off
   ```

Note

Completely disabling your firewall will grant access to your machine through all ports. To enable access to ports 80 and 443 without disabling your firewall, see your operating system documentation.

Log in to the InsightIQ application

You can log in to the InsightIQ web application through any supported web browser.

Procedure

1. In a supported web browser, connect to the InsightIQ application.

   - If you are connecting to InsightIQ through IPv4, specify the address in the following format:

     ```
     https://<ip-address-or-hostname>
     ```

   - If you are connecting to InsightIQ through an IPv6 address, specify the address in the following format:

     ```
     https://[<ip-address>]
     ```

     If you are connecting through IPv6 to a hostname, specify the address in the following format:

     ```
     https://<hostname>
     ```

2. In the **Username** and **Password** fields, type a valid username and password.

   - If you are logging in to an InsightIQ virtual appliance, log in through the `administrator` account.

   - If you are logging in to a Linux machine, log in through any user account other than root.

3. If the end user license agreement (EULA) appears, review the EULA, click **I have read and agree to...**, and then click **Submit**.

Specify a datastore

You must specify a datastore where you want to store the data collected by InsightIQ. The specific steps that you take depend on whether you want to store data on the local datastore or on an NFS-mounted datastore.

If you install InsightIQ as a virtual appliance, the local datastore is a virtual hard drive that is included with InsightIQ. If you install InsightIQ on a Linux machine, the local datastore is the hard drive of the Linux machine. If you want to store InsightIQ data on the local datastore, you must make sure that the virtualization host or Linux machine contains at least 70 GB of free disk space available.

The NFS datastore can be either an Isilon cluster or another NFS-mounted server. If you want to store InsightIQ data on an NFS datastore, you must ensure that the datastore meets certain requirements. For more information, see NFS datastore requirements on page 12.

- If you want to store InsightIQ data on the local datastore that is included with InsightIQ, see Specify the local datastore on page 10.

- If you want to store InsightIQ data on an NFS-mounted datastore, see Specify an NFS datastore on page 10.

Specify the local datastore

You can configure InsightIQ to store monitored-cluster data on the local datastore.

Procedure

1. Click **Local Datastore**.

2. Specify the path of the local datastore.

Option	Description
For virtual appliance	In the **Datastore Path** field, type `/datastore`.
For Linux machine	In the **Datastore Path** field, type the path of an empty directory on the Linux machine.

3. Click **Submit**.

All data subsequently collected by InsightIQ is stored in the local datastore.

Specify an NFS datastore

You can configure InsightIQ to store monitored-cluster data on an NFS datastore.

Procedure

1. Click **NFS Mounted Datastore**.

2. In the **Datastore NFS Server** field, type the host name or IP address of the server or Isilon cluster on which collected performance data will be stored.

3. In the **Datastore NFS Server Path** field, type the absolute path, beginning with a slash mark (/), to the directory on the server or cluster where you want the collected data to be stored. This field must contain only ASCII characters.

4. Click **Submit**.

All data subsequently collected by InsightIQ is stored in the specified NFS datastore.

Begin monitoring the initial cluster

You must configure InsightIQ to monitor an initial cluster during the installation process.

You can configure InsightIQ to monitor more than one Isilon cluster simultaneously. The maximum number of clusters that you can simultaneously monitor varies depending on the resources available to the virtual machine. It is recommended that you do not monitor a cluster that contains more than 80 nodes and that you monitor no more than eight clusters or 150 nodes at a time. If you want to monitor more clusters or nodes than this, we recommend that you deploy an additional instance of InsightIQ.

Add a new cluster to monitor

Before you can view data about a cluster through InsightIQ, you must configure InsightIQ to monitor that cluster.

Before you begin

- Verify that a valid InsightIQ license is enabled on the monitored cluster. For more information, contact your Isilon representative.

- Verify that the local InsightIQ user is enabled and configured with a password on the monitored cluster.

We recommend that you monitor clusters over a LAN connection. Monitoring clusters over a WAN connection might significantly degrade the performance of InsightIQ.

Procedure

1. Click **Settings › Monitored Clusters,** and then click **Add Cluster.**

   The **Add Cluster** dialog box appears.

   Note

   If you are installing InsightIQ for the first time, the **Add Cluster** dialog box might already be displayed.

2. In the **Add Cluster** dialog box, in the **Isilon cluster address** field, type the host name or IP address of any node in the cluster that you want to monitor. Alternatively, you can type the name of an Isilon SmartConnect zone.

   If the monitored cluster is running OneFS 7.2.1 or later, you can specify an IPv4 or IPv6 address. If the cluster is running an earlier version of OneFS, you can specify only an IPv4 address.
   Specify IPv6 addresses without surrounding brackets. You can connect to an NFS datastore over IPv6 only if IPv6 addresses are configured for both the InsightIQ instance and the monitored cluster.

   Note

   In general, we recommend that you specify a monitored cluster by a SmartConnect zone name. However, if the monitored cluster is heavily loaded and you rely on InsightIQ file-heat data, we recommend that you specify the monitored cluster by the IP address or host name of a specific node in the cluster. Avoid specifying an IP address that can be transferred from node to node. If you choose to identify the monitored cluster by a SmartConnect zone, specify a SmartConnect zone that includes a CPU load-balancing policy. By balancing connections to nodes with lower CPU usage, the monitored cluster can respond to InsightIQ data-collection queries more quickly and efficiently.

3. In the **InsightIQ user name** field, type `insightiq`.

4. In the **InsightIQ user password** field, type the password of the monitored cluster's InsightIQ user.

5. Click **OK.**

InsightIQ datastore size

You must provide an adequate amount of space in the InsightIQ datastore to contain the data that InsightIQ creates. The amount of data that InsightIQ creates depends on the number of nodes being monitored and the amount of time that you want InsightIQ to retain data for.

On average, InsightIQ creates 1 GB of data per node that is being monitored every two weeks. If you want to retain more than two weeks worth of data, we recommend that you increase the size of the InsightIQ datastore 2 GB per node per month. We also

recommend that you retain at least 10 GB of free space at all times. Use the following equations to determine the size of your datastore:

```
<minimum_datastore_size> = <number_of_nodes>*1 + 10
<larger_datastore_size> = <number_of_nodes>*<number_of_months>*2 + 10
```

For example, if you monitor 12 nodes, we recommend that you reserve at least 22 GB of space in your datastore. If you want to retain three months worth of data, we recommend that you reserve 82 GB.

There is no maximum size of the InsightIQ datastore. InsightIQ performance is not significantly degraded as the InsightIQ datastore grows.

If the datastore contains less than 3 GB of free space, InsightIQ will begin deleting older data to make room for new data. If InsightIQ is unable to create at least 5 GB of free space, InsightIQ will stop monitoring clusters until you either increase the size of the datastore or manually delete data from the datastore. InsightIQ is unable to automatically delete the following types of data from the datastore:

Most recent data
> InsightIQ will not delete data less than 15 days old.

Non-InsightIQ data
> InsightIQ will not delete data from the datastore that was not generated by InsightIQ.

Generated performance reports
> InsightIQ will not delete generated performance reports.

NFS datastore requirements

As an alternative to storing InsightIQ data on the local datastore, you can store InsightIQ data on the monitored cluster itself, on a different Isilon cluster, or on any NFS-mounted server. If you want to store InsightIQ data on an Isilon cluster or other NFS-based server, you must provide adequate space in which to store the data that InsightIQ collects.

If you store InsightIQ data on an Isilon cluster or other NFS-based server, you must make sure that the cluster or server includes a properly configured NFS export rule. The export rule must export the datastore path and map the root user on the InsightIQ virtual or Linux machine to the owner of the export on the cluster or server. You must also enable read and write access to the export. This enables InsightIQ to mount the cluster or server and create the necessary directories and files on the cluster or server.

InsightIQ might cache permissions for failed attempts to mount the NFS export. If InsightIQ continues to report that it does not have sufficient rights to create the path on the NFS host, reboot InsightIQ to clear the previous mount attempts, and then try again.

You can connect to an NFS datastore over IPv6 only if IPv6 addresses are configured for both the InsightIQ instance and the NFS server.

⚠ **CAUTION**

Do not take snapshots of the InsightIQ datastore. If you revert a snapshot of the InsightIQ datstore or modify the contents of the datastore in any way, the datastore might become unusable.

Datastore requirements for an Isilon cluster

If you want to use an Isilon cluster to store data collected by InsightIQ, the Isilon cluster must meet specific requirements.

Note

This information is applicable only if you are storing data on an Isilon cluster.

If you store InsightIQ data on an Isilon cluster other than the monitored cluster itself, you do not need to license InsightIQ on that cluster. In addition, if you store the InsightIQ data on a different Isilon cluster, that cluster can be running any version of the Isilon OneFS operating system that is supported by InsightIQ. If you store the InsightIQ data on the cluster that InsightIQ is monitoring, the cluster will appear as a client of itself in InsightIQ.

You must make sure that the cluster includes a properly configured NFS export rule. The export rule must export the datastore path and map the root user on the InsightIQ virtual or Linux machine to the owner of the export on the cluster or server. You must also enable read and write access to the export. Isilon OneFS ships with a default NFS export rule for the `/ifs` directory that you can use for InsightIQ. If that default NFS export has been modified or deleted, you must create a new NFS export rule that allows write access for InsightIQ.

Note

Do not apply a quota to the InsightIQ datastore through the SmartQuotas module. If you limit the size of the InsightIQ datastore through a quota, InsightIQ will not be able to detect that space on the datastore has been limited, and the datastore might become full before InsightIQ begins deleting older data to make room for newer data.

Uninstall InsightIQ

You can uninstall InsightIQ. However, uninstalling InsightIQ does not remove all InsightIQ files from the Linux or virtual machine. Uninstalling InsightIQ does not delete InsightIQ data, user settings, live performance reports, generated live performance reports, performance report schedules, or file system reports. If you do not delete this data, the data will be available if you reinstall InsightIQ on the same machine.

Procedure

1. On the Linux or virtual machine, uninstall InsightIQ by running the following command:

   ```
   sudo yum erase isilon-insightiq
   ```

2. (Optional) To delete all InsightIQ user settings, live performance reports, generated live performance reports, performance report schedules, and file system reports, delete the /var/cache/insightiq/ folder from your Linux or virtual machine.

3. Delete the InsightIQ datastore from your Linux machine, virtual machine, or NFS datastore. The path of the local datastore is `/datastore` on an InsightIQ virtual appliance.

4. To remove FSA reports from a monitored cluster, delete the contents of the `/ifs/.ifsvar/modules/fsa` directory on the cluster.

Note

Deleting the contents of the FSA directory will delete all FSA reports stored on the monitored cluster. These reports might still be in use by another instance of InsightIQ. These reports can also be reused if you start monitoring the cluster with InsightIQ again later. Delete the contents of the FSA directory only if you are certain that no other InsightIQ instances are monitoring the cluster and you do not intend to monitor the cluster with InsightIQ later.

Reinstall InstightIQ

You can reinstall InsightIQ after you uninstall InsightIQ. If you did not manually delete InsightIQ settings and the InsightIQ datastore, the reinstallation of InsightIQ will retain all settings and previously collected data.

Procedure

1. Obtain the InsightIQ installation script from https://support.emc.com in .sh format and download the file to the Linux or virtual machine.

2. On the Linux or virtual machine, reinstall InsightIQ by running the following command:

   ```
   sudo sh <path>
   ```

   Specify *‹path›* as the file path of the .sh installation script.