

IBM Flash Management Console 3.9.0



Installation Guide

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Introduction

IBM Flash Management Console allows you to manage High IOPSs using a convenient web interface. There are three main components that you must install to use IBM Flash Management Console:

- High IOPS VSL (Driver)
- Agent
- Management Server (fio-msrv)

High IOPS VSL (Driver)

The High IOPS VSL is the driver that runs High IOPSs. The driver, along with all of its support packages and utilities, must be installed for IBM Flash Management Console to work. For more information on installing and using the driver, see the High IOPS User Guide for your operating system.

Management Server

The Management Server manages High IOPSs on the host (or hosts) by communicating with the Agent on each host.

The Management Server offers a web-based user interface for managing your High IOPSs. For information regarding using this web interface, see the IBM Flash Management Console 3.9.0 User Guide.

Install the Management Server on a server that you will use to manage all of your host High IOPSs.

NOTE-

For optimum High IOPS performance, we recommend running IBM Flash Management Console on a machine that does not host High IOPSs.

Agent

The Agent communicates with the High IOPS VSL and the Management Server. The Agent should be installed on a host machine after the High IOPS VSL is already installed.

NOTE-

Because IBM Flash Management Console allows management of multiple hosts, you will install the Agent on every host machine that you wish to control using IBM Flash Management Console.

System Requirements

The following levels of software and hardware are required to run IBM Flash Management Console.

Server

- IBM Flash Management Console on a centralized server
- RAM: 4GB plus 64MB of free RAM for each High IOPS module managed
- Storage: Up to 200MB minimum hard drive space plus up to 60MB additional space for each High IOPS module

Agent

- IBM Flash Management Console has an Agent on each High IOPS host server
- IBM VSL: Version 2.1 or later
- RAM: Minimum of 64MB of free RAM

Windows

The IBM Flash Management Console Agent and Server run on the following Windows distributions:

- Microsoft Windows Server 2003 64-Bit (with SP2 or higher)
- Microsoft Windows Server 2008 64-Bit, all versions (with SP1 or higher)
- Microsoft Windows Server 2008 R2 64-Bit, all versions (with SP1 or higher)
- Microsoft Windows Server 2012 R2

Operating Systems

The IBM Flash Management Console Agent and Server support the following operating systems:

- Red Hat Enterprise Linux 5, 6
- SUSE Linux Enterprise Server (SLES) 10, 11
- OpenSUSE 11
- CentOS 5, 6
- Solaris 11 (Agent Only)
- OEL 5, 6
- Mac OS X 10.7 (Agent Only)

VMware

There is no Agent that runs on ESX/ESXi servers. However, after the installation of a SMI-S (CIM) provider on the ESX/ESXi host, the IBM Flash Management Console Server can communicate with the ESX/ESXi host.

An SMI-S provider can be installed on ESX/ESXi 4.x and ESXi 5.0 and 5.5.

Attention!

ioSphere can only communicate with ESX hosts that are managed by a vCenter server with a registered Fusion-io vSphere plugin.

Supported Browsers

To take advantage of all the IBM Flash Management Console features, please use one of the following fully supported browsers:

- Mozilla Firefox 10 and later (Windows, Mac, and Linux)
- Microsoft Internet Explorer 9, 10
- Google Chrome 32.x (Windows)

The following browsers have not been tested, but are believed to work:

- Google Chrome (Linux)

Browsers with known issues:

- Google Chrome on Mac

Resolution

1024 x 768 or greater

Adobe Flash Player

For an optimal viewing experience, we recommend that you install the latest version of Adobe Flash Player 11 or above.

Download Files

To install the Management Server and Agent applications, download and install the following files:

Linux

- `fio-common-mgmt*.rpm` or `fio-common-mgmt*.deb` (if not already installed)
- `fio-msrv*.rpm` or `fio-msrv*.deb` (IBM Flash Management Console)
- `fio-agent*.rpm` or `fio-agent*.deb`

Attention!

After installation, you can use `fio-msrv -v` at a command line to output a unique number that differentiates between software builds.

Windows

- `Fusion-io_Management_Server_Setup_*_x64.exe` (Server and Agent)

Mac

- `fio-agent.pkg` (Agent only)

Installation and configuration procedures are described on the following pages.

Management Server Firewall Settings

If you need to adjust your firewall settings to allow Agents to communicate via SSL to the Management Server, use the following:

- Port: 9051 TCP (TLS/SSL)
- Direction: Outbound (Agent), Inbound (Server)
- Domain: [Management Server Domain/IP]

NOTE-

Port 9051 TCP is the port that has been assigned to IBM by the Internet Assigned Numbers Authority (IANA). You can choose to modify the port in the Management Server settings (in the web user interface), but you may need to re-export the Agent access key if you do not use auto-discovery.

Management Server Installation and Configuration

Follow the instructions based on your platform.

Management Server - Linux Installation and Configuration

Installation

Attention!

To prevent an automatic reboot during a silent installation, use the `/norestart` command.

Install `fio-common-mgmt` (if not already installed)

NOTE-

All commands require administrator privileges. Log in as "root" or use sudo to run the install.

`fio-common-mgmt` is a support package that is available with the ioMemory VSL (driver) installation. To see if `fio-common-mgmt` is installed, run:

```
rpm -qa | grep -i fio-common-mgmt
```

Debian equivalent command:

```
dpkg -l | grep -i fio-common-mgmt
```

To install `fio-common-mgmt`, run the following command:

```
sudo rpm -i fio-common-mgmt*.rpm
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -i fio-common-mgmt*.deb
```

Attention!

If you are upgrading from `fio-msrv` version 1.x to 3.x , uninstall the old version before proceeding to the following steps.

Install Management Server (`fio-msrv`)

Run the following command:

```
sudo rpm -i fio-msrv*.rpm
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -i fio-msrv*.deb
```

After installation is complete, start the server with the following command:

```
sudo /etc/init.d/fio-msrv start
```

NOTE-

fio-msrv is already configured to auto-start on boot.

Attention!

If you have upgraded and installed the new **fio-msrv**, IBM Flash Management Console maintains most of your data, but does not restore your saved searches or custom alerts. As a part of the upgrade process, IBM Flash Management Console puts the contents of those two files on disk in two different text files. If you want to keep your alerts and search rules created in a previous version, you will have to read them and re-enter them in the new GUI after the installation is complete and upon first run.

These are the names of the two backed-up files:

- alert_rules.txt
- saved_searches.txt

and this is the directory where you will find them: **/var/lib/fio/data/data_legacy**.

You may use the data in the two text files to recreate your saved alert rules and saved searches in the IBM Flash Management Console 3.x server.

Attention!

If you are upgrading from **fio-msrv** version 1.x to 3.x, you will need to associate the same Labels to the High IOPS that they were previously associated with in the previous version.

Uninstalling the Management Server

To uninstall the Management Server, run the following command:

```
sudo rpm -e <pkg-name>
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -r <pkg-name>
```

First Time Setup

Local Browser

1. Open your browser on the machine where the management server was installed and go to **http://localhost:9051/**
2. The **Admin Password** window appears. In this window, set the admin password. Click **Next**.
3. The Remote Access window appears. Enter the **Agent Push Frequency**. The default is 15 seconds. Increasing this number will make updates less frequent (and history/report information less detailed). Decreasing this number makes updates more frequent, but could affect performance if you are using many clients (more than 20 or 30, for example).
4. Optionally, check the **Enable Remote Access** box. This allows remote access to the Management Server from Agent processes not located on the same machine as the Management Server. **Click Save Changes**.

The features below appear when the **Enable Remote Access** box is checked.

- **Advertise Using Zeroconf** (optional). Causes the Management Server to advertise its service using the Zeroconf service discovery protocol. This allows remote Agent services to automatically discover and communicate with the Management Server.

Attention!

The Zeroconf protocol requires that Avahi be installed on Linux operating systems and Bonjour be installed on Windows operating systems.

Attention!

Using this option still requires manual configuration of Access Keys.

- **Host Name**. Enter an IP address that will not change in an uncontrolled way (such as a DHCP lease that expires). This address is used by Agent services to communicate to the Management Server. If you are unable to reach the Management Server at the configured IP address, you can reset the IP address by clicking the Settings tab and entering the new IP address in the Host Name field.
- **Port**. By default, the port is set to 9051, which is reserved for IBM Flash Management Console worldwide and should not conflict with any other applications. You may opt to change the port (to 443, for example) depending on your requirements.
- **Pre-configured SSL certificate** (optional). Fusion-io provides a pre-configured certificate, but will result in "untrusted certificate" messages. It is less secure than using a certificate signed by a trusted CA that is made specifically for your server.

Click **Save Changes**.

NOTE-

IBM Flash Management Console includes a pre-configured SSL certificate, but it is recommended that you create and use a custom certificate.

No Local Web Browser in Linux

If you run `fio-msrv` from a command line without a local browser, you must configure these settings manually.

Attention!

Completion of the following steps will decrease security.

1. Set admin password:

```
sudo fio-msrv -w
```

2. Enable remote access:

```
sudo fio-msrv -R
```

3. Set the port number <num> that the service is listening to:

```
sudo fio-msrv -P<num>
```

4. Enable automatic Agent authorization.

```
sudo fio-msrv -A
```

5. To view the remote URL path run:

```
sudo fio-msrv -u
```

6. Open your web browser and enter the URL `https://hostname:9051/index.html`)

You will be prompted to configure the remaining settings, as described above.

Server Firewall Settings

If you need to adjust your firewall settings to allow Agents to communicate via SSL to the Server, use the following:

- Port: 9051 TCP (TLS/SSL)
- Direction: Outbound (Agent), Inbound (Server)
- Domain: IBM Flash Management Console Server Domain/IP

Management Server - Windows Installation and Configuration

Attention!

To prevent loss of data during the Windows installation, be sure to do the following BEFORE uninstalling IBM Flash Management Console 1.x and BEFORE installing IBM Flash Management

Console 3.x:

Before uninstalling IBM Flash Management Console 1.x:

Backup the data folder found in **C:\Program Files\Fusion-io iomemory VSL\Utils\Resources**.

Before installing IBM Flash Management Console 3.x:

Backup the data folder found in
C:\Windows\System32\config\systemprofile\AppData\Roaming\fio.

Return the data folder back to its current location in **C:\Program Data\fio**.

Installation

Run **Fusion-io_Management_Server_*_x64.exe** and follow the installation wizard's on-screen instructions.

Attention!

If you have upgraded and installed the new `fio.msrv`, IBM Flash Management Console maintains most of your data, but does not restore your saved searches or custom alerts. As a part of the upgrade process, IBM Flash Management Console puts the contents of those two files on disk in two different text files. If you want to keep your alerts and search rules created in a previous version, you will have to re-enter them in the new GUI after the installation is complete and upon first run.

These are the names of the two backed-up files:

- `alert_rules.txt`
- `saved_searches.txt`

and this is the directory where you will find them: `%ProgramData%\fio`

You may use the data in the two text files to recreate your saved alert rules and saved searches in the IBM Flash Management Console 3.x server.

If you are updating to 3.x, then you will need to associate the same Labels to the High IOPS that is was previously associated with in 1.x.

First Time Setup

To configure the IBM Flash Management Console management server:

1. Open your browser on the machine where the management server was installed and go to **`http://localhost:9051/`**
2. The **Admin Password** window appears. In this window, set the admin password. Click **Next**.
3. The Remote Access window appears. Enter the **Agent Push Frequency**. The default is 15 seconds. Increasing this number will make updates less frequent (and history/report information less detailed).

Decreasing this number makes updates more frequent, but could affect performance if you are using many clients (more than 20 or 30, for example).

Attention!

Increasing this number above 600 displays this message: "A high push frequency will potentially result in data being out of date in ioSphere."

4. Optionally, check the **Enable Remote Access** box. This allows remote access to the Management Server from Agent processes not located on the same machine as the Management Server. **Click Save Changes.**

The features below appear when the **Enable Remote Access** box is checked.

- **Advertise Using Zeroconf** (optional). Causes the Management Server to advertise its service using the Zeroconf service discovery protocol. This allows remote Agent services to automatically discover and communicate with the Management Server.
-

Attention!

The Zeroconf protocol requires that Avahi be installed on Linux operating systems and Bonjour be installed on Windows operating systems.

Attention!

Using this option still requires manual configuration of Access Keys.

- **Host Name.** Enter an IP address that will not change in an uncontrolled way (such as a DHCP lease that expires). This address is used by Agent services to communicate to the Management Server. If you are unable to reach the Management Server at the configured IP address, you can reset the IP address by clicking the Settings tab and entering the new IP address in the Host Name field.
- **Port.** By default, the port is set to 9051, which is reserved for IBM Flash Management Console worldwide and should not conflict with any other applications. You may opt to change the port (to 443, for example) depending on your requirements.
- **Pre-configured SSL certificate** (optional). Fusion-io provides a pre-configured certificate, but will result in "untrusted certificate" messages. It is less secure than using a certificate signed by a trusted CA that is made specifically for your server.

Click **Save Changes.**

NOTE-

IBM Flash Management Console includes a pre-configured SSL certificate, but it is recommended that you create and use a custom certificate.

Agent Installation and Configuration

Follow the instructions based on your platform.

Agent Linux Installation and Configuration

3.x Linux agents require two libraries to be installed:

- `libvsl`
- `fio-common-mgmt`

The installed version of `libvsl/libfio` must match the installed version of the `iomemory-vsl` driver.

Attention!

2.x releases required a library called `libfio`. However, with 3.x, the required code is installed with `libvsl`.

NOTE-

All commands require administrator privileges. Log in as `root` or use `sudo` to run the install and start the server.

Install `fio-common-mgmt` (if not already installed)

NOTE-

All commands require administrator privileges. Log in as `root` or use `sudo` to run the install.

`fio-common-mgmt` is a support package that is available with the High IOPS VSL driver installation. To see if `fio-common-mgmt` is installed, run:

```
rpm -qa | grep -i fio-common-mgmt
```

Debian equivalent command:

```
dpkg -l | grep -i fio-common-mgmt
```

To install `fio-common-mgmt`, run the following command:

```
sudo rpm -i fio-common-mgmt*.rpm
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -i fio-common-mgmt*.deb
```

Attention!

If you are upgrading from **fio-msrv** version 1.x to 3.x , uninstall the old version before proceeding to the following steps.

Install fio-agent

Run the following command:

```
sudo rpm -i fio-agent*.rpm
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -i fio-agent*.deb
```

After installation is complete, start the Agent with the following command:

```
sudo /etc/init.d/fio-agent start
```

NOTE-

The Agent is already configured to auto-start on boot.

Uninstalling fio-agent

To uninstall the Agent, run the following command:

```
sudo rpm -e <pkg-name>
```

For Ubuntu/Debian, run this command:

```
sudo dpkg -r <pkg-name>
```

Configuration

The Agent is configured to automatically find and connect to a Management Server (IBM Flash Management Console requires Avahi on Linux).

To connect the agent to the server manually:

1. Using IBM Flash Management Console, navigate to Settings/Remote Access Key.
2. On the host machine where the Management Server is running, click **Download Remote Access Key** and save the copy to this location on the remote machine:

```
/var/lib/fio/agent_keys/
```

Once copied, the Agent should connect within 15 seconds.

To disconnect the Agent from the server manually, delete the Access Key **[hostname].key** from the following location on the machine where the Agent is running:

```
/var/lib/fio/agent_keys/[hostname].key
```

Proxy (IBM Flash Management Console only)

The Agent uses the Linux **http_proxy** and **https_proxy** environment variables for proxy connections. If you want the Agent to use a proxy server, consult your OS documentation on how to modify these environment variables.

Agent Run Options

Option	Description
-f, --foreground	Run in foreground rather than service/daemon.
--verbose	Enable verbose (debug) logging.
-d, --debug	Display additional debug information.
--brief (default)	Disable verbose (debug) logging.
-r, --runonce	FMS -"Run Once" mode. Collect device data once and push to IBM, then exit.
-o, --outfile	<path> Same as --runonce but dump to specified path instead of automatically sending to IBM.
-c, --cfg-path	<path> Path to config file.
-t, --runtime-datafiles-path	<path> Path to runtime data files (if not specified, default location is used.)
-h, --help	Print the help menu then exit.
-v, --version	Print the program name and version then exit.

Agent Windows Installation and Configuration

Installation

Run `Fusion-io_Management_Server_Setup*_x64.exe` and follow the on-screen instructions.

Configuration

The Agent is configured to automatically find and connect to an IBM Flash Management Console server (requires Bonjour on Windows).

To connect the Agent to the server manually:

1. Using IBM Flash Management Console, navigate to the **Settings** page and click the **Remote Access Key** link.
2. On the host machine running the agent, click **Download Remote Access Key** and copy the key to the following:

For Windows Server 2008

```
C:\ProgramData\fiio\agent_keys
```

Attention!

To disconnect the Agent from the server manually, delete the Access Key `hostname.key` from the following location: `C:\ProgramData\fiio\agent_keys\[hostname].key`

For Windows Server 2003

```
C:\Documents and Settings\All Users\Application Data\fiio
```

Once copied, the Agent should connect within 15 seconds.

To disconnect the Agent from the server manually, delete the **Access Key** `hostname.key` from the following location:

```
C:\Windows\System32\config\systemprofile\AppData\Roaming\fiio\agent_keys\  
[hostname].key
```

Proxy (IBM Flash Management Console only)

The Agent uses the Windows `http_proxy` and `https_proxy` environment variables for proxy connections. If you want the Agent to use a proxy server, consult your OS documentation on how to modify these environment variables.

Agent Mac Installation and Configuration

Attention!

The Agent requires the High IOPS VSL (ioMemory driver) to run. Make sure you have installed version 2.2.1 or later of the driver package before installing the Agent.

Attention!

If you are upgrading from **fio-msrv** version 1.x to 3.x , uninstall the old version before proceeding to the following steps.

Install fio-agent

1. Double-click the installation package. The installation program will assist you with the installation process.
2. Restart your computer.

Configuration

The Agent is configured to automatically find and connect to a Management Server.

To connect the agent to the server manually:

1. Using IBM Flash Management Console, navigate to Settings/Remote Access Key.
2. On the host machine where the Agent is running, click **Download Remote Access Key** and save the copy to:

```
/var/lib/fio/agent_keys/
```

Once copied, the Agent should connect within 15 seconds.

To disconnect the Agent from the server manually, delete the Access Key **[hostname].key** from the following location on the machine where the Agent is running:

```
/var/lib/fio/agent_keys/[hostname].key
```

Proxy (IBM Flash Management Console only)

The Agent uses the Linux **http_proxy** and **https_proxy** environment variables for proxy connections. If you want the Agent to use a proxy server, consult your OS documentation on how to modify these environment variables.

Agent Config Options

The following settings can be modified in `fio-agent-cfg.xml`, located at:

- Linux and Mac: `/etc/fio/`
- Windows: `C:\Program Data\fio`

Auto-Discover Management Server `<iomanager-discovery-enabled>`

Enabling this causes an Agent to locate a management server and to automatically connect with it.

- True=Enable(Default)
- False=Disabled

Disable if you have issues with the following:

- Multiple Management Servers - An Agent does not try to connect with any server beyond the first one it finds. You will have to manually connect an agent to multiple services.
- Security

Attention!

You must delete the XML "comment" tags ("`<!--`" and "`-->`") in order for this parameter to take effect.

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