Monitor ExtremeCloud IQ - Site Engine Server Health

The following sections provide detailed information on how to use specific ExtremeCloud IQ - Site Engine reports and ExtremeCloud IQ - Site Engine features to monitor your ExtremeCloud IQ - Site Engine Server's health. These reports provide you with the information you need to monitor, analyze, and troubleshoot ExtremeCloud IQ - Site Engine server problems.

- Track ExtremeCloud IQ - Site Engine Server CPU/Memory Trends
- Monitor ExtremeCloud IQ - Site Engine Server Disk Access
- Monitor Server and Database Connectivity

Track ExtremeCloud IQ - Site Engine Server CPU/Memory Trends

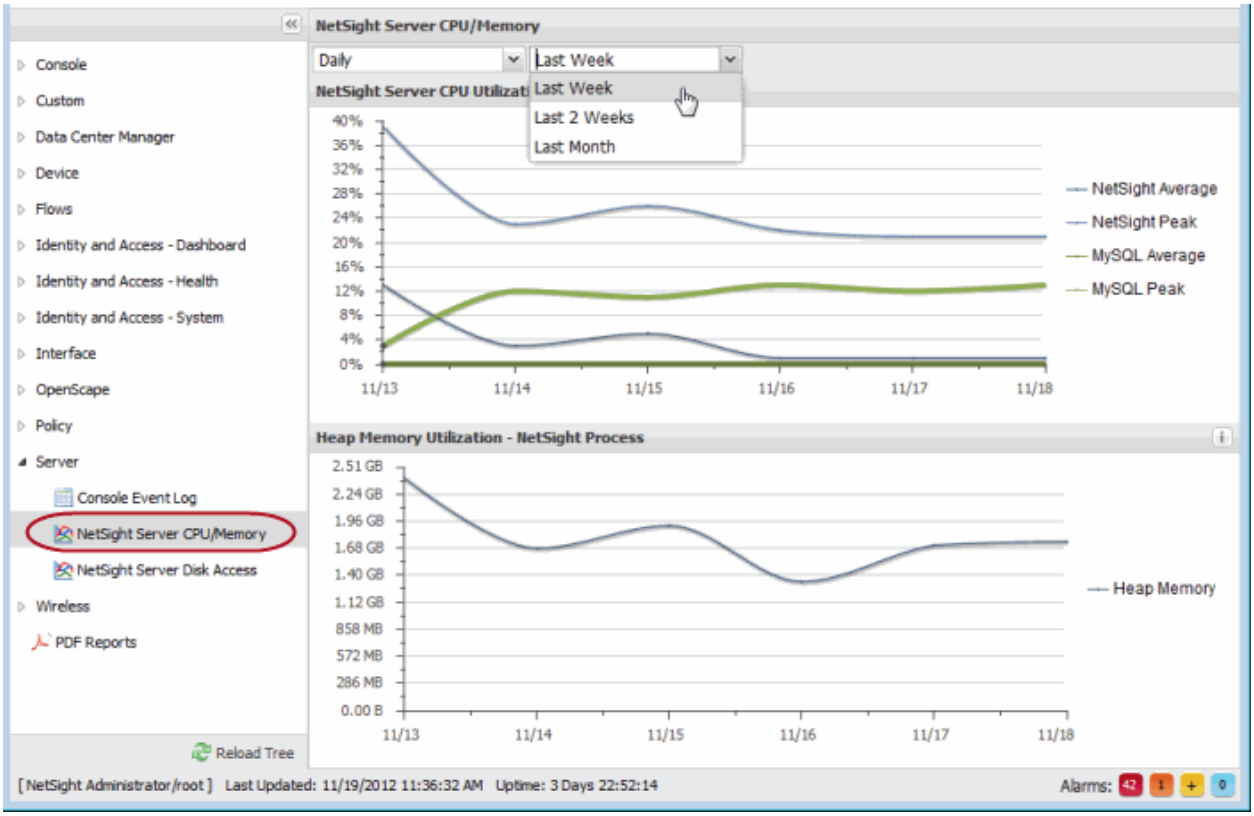
The ExtremeCloud IQ - Site Engine report on ExtremeCloud IQ - Site Engine Server CPU/Memory utilization provides trending information on server performance over a period of time. Use this information to establish a baseline and identify changes in the system.

Knowing the system's normal operating behavior makes it easier to identify when the server's behavior deviates from the norm and when exactly the change occurred. It also makes it easier to identify whether the deviation corresponds to a recent change on the system or network.

If a change in CPU/memory usage is identified, real-time CPU and memory data can be used to further investigate which specific processes are consuming system resources. For more information, see the ExtremeCloud IQ - Site Engine Server Real-Time CPU and Memory Usage section under ExtremeCloud IQ - Site Engine Troubleshooting.

To access the ExtremeCloud IQ - Site Engine Server CPU/Memory report, launch ExtremeCloud IQ - Site Engine and select the **Reports** tab. Expand the Server folder and select the report, as shown below.

ExtremeCloud IQ - Site Engine Server CPU/Memory

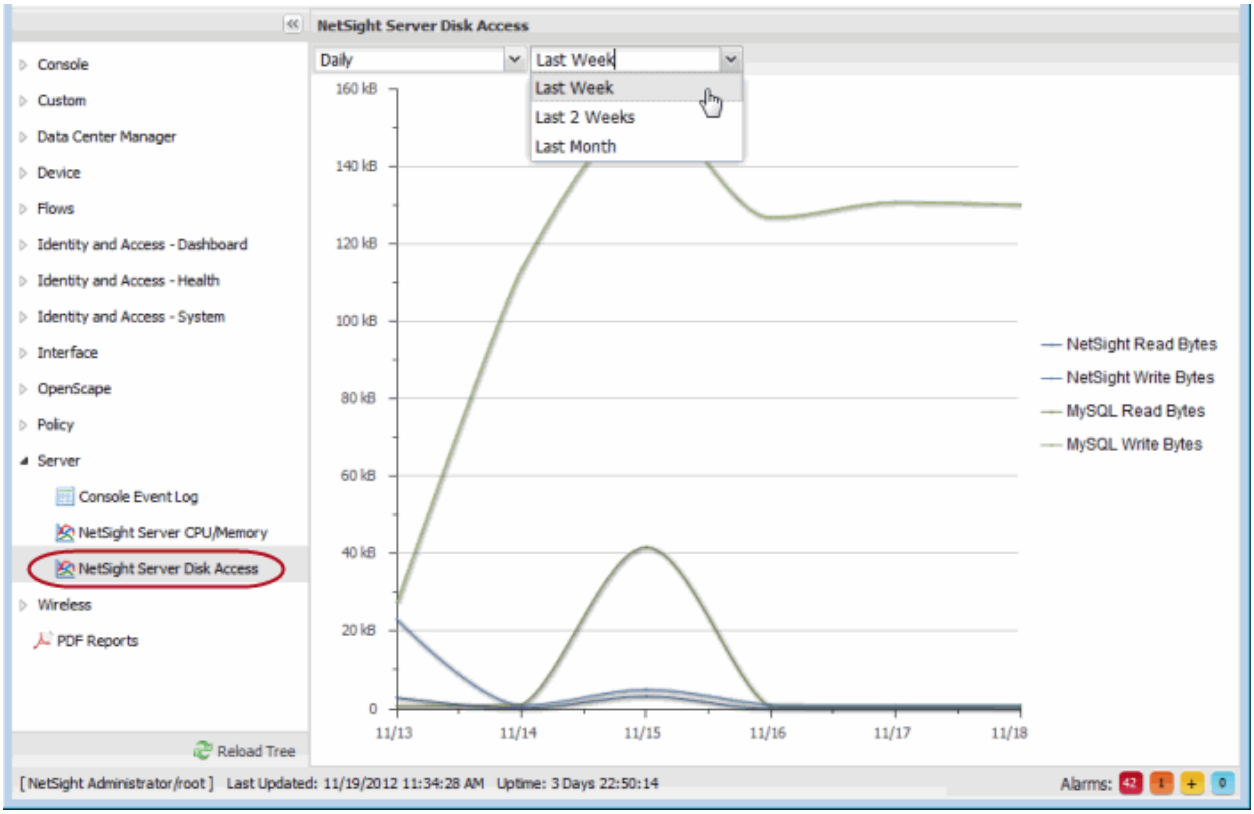


Monitor ExtremeCloud IQ - Site Engine Server Disk Access

The ExtremeCloud IQ - Site Engine Server Disk Access report provides information about disk activity levels on the server. Consistently heavy disk activity causes server performance issues and requires further investigation. Use this report to track read and write operations for both the ExtremeCloud IQ - Site Engine server and the mySQL database.

To access the ExtremeCloud IQ - Site Engine Server Disk Access report, launch ExtremeCloud IQ - Site Engine and select the Reports tab. Expand the Server folder and select the report, as shown below.

ExtremeCloud IQ - Site Engine Server Disk Access Report



Monitor Server and Database Connectivity

The ExtremeCloud IQ - Site Engine server has a built-in mechanism that issues an alert in the event the server is unable to communicate with the database. This alert can be configured to trigger an email notification to be sent to a defined email address, so that network administrators can be alerted to the problem in a timely manner.

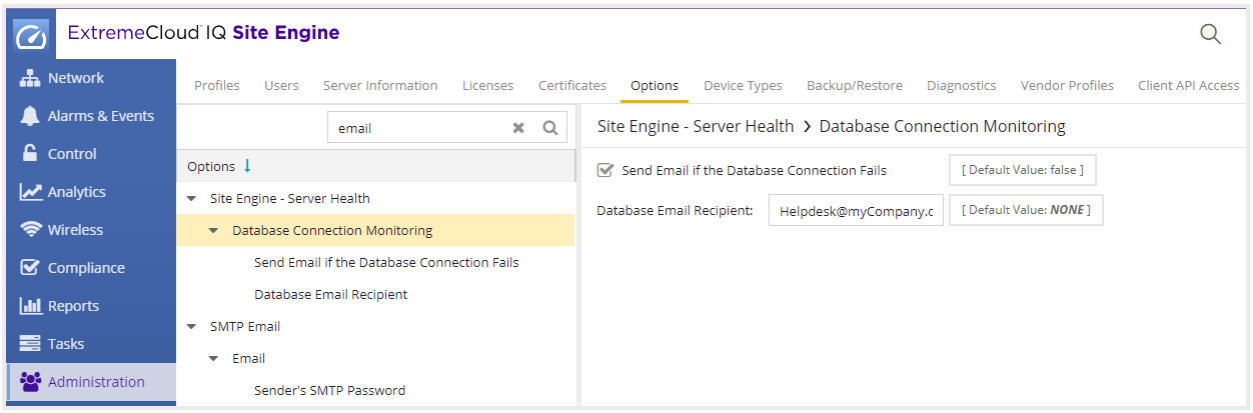
It is important to configure this email notification, because the ExtremeCloud IQ - Site Engine server is central for monitoring, alerting, and diagnosing problems that can arise on the network.

NOTE: In the event communication between the server and database is lost, refer to the ExtremeCloud IQ - Site Engine server.log (see Accessing the Server Log File) for troubleshooting information, as well as other troubleshooting tools that diagnose server CPU, memory, and current disk utilization (see ExtremeCloud IQ - Site Engine Troubleshooting for more information).

Use the ExtremeCloud IQ - Site Engine Suite options to configure the email notification.

1. Navigate to **Administration > Options > Site Engine - Server Health**.
2. Select **Send email.**
3. Enter an email address that will be notified in the event of a database failure.

ExtremeCloud IQ - Site Engine Server Health Options



Performance Tuning

The following sections provide detailed information on how to use specific ExtremeCloud IQ - Site Engine tools and features to monitor and improve ExtremeCloud IQ - Site Engine server performance.

- Tuning NetFlow Collection Settings
- Server Memory Tuning
- Tuning Database Backup Storage
- Binding the Server to One Interface

Tuning NetFlow Collection Settings

NetFlow is a data collection protocol that provides details and analysis of protocol information derived from monitoring flow-based traffic as it traverses a network. K-Series, S-Series, and N-Series devices support NetFlow flow collection. The ExtremeCloud IQ - Site Engine server can be configured as a flow collector for the devices on your network using the Flow Sensor Configuration window in Console.

Enabling NetFlow collection on your network can add significant overhead to ExtremeCloud IQ - Site Engine server operation. Incoming flow data collection consumes a large portion of server memory and impacts the overall disk utilization footprint of the ExtremeCloud IQ - Site Engine server. It can also lead to extended time required to perform an ExtremeCloud IQ - Site Engine server backup, if reporting data is included in the backup.

In addition, name resolution for NetFlow traffic displayed in ExtremeCloud IQ - Site Engine adds overhead to the server. NetFlow traffic bursts can lead to a spike in name resolution traffic which also adds to the overall load on the network.

You can adjust NetFlow collection settings using ExtremeCloud IQ - Site Engine options. Navigate to
Administration > Options > NetFlow Collector.

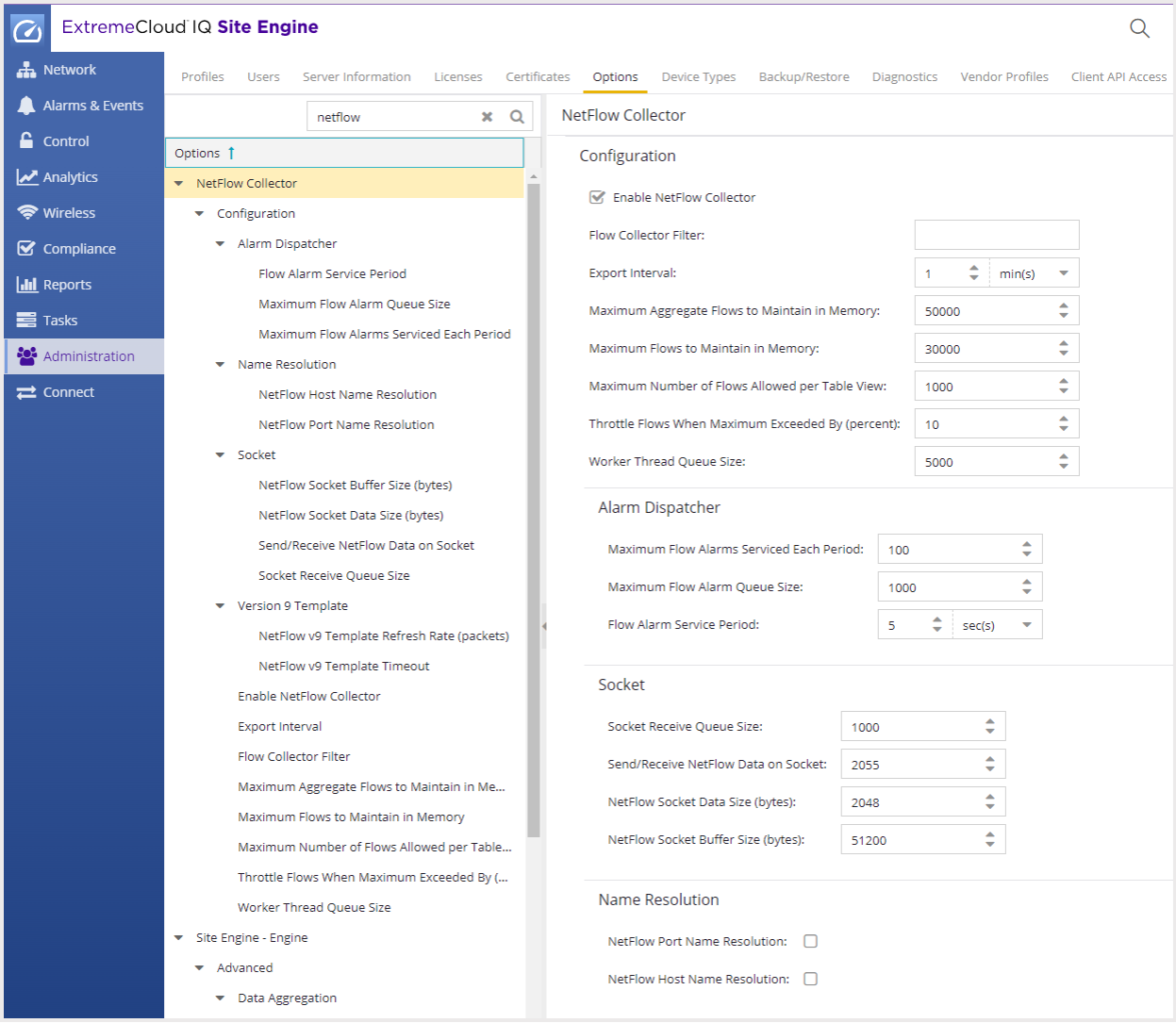
For most implementations, the default settings are recommended. However, in some cases, these settings can be adjusted to improve ExtremeCloud IQ - Site Engine server performance. For example, you can change the maximum number of flows and aggregate flows to maintain in memory. Changing this number would adjust the amount of memory used to store flows.

You can also disable host and port name resolution for NetFlow. Disabling name resolution would affect the display of ExtremeCloud IQ - Site Engine data because IP addresses would not be resolved to names. Other than that, the ExtremeCloud IQ - Site Engine data is not impacted. Disabling name resolution would also reduce the DNS traffic on the network and to the DNS server(s).

The Advanced settings for the NetFlow flow collection let you limit resources used by ExtremeCloud IQ - Site Engine Flow Alarm handling.

NOTE: Perform any change in the default flow collection parameters with caution and make adjustments taking into account items such as the size of the network and features enabled in ExtremeCloud IQ - Site Engine. Advise all ExtremeCloud IQ - Site Engine users of changes to the default flow collection parameters so that they can monitor any changes in server performance.

NetFlow Collection Options



Server Memory Tuning

The ExtremeCloud IQ - Site Engine software requires a significant amount of system resources. It is intended to run on a dedicated system where it does not compete with other software for system resources. Upon installation, ExtremeCloud IQ - Site Engine detects whether the system has the minimum memory required to run correctly. It will then scale its memory usage to take advantage of the available system memory. It should not be necessary to manually adjust

memory usage. If you suspect that you are experiencing performance issues related memory usage, contact Global Technical Assistance Center (GTAC).

Tuning Database Backup Storage

The ExtremeCloud IQ - Site Engine Server can be configured to run an automated backup on the day(s) of the week and time of your choosing. An up-to-date database backup is an important component to ensuring that critical information pertaining to all ExtremeCloud IQ - Site Engine applications is saved and readily available, if needed.

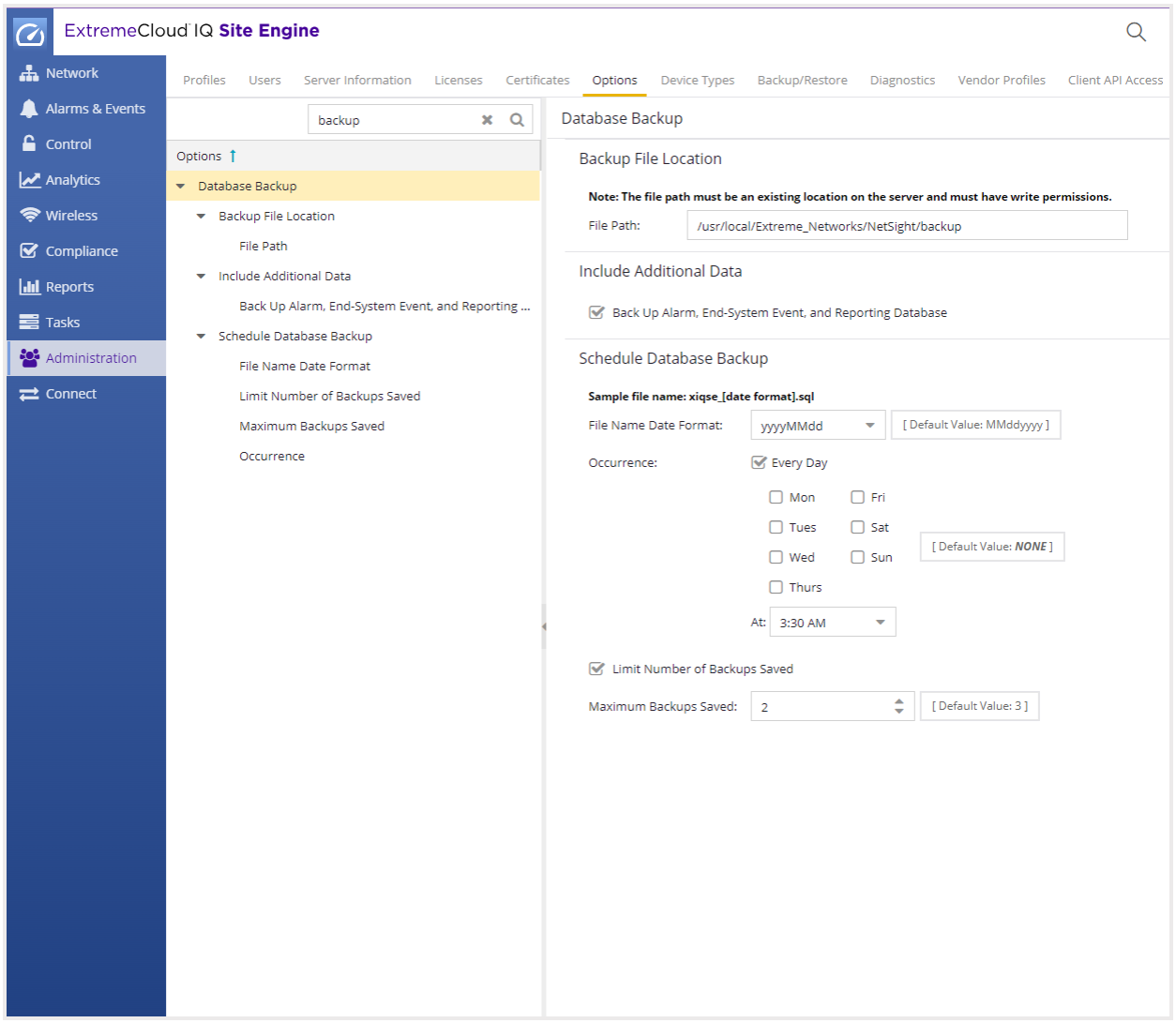
However, while scheduling regular server backups is a best practice, it can lead to unintended side-effects in some environments. For example, backing up multiple copies of the database consumes disk space on the server. Ensuring there is plenty of free space prior to enabling this feature as well as checking the overall size of each backup is helpful in determining whether space issues can become a problem. (See ExtremeCloud IQ - Site Engine Server Disk Utilization for more information.)

Another option is to save backups to a separate location such as a network share. It is important to verify periodically that the backups are running as expected and actually completing. You might also schedule quarterly database restores on a lab server to ensure the integrity of the backups.

In addition, the size of the database backup should be checked after major changes to the environment, for instance enabling ExtremeCloud IQ - Site Engine data collection or implementing ExtremeControl on the network. If there are concerns regarding the available disk space, place limits on the number of backups saved or adjust the frequency of backups.

Database backups are configured in the ExtremeCloud IQ - Site Engine Suite options. Navigate to
Administration > Options > Database Backup.

Database Backup Options



Binding the Server to One Interface

If the ExtremeCloud IQ - Site Engine server has multiple NICs (Network Interface Cards) installed, it is a good practice to configure the server to always bind to the preferred IP address. If the server does not bind to the correct interface, local and remote clients and ExtremeControl engines are unable to connect to the ExtremeCloud IQ - Site Engine server.

During the startup process, the ExtremeCloud IQ - Site Engine server automatically binds to the first available NIC, which might not be the correct interface for the server to use. In addition, changes on the network can cause the server to bind to an incorrect interface, should the server restart during a change.

You will need to make configuration changes in order to bind the server to the correct interface. Configure the ExtremeCloud IQ - Site Engine server to bind to the correct IP address.

For instructions, see the ExtremeCloud IQ - Site Engine Installation Guide section on Systems with Multiple NICs.

ExtremeCloud IQ - Site Engine Troubleshooting

The following sections provide information on tools that can be used when troubleshooting ExtremeCloud IQ - Site Engine server issues.

- System-Wide ExtremeCloud IQ - Site Engine Server Diagnostics
- ExtremeCloud IQ - Site Engine Server Real-Time CPU and Memory Usage
- ExtremeCloud IQ - Site Engine Server Disk Utilization
- ExtremeCloud IQ - Site Engine Server Diagnostics
- Generate a Show Support Report

System-Wide ExtremeCloud IQ - Site Engine Server Diagnostics

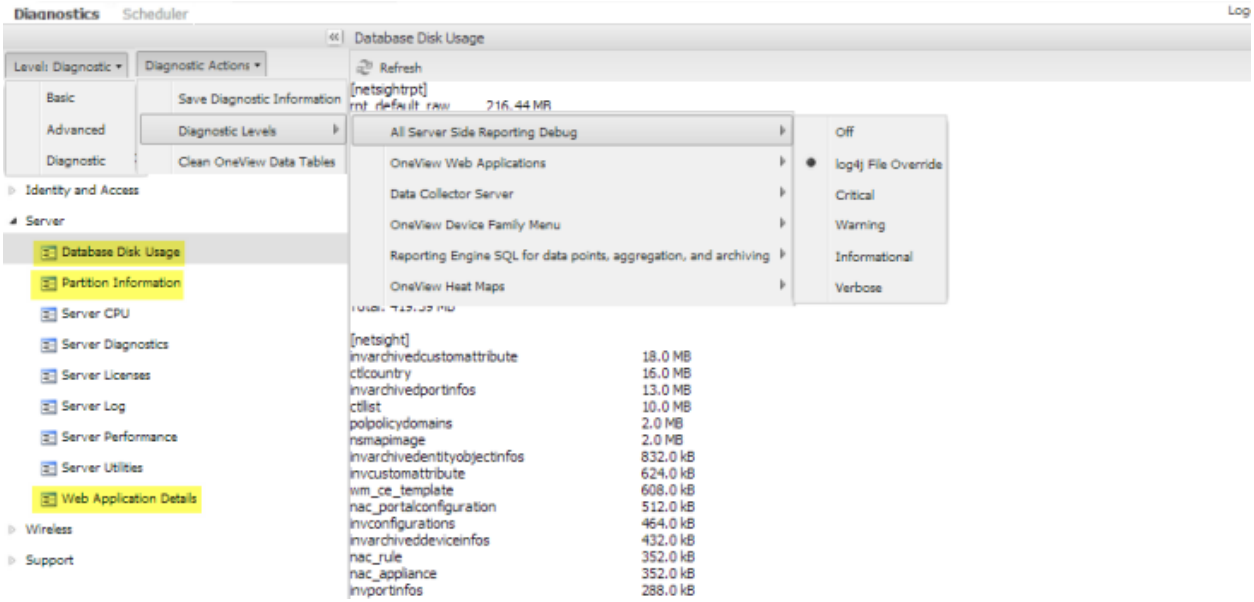
The Administration tab in ExtremeCloud IQ - Site Engine provides detailed statistical and diagnostic information regarding the overall performance and operation of significant ExtremeCloud IQ - Site Engine server functions. It is important to review all the reports available on the Administration tab (Diagnostics sub-tab) so that they can be leveraged when diagnosing and troubleshooting problems.

There are three levels of information available: Basic, Advanced, and Diagnostic. The Basic level provides reports indicating the overall status of the server. Increasing the level to Diagnostic adds additional reports providing more granular insight into the overall operation of the server.

For example, the Diagnostic level adds reports on Database Disk Usage, Partition Information, and Web Application Details, providing in-depth information such as how much each ExtremeCloud IQ - Site Engine component contributes to the overall size of the server database, and DWR statistics including the number of calls made and the average time to complete.

The Diagnostic level also includes a menu of Diagnostic Actions which provide the ability to Save Diagnostic information (similar to the Show Support function) and also enable additional advanced diagnostic logging levels. (Note: As with any diagnostics, care should be taken when enabling increased diagnostic logging and is advised only with the guidance of an Extreme Networks Support Engineer.)

Administration Tab Diagnostics



ExtremeCloud IQ - Site Engine Server Real-Time CPU and Memory Usage

Troubleshooting ExtremeCloud IQ - Site Engine server performance issues related to CPU and memory utilization is easier when you can refer to a CPU utilization baseline that was charted over a period of time.

Knowing the system's normal operating behavior makes it easier to identify when the server's behavior deviates from the norm and when exactly the change occurred. It also makes it easier to identify whether the deviation corresponds to a recent change on the system or network.

For more information on how to establish a baseline, see the Track ExtremeCloud IQ - Site Engine Server CPU/Memory Trends section under Monitor ExtremeCloud IQ - Site Engine Server Health.

When you have your baseline, use these four tools to monitor the ExtremeCloud IQ - Site Engine server CPU and memory usage in real-time and compare that data to the baseline.

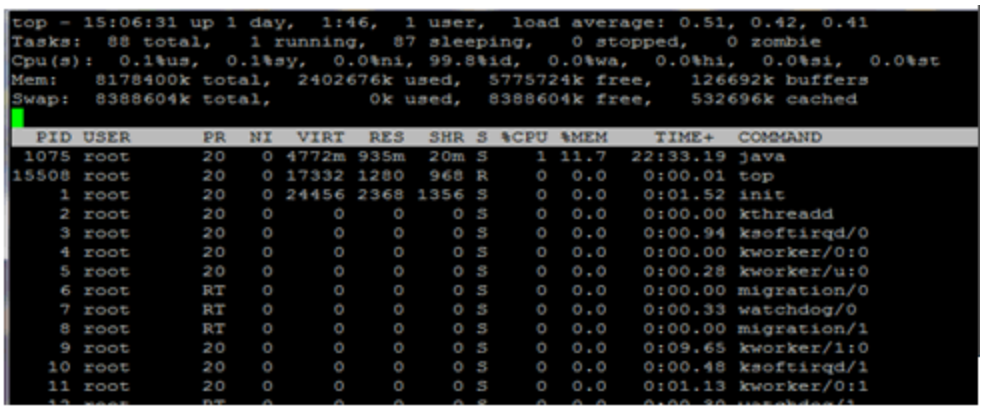
Linux "top" Command

The "top" command displays the most CPU-intensive processes on the system and provides an ongoing look at processor activity in real-time.

The command displays system summary information as well as the processes currently being managed by the Linux kernel. The display continuously refreshes, providing valuable insight into the processes that are consuming the most resources and the ability to quickly monitor incremental usage of specific processes that can be slowly consuming resources over time. The output contains useful information such as CPU, Memory, Process Time, and Process ID.

Refer to Linux operating system documentation for more information about the "top" command.

Linux "top" Command Display



Linux "vmstat" Command

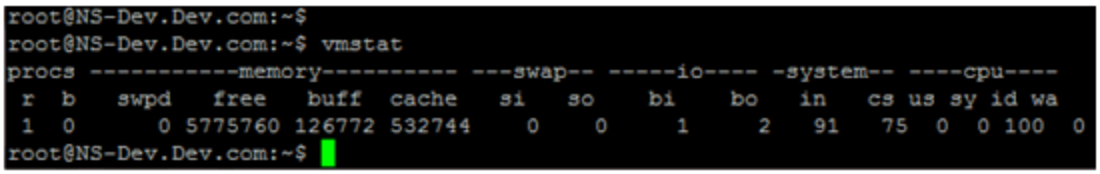
The Linux "vmstat" (virtual memory statistics) command displays summary information about operating system memory, processes, interrupts, paging and block I/O. The first report displayed provides the averages since the last reboot.

If you want to use the command to monitor the virtual memory activity on your system, it is best to specify a sampling interval. Executing the command at predefined intervals helps to identify the rate of change in specific values. The command "vmstat -an 10 15" executes with a display that runs every 10 seconds for 15 iterations, and includes active and inactive memory usage.

Of particular interest would be whether the system is using swap memory, and if so, how frequently and what are the overall memory conditions when this occurs. Keep in mind that it is normal for Linux-based systems to have higher memory consumption due to the operation of the OS, but further investigation is warranted when swap memory is being used.

Refer to Linux operating system documentation for more information about the "vmstat" command.

Linux "vmstat" Command Display



ExtremeCloud IQ - Site Engine Server Disk Utilization

Unmanaged log data or backup files can quickly consume disk space, creating a disk space problem on the ExtremeCloud IQ - Site Engine server. Disk space issues can cause problems

such as an upgrade that fails to execute due to inadequate disk space or, more seriously, an ExtremeCloud IQ - Site Engine server crash.

Here are three tools you can use to troubleshoot disk usage problems on the ExtremeCloud IQ - Site Engine server.

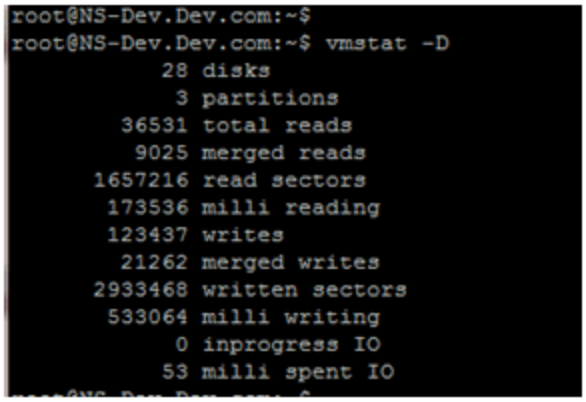
Linux "vmstat -D" and "vmstat -d" Commands

The "vmstat" (virtual memory statistics) command with the "-D" or "-d" option displays disk read and write activity. The "-D" option provides a summary of total disk activity for the entire system, while the "-d" option displays individual disk activity statistics for each disk on the system.

These commands are useful when monitored disk activity (see Monitor ExtremeCloud IQ - Site Engine Server Disk Access) indicates an abnormal change that corresponds with performance-related issues on the ExtremeCloud IQ - Site Engine server. The disk statistics provide a real-time view into disk activity that can perhaps be tied to specific actions.

Refer to Linux operating system documentation for more information about the "vmstat" command.

Linux "vmstat -D" Command Display



Linux "df" and "du" Commands

The Linux "df" command displays how much free disk space is available on the file system. Use "df" to view the overall system disk utilization and identify whether certain directories are at or near full capacity. Use the "-h" option to display the statistics in human readable format.

The "du" command can be used to identify the size of specific files or directories within a parent directory. This command is useful when trying to narrow down specific areas of the file system that are consuming large amounts of disk space.

NOTE: Running the "du" command from a parent directory with the "-ha" option can return a large amount of data. Use the "|more" option or redirect to a file to view the total results for the command.

Refer to Linux operating system documentation for more information about the "df" and "du" commands.

Linux "df -h" Command Display

```
root@NS-Dev.Dev.com:~$ df -h
Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/systemvg-root  52G  8.3G   41G  17% /
udev                      3.9G  4.0K  3.9G   1% /dev
tmpfs                     1.6G  244K  1.6G   1% /run
none                      5.0M     0  5.0M   0% /run/lock
none                      3.9G     0  3.9G   0% /run/shm
/dev/sda1                 228M   25M  192M  12% /boot
root@NS-Dev.Dev.com:~$
```

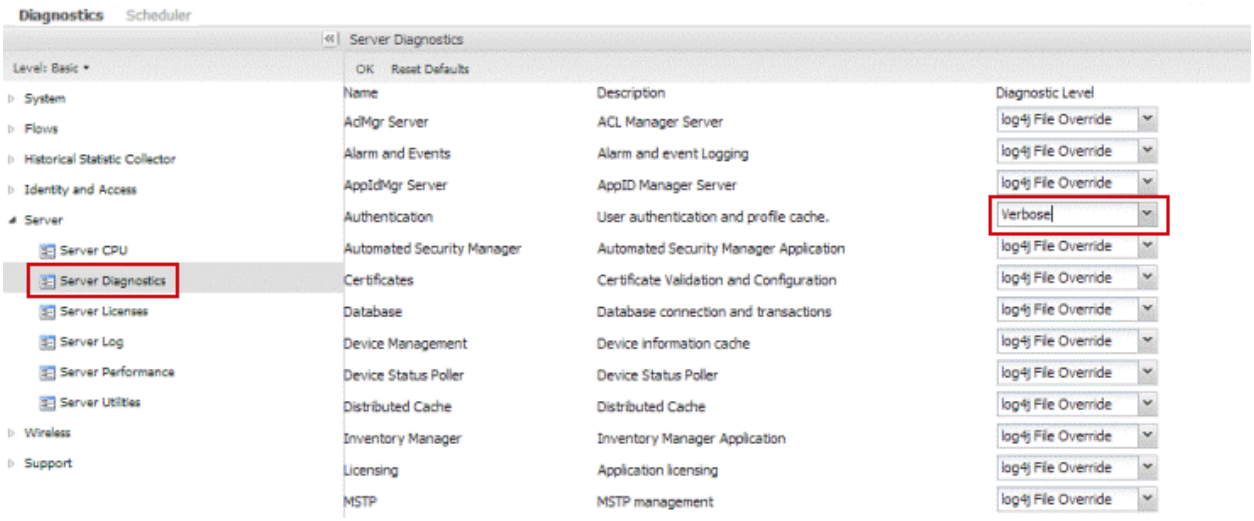
ExtremeCloud IQ - Site Engine Server Diagnostics

Use the **Administration** tab (**Diagnostics** sub-tab) to obtain detailed debug information for ExtremeCloud IQ - Site Engine server processes and applications. Select from a list of diagnostic options to enable targeted debugging of specific system functions. This allows for the collection of relevant data and also helps to limit the overall impact to the system when debugging is enabled.

CAUTION: ExtremeCloud IQ - Site Engine server diagnostics should only be enabled when a specific area of an issue has been identified, or under the guidance of Extreme Networks Support. Certain debug options generate verbose output and could cause adverse effects to the system if enabled for extended periods of time. Debug options should only be enabled long enough to capture data from the behavior under investigation.

Access Server Diagnostics in ExtremeCloud IQ - Site Engine by selecting the **Administration** tab and then expanding the Server section on the **Diagnostics** sub-tab. Enable the different diagnostic groups by setting the Diagnostic Level to "Verbose" for the applications and processes of interest. Debug diagnostic information is mainly saved to the active server.log file on the ExtremeCloud IQ - Site Engine server.

Server Diagnostics



Accessing the Server Log File

The server log file records server activity such as start-up log data, unexpected behavior messaging, and server debug diagnostic log data when enabled. Review previous server log file output to determine when a specific issue started to occur or to uncover additional system issues that can contribute to a current problem.

The file is archived daily into the same directory and is generally named in the server.log.date format.

The server log file can be accessed from the ExtremeCloud IQ - Site Engine Launch page by selecting the **Administration** tab and then the **Server Log** tab. You can also view the Server Log in the Server Information window, which can be launched from the Tools menu or toolbar in every ExtremeCloud IQ - Site Engine application. The Server Log can also be accessed from the `/usr/local/Extreme_Networks/NetSight/appdata/logs` directory.

ExtremeCloud IQ - Site Engine Certificates

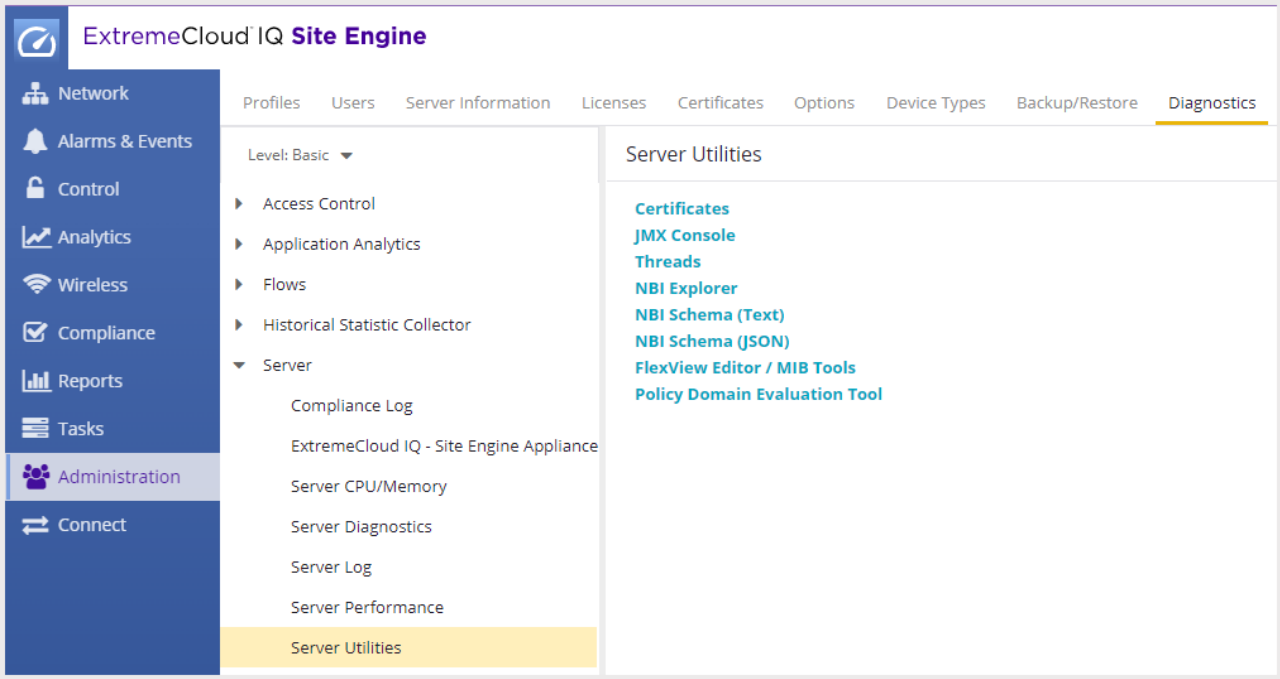
ExtremeCloud IQ - Site Engine uses server certificates to provide secure communication for application web pages and for internal communication between server components.

On the ExtremeCloud IQ - Site Engine server, use the Server Utilities page to view ExtremeCloud IQ - Site Engine server communication certificates. Access the page from the ExtremeCloud IQ - Site Engine Launch page by selecting the **Administration** tab. Select on **Server Utilities**. You need to log in with your username and password. Select the **Certificates** link to open a new window that displays the Server Certificate Chain.

For more information on updating and configuring the ExtremeCloud IQ - Site Engine server certificate, see the top-level Help topic ExtremeCloud IQ - Site Engine and NAC Secure

Communication and the How to Update the ExtremeCloud IQ - Site Engine Server Certificate Help topic in the Server Information section of the Suite-Wide Tools User Guide.

Server Utilities



Generate a Show Support or Show Support Lite Report

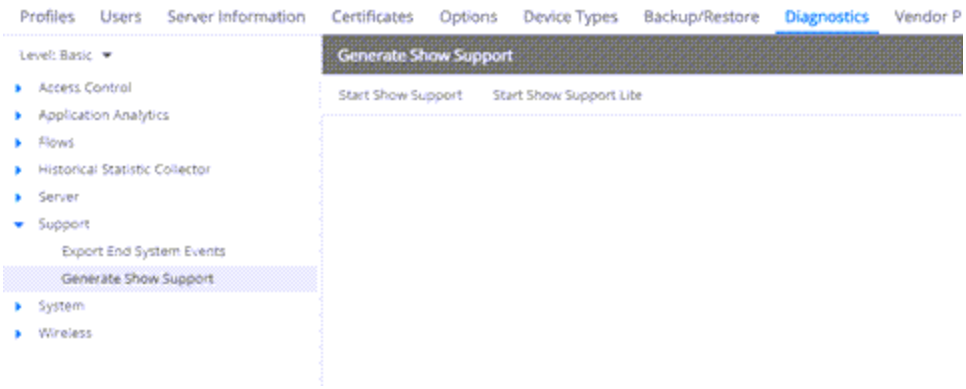
Generate a Show Support or Show Support Lite report to provide to GTAC when requesting assistance with ExtremeCloud IQ - Site Engine. These reports collect important statistical and diagnostic data.

Show Support

The Show Support report provides information pertaining to each of the applications within ExtremeCloud IQ - Site Engine and creates a single archive that your support technician can review.

This data helps to answer many of the upfront questions typically asked when opening a support case, and also provides a comprehensive collection of key data that can reduce follow-up requests for more data and expedite a resolution to the issue.

The Show Support report is generated from the **Administration** tab. Select the **Diagnostics** sub-tab and then expand the **Support** section. Select the **Start Show Support** button to start generating the report.



Show Support provides information about the following:

- Core Service
- Client log files from attached clients
- ExtremeCloud IQ - Site Engine - ReportingServer
- Reporting diagnostic collections
- Collector Status
- Network Task Engine Details
- Vendor Profile Cache
- LoggerUtils Details
- Statistics
- Collector Config
- Device Usage Data csv file
- System Environment log file
- System Properties log file
- Rolling log file
- FlexView Details
- Domain details
- Database details
- Targets
- OneView Engine Details
- TopN Engine Details
- Host/Port Name Cache Details
- License Details
- SNMP Target Availability Summary
- SNMP Statistics Summary

- Search Details
- Target Type Counts
- Device Details Status
- Vendor Profile Details `deviceTypes/myDeviceTypes.properties`
- Vendor Profile Details `deviceTypes/MyVendorProfile.json`
- Flow Engine Details complete.
- Alarm/Event Details complete.
- Site Details complete.
- Console - ConsoleMBean
- Inventory Manager - InvServerManager
- Topology Manager - TopologyService
- Mediation Agent - MediationServer
- Application Analytics - AppIdMgrServer
- ExtremeCloud IQ - Site Engine - MapServer
- Policy Manager - PolServerManager
- Policy Manager diagnostic data collection
- Domain statistics complete.
- NAC Manager - TrustedAccessMgrService
- ExtremeControl engines
- Wireless Manager - BkWirelessMgr
- BK Wireless Manager diagnostic data collection.
- BkManagementServer
- SSHConnectionPool
- ConfigurationManager
- DomainObjectCacheManager
- EventListeners
- ThreatObserverMgr
- ApObserverMgr
- MuObserverMgr
- RogueObserverMgr
- WlanServiceObserverMgr
- NSWMIntegration
- Langley

- BkSchedulerMBean
- TemplateMgrTestMBean
- ThirdParty log files
- ExtremeCloud IQ - Site Engine - GovernanceServer

Upon completion, archived data is stored on the ExtremeCloud IQ - Site Engine server in the *<install directory>*\appdata\ShowSupport folder in a single zipped archive that can be sent to update an open support case.

Show Support Lite

The Show Support Lite report provides information about a smaller set of ExtremeCloud IQ - Site Engine features. Selecting this report creates a much smaller file that ExtremeCloud IQ - Site Engine generates more quickly than the full Show Support report.

Use the Show Support Lite report when looking to gather initial diagnostic information or when instructed by GTAC.

The Show Support report is generated from the **Administration** tab. Select the **Diagnostics** sub-tab and then expand the **Support** section. Select the **Start Show Support Lite** button to start generating the report.

Show Support Lite provides information about the following:

- Core Service
- ReportingServer
- Reporting diagnostic collections
- Collector Status
- Network Task Engine Details
- Vendor Profile Cache
- LoggerUtils Details
- Statistics
- Collector Config
- Flow Engine Details
- Alarm/Event Details
- Site Details
- Console - ConsoleMBean
- Inventory Manager - InvServerManager
- Topology Manager - TopologyService
- Mediation Agent - MediationServer
- Application Analytics - AppIdMgrServer

- ExtremeCloud IQ - Site Engine - MapServer
- Policy Manager - PolServerManager
- NAC Manager - TrustedAccessMgrService
- ExtremeControl Engines
- Wireless Manager - BkWirelessMgr
- ExtremeCloud IQ - Site Engine - GovernanceServer

Upon completion, archived data is stored on the ExtremeCloud IQ - Site Engine server in the *<install directory>*\appdata\ShowSupport folder in a single zipped archive that can be sent to update an open support case.

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