

Activity Monitor



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Activity Monitor

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YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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About the Documentation

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Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <https://www.juniper.net/books>.

Documentation Conventions

Table 1 on page x defines notice icons used in this guide.

Table 1: Notice Icons

| Icon | Meaning | Description |
|--|--------------------|---|
|  | Informational note | Indicates important features or instructions. |
|  | Caution | Indicates a situation that might result in loss of data or hardware damage. |
|  | Warning | Alerts you to the risk of personal injury or death. |
|  | Laser warning | Alerts you to the risk of personal injury from a laser. |
|  | Tip | Indicates helpful information. |
|  | Best practice | Alerts you to a recommended use or implementation. |

Documentation Conventions

[Table 1 on page x](#) defines the notice icons used in this guide. [Table 3 on page xi](#) defines text conventions used throughout this documentation.

Table 2: Notice Icons

| Icon | Meaning | Description |
|--|--------------------|---|
|  | Informational note | Indicates important features or instructions. |
|  | Caution | Indicates a situation that might result in loss of data or hardware damage. |
|  | Warning | Alerts you to the risk of personal injury or death. |
|  | Laser warning | Alerts you to the risk of personal injury from a laser. |
|  | Tip | Indicates helpful information. |
|  | Best practice | Alerts you to a recommended use or implementation. |

Table 3: Text Conventions

| Convention | Description | Examples |
|-----------------------------------|--|--|
| Bold text like this | <ul style="list-style-type: none"> Represents keywords, scripts, and tools in text. Represents a GUI element that the user selects, clicks, checks, or clears. | <ul style="list-style-type: none"> Specify the keyword exp-msg. Run the install.sh script. Use the pkgadd tool. To cancel the configuration, click Cancel. |
| Bold text like this | Represents text that the user must type. | user@host# set cache-entry-age <i>cache-entry-age</i> |
| Fixed-width text like this | Represents information as displayed on your terminal's screen, such as CLI commands in output displays. | <pre> nic-locators { login { resolution { resolver-name /realms/ login/A1; key-type LoginName; value-type SaeId; } } } </pre> |

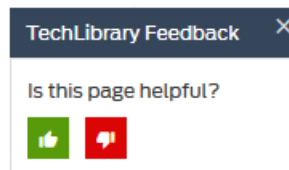
Table 3: Text Conventions (continued)

| | | |
|---------------------------------------|---|---|
| Regular sans serif typeface | <ul style="list-style-type: none"> Represents configuration statements. Indicates SRC CLI commands and options in text. Represents examples in procedures. Represents URLs. | <ul style="list-style-type: none"> <code>system ldap server{ stand-alone;</code> Use the <code>request sae modify device failover command</code> with the <code>force</code> option <code>user@host# ...</code> https://www.juniper.net/techpubs/software/management/sdx/api-index.html |
| <i>Italic sans serif typeface</i> | Represents variables in SRC CLI commands. | <code>user@host# set local-address local-address</code> |
| Angle brackets | In text descriptions, indicate optional keywords or variables. | Another runtime variable is <gfwif>. |
| Key name | Indicates the name of a key on the keyboard. | Press Enter. |
| Key names linked with a plus sign (+) | Indicates that you must press two or more keys simultaneously. | Press Ctrl + b. |
| <i>Italic typeface</i> | <ul style="list-style-type: none"> Emphasizes words. Identifies book names. Identifies distinguished names. Identifies files, directories, and paths in text but not in command examples. | <ul style="list-style-type: none"> There are two levels of access: <i>user</i> and <i>privileged</i>. <i>SRC-PE Getting Started Guide</i>. <i>o=Users, o=UMC</i> The <i>/etc/default.properties</i> file. |
| Backslash | At the end of a line, indicates that the text wraps to the next line. | <code>Plugin.radiusAcct-1.class=\net.juniper.smgmt.sae.plugin\RadiusTrackingPluginEvent</code> |
| Words separated by the symbol | Represent a choice to select one keyword or variable to the left or right of this symbol. (The keyword or variable may be either optional or required.) | diagnostic line |

Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the [Juniper Networks TechLibrary](#) site, and do one of the following:



- Click the thumbs-up icon if the information on the page was helpful to you.

- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or Partner Support Service support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <https://www.juniper.net/customers/support/>
- Search for known bugs: <https://prsearch.juniper.net/>
- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes: <https://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <https://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <https://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <https://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Software Features Overview on page 3](#)
- [Monitoring Activity on page 7](#)

CHAPTER 1

Software Features Overview

- [SRC Component Overview on page 3](#)

SRC Component Overview

The SRC software is a dynamic system. It contains many components that you use to build a subscriber management environment. You can use these tools to customize and extend the SRC software for your use and to integrate the SRC software with other systems. The SRC software also provides the operating system and management tools for C Series Controllers.

[Table 4 on page 3](#) gives a brief description of the components that make up the SRC software.

Table 4: Descriptions of SRC Components

| Component | Description |
|--|---|
| Server Components | |
| Service activation engine (SAE) | <ul style="list-style-type: none">• Authorizes, activates, and deactivates subscriber and service sessions by interacting with systems such as Juniper Networks routers, cable modem termination system (CMTS) devices, RADIUS servers, and directories.• Collects accounting information about subscribers and services from routers, and stores the information in RADIUS accounting servers, flat files, and other accounting databases.• Provides plug-ins and application programming interfaces (APIs) for starting and stopping subscriber and service sessions and for integrating with systems that authorize subscriber actions and track resource usage. |
| Subscriber Information Collector (SIC) | The SIC listens for RADIUS accounting events from IP edge devices (accounting clients) and forwards them to a remote AAA server, allowing the SRC software to gain increased subscriber awareness. Additionally, the SIC can optionally edit accounting events before routing them. |
| Network information collector (NIC) | Collects information about the state of the network and can provide a mapping from a given type of network data to another type of network data. |
| Redirect Server | Redirects HTTP requests received from IP Filter to a captive portal page. |

Table 4: Descriptions of SRC Components (continued)

| Component | Description |
|---|--|
| 3GPP Gateway | The SRC Third-Generation Partnership Project (3GPP) gateway is a Diameter-based component in the SRC software, which provides integration with 3GPP Policy and Charging Control environments, to provide fixed-mobile convergence (FMC). The SRC 3GPP gateway provides Gx-based integration with the Policy and Charging Rules Function (PCRF). The SRC 3GPP gateway uses the northbound Gx interface to mediate between the PCRF and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. The northbound Gx interface on the SRC 3GPP gateway communicates with the PCRF using the Diameter protocol. |
| 3GPP Gy | The SRC 3GPP Gy is a Diameter-based component in the SRC software, which provides Gy-based integration with the Online Charging System (OCS), to provide FMC. The SRC 3GPP Gy uses the northbound Gy interface to handle charging-related information between the OCS and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. The northbound Gy interface communicates with the OCS using the Diameter protocol. |
| Web Application Service | The SRC software includes a Web application server that hosts the Web Services Gateway and the Volume Tracking Application (SRC VTA). In production environments, this application server is designed to host only these applications. However, you can load your own applications into this server for testing or demonstration purposes. |
| Web Services Gateway | Allows a gateway client—an application that is not part of the SRC network—to interact with SRC components through a Simple Object Access Protocol (SOAP) interface. The Web Services Gateway provides the Dynamic Service Activator which allows a gateway client to dynamically activate and deactivate SRC services for subscribers and to run scripts that manage the SAE. |
| Repository | |
| Directory | The SRC software includes the Juniper Networks database, which is a built-in Lightweight Directory Access Protocol (LDAP) directory for storing all SRC data including services, policies, and small subscriber databases. For large subscriber databases, you must supply your own directory. |
| SRC Configuration and Management Tools | |
| SRC command line interface (CLI) | Provides a way to configure the SRC software on a C Series Controller from a Junos OS–like CLI. The SRC CLI includes the policies, services, and subscribers CLI, which has separate access privileges. |
| C-Web interface | Provides a way to configure, monitor, and manage the SRC software on a C Series Controller through a Web browser. The C-Web interface includes a policies, services, and subscribers component, which has separate access privileges. |
| Simple Network Management Protocol (SNMP) agent | Monitors system performance and availability. It runs on all the SRC hosts and makes management information available through SNMP tables and sends notifications by means of SNMP traps. |
| Service Management Applications (Run on external system) | |
| IMS Services Gateway | Integrates into an IP multimedia system (IMS) environment. The SRC software provides a Diameter protocol-based interface that allows the SRC software to integrate with services found on the application layer of IMS. |

Table 4: Descriptions of SRC Components (continued)

| Component | Description |
|---|--|
| SRC Programming Interfaces | |
| NETCONF API | Allows you to configure or request information from the NETCONF server on a C Series Controller that runs the SRC software. Applications developed with the NETCONF API run on a system other than a C Series Controller. |
| CORBA plug-in service provider interface (SPI) | Tracks sessions and enables linking the rest of the service provider's operations support system (OSS) with the SRC software so that the OSS can be notified of events in the life cycle of SAE sessions. Hosted plug-ins only. |
| CORBA remote API | Provides remote access to the SAE core API. Applications that use these extensions to the SRC software run on a system other than a C Series Controller. |
| NIC access API | Performs NIC resolutions. Applications that use these extensions to the SRC software run on a system other than a C Series Controller. |
| SAE core API | Controls the behavior of the SRC software. Applications that use these extensions to the SRC software run on a system other than a C Series Controller. |
| Script services | Provides an interface to call scripts that supply custom services such as provisioning policies on a number of systems across a network. |
| VTA API | The Volume Tracking Application (VTA) API is a Simple Object Access Protocol (SOAP) interface that allows developers to create gateway clients and that administrators use to manage VTA subscribers and sessions. The SRC Web Services Gateway allows a gateway client—an application that is not part of the SRC network—to interact with SRC components, such as the VTA, through a SOAP interface. |
| Authorization and Accounting Applications | |
| AAA RADIUS servers | Authenticates subscribers and authorizes their access to the requested system or service. Accepts accounting data—time active and volume of data sent—about subscriber and service sessions. RADIUS servers run on a system other than a C Series Controller. |
| SRC Admission Control Plug-In (SRC ACP) | Authorizes and tracks subscribers' use of network resources associated with services that the SRC application manages. |
| Flat file accounting | Stores tracking data to accounting flat files that can be made available to external systems that send the data to a rating and billing system. |
| Volume Tracking Application | <p>The SRC Volume Tracking Application (SRC VTA) is an SRC component that allows service providers to track and control the network usage of subscribers and services. You can control volume and time usage on a per-subscriber or per-service basis. This level of control means that service providers can offer tiered services that use volume as a metric, while also controlling abusive subscribers and applications.</p> <p>When a subscriber or service exceeds bandwidth limits (or quotas), the SRC VTA can take actions including imposing rate limits on traffic, sending an e-mail notification, or charging extra for additional bandwidth consumed.</p> |
| Demonstration Applications (available on the Juniper Networks Website) | |

Table 4: Descriptions of SRC Components (continued)

| Component | Description |
|---------------------------------------|---|
| Enterprise Audit Plug-In | Defines a callback interface, which receives events when IT managers complete specified operations. |
| Enterprise Manager Portal | <p>Allows service providers to provision services for enterprise subscribers on routers running JunosE or Junos OS and allows IT managers to manage services.</p> <p>Enterprise Manager Portal can be used with NAT Address Management Portal to allow service providers to manage public IP addresses for use with NAT services on routers running Junos OS and to allow IT managers to make requests about public IP addresses through the Enterprise Manager Portal.</p> |
| Monitoring Agent application | Integrates IP address managers, such as a DHCP server or a RADIUS server, into an SRC-managed network so that the SAE is notified about subscriber events. The Monitoring Agent application runs on a Solaris platform. |
| Residential service selection portals | Provides a framework for building Web applications that allow residential and enterprise subscribers to manage their own network services. It comes with several full-featured sample Web applications that are easy to customize and suitable for deployment. The Residential service selection portals run on a Solaris platform. |
| Sample enterprise service portal | Lets service providers supply an interface to their business customers for managing and provisioning services. |

Related Documentation • *SRC Product Description*

CHAPTER 2

Monitoring Activity

- [Monitoring Activity on C Series Controllers on page 7](#)

Monitoring Activity on C Series Controllers

The SRC software provides logging support and general statistics for SRC components. The Activity Monitor collects diagnostic information about the state of a component at a specific time and archives this information in one file.

You can collect the following information:

- Log files
- Configuration files
- stdout
- stderr
- Round-robin database (rrd) files generated by the Activity Monitor
- Output from system monitoring commands
- System log files, SAR data files, and other important log files in the system `/var/log` directory

The collected information is in a zipped tarball file that is named in the format **diagnostic-hostname-productname-YYMMDD-HHMMSS.tar.gz**—for example, `diagnostic-atlanta-C2000-20110926-184950.tar.gz`—and is found in the `/opt/UMC/activity/var/diagnostic/` directory. The tarball file contains the *diagnostic-info.log* file, which contains all the operations performed by the command and their success status. If an error occurred during an operation, the error message is logged.

The Activity Monitor can create graphs from the collected data to help determine the state of the SRC component for troubleshooting. You can view the graphs for the components during a specified time in the C-Web interface.

The generated graphs include data about the C Series Controller:

- CPU usage
- Load average

- Memory usage
- Interface traffic

The generated graphs for the SAE include the following data:

- Heap usage
- Service activity
- User activity
- Users and services

The generated graphs for the components include data generated from the MIBs.

- ACP—juniAcpHeapLimit, juniAcpHeapUsed, juniAcpIntfTrackingEvents, juniAcpIgnoredTrackingEvents, juniAcpCongestionPoints, juniAcpVirtualRouters, juniAcpCPUUpdateRcvd, juniAcpUserUpdateRcvd, juniAcpCPActiveUpdate, juniAcpUserActiveUpdate
- License server—juniSdxLicApplEntry
- NIC—juniNicHostHeapLimit, juniNicHostHeapUsed, juniNicHostResolutions, juniNicHostUnmatchedResolutions, juniNicHostResolutionErrors, juniNicHostResolutionTime
- SAE—juniSaeRouterCommonCurConn, juniSdxSaeUserLicenses

**Related
Documentation**

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 11](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 12](#)
- [Viewing Graphs \(C-Web Interface\) on page 13](#)
- [Viewing Graphs from a Webpage on page 13](#)

PART 2

Administration

- [Managing Activity Monitor on page 11](#)
- [Routine Monitoring on page 13](#)

CHAPTER 3

Managing Activity Monitor

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 11](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 12](#)

Collecting Data with the Activity Monitor (SRC CLI)

You can collect data with the Activity Monitor for specific components over a specified time and save them to a tar.gz file in the `/opt/UMC/activity/var/diagnostic/*` directory. You can view the exact file name and path after you execute the **request support information** command. Before you perform data collection with the Activity Monitor, make sure the filter for the specific components is enabled.

To perform data collection with the Activity Monitor:

- `user@host> request support information`

Some of the information retrieved includes:

- System log messages from the `/var/log/messages/*` directory.
- The configuration in text format, XML format, and set format.
- The hostname in the name of the diagnostic file.

To perform data collection for specific components:

- `user@host> request support information component`

where ***component*** is one of the following:

- `acp`—SRC Admission Control Plug-In
- `activity`—Activity Monitor
- `agent`—SNMP agent
- `appsvr`—Application server
- `cli`—SRC CLI
- `diameter`—Diameter application
- `dsa`—Dynamic Service Activator

- extsubmon—External Subscriber Monitor
- ims—IP multimedia subsystem
- jdb—Juniper Networks database
- licSvr—License server
- nic—Network information collector
- redir—Redirect server
- sae—SAE
- webadm—C-Web interface

To perform data collection for a specified number of days:

- `user@host> request support information days`

where **days** is in the range of 1–36500.

**Related
Documentation**

- [Before You Load a Configuration](#)
- [Viewing Graphs \(C-Web Interface\) on page 13](#)
- [Viewing Graphs from a Webpage on page 13](#)
- [Monitoring Activity on C Series Controllers on page 7](#)

Collecting Data with the Activity Monitor (C-Web Interface)

You can collect data with the Activity Monitor for specific components over a specified time. Before you configure data collection for the Activity Monitor, make sure the Activity Monitor (activity), CLI (cli), and C-Web interface (webadm) components are enabled.

To perform data collection with the Activity Monitor:

1. Click **Manage>Request>Support>Information**.
The Support Information pane appears.
2. From the Components list, select the components you want to monitor, and click **OK**.
3. (Optional) Enter the number of days for which you want to collect data, and click **OK**.

**Related
Documentation**

- [Viewing Graphs \(C-Web Interface\) on page 13](#)
- [Viewing Graphs from a Webpage on page 13](#)
- [Monitoring Activity on C Series Controllers on page 7](#)

CHAPTER 4

Routine Monitoring

- [Viewing Graphs \(C-Web Interface\) on page 13](#)
- [Viewing Graphs from a Webpage on page 13](#)

Viewing Graphs (C-Web Interface)

You can display graphs for components for which the Activity Monitor has collected data.

To display graphs from the Activity Monitor with the C-Web interface:

1. Click **Graphs**.
2. In the side pane, select the component and the graph that you want to display.
The pane for selecting the time period displayed by the graph appears.
3. Select one of the preset values or enter the time range in the From and To boxes, and click **OK**.
The graphs appear.

Related Documentation

- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 12](#)
- [Viewing Graphs from a Webpage on page 13](#)
- [Monitoring Activity on C Series Controllers on page 7](#)

Viewing Graphs from a Webpage

You can display graphs for components for which the Activity Monitor has collected data from a webpage. Before you display these graphs, make sure the Activity Monitor (activity) and C-Web interface (webadm) components are enabled. For more secure displays, configure the C-Web interface to use HTTPS and use POST requests.

- [Viewing Graphs for a Preset Time Period from a Webpage on page 14](#)
- [Viewing Graphs for Specified Time Periods from a Webpage on page 15](#)

Viewing Graphs for a Preset Time Period from a Webpage

To display graphs with preset time periods from the Activity Monitor from a webpage:

`http://ip-address/graph?&id=username&pw=password&name=graph-name&time=time-period`

where

- *ip-address*—IP address of the C Series Controller
- *username*—Username used to log in to the C Series Controller
- *password*—Password used to log in to the C Series Controller
- *graph-name*—Name of graph to display in the format `<component>-<graph>`, where `<graph>` is the name of the graph as specified in the C-Web interface in all lowercase letters with hyphens separating words
- *time-period*—Period of time that data was collected for display in a graph in the format `<number><units>`

The `<number>` is the number of `<units>`, which are specified as one of the following values:

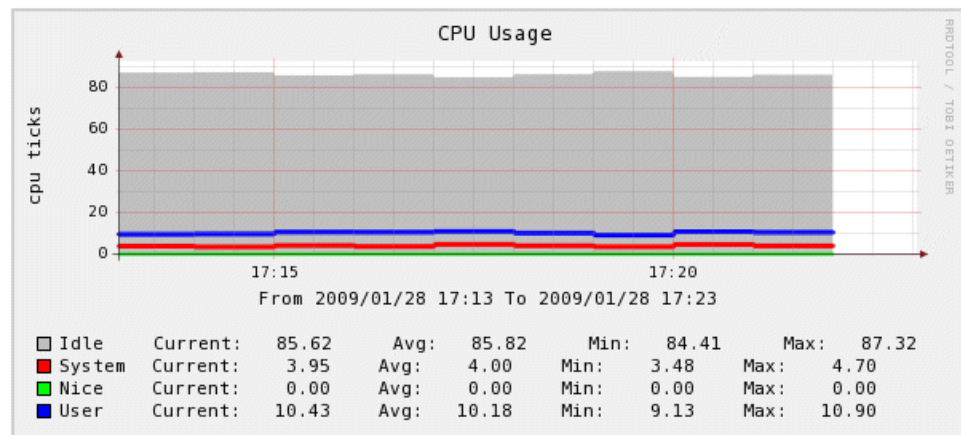
- m—minutes
- h—hours
- d—days
- w—weeks
- M—months
- y—years

For example, to view the CPU graph for the System component for the past 10 minutes on the C Series Controller called c2000 for the user admin:

`http://c2000/graph?&id=admin&pw=secret&name=system-cpu&time=10m`

The CPU Usage graph appears.

Figure 1: Sample CPU Usage Graph



Viewing Graphs for Specified Time Periods from a Webpage

To display graphs for specified time periods from the Activity Monitor from a webpage:

`http://ip-address/graph?&id=username&pw=password&name=graph-name&start=date-time&end=date-time`

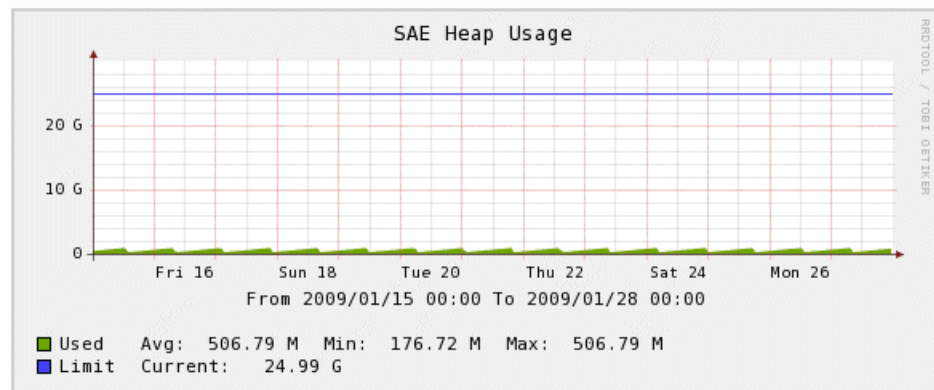
where

- *ip-address*—IP address of the C Series Controller
- *username*—Username used to log in to the C Series Controller
- *password*—Password used to log in to the C Series Controller
- *graph-name*—Name of graph to display in the format `<component>-<graph>`, where `<graph>` is the name of the graph as specified in the C-Web interface in all lowercase letters with hyphens separating words
- *date-time*—Date and time that data was collected for display in a graph in the format `yyyyMMddHHmm`, where:
 - *yyyy*—year
 - *MM*—month
 - *dd*—day
 - *HH*—hour
 - *mm*—minute

For example, to view the heap usage graph for the SAE component from January 15 to January 28 on the C Series Controller called c2000 for the user admin:

`http://c2000/graph?&id=admin&pw=secret&name=sae-heap&start=200901150000&end=200901280000`

The SAE Heap Usage graph appears.

Figure 2: Sample SAE Heap Usage Graph**Related Documentation**

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 11](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 12](#)
- [Viewing Graphs \(C-Web Interface\) on page 13](#)
- [Monitoring Activity on C Series Controllers on page 7](#)