



Signaling Delivery Controller

CLI Application Guide

5.1

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About this Document

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Document Objectives

This document provides an overview of the F5 Signaling Deliver Controller (SDC) CLI (Command Line Interface) application that is supported as of Release 5.1.

Document History

| Revision Number | Change Description | Change Location |
|----------------------|--|--|
| Ver.2-November, 2016 | Edited CLI installation process description, updated procedure for accessing the CLI | <i>Installing the CLI Application, Accessing the CLI Application</i> |

Conventions

The style conventions used in this document are detailed in Table 1.

Table 1: Conventions

| Convention | Use |
|---------------------------|--|
| Normal Text | Regular text; style: F5_Normal |
| Normal Text Bold | Names of menus, commands, buttons, and other elements of the user interface; style: F5_Normal_Bold |
| <i>Normal Text Italic</i> | Links to figures, tables, and sections in the document, as well as references to other documents; style: <i>F5_Normal_CrossRef</i> |
| Script | Language scripts; style: F5_Scripts |
| Calibri | File names; F5_Normal_FileName |
| Table Heading | Table Headings; style: F5_Table Header Text |




| Convention | Use |
|---|---|
| Table Text | Table Text; style: F5_Table_Text |
|  Note: | Notes which offer an additional explanation or a hint on how to overcome a common problem |



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1. About the F5 SDC CLI Application

This section provides an overview of the CLI (Command Line Interface) application that is used by F5® Traffix® Signaling Delivery Controller™ (SDC).

1.1 Introduction

The F5 SDC CLI application provides system administrators with a status overview of an SDC site's related peers and pools. By enabling administrators to easily view the status of the connected peers and pools, administrators can then easily manage an SDC site's peer/pool availability.

1.2 CLI Application Interface Functionality

The CLI application interface enables a system administrator to use a predefined set of commands to define and manage SDC peers and pools. For example, administrators can get a list of peers/pools or add/enable a specific peer. For a detailed list of the supported commands, see *CLI Application Supported Commands*.



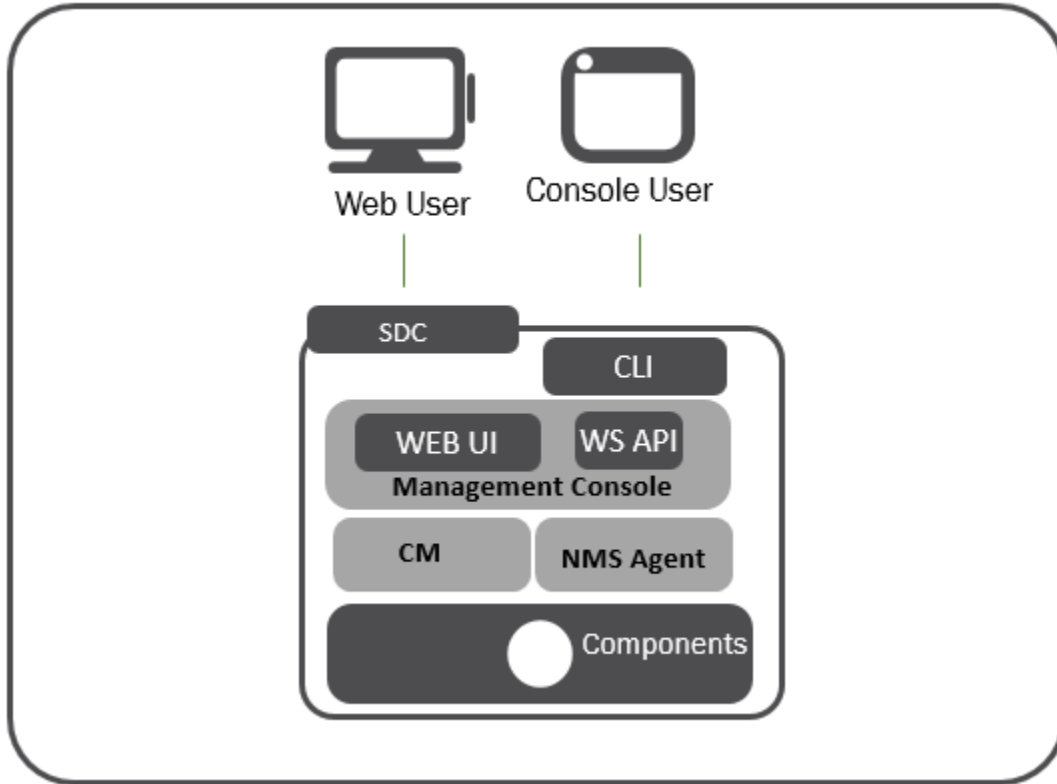
Note: Any configuration change done via the CLI application interface is automatically applied to the site.

1.3 Software Architecture

Users access the management console either through the Web UI or the WS API to manage an SDC site. The CLI application interface, using the WS API, provides another way for console users to manage an SDC site. The CLI application interface is installed as a separate utility on an SDC site, as shown in *Figure 1*.



Figure 1: SDC CLI High Level Architecture





2. Working with the CLI Application

This section describes how to work with the CLI application.

2.1 Installing the CLI Application

The CLI application is available in the yum repository in the SDC nodes.

To install the CLI application:

1. Execute the following command:
yum install f5cli
2. Type **y** (yes) after receiving the F5 CLI from the repository.
A successful installation will return the message:

“Complete!”.

The application is now installed in the */opt/traffic/f5cli* directory.

2.2 Post-Installation Configuration

You have the option to change the CLI related logging level from the default defined level of INFO to either WARN or DEBUG. The log configuration file is saved in the *env.conf* file.

To define the log level:

1. Execute the following command from the F5 CLI directory, */opt/traffic/f5cli*:
vi conf/env.conf.

The *env.conf* file appears.

Figure 2: The Log Configuration File

```
[f5cli]
logfile = f5cli.log
loglevel = INFO
[root@localhost f5cli]#
```

2. In the **loglevel = INFO** line, change INFO to either WARN or DEBUG.
3. Save the file.



Note: This configuration change must be done before running the application. The CLI application logs are then available in the *log/f5cli.log* file in the *opt/traffic/f5cli* directory. For more information, see *Viewing the CLI Application Logs*.

2.3 Accessing the CLI Application

Access to the CLI application is allowed only to authorized LINUX level users who have SDC administrative privileges.

To access the CLI application:

1. From the shell prompt type **f5cli**.
2. In the prompt:

```
root@(f5console)(default)(Inactive)(/Main)#
```

Connect to the site by running the following command:

```
connect
```



Note: If an error message is displayed, connect to the site by running the following command with the SDC Web UI IP address:

```
connect <IP address>
```

3. Enter the SDC Web UI username and the password.
If the credentials are acceptable, the following message appears:

```
“Connected. Use switch to choose a site.”
```



Note: To switch to another site, in the prompt:

```
root@(f5console) (default) (Active)(/common)#
```

Define the SDC Site ID as it is defined in the SDC Web UI by running the following command:

```
Switch <SDC ID>
```

The site ID entered replaced the “default” in the above command prompt line.



3. CLI Application Supported Commands

This section describes the different commands that are currently supported by the CLI application. The application is based on a hierarchical structure for common and action application commands.

3.1 CLI Application Common Commands


The following table contains all common commands, their descriptions and their options that are based on the application's hierarchical structure.

Table 2: CLI Application Common Commands

| Command | Description | Command Arguments | How to Use |
|------------|--|--|--|
| version | Displays the CLI application version | N/A | version |
| shell | Provides a way to interact with the Linux shell | Any of the shell Linux commands (i.e. free -m, uptime, date) | shell <Linux command> or !<Linux command> |
| disconnect | Returns to main console | N/A | disconnect |
| switch | Redefines the site ID in the console | The relevant site ID | switch <SDC site ID> |
| pwd | Displays your current console view (status/site) | N/A | pwd |
| history | Displays a list of previously used commands during the current CLI session presented by index numbers and can be used to execute one of these commands | <index #> | history: to display the list of previous commands or history <index #> : to execute a previous command |
| help | Displays help per command. | < name of command> | help <command> or ? <command> |



| | | | |
|-----------|--|-----|-----------|
| | <i>Note: The help command displays the help that is relevant for the level of the console from which you type in the command</i> | | |
| exit | Exits from the console | N/A | exit |
| sys | Details the system platform architecture and the OS version of the server | N/A | sys |
| assistant | Displays the list of all available commands of all the sections | N/A | assistant |

 Note: Double-clicking <Tab> displays the available command options for the application level of which you are in.

Command syntax is case-sensitive.

3.2 CLI Application Action Commands

The following table contains all supported action commands, their descriptions and their options that are based on the application’s hierarchical structure.


 Note: By applying grep/awk and other Linux commands, the output parameters can be further manipulated. Retrieval of peers/pools can be parsed according to specific criteria. For example, “show peers | grep port” will display those lines that are associated with the filtered request (i.e. port).

Table 3: CLI Application Action Commands

| Command | Description | Command Arguments | How to Use |
|-----------------------|--|----------------------------------|-------------------------|
| show | Displays list of available command options | peers, pools, health, peer, pool | show < command options> |
| show Command Options: | | | |



| Command | Description | Command Arguments | How to Use |
|-----------------------|--|--|---|
| show peers | Displays all available peers for an SDC site | N/A | show peers |
| show pools | Displays all available pools for an SDC site | N/A | show pools |
| show peer | Displays the specified peer details | <peer name> | show peer <peer name> |
| show pool | Displays the specified pool details | <pool name> | show pool <pool name> |
| show health | Displays health and status of all peers and all pools | N/A | show health |
| show health-map | Displays the health and status per FEP, per CPF for a peer or pool | N/A | show health-map |
| conf | Modifies an existing peer according to a specified command option | add-peer, remove-peer, disable-peer, enable-peer | conf < command options> |
| conf Command Options: | | | |
| conf add-peer | Adds a peer to an existing pool | <peer name> <pool name> | conf add-peer <peer name> <pool name> |
| conf remove-peer | Removes a peer from an existing pool | <peer name> <pool name> | conf remove-peer <peer name> <pool name> |
| conf disable-peer | Disables (disconnects) an existing enabled peer | <peer name> | conf disable-peer <peer name> |
| conf enable-peer | Enables (connects) an existing disabled peer | <peer name> | conf enable-peer <peer name> |
| Conf add-vsr | Adds a virtual server | <server name> | conf add-vsr <server name> <protocol> <proxyGroup> <port> |
| Conf remove-vsr | Removes a virtual server | <server name> | conf remove-vsr <server name> |



4. Viewing the CLI Application Logs

The CLI application logs are displayed in the *log/f5cli.log* file in the *f5cli* directory (*/opt/traffix/f5cli*), as either INFO, WARN, DEBUG logs depending on how they were configured prior to running the application. For more information about this configuration option, see *Post-Installation Configuration*.

To generate a CLI application log:

1. Execute the following command:

```
# tail -f /opt/traffix/f5cli/log/f5cli.log
```

The relevant log appears.

The following is an example of an INFO log.

Figure 3: A CLI App INFO Log Example

```
[root@localhost f5cli]# tail -f log/f5cli.log
2014-12-10 01:10:21 root INFO [3586] Connected to 172.29.49.87. use 'switch' to switch site
2014-12-10 01:10:38 root INFO [3586] Switched to site207-A
```



Appendix A : Examples of Output Parameters for CLI Action Commands

The following screenshot is an example for the show pool command.



Note: The actual output parameters vary depending on how a specific pool is configured.

Figure 4: Show Pool Command Output

```
=====
Properties                               Values
=====
Name                                     Pool.test.com
Status                                   red
Health                                   red
Load Balancing Policy
Policy                                   Round Robin
Minimum Number of Servers                1
Peers                                     peer1.test.com;peer2.test.com
Rate Limit (TPS)                         4
Pool Ramp-Up Time (Seconds)              2
Split By                                  10
Discovery Method                          Static
Time to Live (Millis)
Routing Rules

+ Associated peers
=====
Name                                     peer1.test.com
Administrative State                      Enabled
Health                                    red
Status                                    red
Binding Name                              peerName1

Name                                     peer2.test.com
Administrative State                      Enabled
Health                                    red
Status                                    red
Binding Name                              peer2Name

=====
Properties                               Values
=====
Name                                     pool3.test.net
Status                                   red
Health                                   red
Load Balancing Policy
Policy                                   Weighted Round Robin
Minimum Number of Servers                1
Peers                                     peer1.test.com
Rate Limit (TPS)                         44
Pool Ramp-Up Time (Seconds)              0
Split By                                  request.SESSION_ID
Discovery Method                          Static
Time to Live (Millis)
Routing Rules

+ Associated peers
=====
Name                                     peer1.test.com
Administrative State                      Enabled
Health                                    red
Status                                    red
Binding Name                              peerName1
=====
```



The following screenshot is an example for the show peers command.



Note: The actual output parameters vary depending on how a specific peer is configured.

Figure 5: Show Peers Command Output

```
root@(f5console) (vSDC_Site) (Active) (/Common) # show peers
Common :: Peer Table
=====
Properties                               Values
=====
Name                                     peer2.test.com
Peer Profile                             fep-tcp-in
Proxy Group                              fep-tcp-in
Node is static                           true
Administrative State                     Enabled
Health                                   red
Status                                   red
Protocols                                Diameter
Local IP                                  1.1.1.1
Local Port                                11
Local Realm                              Realm2
Local Host                                2.2.2.2
Remote IP                                  55.5.5.5
Remote Port                               55
Define as Server                          true
Discovery Method                         Static
Binding Name                             peer2Name
Use SCTP Transport                       false
TC Timer                                  44
TC Timer Units                            MILLISECONDS
TW Timer                                  22
=====
Properties                               Values
=====
Name                                     peer1.test.com
Peer Profile                             fep-tcp-in
Proxy Group                              fep-tcp-in
Node is static                           true
Administrative State                     Enabled
Health                                   red
Status                                   red
Protocols                                Diameter
Local IP                                  2.2.2.2
Local Port                                22
Local Realm                              realm1
Local Host                                host1
Remote IP                                  1.1.1.1
Remote Port                               11
Define as Server                          true
Discovery Method                         Static
Binding Name                             peerName1
Use SCTP Transport                       false
TC Timer                                  11
TC Timer Units                            MILLISECONDS
TW Timer                                  3
=====
root@(f5console) (vSDC_Site) (Active) (/Common) #
```



Glossary

The following tables list the common terms and abbreviations used in this document.

Table 4: Common Terms

| Term | Definition |
|------------------|---|
| Answer | A message sent from one Client/Server Peer to the other following a request message |
| Client Peer | A physical or virtual addressable entity which consumes AAA services |
| Data Dictionary | Defines the format of a protocol's message and its validation parameters: structure, number of fields, data format, etc. |
| Destination Peer | The Client/Server peer to which the message is sent |
| Geo Redundancy | A mode of operation in which more than one geographical location is used in case one site fails |
| Master Session | The session for which the routing selection is performed based on the routing rules (Slave Sessions are applied with routing rules inherited from the Master Session) |
| Orchestrator | A workflow management solution to automate the creation, monitoring, and deployment of resources in your environment |
| Origin Peer | The peer from which the message is received |
| Pool | A group of Server Peers |
| QCOW2 | A file format for disk image files |
| RADIUS | Remote Authentication Dial In User Service |
| REST | Representation of a resource between a client and server (Representational State Transfer) |
| Request | A message sent from one Client/Server peer to the other, followed by an answer message |



| Term | Definition |
|-----------------------|--|
| RPM | RPM Package Manager |
| Salt-API | Manages and communicates between an Orchestrator and network master and minion servers |
| SDC Site | The entire list of entities working in a single site |
| Server Peer | A physical or virtual addressable entity which provides AAA services |
| Session | An interactive information interchange between entities |
| Slave (Bound) Session | A session which inherits properties from a master session |
| Transaction | A request message followed by an answer message |
| Tripo | Session data repository |
| vCenter | Vmware Virtual Infrastructure tool for centralized management of multiple hypervisors and enabling functionalities |
| Virtual Server | A binding point used by SDC to communicate with the Remote Peers (Clients and Servers) |

Table 5: Abbreviations

| Term | Definition |
|-------------|--|
| AAA | Authentication, Authorization and Accounting |
| ACL | Access Control List |
| AF | Application Function |
| API | Application Programming Interface |
| AVP | Attribute Value Pair |
| CLI | Command Line Interface |
| CPF | Control Plane Function |



| Term | Definition |
|-------------|---|
| DEA | Diameter Edge Agent |
| DRA | Diameter Routing Agent |
| EMS Site | Element Management System Site |
| FEP-In | In-Front End Proxy |
| FEP-Out | Out-Front End Proxy |
| HA | High Availability |
| HSS | Home Subscriber Server |
| HTTP | Hypertext Transfer Protocol |
| IaaS | Infrastructure as a Service |
| IMS | IP Multimedia Subsystem |
| JMS | Java Message Service |
| KPI | Key Performance Indicator |
| LDAP | Lightweight Directory Access Protocol |
| LTE | Long Term Evolution |
| MME | Mobility Management Entity |
| NGN | Next Generation Networking |
| Node | Physical or virtual addressable entity |
| OAM | Operation, Administration and Maintenance |
| OCS | Online Charging System |
| OVF | Open Virtualization Format |
| PCEF | Policy and Charging Enforcement Function |
| PCRF | Policy and Charging Rules Function |



| Term | Definition |
|-------------|--|
| PLMN | Public Land Mobile Network |
| SCCP | Signaling Connection Control Part |
| SCTP | Stream Control Transmission Protocol |
| SDC | Signaling Delivery Controller |
| SNMP | Simple Network Management Protocol |
| SS7 | Signaling System No. 7 |
| TCP | Transmission Control Protocol |
| TLS | Transport Layer Security |
| UDP | User Datagram Protocol |
| UE | User Equipment |
| URI | Universal Resource Identification. |
| VIP | Virtual IP |
| VM | Virtual Machine |
| VNFC | Virtualized Network Function Component |
| VPLMN | Visited Public Land Mobile Network |
| Web UI | Web User Interface |
| WS | Web Service |