Loftware

Loftware Integration CLI for SAP® Applications

Version 3.0

Installation and Configuration Guide

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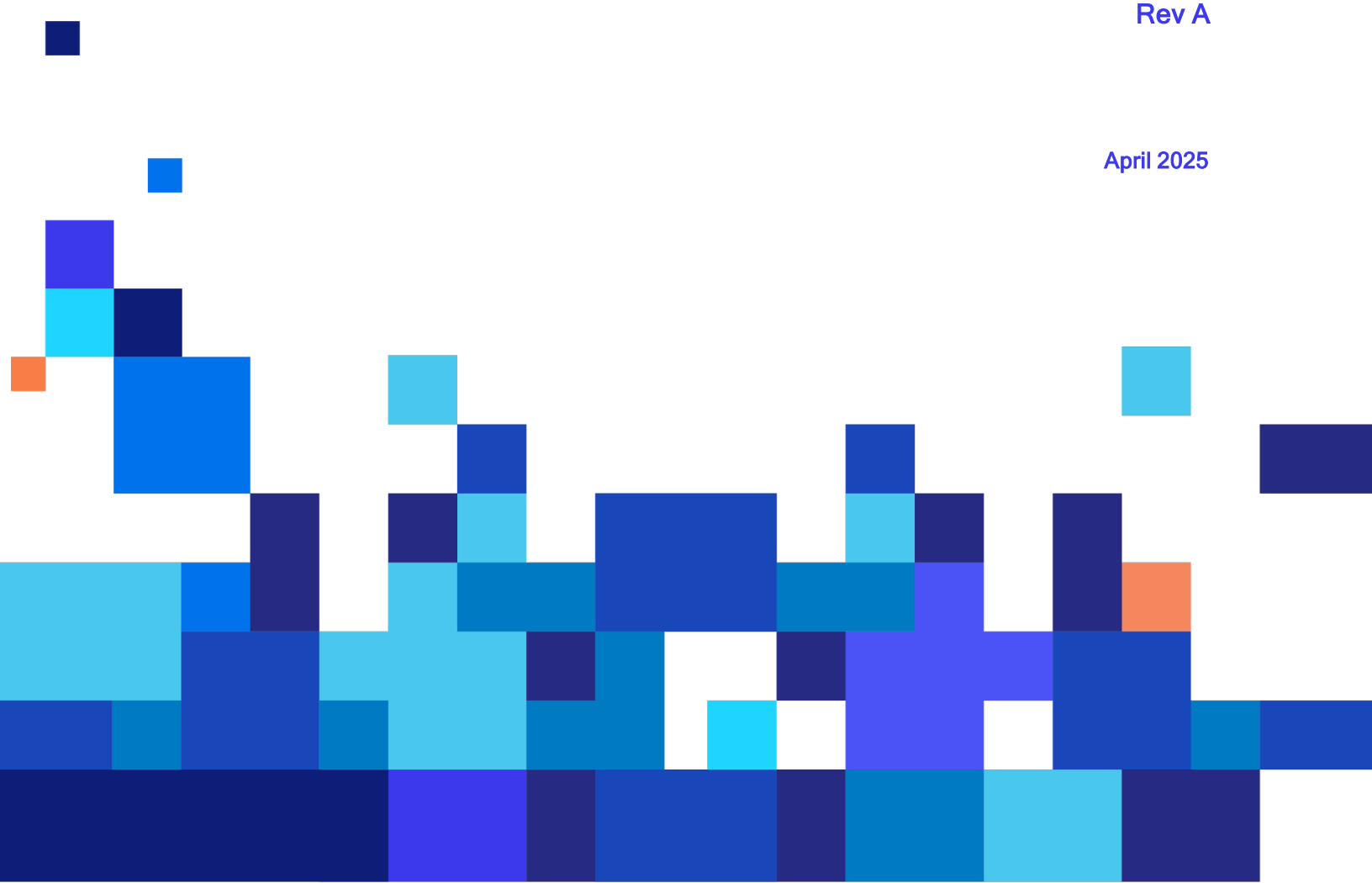

Contents

Loftware Integration Command Line Interpreter (CLI) for SAP Applications

Loftware Integration Command Line Interpreter (CLI) for SAP Applications is a product-agnostic utility that is run by the SAP Spooler when a print job is submitted from SAP ERP. Loftware Integration CLI for SAP Applications passes the request to a Loftware labeling solution. The Loftware labeling solution applies the appropriate label template, sends the job to the printer, and then sends the status back to the SAP Spooler.

If you are using a Loftware labeling solution, such as Loftware Cloud Enterprise SP, Loftware Enterprise™ SP, Loftware Cloud™, or Loftware NiceLabel®, and want to support SAP BC-XOM integrations, then you must install Loftware Integration CLI for SAP Applications on the SAP Application Server.

Note: It is strongly recommended that each SAP Application Server be configured with its own Loftware Integration CLI for SAP Applications.

Installation of Loftware Integration CLI for SAP Applications should be performed by an SAP Basis Administrator on the SAP Application Server. The configuration for Loftware Integration CLI for SAP Applications requires moving files into a folder that the SAP Logical Output Management System (LOMS) instance can access.

Tip: For more documentation about this product, see Loftware Components: Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

Note: In this guide, unless otherwise noted,

- Loftware Enterprise SP refers to both Loftware Enterprise SP and Loftware Cloud Enterprise SP.
- Loftware Cloud refers to Loftware Cloud Business, Loftware Cloud Compliance, and Loftware Cloud Enterprise.
- Loftware NiceLabel refers to Loftware NiceLabel LMS Enterprise.

Technical Requirements for Loftware Integration Command Line Interpreter (CLI) for SAP Applications

If you intend to support SAP BC-XOM integrations in Loftware Enterprise SP, Loftware Cloud, or Loftware NiceLabel, then you must install Loftware Integration CLI for SAP Applications on the SAP Application Server.

Component	Requirement
Loftware license	One of the following is required to support integration with SAP applications: • Loftware Enterprise SP or Loftware Cloud Enterprise SP license that includes Integration for use with SAP® Applications • Loftware Cloud Business, Loftware Cloud Compliance, or Loftware Cloud Enterprise license • Loftware NiceLabel LMS Enterprise 10.5 license
SAP system	• SAP S/4HANA On-Premise • SAP ECC 6.0 or later with the latest enhancements
SAP role	Installation of Loftware Integration CLI for SAP Applications should be performed by an SAP Basis Administrator on the SAP Application Server. The configuration for Loftware Integration CLI for SAP Applications requires moving files into a folder that the SAP Logical Output Management System (LOMS) instance can access.

Component	Requirement
Operating system	Loftware Integration CLI for SAP Applications must be installed on an SAP Application Server running one of the following operating systems: • Windows Server • Red Hat Enterprise Linux • SUSE Linux • IBM AIX **Note:** It is strongly recommended that each SAP Application Server be configured with its own Loftware Integration CLI for SAP Applications.
Loftware Enterprise SP user	If integrating with Loftware Enterprise SP, a dedicated Loftware Enterprise SP user is required for authentication. This Loftware Enterprise SP user can be created before or after Loftware Integration CLI for SAP Applications is installed. For details, see the *Loftware Enterprise SP User Guide (Help)* or the *Loftware Integration Command Line Interpreter (CLI) for SAP® Applications Installation and Configuration Guide*.
Java	If your SAP Application Server is running IBM AIX, the Java Development Kit (JDK) version 1.8 from IBM must be installed on the server.

How to Obtain the Software

This section is provided to assist customers who are reviewing Loftware Integration Command Line Interpreter (CLI) for SAP Applications documentation prior to obtaining the software.

If you are interested in using Loftware Integration CLI for SAP Applications in conjunction with Loftware Cloud Enterprise SP or Loftware Enterprise SP and you are upgrading from Spectrum:

- **If your Loftware Enterprise SP license includes Integration for use with SAP® Applications**, refer to the email you received from Loftware about how to download the Loftware Enterprise SP 5.1 package. This email includes information about how to download Loftware Integration CLI for SAP Applications package.
- **If your Loftware Cloud Enterprise SP license includes Integration for use with SAP® Applications**, refer to the email you received from Loftware. This email includes information about how to download Loftware Integration CLI for SAP Applications package.
- **If your Loftware Cloud Enterprise SP or Loftware Enterprise SP license does not include Integration for use with SAP® Applications** and you would like to add it, contact Loftware Sales about purchasing an add-on to your license to include Loftware Integration CLI for SAP Applications.

- **If you need to determine whether your Loftware Cloud Enterprise SP or Loftware Enterprise SP license includes Integration for use with SAP® Applications**, you can use either of the following approaches to view your license information:
  - You can view your license information in Loftware Cloud Enterprise SP or Loftware Enterprise SP. In either application, click Help > **About**. In the **License** panel, and the **Integrations for use with SAP® ERP** entry indicates whether your license includes Integration for use with SAP® Applications.
  - You can view your license online. For information about how to sign in to the Loftware Licensing Server and view an existing license, see Loftware Licensing Server Help.

If you are interested in using Loftware Integration CLI for SAP Applications in conjunction with Loftware Cloud or Loftware NiceLabel and you are an existing Loftware Cloud or NiceLabel customer, contact Loftware.

If you are a new customer interested in integrating a Loftware labeling solution with SAP applications, contact Loftware Sales.

Installing Loftware Integration Command Line Interpreter (CLI) for SAP Applications

To install and configure Loftware Integration CLI for SAP Applications, use the following procedure appropriate to the operating system running the SAP Application Server.

Installing Loftware Integration CLI for SAP Applications on Windows Server

To install and configure Loftware Integration Command Line Interpreter (CLI) for SAP Applications on an SAP Application Server running Windows Server, ensure that you are prepared with required information and then perform the following procedures.

Tip: Throughout this guide, *<SAPCLI_HOME>* refers to the folder where Loftware Integration CLI for SAP Applications is installed. The following location is recommended: C:\Loftware\SAPCLI.

Preparing for Installation on Windows Server

Before You Begin: Ensure that the environment to which you want to install Loftware Integration Command Line Interpreter (CLI) for SAP Applications meets the Technical Requirements for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

You will require the following information while installing and configuring Loftware Integration CLI for SAP Applications. For more detail about any of these items, see the installation procedures that follow.

- For each Loftware Application Server that is implemented with SSL:
    - Hostname or IP address and sign in URL for the Loftware labeling solution
    - Username and password for the Loftware labeling solution
- If integrating with Loftware Enterprise SP: username and password for a dedicated Loftware Enterprise SP user for authentication. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.
- If using a proxy server: access information for the server including host name, port, username, and password.

Tip: You can install Loftware Integration CLI for SAP Applications and the Loftware labeling solution in any order. However, during configuration of Loftware Integration CLI for SAP Applications you must enter credentials for a dedicated user of the Loftware labeling solution.

A. Install Loftware Integration CLI for SAP Applications on Windows Server

Note: It is strongly recommended that each SAP Application Server be configured with its own Loftware Integration CLI for SAP Applications.

To install Loftware Integration CLI for SAP Applications on an SAP Application Server running Windows Server, perform the following procedure as an SAP Basis Administrator.

1. Verify that resolutions for all relevant hostnames are working.
2. Download the Loftware Integration CLI for SAP Applications installation package (**LoftwareCLIforSAP3.0.zip**).
3. Extract the contents of the **LoftwareCLIforSAP3.0.zip** package to a folder on the SAP Application Server. Throughout this guide, this location is referred to as *<SAPCLI_HOME>*.

   Recommended Location
   C:\Loftware\SAPCLI

   Note: Loftware Integration CLI for SAP Applications can be installed in any location on the SAP Application Server as long as the Output Management System (OMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the OMS Submit Command.

4. Extract the contents of the **sapClient-package.zip** file to *<SAPCLI_HOME>*.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and then run the `install.cmd` command.

If your Loftware Application Server is implemented with SSL, continue to B. Install SSL Certificate on Windows Server.

Otherwise, continue to C. Configure Loftware Integration CLI for SAP Applications on Windows Server.

B. Install SSL Certificate on Windows Server

If your Loftware Application Server is implemented with SSL, perform the following steps to ensure that Loftware Integration CLI for SAP Applications can connect to your Loftware labeling solution.

Tip: When performing the following steps, replace *<SAPCLI_HOME>* with the folder where you installed Loftware Integration CLI for SAP Applications.

a. In your browser, navigate to the sign in page for your Loftware labeling solution.

b. Follow your browser's instructions to save the SSL certificate to a file.

c. On the SAP Application Server , navigate to the following folder.
<SAPCLI_HOME>`\jre\bin`

d. Run the following command, replacing *<path_to_saved_file>* with the path to the certificate file that you saved and *<cert_alias>* with a nickname for the certificate.
`keytool -importcert -alias` ***<cert_alias>***
`-file` ***<path_to_saved_file>***
`-keystore` ***<SAPCLI_HOME>***`\jre\lib\security\cacerts`

e. At the prompt for the keystore password, enter `changeit`.

f. At the prompt for trusting the certificate, enter `yes`.

Continue to C. Configure Loftware Integration CLI for SAP Applications on Windows Server.

C. Configure Loftware Integration CLI for SAP Applications on Windows Server

Perform the following steps to configure a **runcli.cmd** file for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **runcli.cmd_EXAMPLE** file and name it **runcli.cmd**.
3. Open the **runcli.cmd** file in a text editor and configure it for your environment as follows.

> **Note:** The script output must be only the single output line generated by the sapcli request. This format is dictated by SAP and additional lines are not allowed. The following is an example.
> `2.00 4 1 test Print\ request\ accepted\ by\ Loftware`

Required Parameters for runcli.cmd

Parameter	Description
SAPCLI_HOME	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `set SAPCLI_HOME=C:\Loftware\SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE is installed. **Tip:** It is not necessary to edit this parameter because the Java 1.8 JRE is packaged and installed with Loftware Integration CLI for SAP Applications. **Example** `set JAVA_HOME=%SAPCLI_HOME%\jre`

Parameter	Description
BASICUSER BASICPASSWORD	If using with Loftware Enterprise SP, specify credentials for a dedicated Loftware Enterprise SP user for authentication. A Loftware Enterprise SP administrator must create this user in Loftware Enterprise SP. This user does not have to exist before you install Loftware Integration CLI for SAP Applications, but it must exist for Loftware Integration CLI for SAP Applications to function. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications. You must include credentials for this user in the command line arguments in the last line of the file. The password can be clear text or encrypted as described later in this procedure. BASICUSER=*<SPusername>* BASICPASSWORD=*<SPpassword>* **Example** (enter all parameters on the same line) `BASICUSER=myuser BASICPASSWORD=mypassword`

Optional Parameters for runcli.cmd

Parameter	Description

CTO	Optional. To change the request connection timeout setting, add a space at the end of the last line in the **runcli.cmd** file and then add the following parameter on the same line:
	`CTO=<numeric value in milliseconds>`
	Example
	`CTO=20000`

PROXYHOST
PROXYPORT
PROXYUSER
PROXYPASSWORD
	Optional. To use a proxy server, add a space at the end of the last line in the **runcli.cmd** file and then add any of the following parameters needed on the same line. The password can be clear text or encrypted as described later in this procedure.
	`PROXYHOST=<IP address of proxy server>`
	`PROXYPORT=<port number>`
	`PROXYUSER=<username>`
	`PROXYPASSWORD=<password>`
	Example (enter all parameters on the same line)
	`PROXYHOST=172.17.2.83 PROXYPORT=8080`
	`PROXYUSER=myuser PROXYPASSWORD=mypassword`

4. Save the **runcli.cmd** file.

If you want to encrypt the passwords that you entered, continue to D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on Windows Server.

Otherwise, continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on Windows Server.

D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on Windows Server

If you want to encrypt the passwords that you entered in the configuration file (**runcli.cmd**) for Loftware Integration Command Line Interpreter (CLI) for SAP Applications, perform the following steps.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **encryptpw.cmd_EXAMPLE** file and name it **encryptpw.cmd**.
3. Open the **encryptpw.cmd** file in a text editor and configure it for your environment and to indicate the passwords to be encrypted as follows.

Required Parameters for encryptpw.cmd

Parameter	Description
SAPCLI_HOME	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `set SAPCLI_HOME=C:\Loftware\SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE is installed. **Tip:** It is not necessary to edit this parameter because the Java 1.8 JRE is installed with Loftware Integration CLI for SAP Applications. **Example** `set JAVA_HOME=%SAPCLI_HOME%\jre`

Parameter	Description

-file	The file name of the file containing the password to be encrypted. This value is case sensitive.
	`-file=<file name>`
	Example
	`-file=runcli.cmd`

-field	The name of password parameter to be encrypted as it appears in the specified file. This value is case sensitive.
	Tip: If you are encrypting values for both BASICPASSWORD and PROXYPASSWORD, you must have a separate line for each in the **encryptpw.cmd** file.
	`-field=<parameter name>`
	Examples (include only one per line)
	`-field=BASICPASSWORD`
	`-field=PROXYPASSWORD`

4. Save the **encryptpw.cmd** file.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and run the `encryptpw.cmd` command.

Continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on Windows Server.

E. Configure Logging for Loftware Integration CLI for SAP Applications on Windows Server

Perform the following steps to specify the location where log files for Loftware Integration CLI for SAP Applications are saved.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **log4j2.xml_EXAMPLE** file and name it **log4j2.xml**.
3. Open the **log4j2.xml** file in a text editor. This file is used to configure log files for Loftware Integration CLI for SAP Applications.
4. Change the property **LOG_DIR** value to be the explicit folder where Loftware Integration CLI for SAP Applications is installed.

   Example

   ```
   <Property name="LOG_DIR">C:\Loftware\SAPCLI</Property>
   ```

5. Save the **log4j2.xml** file.

Continue to F. Ensure LOMS Definition in SPAD on Windows Server.

F. Ensure LOMS Definition in SPAD on Windows Server

Loftware Integration Command Line Interpreter (CLI) for SAP Applications can be installed in any location as long as the Logical Output Management System (LOMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the Output Management System (OMS) Submit Command. The path must include the trailing backslash.

OMS commands must include required quotation marks, as shown in the following example. For the last parameter, enter RDI, XSF, XML, or XFP as appropriate.

Example: LOMS definition using a non-secured access port

```
Path: C:\Loftware\SAPCLI\
Submit: runcli.cmd http://example.com:8080/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Example: LOMS definition using a secured access port

```
Path: C:\Loftware\SAPCLI\
Submit: runcli.cmd https://example.com:8443/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Installation and configuration of Loftware Integration Command Line Interpreter (CLI) for SAP Applications is complete.

Installing Loftware Integration CLI for SAP Applications on Linux

To install and configure Loftware Integration Command Line Interpreter (CLI) for SAP Applications on an SAP Application Server running Red Hat Enterprise Linux or SUSE Linux, ensure that you are prepared with required information and then perform the following procedures.

Tip: Throughout this guide, *<SAPCLI_HOME>* refers to the folder where Loftware Integration CLI for SAP Applications is installed. The following location is recommended: /opt/Loftware/SAPCLI.

Preparing for Installation on Linux

Before You Begin: Ensure that the environment to which you want to install Loftware Integration Command Line Interpreter (CLI) for SAP Applications meets the Technical Requirements for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

You will require the following information while installing and configuring Loftware Integration CLI for SAP Applications. For more detail about any of these items, see the installation procedures that follow.

- For each Loftware Application Server that is implemented with SSL:
    - Hostname or IP address and sign in URL for the Loftware labeling solution
    - Username and password for the Loftware labeling solution
- If integrating with Loftware Enterprise SP: username and password for a dedicated Loftware Enterprise SP user for authentication. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.
- If using a proxy server: access information for the server including host name, port, username, and password.

Tip: You can install Loftware Integration CLI for SAP Applications and the Loftware labeling solution in any order. However, during configuration of Loftware Integration CLI for SAP Applications you must enter credentials for a dedicated user of the Loftware labeling solution.

A. Install Loftware Integration CLI for SAP Applications on Linux

Note: It is strongly recommended that each SAP Application Server be configured with its own Loftware Integration CLI for SAP Applications.

To install Loftware Integration CLI for SAP Applications on an SAP Application Server running Red Hat Enterprise Linux or SUSE Linux, perform the following procedure as an SAP Basis Administrator.

1. Verify that resolutions for all relevant hostnames are working.
2. Download the Loftware Integration CLI for SAP Applications installation package (**LoftwareCLIforSAP3.0.zip**).
3. Extract the contents of the **LoftwareCLIforSAP3.0.zip** package to a folder on the SAP Application Server. Throughout this guide, this location is referred to as *<SAPCLI_HOME>*.

   Recommended Location
   /opt/Loftware/SAPCLI

   Note: Loftware Integration CLI for SAP Applications can be installed in any location on the SAP Application Server as long as the Output Management System (OMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the OMS Submit Command.

4. Extract the contents of the **sapClient-package.zip** file to *<SAPCLI_HOME>*.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and then run the `install.sh` command.

If your Loftware Application Server is implemented with SSL, continue to B. Install SSL Certificate on Linux.

Otherwise, continue to C. Configure Loftware Integration CLI for SAP Applications on Linux.

B. Install SSL Certificate on Linux

If your Loftware Application Server is implemented with SSL, perform the following steps to ensure that Loftware Integration CLI for SAP Applications can connect to your Loftware labeling solution.

Tip: When performing the following steps, replace *<SAPCLI_HOME>* with the folder where you installed Loftware Integration CLI for SAP Applications.

a. In your browser, navigate to the sign in page for your Loftware labeling solution.

b. Follow your browser's instructions to save the SSL certificate to a file.

c. On the SAP Application Server , navigate to the following folder.
<SAPCLI_HOME>`/jre/bin`

d. Run the following command, replacing *<path_to_saved_file>* with the path to the certificate file that you saved and *<cert_alias>* with a nickname for the certificate.
`./keytool -importcert -alias` ***<cert_alias>***
`-file` ***<path_to_saved_file>***
`-keystore` ***<SAPCLI_HOME>***`/jre/lib/security/cacerts`

e. At the prompt for the keystore password, enter `changeit`.

f. At the prompt for trusting the certificate, enter `yes`.

Continue to C. Configure Loftware Integration CLI for SAP Applications on Linux.

C. Configure Loftware Integration CLI for SAP Applications on Linux

Perform the following steps to configure a **runcli.sh** file for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **runcli.sh_EXAMPLE** file and name it **runcli.sh**.
3. Open the **runcli.sh** file in a text editor and configure it for your environment as follows.

> **Note:** The script output must be only the single output line generated by the sapcli request. This format is dictated by SAP and additional lines are not allowed. The following is an example.
> `2.00 4 1 test Print\ request\ accepted\ by\ Loftware`

Required Parameters for runcli.sh

Parameter	Description
sapCli_home	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `export sapCli_home=/opt/Loftware/SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE is installed. **Tip:** It is not necessary to edit this parameter because the Java 1.8 JRE is packaged and installed with Loftware Integration CLI for SAP Applications. **Example** `export JAVA_HOME=${sapCli_home}/jre`

Parameter	Description
BASICUSER BASICPASSWORD	If using with Loftware Enterprise SP, specify credentials for a dedicated Loftware Enterprise SP user for authentication. A Loftware Enterprise SP administrator must create this user in Loftware Enterprise SP. This user does not have to exist before you install Loftware Integration CLI for SAP Applications, but it must exist for Loftware Integration CLI for SAP Applications to function. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications. You must include credentials for this user in the command line arguments in the last line of the file. The password can be clear text or encrypted as described later in this procedure. BASICUSER=*<SPusername>* BASICPASSWORD=*<SPpassword>* **Example** (enter all parameters on the same line) `BASICUSER=myuser BASICPASSWORD=mypassword`

Optional Parameters for runcli.sh

Parameter	Description

CTO	Optional. To change the request connection timeout setting, add a space at the end of the last line in the **runcli.sh** file and then add the following parameter on the same line:
	`CTO=<numeric value in milliseconds>`
	Example
	`CTO=20000`

PROXYHOST
PROXYPORT
PROXYUSER
PROXYPASSWORD
	Optional. To use a proxy server, add a space at the end of the last line in the **runcli.sh** file and then add any of the following parameters needed on the same line. The password can be clear text or encrypted as described later in this procedure.
	`PROXYHOST=<IP address of proxy server>`
	`PROXYPORT=<port number>`
	`PROXYUSER=<username>`
	`PROXYPASSWORD=<password>`
	Example (enter all parameters on the same line)
	`PROXYHOST=172.17.2.83 PROXYPORT=8080`
	`PROXYUSER=myuser PROXYPASSWORD=mypassword`

4. Save the **runcli.sh** file.

If you want to encrypt the passwords that you entered, continue to D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on Linux.

Otherwise, continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on Linux.

D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on Linux

If you want to encrypt the passwords that you entered in the configuration file (**runcli.sh**) for Loftware Integration Command Line Interpreter (CLI) for SAP Applications, perform the following steps.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **encryptpw.sh_EXAMPLE** file and name it **encryptpw.sh**.
3. Open the **encryptpw.sh** file in a text editor and configure it for your environment and to indicate the passwords to be encrypted as follows.

Required Parameters for encryptpw.sh

Parameter	Description
sapCli_home	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `export sapCli_home=/opt/Loftware/SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE is installed. **Tip:** It is not necessary to edit this parameter because the Java 1.8 JRE is installed with Loftware Integration CLI for SAP Applications. **Example** `export JAVA_HOME=${sapCli_home}/jre`

Parameter	Description

-file	The file name of the file containing the password to be encrypted. This value is case sensitive.
	`-file=<file name>`
	Example
	`-file=runcli.sh`

-field	The name of password parameter to be encrypted as it appears in the specified file. This value is case sensitive.
	Tip: If you are encrypting values for both BASICPASSWORD and PROXYPASSWORD, you must have a separate line for each in the **encryptpw.sh** file.
	`-field=<parameter name>`
	Examples (include only one per line)
	`-field=BASICPASSWORD`
	`-field=PROXYPASSWORD`

4. Save the **encryptpw.sh** file.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and run the `encryptpw.sh` command.

Continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on Linux.

E. Configure Logging for Loftware Integration CLI for SAP Applications on Linux

Perform the following steps to specify the location where log files for Loftware Integration CLI for SAP Applications are saved.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **log4j2.xml_EXAMPLE** file and name it **log4j2.xml**.
3. Open the **log4j2.xml** file in a text editor. This file is used to configure log files for Loftware Integration CLI for SAP Applications.
4. Change the property **LOG_DIR** value to be the explicit folder where Loftware Integration CLI for SAP Applications is installed.

   Example

   ```
   <Property name="LOG_DIR">/opt/Loftware/SAPCLI</Property>
   ```

5. Save the **log4j2.xml** file.

Continue to F. Ensure LOMS Definition in SPAD on Linux.

F. Ensure LOMS Definition in SPAD on Linux

Loftware Integration Command Line Interpreter (CLI) for SAP Applications can be installed in any location as long as the Logical Output Management System (LOMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the Output Management System (OMS) Submit Command. The path must include the trailing slash.

OMS commands must include required quotation marks, as shown in the following example. For the last parameter, enter RDI, XSF, XML, or XFP as appropriate.

Example: LOMS definition using a non-secured access port

```
Path: /opt/Loftware/SAPCLI/
Submit: runcli.sh http://example.com:8080/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Example: LOMS definition using a secured access port

```
Path: /opt/Loftware/SAPCLI/
Submit: runcli.sh https://example.com:8443/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Installation and configuration of Loftware Integration Command Line Interpreter (CLI) for SAP Applications is complete.

Installing Loftware Integration CLI for SAP Applications on IBM AIX

To install and configure Loftware Integration Command Line Interpreter (CLI) for SAP Applications on an SAP Application Server running IBM AIX, ensure that you are prepared with required information and then perform the following procedures.

Tip: Throughout this guide, *<SAPCLI_HOME>* refers to the folder where Loftware Integration CLI for SAP Applications is installed. The following location is recommended: /opt/Loftware/SAPCLI.

Preparing for Installation on IBM AIX

Before You Begin: Ensure that the environment to which you want to install Loftware Integration Command Line Interpreter (CLI) for SAP Applications meets the Technical Requirements for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

If your SAP Application Server is running the IBM AIX operating system, the Java Development Kit (JDK) version 1.8 from IBM must be installed on the server before you install Loftware Integration CLI for SAP Applications.

You will require the following information while installing and configuring Loftware Integration CLI for SAP Applications. For more detail about any of these items, see the installation procedures that follow.

- For each Loftware Application Server that is implemented with SSL:
  - Hostname or IP address and sign in URL for the Loftware labeling solution
  - Username and password for the Loftware labeling solution
- If integrating with Loftware Enterprise SP: username and password for a dedicated Loftware Enterprise SP user for authentication. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.
- If using a proxy server: access information for the server including host name, port, username, and password.
- If your SAP Application Server is running the IBM AIX operating system: the fully-qualified path to the folder where the Java 1.8 JRE or JDK from IBM is installed.

Tip: You can install Loftware Integration CLI for SAP Applications and the Loftware labeling solution in any order. However, during configuration of Loftware Integration CLI for SAP Applications you must enter credentials for a dedicated user of the Loftware labeling solution.

A. Install Loftware Integration CLI for SAP Applications on IBM AIX

Note: It is strongly recommended that each SAP Application Server be configured with its own Loftware Integration CLI for SAP Applications.

To install Loftware Integration CLI for SAP Applications on an SAP Application Server running IBM AIX, perform the following procedure as an SAP Basis Administrator.

1. Verify that resolutions for all relevant hostnames are working.
2. Download the Loftware Integration CLI for SAP Applications installation package (**LoftwareCLIforSAP3.0.zip**).
3. Extract the contents of the **LoftwareCLIforSAP3.0.zip** package to a folder on the SAP Application Server. Throughout this guide, this location is referred to as *<SAPCLI_HOME>*.

   Recommended Location
   /opt/Loftware/SAPCLI

   Note: Loftware Integration CLI for SAP Applications can be installed in any location on the SAP Application Server as long as the Output Management System (OMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the OMS Submit Command.

4. Extract the contents of the **sapClient-package.zip** file to *<SAPCLI_HOME>*.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and then run the `install.sh` command.

If your Loftware Application Server is implemented with SSL, continue to B. Install SSL Certificate on IBM AIX.

Otherwise, continue to C. Configure Loftware Integration CLI for SAP Applications on IBM AIX.

B. Install SSL Certificate on IBM AIX

If your Loftware Application Server is implemented with SSL, perform the following steps to ensure that Loftware Integration CLI for SAP Applications can connect to your Loftware labeling solution.

Tip: When performing the following steps, replace *<JAVA_HOME>* with the fully-qualified path to the folder where the Java 1.8 JRE or JDK from IBM is installed.

a. In your browser, navigate to the sign in page for your Loftware labeling solution.

b. Follow your browser's instructions to save the SSL certificate to a file.

c. On the SAP Application Server , navigate to the following folder.
<JAVA_HOME>`/bin`

d. Run the following command, replacing *<path_to_saved_file>* with the path to the certificate file that you saved and *<cert_alias>* with a nickname for the certificate.
`./keytool -importcert -alias` ***<cert_alias>***
`-file` ***<path_to_saved_file>***
`-keystore` ***<JAVA_HOME>***`/lib/security/cacerts`

e. At the prompt for the keystore password, enter `changeit`.

f. At the prompt for trusting the certificate, enter `yes`.

Continue to C. Configure Loftware Integration CLI for SAP Applications on IBM AIX.

C. Configure Loftware Integration CLI for SAP Applications on IBM AIX

Perform the following steps to configure a **runcli.sh** file for Loftware Integration Command Line Interpreter (CLI) for SAP Applications.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **runcli.sh_EXAMPLE** file and name it **runcli.sh**.
3. Open the **runcli.sh** file in a text editor and configure it for your environment as follows.

> **Note:** The script output must be only the single output line generated by the sapcli request. This format is dictated by SAP and additional lines are not allowed. The following is an example.
> `2.00 4 1 test Print\ request\ accepted\ by\ Loftware`

Required Parameters for runcli.sh

Parameter	Description
sapCli_home	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `export sapCli_home=/opt/Loftware/SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE or JDK from IBM is installed. **Tip:** Although a Java 1.8 JRE is packaged with Loftware Integration CLI for SAP Applications, if the SAP Application Server is running IBM AIX, then you use Java 1.8 from IBM instead. **Example** `export JAVA_HOME=/usr/java8_64/jre`

Parameter	Description
BASICUSER BASICPASSWORD	If using with Loftware Enterprise SP, specify credentials for a dedicated Loftware Enterprise SP user for authentication. A Loftware Enterprise SP administrator must create this user in Loftware Enterprise SP. This user does not have to exist before you install Loftware Integration CLI for SAP Applications, but it must exist for Loftware Integration CLI for SAP Applications to function. For more information, see Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications. You must include credentials for this user in the command line arguments in the last line of the file. The password can be clear text or encrypted as described later in this procedure. BASICUSER=*<SPusername>* BASICPASSWORD=*<SPpassword>* **Example** (enter all parameters on the same line) `BASICUSER=myuser BASICPASSWORD=mypassword`

Optional Parameters for runcli.sh

Parameter	Description

CTO	Optional. To change the request connection timeout setting, add a space at the end of the last line in the **runcli.sh** file and then add the following parameter on the same line:
	`CTO=<numeric value in milliseconds>`
	Example
	`CTO=20000`

PROXYHOST
PROXYPORT
PROXYUSER
PROXYPASSWORD
	Optional. To use a proxy server, add a space at the end of the last line in the **runcli.sh** file and then add any of the following parameters needed on the same line. The password can be clear text or encrypted as described later in this procedure.
	`PROXYHOST=<IP address of proxy server>`
	`PROXYPORT=<port number>`
	`PROXYUSER=<username>`
	`PROXYPASSWORD=<password>`
	Example (enter all parameters on the same line)
	`PROXYHOST=172.17.2.83 PROXYPORT=8080`
	`PROXYUSER=myuser PROXYPASSWORD=mypassword`

4. Save the **runcli.sh** file.

If you want to encrypt the passwords that you entered, continue to D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on IBM AIX.

Otherwise, continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on IBM AIX.

D. Encrypt Passwords for Loftware Integration CLI for SAP Applications on IBM AIX

If you want to encrypt the passwords that you entered in the configuration file (**runcli.sh**) for Loftware Integration Command Line Interpreter (CLI) for SAP Applications, perform the following steps.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **encryptpw.sh_EXAMPLE** file and name it **encryptpw.sh**.
3. Open the **encryptpw.sh** file in a text editor and configure it for your environment and to indicate the passwords to be encrypted as follows.

Required Parameters for encryptpw.sh

Parameter	Description
sapCli_home	The fully-qualified path to the folder where Loftware Integration CLI for SAP Applications is installed. **Example** `export sapCli_home=/opt/Loftware/SAPCLI`
JAVA_HOME	The fully-qualified path to the folder where the Java 1.8 JRE or JDK from IBM is installed. **Tip:** Although a Java 1.8 JRE is packaged with Loftware Integration CLI for SAP Applications, if the SAP Application Server is running IBM AIX, then you must use Java 1.8 from IBM instead. **Example** `export JAVA_HOME=${sapCli_home}/jre`

Parameter	Description

-file	The file name of the file containing the password to be encrypted. This value is case sensitive.
	`-file=<file name>`
	Example
	`-file=runcli.sh`

-field	The name of password parameter to be encrypted as it appears in the specified file. This value is case sensitive.
	Tip: If you are encrypting values for both BASICPASSWORD and PROXYPASSWORD, you must have a separate line for each in the **encryptpw.sh** file.
	`-field=<parameter name>`
	Examples (include only one per line)
	`-field=BASICPASSWORD`
	`-field=PROXYPASSWORD`

4. Save the **encryptpw.sh** file.
5. Open a terminal window, navigate to *<SAPCLI_HOME>*, and run the `encryptpw.sh` command.

Continue to E. Configure Logging for Loftware Integration CLI for SAP Applications on IBM AIX.

E. Configure Logging for Loftware Integration CLI for SAP Applications on IBM AIX

Perform the following steps to specify the location where log files for Loftware Integration CLI for SAP Applications are saved.

1. On the SAP Application Server, navigate to *<SAPCLI_HOME>*.
2. Make a copy of the **log4j2.xml_EXAMPLE** file and name it **log4j2.xml**.
3. Open the **log4j2.xml** file in a text editor. This file is used to configure log files for Loftware Integration CLI for SAP Applications.
4. Change the property **LOG_DIR** value to be the explicit folder where Loftware Integration CLI for SAP Applications is installed.

   Example

   ```
   <Property name="LOG_DIR">/opt/Loftware/SAPCLI</Property>
   ```

5. Save the **log4j2.xml** file.

Continue to F. Ensure LOMS Definition in SPAD on IBM AIX.

F. Ensure LOMS Definition in SPAD on IBM AIX

Loftware Integration Command Line Interpreter (CLI) for SAP Applications can be installed in any location as long as the Logical Output Management System (LOMS) definition in SAP Spool Administration (SPAD) has the appropriate path in the Output Management System (OMS) Submit Command. The path must include the trailing slash.

OMS commands must include required quotation marks, as shown in the following example. For the last parameter, enter RDI, XSF, XML, or XFP as appropriate.

Example: LOMS definition using a non-secured access port

```
Path: /opt/Loftware/SAPCLI/
Submit: runcli.sh http://example.com:8080/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Example: LOMS definition using a secured access port

```
Path: /opt/Loftware/SAPCLI/
Submit: runcli.sh https://example.com:8443/spectrum-server/int/sbpj
"n=bcxom1" "&EI" "&EG" "&P" "&F" "&ES" RDI
```

Installation and configuration of Loftware Integration Command Line Interpreter (CLI) for SAP Applications is complete.

Uninstall Loftware Integration Command Line Interpreter (CLI) for SAP Applications

To uninstall Loftware Integration CLI for SAP Applications from an SAP Application Server, perform the following procedure as an SAP Basis Administrator.

1. On the SAP Application Server, navigate to the folder where Loftware Integration CLI for SAP Applications is installed.
2. Delete the folder where Loftware Integration CLI for SAP Applications is installed.

Uninstallation of Loftware Integration CLI for SAP Applications is complete.

Appendix

Loftware Enterprise SP User for Loftware Integration Command Line Interpreter (CLI) for SAP Applications

If Loftware Integration Command Line Interpreter (CLI) for SAP Applications is being used to support an SAP BC-XOM integration in Loftware Enterprise SP, then a dedicated Loftware Enterprise SP user must be specified to enable communication between the SAP Application Server and Loftware Enterprise SP.

This Loftware Enterprise SP user is **not** automatically created by the installation of Loftware Integration CLI for SAP Applications. A Loftware Enterprise SP administrator must create this user in Loftware Enterprise SP before you can use SAP BC-XOM integrations. Additionally, an SAP Basis Administrator must specify this Loftware Enterprise SP user in the configuration of Loftware Integration CLI for SAP Applications.

Note: Do not use this Loftware Enterprise SP user as a Run As user in SAP BC-XOM integrations.

A Loftware Enterprise SP administrator must create this user in Loftware Enterprise SP and assign it at least the following permissions:

- User permission for the root folder in Loftware Enterprise SP: Read permission for Integrations.
- Role permission: The user must be assigned to a role in Loftware Enterprise SP that has Read permission for Integrations.

Note: A user **Name** can include letters and numbers. Additionally, the following characters are permitted but cannot begin or end the name: hyphens, underscores, and periods. The maximum length is 50 characters.