



User Guide | PUBLIC

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Import/Export Connector (IEC) Application

Content

- 1 Import/Export Connector (IEC) Application. 3**
- 1.1 What's New?. 3
- 1.2 Getting Started. 4
 - What You Can Do with IEC. 4
- 1.3 Important Concepts. 5
 - Import/Export Connectors. 5
- 1.4 Tasks. 10
 - Launching an Import/Export Connector (IEC) Application. 10
 - Executing a Scenario with a Stand-Alone IEC. 10
 - Working with an IEC. 12
 - Monitoring the Logs. 14
 - Starting a Remote IEC Application. 14
 - Stopping a Connector. 16
- 1.5 Troubleshooting. 17

1 Import/Export Connector (IEC) Application

[What's New? \[page 3\]](#)

[Getting Started \[page 4\]](#)

[Important Concepts \[page 5\]](#)

[Tasks \[page 10\]](#)

[Troubleshooting \[page 17\]](#)

Related Information

[CAT Tool](#)

1.1 What's New?

This section highlights the main changes in this *SAP Product Document and User Assistance Deliverable*. They relate both to **new or changed features** in the SAP Convergent Charging 2022 software and to **documentation enhancements** for enriching your SAP user experience continuously.

What's New in SAP CC 2020 FPS 0

SAP CC 2020 is a new major release.

Primary help for your Import/Export Connector (IEC) applications is available. Once a scenario is created with the CAT Tool user interface, you can run it in an [IEC application \[page 5\]](#) that is installed on a host in your SAP system landscape.

What Was New in SAP CC 5.0

Please, see <https://help.sap.com/viewer/c7120011d1c244168dc1f945a06f1350/5.0.latest/en-US/9adffa3290864eb79411b75134b721b6.html>.

Related Information

[What's New in Feature Package Stack 1](#)

1.2 Getting Started

SAP CC *IEC* is a connector application (see [Import/Export Connectors \[page 5\]](#)) which imports and exports low volume data from/to different systems, applications, sources, and destinations.

The import/export connector (IEC) application performs scheduled data transfers between the SAP CC system and external systems.

IEC contains:

- *CAT Tool* (see [Getting Started](#)) to create scenarios for describing data transfers between the SAP CC system and external systems
- Executable [Import/Export Connectors \[page 5\]](#) to execute the scenarios

Tools

To perform its functions, *IEC* provides you with the following tools:

- *CAT Tool* for creating, executing, and stopping scenarios (see [Getting Started](#))
- Executable files for launching [Import/Export Connectors \[page 5\]](#)
- Configuration files for configuring *CAT Tool*

Architecture

IEC

- Is fully developed in Java
- Can work with SAP HANA, Sybase ASE, Oracle, SQL Server, or IBM DB2 databases

1.2.1 What You Can Do with IEC

This topic describes the main features of IEC.

IEC features

IEC allows you to:

- Transfer data between SAP CC systems and external systems
- Modify and consolidate transferred data whatever the type of the transfer mode

i Note

An IEC does not replace a mediation system but easily interfaces the SAP CC system with an information system or a mediation system.

Transferring data

IEC allows you to:

- Import data from the SAP CC system. For example, you can aggregate billing information to generate financial reports.
- Export data to the SAP CC system. For example, you can rate customers' consumptions or import customers' subscriptions from your CRM portal.

Modifying and consolidating data

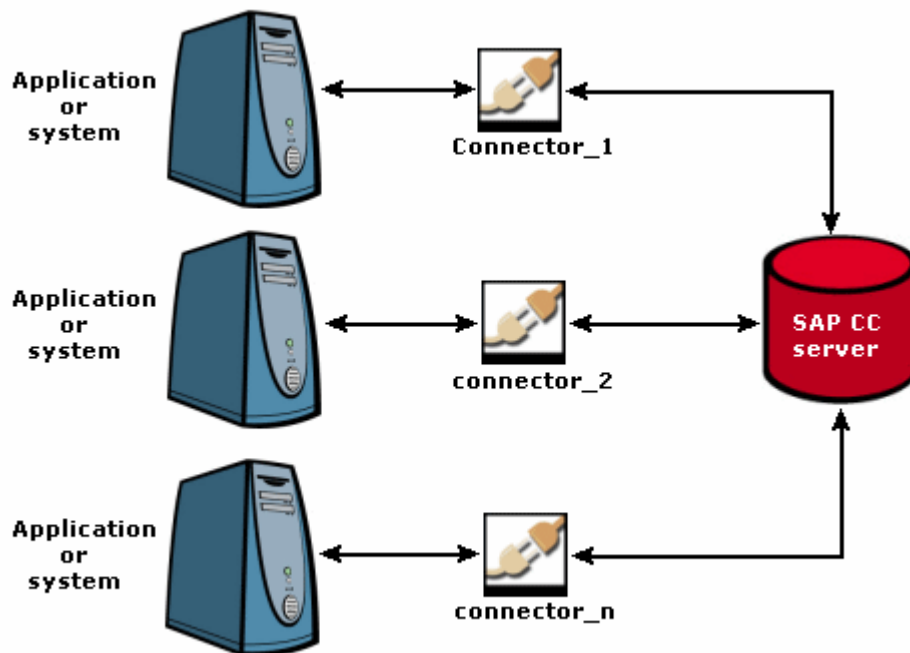
IEC allows you to:

- Collect data from files or external databases
- Extract advanced lines from files, lines by lines, or extract all the lines which are inserted between two specific lines
- Modify advanced character strings such as CSV parsing
- Generate chargeable items from collected data
- Send XML API requests to SAP CC Core Server
- Execute SQL requests
- Process XML and XSL operations

1.3 Important Concepts

1.3.1 Import/Export Connectors

An import/export connector (IEC) is an interface application for communicating with SAP CC systems from external applications, systems, or sources as illustrated below. The purpose of an IEC application is to execute scenarios to exchange or process data between applications or systems and the SAP CC systems (Core Server and BART Server).



Implementation

You implement a remote import/export connector (IEC) application during the implementation project phase to transport data to the SAP CC systems.

⚠ Caution

Do not implement a remote IEC in a production system landscape.

Note that you can install many connectors on a host depending on your business/technical requirements (data flows, processes, performances).

Stand-alone IEC

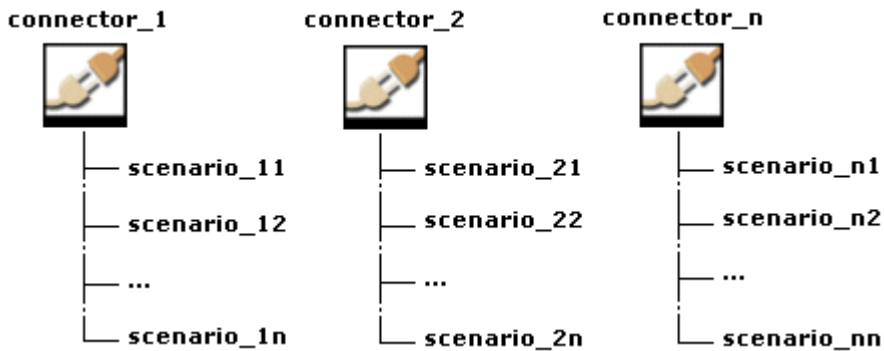
You execute scenarios saved as files in directories ([Executing a Scenario with a Stand-Alone IEC \[page 10\]](#)).

i Note

Unlike the remote mode, you do not use the CAT Tool graphical user interface to manage the execution of scenarios.

Remote IEC

You execute one or several scenarios at a time by using the *CAT Tool* graphical user interface ([Executing a Scenario with a Remote IEC Application](#)). Each connector has its own repository to which you can export scenarios to be executed (see [Exporting a Scenario](#)):



Managing the connector address book

Because you can launch many connectors on several host machines, you must register in *CAT Tool* the addresses of all the remote connectors so that *CAT Tool* can connect to them when needed. The connector address book (see [Managing the Connector Address Book](#)) allows you to register all the IEC applications that are used or likely to be used.

Scheduler

An IEC application includes a scheduler function that triggers a scenario at a frequency set in it ([Scheduling Policy](#)).

Logs

An IEC application manages the logs in a directory (see [Log Management \[page 8\]](#)).

1.3.1.1 Stand-Alone IEC

- [Executing a Scenario with a Stand-Alone IEC \[page 10\]](#)

1.3.1.2 Remote IEC

- [Executing a Scenario with a Remote IEC Application](#)
- [Managing the Connector Address Book](#)

1.3.1.3 Log Management

The import/export connector (IEC) application generates and manages logs during the business/technical operations when executing a customized scenario.

Log Directory

The import/export connector (IEC) application manages a log directory that includes several files and the following subfolders:

- Accepted
- Filtered
- Rejected

Acquisition Reports

The import/export connector (IEC) application generates a report log file with acquisition errors or not for each file being successfully processed when the executed scenario includes the [Acquisition \(by BART\)](#) component.

This report contains the following information:

- START DATE
- END DATE
- DURATION
- NB ITEMS: Is the number of lines read from the input file.
- NB ACCEPTED: Is the number of lines accepted in the scenario.
- NB REJECTED: Is the number of lines rejected by the scenario if the line could not be properly mapped to a chargeable item structure.
- NB FILTERED: Is the number of lines filtered by the scenario (per the IEC filter configuration).

→ Remember

$NB \text{ ITEMS} = NB \text{ ACCEPTED} + NB \text{ REJECTED} + NB \text{ FILTERED}$

🔗 Example

The content of the report log file are:

START DATE = 2011-05-24T14:33:35

END DATE = 2011-05-24T14:33:35

DURATION = 0 sec

NB ITEMS = 10

NB ACCEPTED = 10


```
NB REJECTED = 0
```

```
NB FILTERED = 0
```

Other Processing Logs

The log files contain monitoring information related to any filtering or error event that happened when an IEC application is executing a scenario.

Refer to the following components for more information:

- [File Spool Collector](#)
- [Log Action](#)

Accepted Logs

❖ Example

```
# Accepted [LOGGER_1]
```

```
S#6105000020#00000001#20121116#20121116#0056#5600#US#-1#1#10.00#USD#0#-1#-1#19700  
101#ZITU#4F#361285480#i_software
```

Filtered Logs

The `filtered` subfolder contains the data item that has been filtered when an IEC application is executing and processing a set of components in a scenario. `Filtered` means that a data item such as a chargeable item has not been processed. This is not an error but the expected result. The following components can filter data items:

- [Delimited Line Set Extractor](#)
- [Fixed Size Line Set Extractor](#)
- [File Spool Collector](#)
- [Acquisition \(by BART\)](#)

The filtered data items are grouped according to their source name.

Rejected Logs

The `rejected` subfolder contains the data item that has been rejected when an IEC application is executing and processing a set of components in a scenario. For example, the [Reject](#) component can reject data items.

❖ Example

```
# Rejected [MESSAGE_RATING_ACTION_2]
```

```
# Invalid Item Exception (Division by zero.) rejected by Send to CC
```

```
DEFERRED,2012-11-16T00:00:00,2012-11-16T00:00:00,USD,2000000.000000,1.000000,231  
30050,32650016,D5942G/A,ZITU,0056,,5600,01,01,907040,IS02,5601,IS,D5942G/  
A,5600,US,-1,2013/04|-449315.07;2013/05|-147945.21;2013/06|-147945.21;2013/07|-18  
6301.37;2013/08|-147945.21;2013/09|-147945.21;2013/10|-186301.37;2013/11|-147945.
```

```
21;2013/12|-147945.21;2014/01|-186301.37;2014/02|
23668.22,365.000000,-1.000000,2012-11-12T00:00:00,2013-11-12T00:00:00,-1.000000,-
1,,i_software,,1.000000,0,4F,361304891,2012-11-16T00:00:00
```

1.4 Tasks

- [Launching an Import/Export Connector \(IEC\) Application \[page 10\]](#)
- [Working with an IEC \[page 12\]](#)

1.4.1 Launching an Import/Export Connector (IEC) Application

Launching an IEC means that you execute a scenario via an import/export connector (IEC) application (see [Import/Export Connectors \[page 5\]](#)) installed in your SAP system landscape.

Launch an import/export connector program

You can manually execute a stand-alone IEC program or a remote IEC program.

Caution

Do not implement a **remote** IEC (see [Executing a Scenario with a Remote IEC Application](#)) in a **production system landscape**.

Related Information

[Working with an IEC \[page 12\]](#)

1.4.2 Executing a Scenario with a Stand-Alone IEC

In your SAP system landscape, you can execute a scenario on a host machine if:

- An import/export connector (IEC) application is installed on this host.
- The scenario to be executed is saved in a directory that is accessible the IEC application.

You can execute only one scenario at a time with one stand-alone connector. To execute a scenario, you launch the appropriate connector executable with the scenario filename as an argument.

Procedures

Refer to the table below:

Environment	Executable	Procedures
<i>MS Windows</i>	<code>iec.bat</code>	<p>To launch a connector program:</p> <ol style="list-style-type: none"> 1. Open a <i>COMMAND</i> window. 2. Type: cd <IEC_INSTALL_DIR>\bin 3. Press <input type="text" value="ENTER"/>. 4. Then type: iec.bat <ARGUMENTS> 5. Press <input type="text" value="ENTER"/>. <p>To stop a connector: Close the <i>COMMAND</i> window in which the scenario is running in a connector.</p>
<i>UNIX</i>	<code>iec.sh</code>	<p>To launch a connector program:</p> <ol style="list-style-type: none"> 1. Open a <i>UNIX</i> console window. 2. Type: <IEC_INSTALL_DIR>/bin/ iec.sh <ARGUMENTS> 3. Press <input type="text" value="ENTER"/>. <p>To stop a connector: Close the <i>UNIX</i> console window in which the scenario is running in a connector.</p>

Where:

- **<IEC_INSTALL_DIR>** is the installation directory of an import/export connector (IEC) program; Its launch scripts are available in the `bin` subfolder.
- **<ARGUMENTS>** are the mandatory and optional options to be executed

The description of the command arguments is the following:

```
-login <USR_LOGON> -password <USR_PASSWORD> <SCENARIO_DIR> -uri <CCD_URIS> [-rootDir [<LOG_DIR>]] [-scheduled]
```

Where:

- **<USR_LOGON>** is the logon (SAP CC user name or ID) of a power user or administrator having the right to execute the connector program.
- **<USR_PASSWORD>** is the password of the SAP CC user (service user) identified with **<USR_LOGIN>**

- **<SCENARIO_DIR>** is the path to the scenario file to be executed by the connector application.
- **<CCD_URIS>** is the comma-separated URIs of the dispatcher instances in the target SAP CC Core Server system.

The URI syntax is `<PROT>://<HOST_ADDRESS>:<MSG_TCP_PORT>`

Where:

- **<PROT>** is the communication protocol. The possible values are: **tcptcp** and **tcps** (secured channel).
- **<HOST_ADDRESS>** is the hostname or the IP address (IPv4 or IPv6) of the machine hosting the dispatcher instance related to the URI. View the instance map of the target SAP CC system or contact the IT administrator.
- **<MSG_TCP_PORT>** is the port number of the host that is dedicated to the dispatcher instance for the communications via the *Message TCP* technical interface. View the instance map of the target SAP CC system or contact the IT administrator.

i Note

- The syntax `<HOST_ADDRESS>:<MSG_TCP_PORT>` is deprecated and replaced by the syntax based on *tcp* and *tcps* prefixes.
- When the UDP discovery function is available in the target SAP CC Core Server system, you can replace the URI list by the following entry:

```
udp://<IP_ADDRESS>:8910/?SID=SCC
```

When starting, the import/export connector (IEC) application discovers the SAP CC system and connects to it via the Message TCP technical interface by using the relevant security level. Tip: View the current system settings to check if the function is enabled. Get the values of the following system parameters: EXTERNAL_DISCOVERY_ENABLED, EXTERNAL_DISCOVERY_MULTICAST_ADDRESS, and EXTERNAL_DISCOVERY_PORT.

- **-rootDir [**<LOG_DIR>**]** is an optional argument.

`<LOG_DIR>` is the directory where the log files are saved (refer to [Log Management \[page 8\]](#)).

If `<LOG_DIR>` is not mentioned, the default directory is the user working directory that depends on the procedure used to launch the connector program.

- **-scheduled** is an optional argument. This argument enables the scheduler as configured in the scenario to be executed (refer to [Scheduling Policy](#)).

If this argument is not mentioned, the scenario is executed only once even if the scenario defines regular activities.

1.4.3 Working with an IEC

If you need to transfer data between the SAP CC system and an external system by using an import/export connector (IEC), you must first design and create a scenario (see [Scenarios](#)) with the *CAT Tool* graphical user interface ([Getting Started](#)).

Implementation example

Every hour, you want to rate and charge the CDRs of customers which are stored in CSV files by your offline mediation system. In the CSV files, every CDR will have the simple following format:
customerID;consumptionDate;serviceID

This format means that the end customer “customerID” used the customer service “serviceID” on the date “consumptionDate”.

Scenario analysis and design

To define the scenario, you must consider the following four steps:

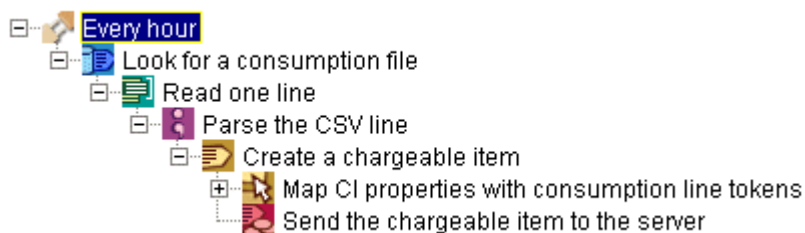
1. **Data Collection:** How to import the data in the scenario. In our example, the CDRs are collected from files, line by line.
2. **Data Modification:** How to make collected data exportable. You need to generate one chargeable item from one collected line. Each collected line must be parsed through a CSV parser. The *userID* property of the chargeable item must be mapped onto the *customerID* token of the collected line, the *consumptionDate* property with the *consumptionDate* token, and the *serviceID* property with the *serviceID* token.
3. **Data Export:** How to export data from the scenario. You need to send the chargeable items to be rated to SAP CC Core Server by using Message API, for example (see [Rating](#)).
4. **Execution Period:** How to execute the scenario. The scenario is executed every hour.

i Note

For more information on scenario design, refer to [Designing a Scenario](#).

Scenario creation

Once you have designed the scenario, you can open *CAT*, create the scenario, and then insert appropriate components in the tree for describing actions.



This scenario means that:

1. Every hour, a CDR file is looked for.
2. When a CDR file has been found, the extractor reads one CSV line from this file.
3. The CSV line is parsed to extract token1, token2, and token3, for example.
4. A chargeable item is created.
5. The chargeable item properties are mapped onto token1, token2, token3.
6. The chargeable item is sent to the server through Message API.

When the scenario is complete, and then saved in XML file, you can execute it in an import/export connector (IEC) every hour ([Import/Export Connectors \[page 5\]](#)).

i Note

For more information on scenario configuration, refer to [Configuring a Scenario](#).

1.4.4 Monitoring the Logs

Once you have started a scenario, you can monitor the logs saved by the import/export connector (IEC) in the log directory.

Related Information

[Executing a Scenario](#)

[Log Management \[page 8\]](#)

1.4.5 Starting a Remote IEC Application

Starting a Remote connector

To establish a connection with the *CAT Tool* user interface, you start a connector by launching an executable file with the following arguments:

- The repository path where the scenarios are saved and executed.
- The port number on which the connector is listening.
- The repository where the logs are saved..

Procedures

Refer to the table below:

Environment	Executable	Procedures
<i>MS Windows</i>	<code>iec_remote.bat</code>	<p>To launch a remote connector program</p> <ol style="list-style-type: none"> 1. Open a <i>COMMAND</i> window 2. Type: cd <IEC_INSTALL_DIR>\bin 3. Press <input type="text" value="ENTER"/> 4. Then type: iec_remote.bat <ARGUMENTS> 5. Press <input type="text" value="ENTER"/> <p>To stop a connector, close the <i>COMMAND</i> window.</p>
<i>UNIX</i>	<code>iec_remote.sh</code>	<p>To launch a remote connector program</p> <ol style="list-style-type: none"> 1. Open a <i>UNIX</i> console window 2. Type: <IEC_INSTALL_DIR>/bin/ iec_remote.sh <ARGUMENTS> 3. Press <input type="text" value="ENTER"/> <p>To stop a connector, close the <i>UNIX</i> console window in which the scenario is running in a connector.</p>

Where:

- **<IEC_INSTALL_DIR>** is the installation directory of an import/export connector (IEC) program; Its launch scripts are available in the `bin` subfolder.
- **<ARGUMENTS>** are the mandatory and optional options to be executed.

The description of the command arguments is the following:

```
[-repositoryDir=<SCN_REP_DIR>] -uri <CCD_URIS> [-port=<IEC_PORT_NB>] [-logDir=<LOG_DIR>]
```

Where:

- **<SCN_REP_DIR>** is the file directory where the scenarios are stored (by default, under MS Windows: `.. \iec-repository`; under UNIX: `.. /iec-repository`)
- **<CCD_URIS>** is the comma-separated URIs of the dispatcher instances of SAP CC Core Server; The URI syntax is `<PROT> : //<HOST_ADDRESS> : <MSG_TCP_PORT>` where:
 - **<PROT>** is the communication protocol; the possible values are: `tcp` and `tcps` (secured channel).
 - **<HOST_ADDRESS>** is the hostname or the IP address (IPv4 or IPv6) of the machine hosting the dispatcher instance related to the URI; View the instance map of the SAP CC system.
 - **<MSG_TCP_PORT>** is the port number of the host that is dedicated to the dispatcher instance for the communications via the Message TCP technical interface; View the instance map of the SAP CC system.

- **<IEC_PORT_NB>** is the communication port number on which the import/export connector program is listening (by default: 9002) on the host machine; CAT Tool connects to this port to manage the scenarios in the remote connector.
- **<LOG_DIR>** is the directory where the logs are saved; if **<LOG_DIR>** is not mentioned, the default log directory is the logs subfolder in the scenario repository: under MS Windows: <SCN_REP_DIR>\logs; under UNIX: <SCN_REP_DIR>/logs);

❖ Example

The table below shows some examples to start a remote connector:

Environment	Command
<i>Windows</i>	<pre> iec_remote -repositoryDir=C:\home\job\MyRepository -port=2002 -logDir=c:\home\job\MyLogs </pre>
<i>UNIX</i>	<pre> iec_remote -repositoryDir=/home/job/MyRepository -port=2002 -logDir=/home/job/MyLogs </pre>

1.4.6 Stopping a Connector

Stop a Connector

Close the window (*COMMAND* or *UNIX*) in which the connector program is running.

1.5 Troubleshooting

Troubleshooting Problems of the Application

You may have to troubleshoot some user interface issues when working with the Import/Export Connector (IEC) application.

Enabling the Traces for Troubleshooting

For troubleshooting purposes, SAP SE recommends that you temporarily enable the logging and tracing functions in the application.

For more information, refer to the related topic in the SAP CC [Administration Guide](#).

Related Information



[Help Resources](#)

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