IBM Z and LinuxONE

Connectivity Mapping Tool User's Guide

GC28-7058-00

Note:

Before you use this information and the product it supports, read the information in "Safety" on page vii, Appendix A, "Notices," on page 37 , and IBM Systems Environmental Notices and User Guide, Z125–5823.

This edition, GC28-7058-00, applies to IBM Z and IBM LinuxONE.

There might be a newer version of this document in a **PDF** file available on **IBM Documentation**. Go to https://www.ibm.com/docs/en/systems-hardware, select **IBM Z** or **IBM LinuxONE**, then select your configuration, and click **Library Overview** on the navigation bar.

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Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

World trade safety information

Several countries require the safety information contained in product publications to be provided in their local language(s). If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the translated safety information with references to the US English source. Before using a US English publication to install, operate, or service this product, you must first become familiar with the related safety information in the *Systems Safety Notices*, G229-9054. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Laser safety information

All IBM Z® and IBM LinuxONE (LinuxONE) models can use I/O cards such as FICON®, Open Systems Adapter (OSA), Network Express, Integrated Coupling Adapter2.0 SR (ICA SR2.0), zHyperLink Express, or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

Laser compliance

All lasers are certified in the US to conform to the requirements of DHHS 21 CFR Subchapter J for Class 1 or Class 1M laser products. Outside the US, they are certified to be in compliance with IEC 60825 as a Class 1 or Class 1M laser product. Consult the label on each part for laser certification numbers and approval information.

Laser Notice: U.S. FDA CDRH NOTICE if low power lasers are utilized, integrated, or offered with end product systems as applicable. Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION: This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

About this publication

This guide is intended to help users of the Connectivity Mapping Tool to obtain the tool and learn to use it for mapping available CHPIDs to PCHIDs.

This guide is available in portable document format (PDF) to view or print from (at https://www.ibm.com/docs/en/systems-hardware). This guide is also available in HTML format within the Connectivity Mapping Tool itself under the **Help** menu.

How to use this guide

This guide includes the following:

Figures included in this document illustrate concepts and are not necessarily accurate in content, appearance, or specific behavior.

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in this product. Consult the product information for the specific assistive technology product that is used to access our product information.

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

IBM and accessibility

See http://www.ibm.com/able for more information about the commitment that IBM® has to accessibility.

How to provide feedback to IBM

We welcome any feedback that you have, including comments on the clarity, accuracy, or completeness of the information.

For additional information use the following link that corresponds to your configuration:

Configuration	**Link**
IBM z17® Model ME1	How to send feedback to IBM
IBM LinuxONE Emperor 5 Model ML1	How to send feedback to IBM

Chapter 1. Overview

This chapter describes the IBM Z Connectivity Mapping Tool and its requirements.

Overview of the IBM Z Connectivity Mapping Tool

The IBM Z Connectivity Mapping Tool lets users map logical IDs, such as *channel path IDs* (CHPIDs) and *function IDs* (FIDs), from their IOCP configuration file. This mapping helps to avoid connecting critical paths to single-points-of-failure. The IBM Z Connectivity Mapping Tool can save time by minimizing or eliminating changes when users get new hardware or upgrade existing hardware.

The IBM Z Connectivity Mapping Tool supports the following:

- **IBM z17™ (z17) / IBM LinuxONE Emperor 5 - Models ME1 and ML1**.

The IBM Z Connectivity Mapping Tool supports MES upgrades from the following :

- IBM z16™ (z16) / IBM LinuxONE 4 - Models A01, A02, and AGZ
- IBM z15™ (z15) / IBM LinuxONE III - Models T02, T02, LT1, and LT2.

Users can use the IBM Z Connectivity Mapping Tool for a new build or an MES upgrade. The IBM Z Connectivity Mapping Tool can also be used to modify an existing installation after hardware upgrades have been completed. CHPIDs and FIDs are assigned in the IOCP source file and are mapped to the *physical channel IDs* (PCHIDs) and *adapter IDs* (AIDs). The IBM Z Connectivity Mapping Tool assists in these assignments. When the resulting I/O configuration data set (IOCDS) is loaded during activation of the CPC hardware, the mapping of logical IDs to PCHIDs or AIDs becomes part of the configuration.

The IBM Z Connectivity Mapping Tool can be used to:

- Maintain the existing IOCP definitions for CHPID assignments to control units. Using the tool reduces the need for changes to internal documentation, cable labels, and hardware configuration definitions (HCDs).
- Implement a numbering scheme for associating different device types to ranges of CHPID addresses. For example, users might want to have all direct access storage devices (DASDs) within a certain CHPID range.

Note: The existing control units and wiring do not need to be changed.

For purposes of this document, consider an assignment or a mapping as a logical value that is associated with a physical entity that is called a PCHID, or in the case of Coupling Express Short Range, an AID. A PCHID can be a specific port on an I/O connectivity feature, such as a FICON Express, zHyperLink Express, or Network Express. A logical ID is merely an arbitrary number defined within the IOCP configuration data. The tool relates that logical assignment to a PCHID location in the machine.

Requirements

There are certain requirements that must be satisfied before using the tool:.

Resource Link ID

The user must have a valid user ID and password for Resource Link. The web address for Resource Link is: http://www.ibm.com/servers/resourcelink

An option on the Resource Link Sign-in window allows users to obtain a user ID and password.

You can download the IBM Z Connectivity Mapping Tool after obtaining a Resource Link ID.

Configuration Feature Report (CF Report) file

A CF Report file is required to use the IBM Z Connectivity Mapping Tool. A CF Report file can be obtained in several ways:

- An IBM representative can provide the CF Report that is generated by e-config and can be used by the IBM Z Connectivity Mapping Tool.
- The CF Report file can be downloaded from the Resource Link website by identifying the order with the Configuration Control Number (CCN) for the new processor. See Chapter 2, “Obtaining the IBM Z Connectivity Mapping Tool and CFReport file,” on page 5.

IOCP Configuration file

A validated IOCP configuration file must be provided. There are two ways to get a validated IOCP configuration:

1. Use the function in hardware configuration definition (HCD) to generate IOCP source from a validated work IODF. Validated work IODF is the stage of IODF where all logical definitions are in place except PCHID definitions (Logical definitions are in place for channel subsystems, logical partitions, CHPIDs, control units, and devices). At this stage, HCD can generate IOCP statements. These statements can be transferred to a PC as an ASCII text file. They can then be used in the IBM Z Connectivity Mapping Tool. After logical IDs have been mapped to the PCHIDs or AIDs using the tool, the updated IOCP source must be migrated back into HCD.
2. Create an IOCP source manually and validate it using:
   - The ICP IOCP with an execution parameter of WRTCDS=NO
   - The correct SYSTEM=value for the target machine. For example, use **SYSTEM=9175 for a z17**.

Some factors must be considered regarding the IOCP source input file:

- This file must represent the configuration of the machine that is on order. For example, suppose the current machine has parallel channels and the new machine does not. The IOCP needs to be changed to remove the parallel channel definitions.
- The IOCP input must be generated by a level of HCD that supports the target machine. All of the channels to use on the target machine must be defined. The associated control unit statements must be included and CHPID types accurately defined. For example, OSA-Express can have different CHPID types.
- HCD or IOCP must validate the IOCP source input for the correct target machine. A manually generated source file might have errors associated with it that would be invalidated by IOCP. The mapping tool does not do any extensive validation of the source file. The file is presumed to be correct by IOCP standards.

The tool does not consider:

- Logical partitions (LPs) - The tool does not consider which logical IDs are assigned to which LPs
- Switch configurations
- Control unit availability characteristics.

The tool results can be valuable, but cannot fully replace an expert system programmer.

The tool allows users to map logical IDs and export the updated IOCP file. Then, import the file back into the same "validated work IODF" from which it was generated if using HCD.

System Requirements

Supported operating systems:

- Microsoft Windows 10 and later
- macOS Sequoia 15.2 (or later).

System memory: 4 GB of RAM

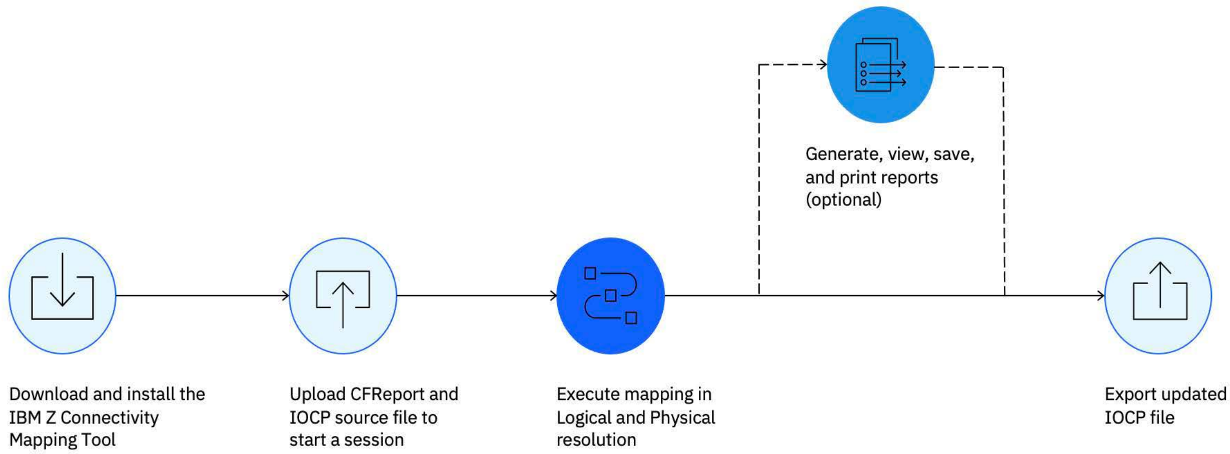
Hard disk space: 380 MB

Display resolution setting: at least 1280 x 1024 pixels

Overview of tasks for using the Connectivity Mapping Tool

The graphical user interface (GUI) of the IBM Z Connectivity Mapping Tool has been extensively redesigned. The following flow chart provides a visual overview of a typical workflow. It outlines the tasks required, from downloading the tool to mapping, and optionally creating and saving reports.

Figure 1. IBM Z Connectivity Mapping Tool GUI flow



Chapter 2. Obtaining the IBM Z Connectivity Mapping Tool and CFReport file

This chapter explains how to download the IBM Z Connectivity Mapping Tool and the CF Report file. The accurate Configuration Control Number (CCN) is required to download this file. For other requirements, see “Requirements” on page 1.

Download the IBM Z Connectivity Mapping Tool

Perform the following steps to download the latest version of the IBM Z Connectivity Mapping Tool or the legacy CHPID Mapping Tool.

1. Log on to Resource Link®
2. Select **Tools** on the Homepage
3. Select **IBM Z Connectivity Mapping Tool** from the available options. From this window, you can perform the following actions:
   a. CF Report download
   b. Download the IBM Z Connectivity Mapping Tool for macOS or Windows
   c. Download Legacy CHPID Mapping Tool
   d. Access User's Guides and Documentation
   e. View the frequently asked questions (FAQ).
4. For IBM z17 or LinuxONE Emperor 5 and current, download the **IBM Z Connectivity Mapping Tool**:
   a. Download either macOS, macOS x, or Windows versions depending on the operating system the IBM Z Connectivity Mapping Tool runs on.
5. For IBM z16 or LinuxONE Emperor 4 and older:
   a. Select the **Legacy IBM CHPID Mapping Tool**
   b. Select the **Download Legacy CHPID Mapping Tool** from the legacy landing page.

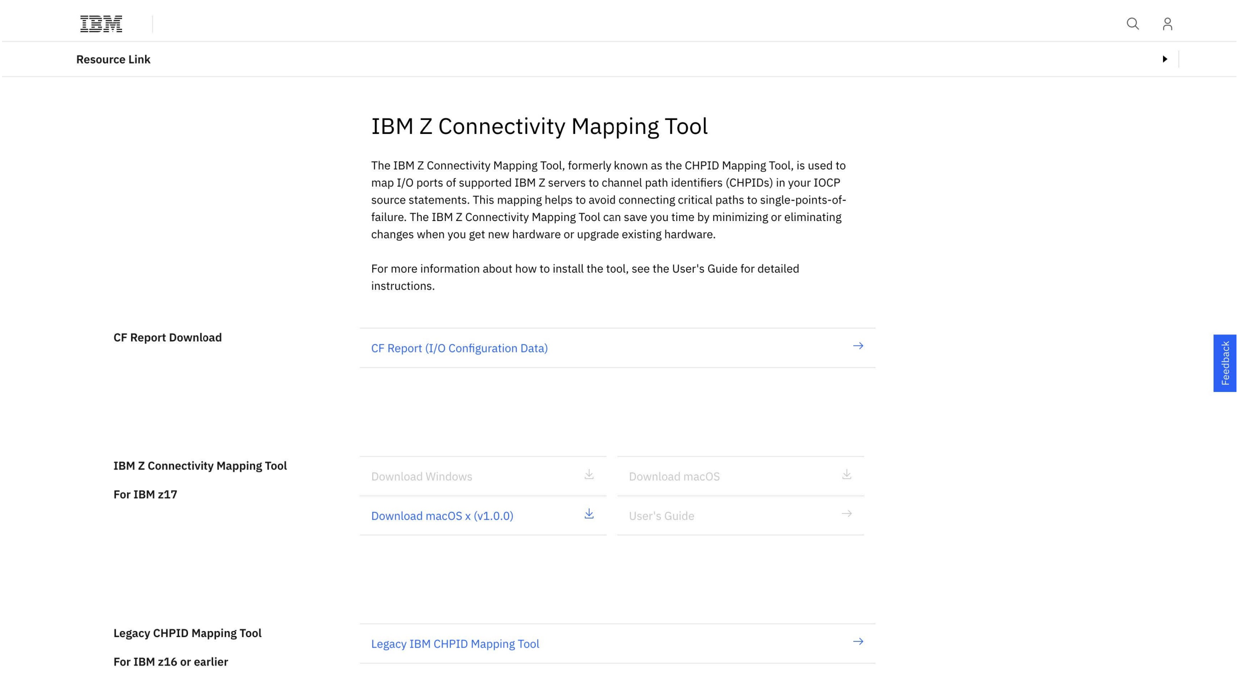


Figure 2. IBM Z Connectivity Mapping Tool download

Obtaining the CFReport file

The IBM Z Connectivity Mapping tool uses the CF Report file to determine which I/O connectivity features have been ordered and the location they will be installed. A service representative can provide a copy of this file, or alternatively, it can be downloaded from Resource Link.

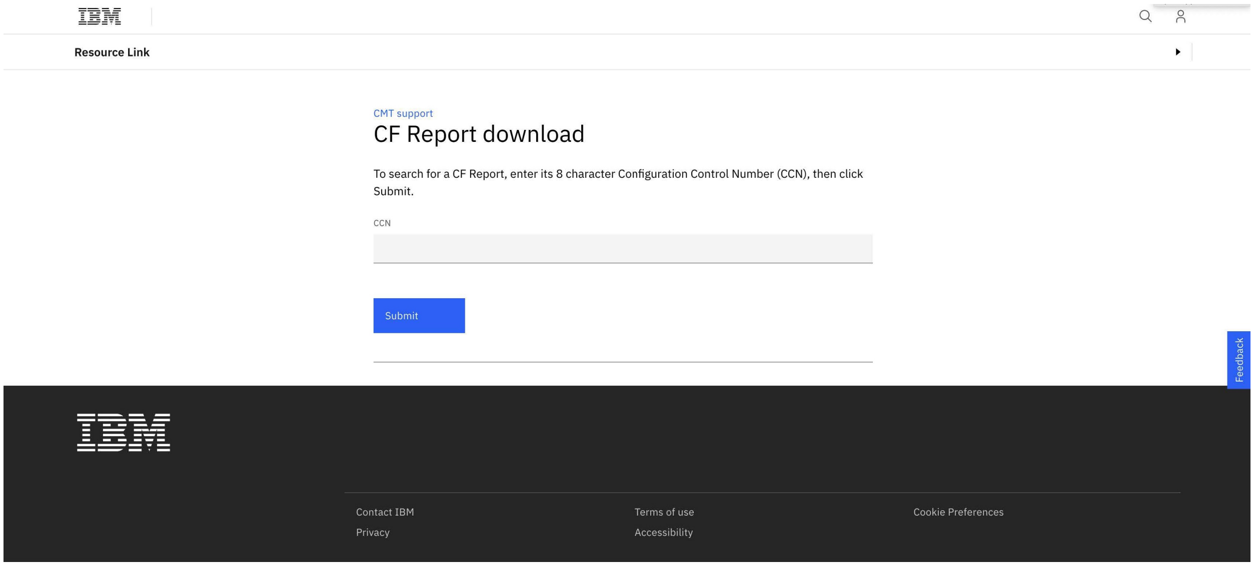


Figure 3. CF Report Download

Before you begin: To obtain the CF Report file, a CCN is required. The CCN is an 8-digit number that is the unique identifier for the ordered machine. It is critical to verify with the service representative that the number is correct.

Perform the following steps to obtain the CF Report file:

1. Log on to IBM Resource Link: http://www.ibm.com/support/resourcelink/.
2. Scroll down to **Tools** on the homepage and select **IBM Z Connectivity Mapping Tool**.
3. Select the **CF Report (I/O Configuration Data)** option that is displayed on the IBM Z Connectivity Mapping Tool page.
4. Enter the CCN in the **Control number** field, and click **Submit**.
5. If there are no problems, a CF Report displays for download.
6. If there are problems with the CCN, an error message displays on the CF Report Download window in the results area.

   One reason why the CCN could be incorrect is that the processing of the order from the IBM configurator might not have completed running. As part of the configuration process, the service representative running the configurator must send the order to the manufacturing database. If problems persist, contact a service representative as soon as possible or click **Feedback** in the navigation bar on the right side of the Resource Link window.

Chapter 3. Getting started

This chapter provides the details on how to launch the IBM Z Connectivity Mapping Tool, create a session, and navigating the tool.

Starting the tool

Download the IBM Z Connectivity Mapping Tool from Resource Link and obtain the CF Report file as described in "Download the IBM Z Connectivity Mapping Tool" on page 6. When the tool is downloaded and installed, launch the tool either through the desktop shortcut (Windows) or from the Applications folder (macOS).

Double-click the IBM Z Connectivity Mapping Tool icon in Figure 4 on page 9 to launch the application. The application launches and opens to the Welcome window as shown in Figure 4 on page 9.

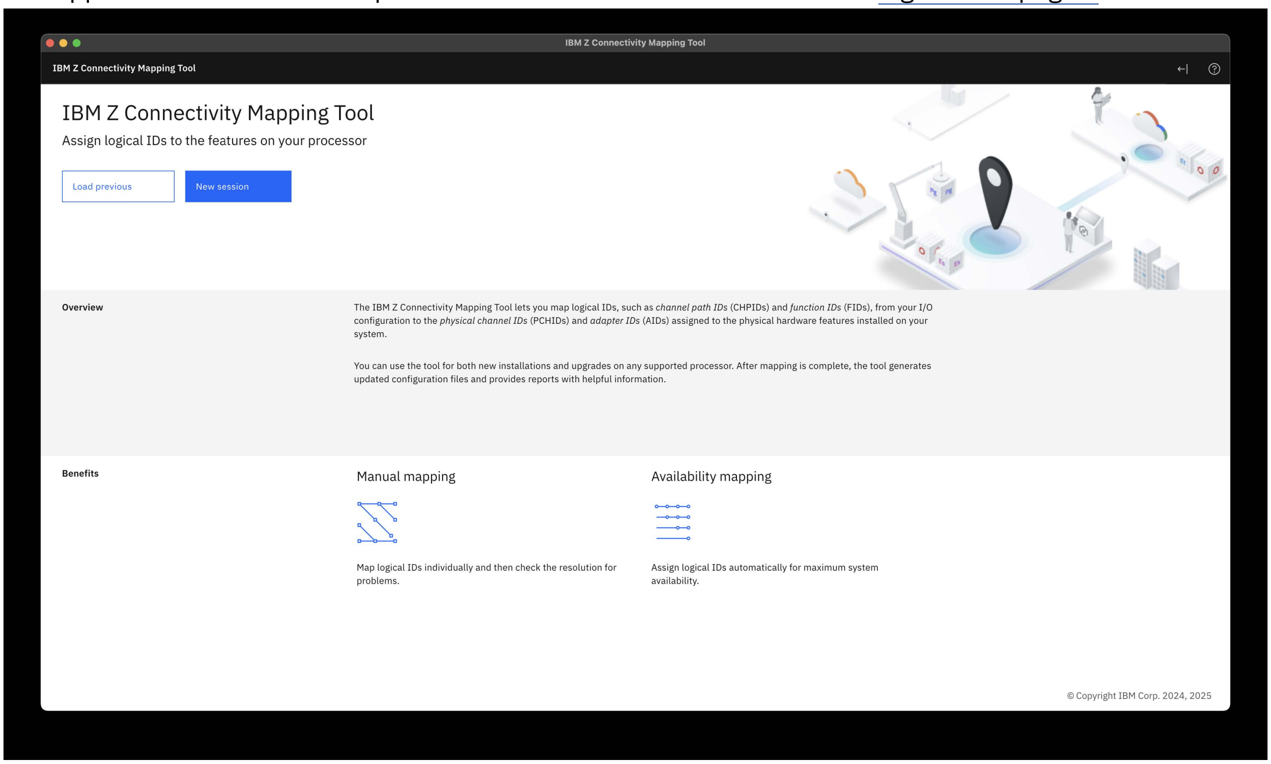


Figure 4. Welcome window

Creating a session

Perform the following steps to create a new IBM Z Connectivity Mapping Tool session:

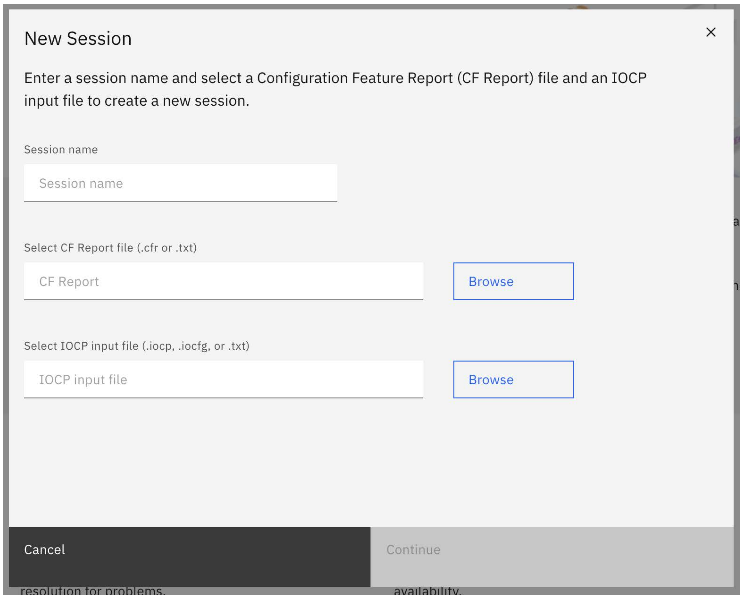


Figure 5. New session

1. Select **New session** on the Welcome window to launch a New session as shown in Figure 5 on page 10.
2. Enter the name of the session in the *Session name* entry field. This name is used to identify the session.
3. Click **Browse** to the right of the *Select CF Report file* entry field and select the CF Report file from the local file system. The .cfr or .txt file types are only allowed and the file may need to be renamed.
4. Click **Browse** to the right of the *Select IOCP input file* entry field and select the IOCP file from the local file system. The .iocp, .iocfg, or .txt file types are only allowed and the file may need to be renamed.
5. Click **Continue** to continue to the next step. **Continue** is disabled until the CF Report and a valid session name is provided. If there is no IOCP file provided, a confirmation modal displays to confirm the start of a session without an IOCP input file. If the CF Report and IOCP input file are not valid, an error banner appears above the Session name entry field. If the CF Report and IOCP input file are valid, the Select system step appears in the New session modal.
6. Figure 6 on page 11 displays the second step of the new session modal which has 3 sections described in detail below: IOCP information, System selection, and IOCP configuration. Select the system and specify the IOCP configuration (if applicable), then click **Create Session** to begin a session. A session is initialized and the screen directs you to the Logical resolution window.

IOCP information

The IOCP input file provides and displays available IOCP information, including the system name and system type. If there is no information available, this section is not displayed.

System selection

If the provided CF Report has multiple systems defined, they display in the System dropdown. Select a system to work on in this session. The tool automatically chooses the first system that matches the system type defined in the IOCP input file.

IOCP configuration

If the IOCP file has PCHIDs assigned, and the CF report file specifies an MES upgrade or change, the IOCP configuration selection allows users to select their relationship. There are two options:

1. *Current configuration:* Select this option if the loaded IOCP configuration file contains statements mapped to features from the old system and to allow the tool to automatically update PCHID

values for features that are being carried forward to the new system. This option is the most common.

2. *Proposed configuration:* Select this option if the IOCP input file represents the new system, meaning the IOCP input file was manually changed before loading it into the tool.

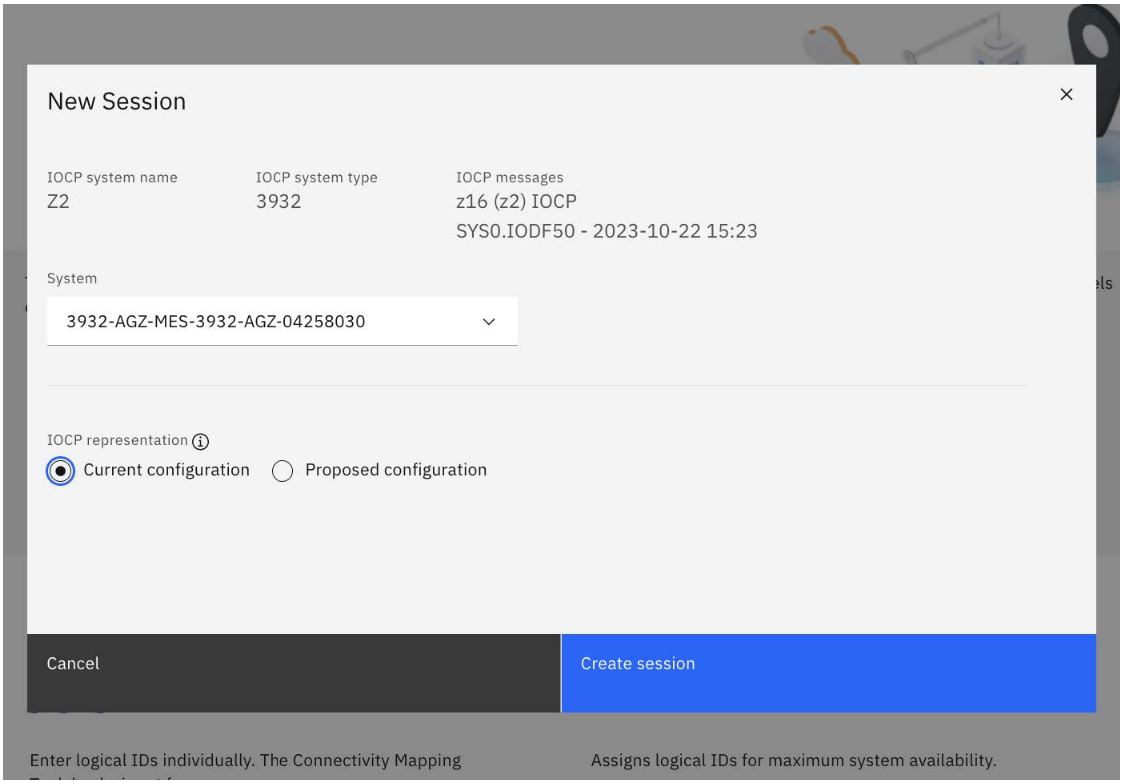


Figure 6. New session - Select system and IOCP configuration step

Load previous session

The IBM Z Connectivity Mapping Tool allows users to effortlessly resume work from a previously saved session. To load a previous session, follow these steps:

1. From the Welcome window, Click **Load previous** to launch the Load session modal, as shown in Figure 7 on page 12.
2. Click **Browse files** to open the file explorer. Browse and select the desired session file with the .cmt extension.
3. After selecting the session file, select **Open**, then click **Load**.

   Note: The **Load** button remains disabled until a valid .cmt session file is selected.
4. If the selected session file was created with an earlier version of the tool and is not compatible, an error message displays in the modal. The file input is reset, and the session is not loaded.
5. If the session file is valid and compatible, the tool restores the session and automatically directs the user to the Logical resolution modal. All previously saved configurations and mappings are reloaded.

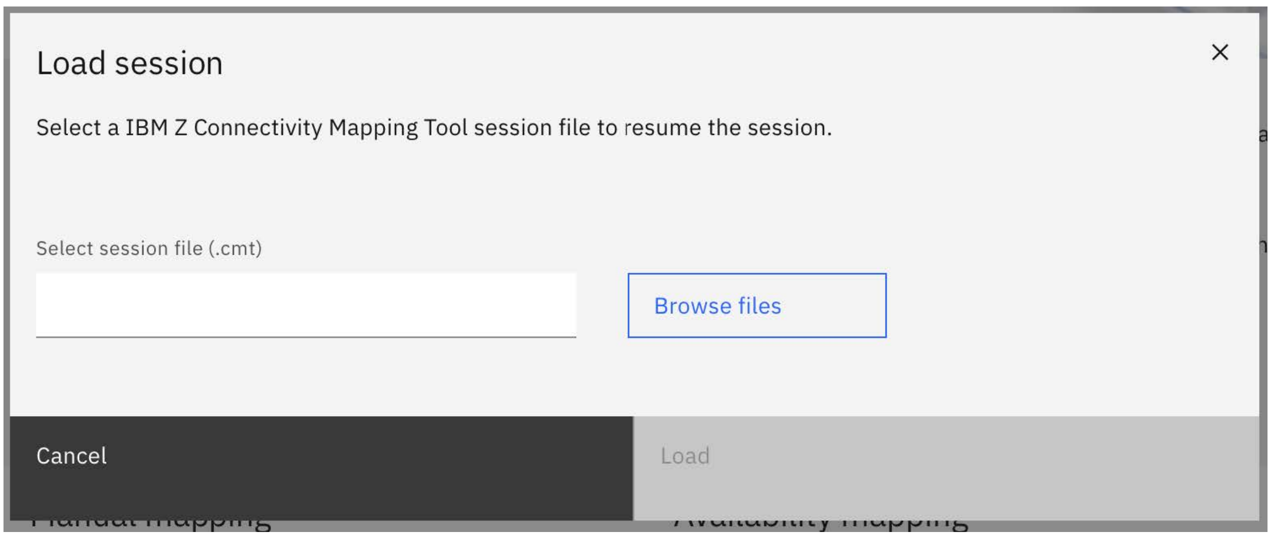


Figure 7. Load session

Navigating the tool

Figure 8 on page 13 displays a masthead with a tool navigation bar. The navigation bar includes links to four main pages and three visual indicators, each serving a specific function:

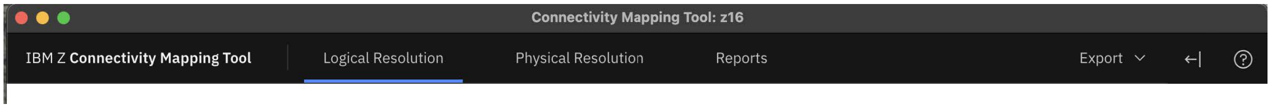


Figure 8. Navigation bar

Main pages

Welcome
The IBM Z Connectivity Mapping Tool link in the top left directs you to the tool Welcome window. This window allows users to load a previous session or start a new one.

Logical resolution
The Logical resolution link launches the Logical resolution window. This window allows user to map logical IDs to PCHIDs and FIDs by utilizing either manual or automatic mapping. Additionally, users can assign feature types, ignore logical IDs, reset mappings, and view the original IOCP statements that defined each logical ID in the imported file.

Note: This link is only available when a session is active.

Physical resolution
The Physical resolution link launches the Physical resolution window. This window allows users to manually map PCHIDs or AIDs to logical IDs, view features and their location, reset mappings, and override AIDs. See the "Physical resolution" on page 20 section for more details.

Note: This link is only available when a session is active.

Reports
The Reports link launches the Reports window. The Reports window allows users to preview and download various types of reports.

Note: This link is only available when a session is active.

Buttons

Export Menu
Select the **Export Menu** option to launch Export IOCP input file and Export session as described in the "Export IOCP input file" on page 23 and Chapter 5, "Exporting," on page 23sections.

Note: This menu is only available when a session is active.

Exit
Click **Exit** to close the tool. If there are unsaved changes to the session, a confirmation dialog displays to verify closing the application before exporting changes.

Help
Click **Help** to launch a modal that contains information about the tool, providing guidance and support for users. This modal provides important information about the IBM Z Connectivity Mapping Tool, including the version information, copyright, privacy policy, and the following links:

- **Resource Link:** A link to the IBM Resource Link which provides access to additional resources and documentation.
- **Feedback:** A link for users to provide feedback about the tool helping IBM improve the tool based on user experiences and suggestions.

- **User's Guide:** A link to the User's Guide offering detailed instructions and information on how to use the tool effectively.

Figure 9. Help window

Chapter 4. Logical and physical resolution

This chapter provides a comprehensive overview of the logical and physical resolution pages to help users understand the information presented and effectively manage logical and physical resolution tasks.

Logical resolution

The Logical resolution window contains a detailed table that displays attributes for each logical channel path or function logical ID. The navigation bar displays this window only when the session is created with an IOCP input file. This window allows users to manually and automatically map logical IDs to PCHIDs, view features, assign feature type, ignore logical IDs, reset connections, and view IOCP statements. A description of each column and the available options in the Logical resolution table are displayed in Figure 10 on page 15.

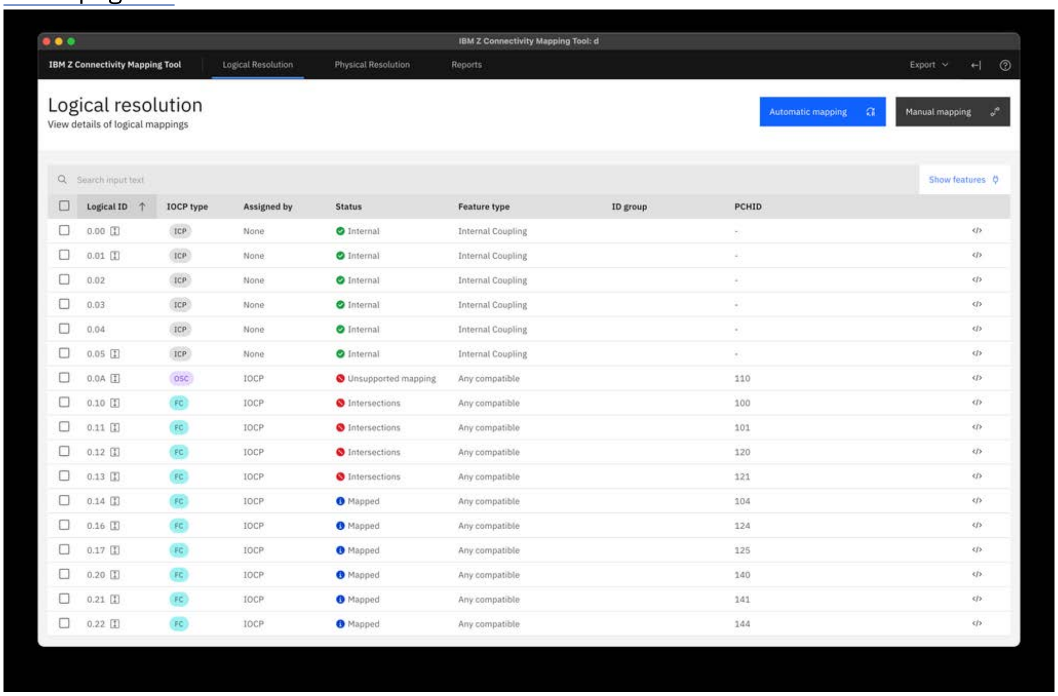


Figure 10. Logical resolution

Logical ID

This **Logical ID** column displays the identifier for the logical channel path or function. The identifier is a unique value to identify each logical path within the system. In most cases, the logical ID represents a Channel Path ID (CHPID). For features such as zHyperLink, Coupling Express, or other PCIe-based adapters the logical ID may instead display a Function ID (FID) in the form FID=xxxx.

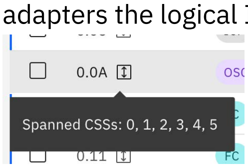


Figure 11. Spanned IDs

Spanned IDs

In the Logical resolution table, a logical ID that represents a CHPID may span multiple channel subsystems (CSSs). A CHPID that is spanned indicates that the channel path can be accessed by logical partitions (LPs) in more than one logical channel subsystem at the same time. All spanned channel paths are considered shared channel paths.

Spanned CHPIDs are indicated by the icon in the logical ID column. To view the specific channel subsystems associated with a spanned logical ID, hover over the icon. A tooltip displays listing the CSSs involved (for example; Spanned CSSs: 0, 1, 2, 3, 4, 5).

IOCP type

The **IOCP type** column specifies the channel path type or function as defined in the IOCP source file. The IOCP type indicates the specific channel type used, such as FICON, OSA, or ICP, or function types such as HYL or NETH.

Assigned by

The **Assigned by** column displays the source of the PCHID/AID assignment. Possible values include:

- **Manual** assignment is made manually by the user
- **Automatic** assignment is made as part of an automatic mapping operation
- **IOCP** assignment is defined in the IOCP source file
- **Ignore** CHPID is marked to be ignored by an automatic mapping operation.

Status column

The **Status** column in the Logical resolution table indicates the resolution status of each logical path. To view additional details about a status, hover over the **Status** icon next to a specific status to display a tooltip with more information.

Status Types

- **Mapped**

  Indicates that the logical configuration is successfully mapped to a physical adapter. No potential issues were detected.

- **Mapped**

  Indicates that the logical configuration is mapped and is assigned by the IOCP.

- **Intersections**

  Indicates that the logical configuration or physical adapter is part of a path that intersects with another path on the same control unit. Hover over the status icon to view more information about the intersection. For more information about resolving intersections, see Chapter 6, “Automatic mapping and processing intersections,” on page 25.

- **Problems**

  This indicates that one or more mapped logical configuration contain warnings or errors.

- **Internal**

  The logical ID is internal and does not need to be mapped.

Feature type

The **Feature type** column specifies the type of hardware feature that the logical path should be mapped to. The Feature type can be set to allow any compatible feature that supports the IOCP type (for example, Any Compatible), or set to a specific type of feature to limit the features that are allowed when mapping (for example, FICON Express32S LX).

ID group

The **ID group** column specifies the type of hardware feature that the logical path should be mapped to. The ID group can be set to allow any compatible feature that supports the IOCP type (for example, Any Compatible), or set to a specific type of feature to limit the features that allows when mapping (for example, FICON Express32S LX).

PCHID

The **PCHID** column displays the Physical Channel Identifier (PCHID) that is mapped to the logical ID. The PCHID indicates the physical hardware location associated with the logical channel path. In configurations where features utilize Adapter IDs (AIDs), including Coupling Express, the PCHID column displays the associated value (for example, AID=12). When a feature has multiple ports that share a PCHID or AID, the port number is included in the identifier displayed (for example, 118/D1).

IOCP statement

Select the **</>** in any row to open the IOCP statement modal for the corresponding logical ID, as shown in Figure 12 on page 17. Click **Copy** on the IOCP statement modal to copy the full original IOCP statement that defines the selected logical ID to the clipboard.

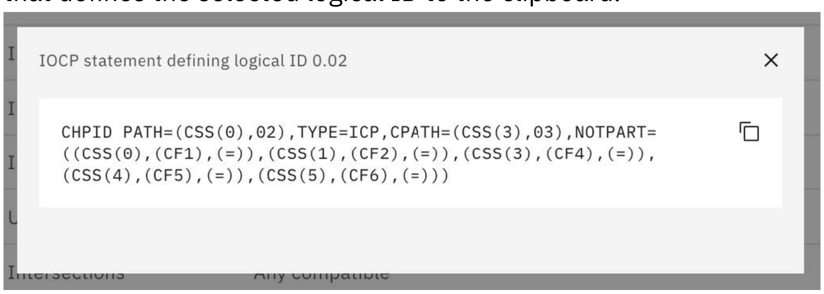


Figure 12. IOCP statement

Show features

Select the **Show features** option at the top right of the Logical resolution table to launch the Features modal, as shown in Figure 13 on page 18. This modal provides a detailed overview of the features and their usage statistics. The table includes the following columns:

Feature type
: Indicates the name of the feature

Used
: Indicates the number of instances of this feature that are currently in use

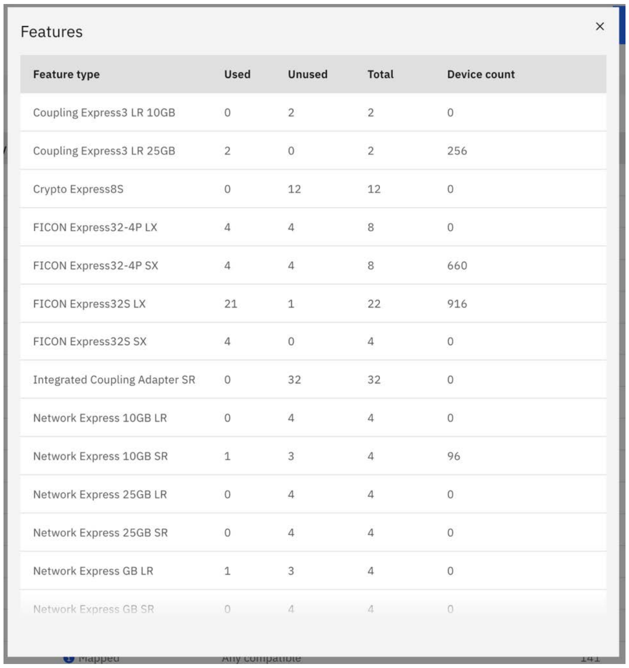
Unused
: Indicates the number of instances of this feature that are not currently in use

Total
: Displays the maximum number of instances of this feature that can be defined

Device count
: Displays the number of devices associated with this feature type.

The Features modal helps users quickly assess the utilization and availability of various features within the system.

Note: The **Show features** option is only available when a logical ID row has been selected in the Logical resolution table.



Features

Feature type	Used	Unused	Total	Device count
Coupling Express3 LR 10GB	0	2	2	0
Coupling Express3 LR 25GB	2	0	2	256
Crypto Express8S	0	12	12	0
FICON Express32-4P LX	4	4	8	0
FICON Express32-4P SX	4	4	8	660
FICON Express32S LX	21	1	22	916
FICON Express32S SX	4	0	4	0
Integrated Coupling Adapter SR	0	32	32	0
Network Express 10GB LR	0	4	4	0
Network Express 10GB SR	1	3	4	96
Network Express 25GB LR	0	4	4	0
Network Express 25GB SR	0	4	4	0
Network Express GB LR	1	3	4	0
Network Express GB SR	0	4	4	0

Figure 13. Features Modal

Automatic mapping

Select the **Automatic mapping** option to allow the system to automatically map logical IDs to features by assigning PCHIDs or AIDs. Automatic mapping helps streamline the resolution process by leveraging the tool's algorithms to find optimal mappings. Select **Automatic mapping** from the Logical resolution table to allow the tool to automatically map all logical IDs or select one or more logical ID rows to automatically map specific IDs.

Logical resolution table actions

Users can perform several actions in the Logical resolution table to manage and resolve logical IDs. These actions can be performed by selecting one or more logical IDs and then choosing from the available options. Below is a detailed description of each action:

Manual mapping
: The **Manual mapping** option allows users to manually assign mappings of logical IDs to features. See Chapter 7, "Manual mapping," on page 29 for details.

Ignore ID
: The **Ignore ID** option allows users to ignore a selected logical ID. Ignoring an ID effectively excludes it from further processing or consideration, which can be useful for IDs that are not relevant or need to be temporarily set aside. Select the logical ID and choose the **Ignore ID** option. The ID is marked as ignored and is not included in subsequent resolution tasks. Use the **Reset assignment** option to remove the Ignored status.

Reset assignment
: The **Reset assignment** option allows users to reset any previous assignments made to a logical ID and return it to an unassigned state. This action is useful for correcting mistakes or reassigning IDs that were previously mapped incorrectly. Select the logical ID and then select the **Reset assignment** option. The assignment is cleared, the ignored status is removed (if applicable), and the logical ID is available for new mappings. Reset assignment does not change the assigned feature type of the logical ID.

Assign feature type

The **Assign feature type** option allows assignment of specific feature types to selected logical IDs. The Feature type can be set to allow any compatible feature that supports the IOCP type (for example, Any Compatible) or set to a specific type of feature to limit the features that are allowed when mapping (for example, FICON Express32S LX). To assign a feature type, follow these steps:

1. Select the desired logical ID in the Logical resolution table, then select the **Assign feature type** option to open the modal.
2. Confirm that the correct logical ID is displayed at the top of the modal. This ensures the feature type is being assigned to the intended ID.
3. Use the drop-down menu under **Select a feature type** to view the available options. Only compatible feature types are listed, ensuring that only appropriate selections can be made for the selected logical ID. Select the **Any compatible** feature type option to allow the automatic mapping algorithm to determine the feature type for the selected logical ID.
4. After selecting the desired feature type, click **Assign** to apply the change. The Logical resolution table updates to reflect the newly assigned feature type for the selected logical ID. A notification displays in the top-right corner of the tool, confirming the successfully completion of the assignment.

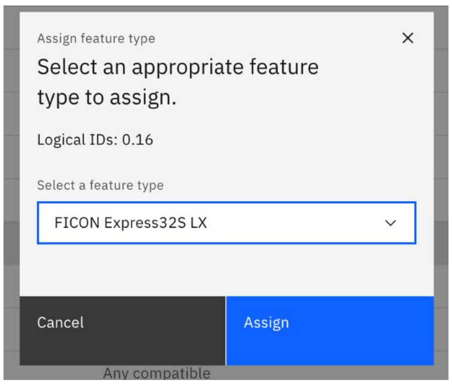
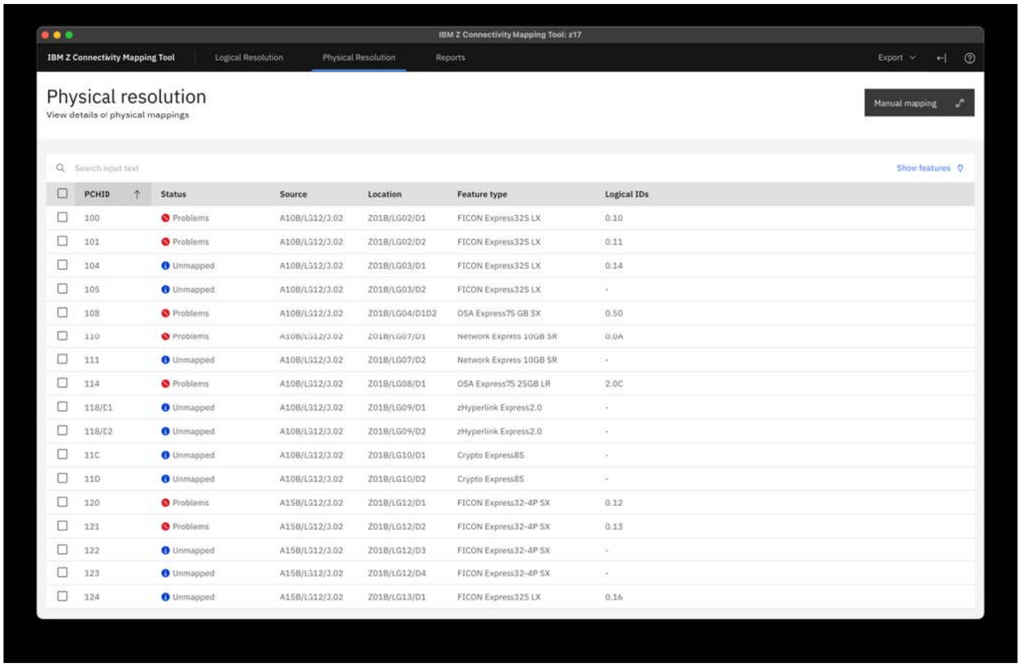


Figure 14. Assign feature type

Physical resolution

The Physical resolution window in the IBM Z Connectivity Mapping Tool provides a detailed view of the features ordered for the system selected in the current session. This window can be used to manage and resolve how logical paths are mapped. Each row in the Physical resolution table represents a mappable port on a feature and displays its associated attributes as listed below:



PCHID

The **PCHID** column lists the Physical Channel Identifier (PCHID). Each PCHID corresponds to a specific physical channel within the system. In configurations where features utilize Adapter IDs (AIDs), including Coupling Express, the PCHID column displays the associated value (for example, AID=12). When a feature has multiple ports that share a PCHID or AID, there is an entry in the table for each port and the port number is included in the identifier displayed (for example, 118/D1).

Status

The **Status** column indicates the current mapping status of each PCHID. The user can hover over the status icon to view more details. Possible status values include:

- **Mapped**

  The PCHID has been successfully mapped.

- **Mapped with warnings the mapping**

  The PCHID has been mapped but there are warnings about.

- **Mapped with errors**

  There is an issue with the physical mapping for the PCHID. Review the associated logical IDs for details.

- **Unmapped**

  The PCHID is not mapped to any logical ID.

- **Problems**

  This status appears only on physical adapters and indicates that one or more mapped logical configurations contain warnings or errors. Identify the logical IDs mapped to the PCHID or AID, then refer to the Logical resolution window to investigate the specific issues.

Source

The **Source** column identifies the location of the primary Fanout card responsible for managing data to and from the associated feature. This location is presented in the format cage-slot-jack (for example, A10B/LG12/J.02)

Location

The **Location** column specifies the physical location details of each PCHID. This identifies the exact physical placement of the feature channel within the system in the form cage-slot-jack (for example, Z01B/LG02/D2).

Feature type

The **Feature** column describes the type of feature associated with each PCHID. This provides information about the hardware capabilities and specific functions of the channel.

Logical IDs

The **Logical IDs** column specifies the type of hardware feature that the logical path should be mapped to. The logical IDs can be set to allow any compatible feature that supports the IOCP type (for example, Any Compatible) or set to a specific type of feature to limit the features that are allowed when mapping (for example, FICON Express32S LX).

Physical resolution table actions

Users can perform several actions directly from the Physical resolution table by selecting one or more PCHIDs and choosing from the available options in the table toolbar. These actions are only available if an IOCP input file is provided during the session creation.

Reset ID

The **Reset ID** action allows reassignment of a selected PCHID by returning it to an unassigned state. This is useful for correcting mapping errors or reassigning IDs that were previously mapped incorrectly. To reset a PCHID:

- Select the PCHID(s) to be reset.
- Choose the **Reset ID** option. The assignment is cleared, and the PCHID becomes available for new mappings.

Manual mapping

The **Manual mapping** option launches the Manual mapping modal and users can manually assign mappings of PCHIDs to logical IDs. See the **Manual mapping** section for details on how to use this window. The **Manual mapping** option is disabled if the selected PCHID is already mapped.

Override AID

The **Override AID** action allows users to manually override the AID associated with a specific feature, such as Coupling Express. The **Override AID** action is available only for features that are associated with AIDs.

- To launch the modal, select **Override AID** located in the last column of the row of the target PCHID in the Physical resolution table.
- Review the **Current AID** displayed at the top of the window.

- Enter a new AID value in the AID entry field. The value must be a valid hexadecimal number between 00 and FF. The AID you enter must be unique and not already used elsewhere in the configuration.
- Select **Override AID** to apply the change.
- Click **Cancel** to cancel the operation.

When the action is complete, the new AID is assigned to the selected feature and displayed in the Physical resolution table. A confirmation notification confirms the action.

Chapter 5. Exporting

This chapter includes information about how to perform various tasks. The tasks are grouped according to how to access them.

Export IOCP input file

If changes were made to the logical configuration during the session, an updated IOCP configuration can be exported to a file for use with HCD or IOCP. This option is only available when a valid IOCP input file has been provided on a new created session. Perform the following steps to export the updated IOCP Input File:

1. Select **Export** on the top right side of the IBM Z Connectivity Mapping Tool masthead
2. Select **Export IOCP Input file** to launch the Export updated IOCP data modal
3. Click **Export Updated IOCP** to open your operating system's file access selection.

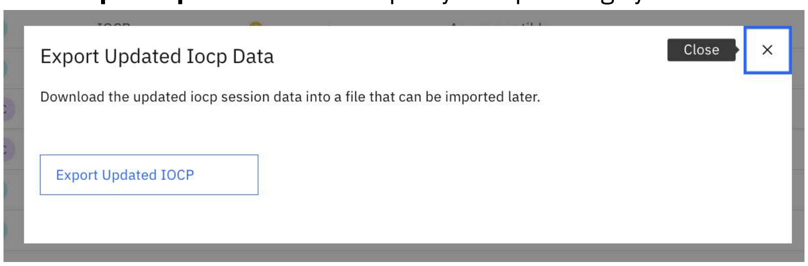


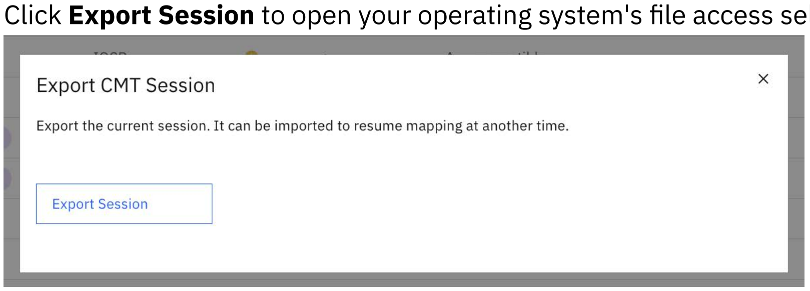
Figure 15. Export Updated IOCP Data

4. Use the file access selection to name the download and select a location. The default name is the session name with the .iocp file extension.
5. Click **Save**.

Export session

The current session information may be exported so that it can be continued at a later time, shared with another user, or to provide problem information to IBM Support. Perform the following steps to export a session:

1. Select **Export** on the top right side of the IBM Z Connectivity Mapping Tool masthead
2. Select **Export Session** to launch the Export CMT Session modal
3. Click **Export Session** to open your operating system's file access selection.



4. Use the file access selection to name the download and select a location. The default name is the session name with the .cmt file extension.
5. Click **Save**.

Chapter 6. Automatic mapping and processing intersections

The IBM Z Connectivity Tool provides two methods for mapping logical configuration, such as CHPIDs and FIDs, to the physical features; automatic mapping and manual mapping.

Automatic mapping
: Automatically assigns CHPIDs and FIDs to features for maximum availability

Manual mapping
: Manually assigns CHPIDs and FIDs to features.

To get the maximum benefit from the IBM Z Connectivity Mapping Tool, it is recommended to use automatic mapping whenever possible. However, certain situations may require manual mapping before performing automatic mapping.

Manual mapping may also be recommended in the following circumstances:

- When there are specific requirements about how CHPIDs should be arranged on the machine
- To make minor mapping adjustments
- To eliminate intersections.

For details about performing manual mapping, see Chapter 7, “Manual mapping,” on page 29.

Performing automatic mapping

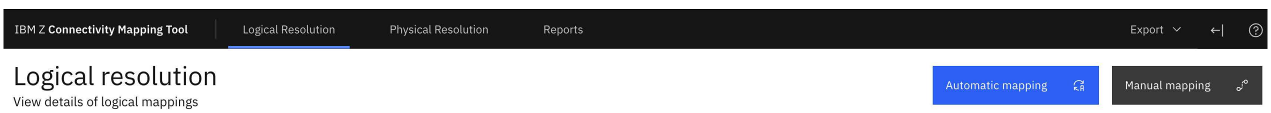


Figure 16. Automatic mapping

Select **Automatic mapping** in the Logical resolution window to perform two tasks:

- Perform the processing for automatic mapping
- Process intersections.

Note: Although automatic mapping attempts to avoid intersections, there may be times when it is preferred to address intersections and important connections through manual mapping first. Automatic mapping takes into account how manual mappings have been assigned when calculating new mappings.

Perform the following steps for automatic mapping:

1. Select the Logical IDs to reset

   Select any number of IDs to map. Select all using the checkbox in the table header.

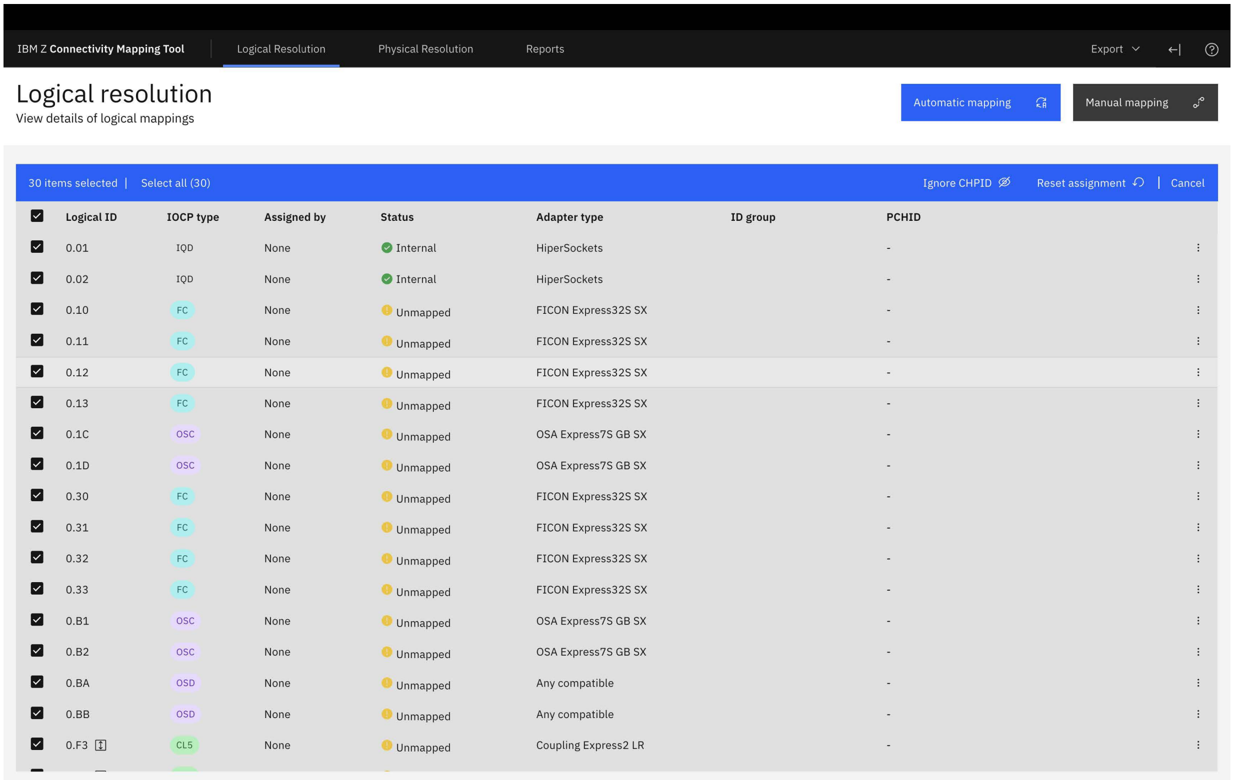


Figure 17. Reset CHPID Assignments window

2. Select all, one, or several items to map
3. Select **Automatic mapping** in the top right after making selections.
4. After automatic mapping is complete on the selected connections, repeat the procedure with other Logical IDs if needed.

Intersections

The next several sections provide the following information:

- Types of intersections
- Viewing information about intersections
- Possible strategies for eliminating intersections

Types of Intersections

The IBM Z Connectivity Mapping Tool flags several types of intersections. An intersection indicates that the logical configuration or physical adapter is part of a path that intersects with another path on the same control unit. For more information on intersections see Chapter 4, “Logical and physical resolution,” on page 15. The types of intersections are:

Domain intersection
Drawer intersection occurs when two or more paths are connected through the same I/O drawer and is the least severe type of intersection. This is common in smaller systems and does not indicate a connectivity issue. For example, if a control unit has 8 paths but there are fewer than 8 I/O drawers available, drawer intersections are unavoidable.

Domain intersection
Domain intersection occurs when multiple paths on the same control unit are connected through the same I/O domain within a single I/O drawer. This should be avoided unless working with a very small system.

Slot intersection
Slot intersection occurs when multiple paths on the same control unit are connected through different ports on the same FICON Express card. This is the most severe type of intersection. This presents an availability risk—if the card fails, multiple paths may be lost.

Viewing information about intersections

The IBM Z Connectivity Mapping Tool displays information about intersections in the **Status** column of the Logical resolution table after running **Automatic mapping** . Figure 18 on page 28 displays an example of how the tool displays intersections. Hover over the status icon to view the available details regarding the intersection.

An intersection does not necessarily indicate an availability issue in the mapped configuration. Although it is best to avoid Slot intersections whenever possible, Domain and Drawer intersections may occasionally be necessary due to constraints in available I/O drawers and feature limitations.

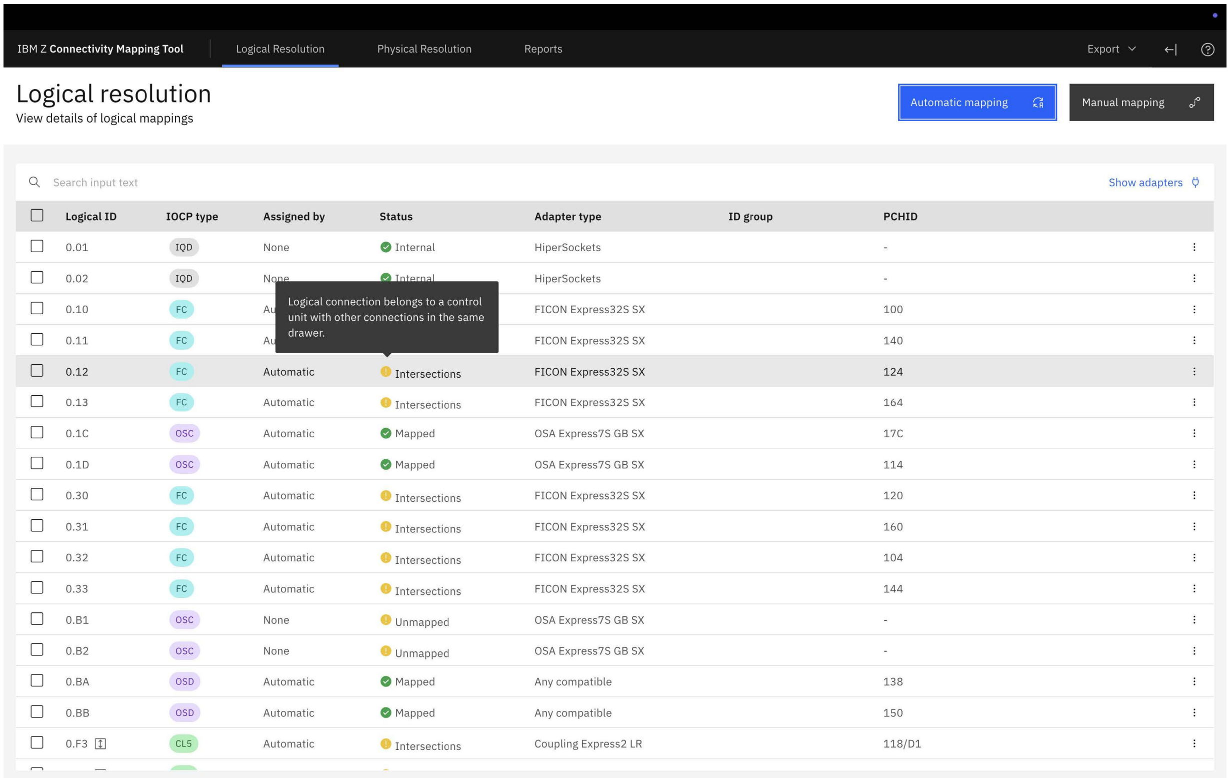


Figure 18. Intersections

Resolving intersections

For best results, select and automatically map the most critical logical connections first. Prioritizing these high-importance connections early ensures that the tool assigns them to the most optimal hardware resources. Proceed to map the remaining unmapped connections when the key connections are mapped.

The following options are available for resolving intersections:

- Changing assignments in the Manual mapping view
- Using a different IOCP file
- Adding hardware.

Resetting CHPIDs in manual mapping

Perform the following steps to reset CHPIDS:

1. Find the CHPID to reset in the Logical resolution table
2. Select the boxes next to the items you want to reset
3. A **Reset assignment** option displays in the Logical resolution table header after your selections
4. Select **Automatic Mapping** for the specific CHPIDs to check if the tool reports an Intersection. Otherwise, the selection may need to be manually mapped.

Chapter 7. Manual mapping

This chapter provides general information about the Manual mapping view and the steps to perform manual mapping.

Few users would want to use manual mapping exclusively. To use only manual mapping, you need to thoroughly evaluate the allocation of devices to channels and need an in-depth knowledge of the availability characteristics of the machine structure. Therefore, most users prefer to use automatic mapping. For more details on automatic mapping, see Chapter 6, “Automatic mapping and processing intersections,” on page 25.

You may prefer to use manual mapping if:

- They have specific requirements about how logical IDs should be arranged on the machine
- They need to make minor mapping adjustments
- They need to eliminate intersections.

Manual mapping view

Manual mapping is available on both the **Logical Resolution** and **Physical Resolution** views.

If Manual mapping is available for the selected IDs, **Manual mapping** is enabled in the top right corner of the page.

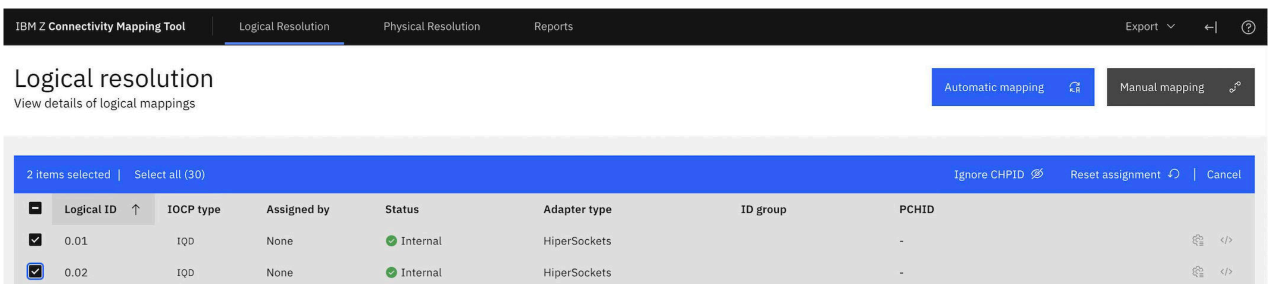
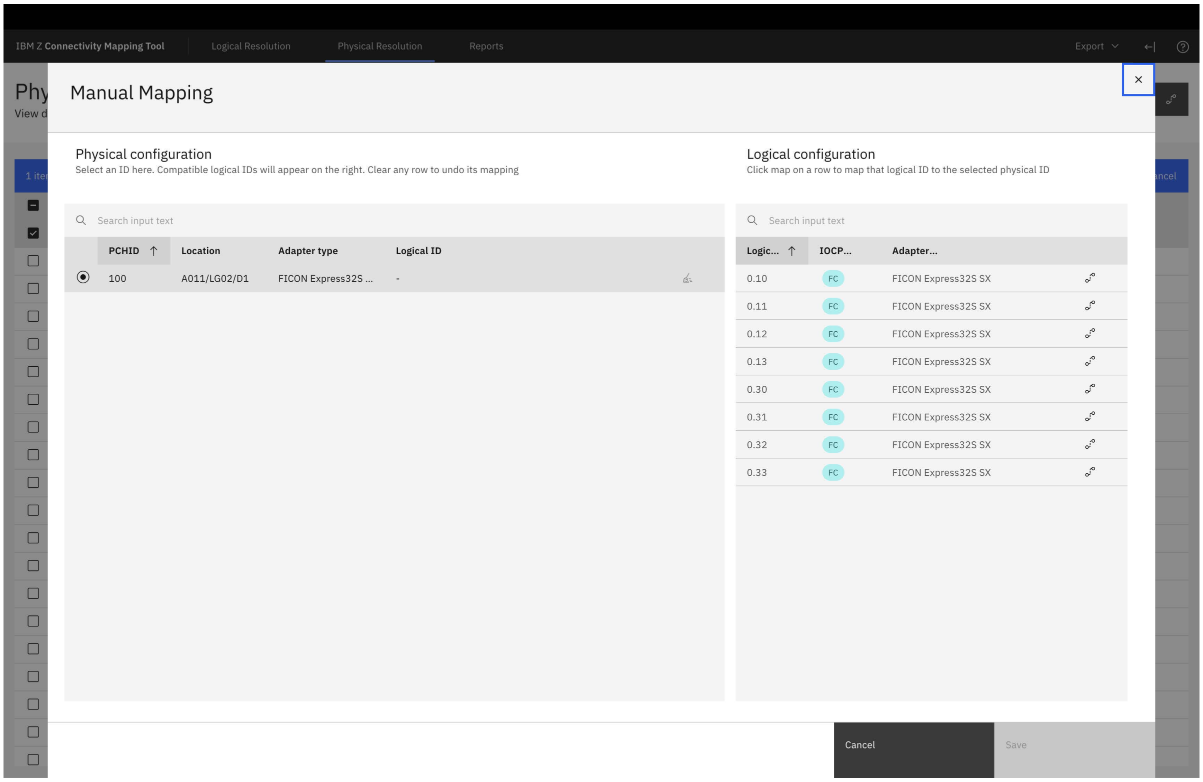


Figure 19. Manual mapping

If Manual mapping is not available for selected Logical IDs, **Manual mapping** is disabled.

Click **Manual mapping** to launch the Manual mapping modal, which displays two tables: a primary table (left) and a secondary table (right). When launching manual mapping from the Logical resolution window the primary table is **Logical configuration** and the secondary table is compatible with **Physical configuration**. When launching Manual mapping from the Physical resolution window the primary table is the Physical configuration and the secondary table is compatible with Logical configuration.



Performing manual mapping

Perform the following steps to start manual mapping:

1. Select the IDs to perform manual mapping on the Logical or Physical resolution window. If manual mapping is available, the **Manual mapping** is enabled.
2. Click **Manual mapping** to launch the Manual mapping modal.
3. Select the radio button of a Logical/Physical ID from the primary table on the left. All unmapped IDs that can be mapped to your selection will appear in the secondary table on the right.
4. Click **Map** ( ) from the secondary table for the ID to map to the selected ID on the primary table. The Logical and Physical configurations are updated to reflect the action.

   Note: If the ID being mapped is grouped, multiple rows may be mapped together or multiple IDs may be mapped.

   The tool also automatically handles mapping any spanned CHPIDs.
5. Click **Clear** ( ) to undo a mapping on the row of the mapped ID in the primary table.
6. Repeat Steps “3” on page 30 and “4” on page 30 until manual mapping is to specifications. It is not necessary to map all IDs before continuing.

   Note: Use the search and/or sort action for both Logical and Physical configurations to make mapping easier.
7. Once manual mapping is complete, click **Save** in the bottom right corner of the view. Click **Cancel** at any time to discard all changes.
8. Manual mapping selections are updated directly in the Resolution table that launched the Manual mapping view.

Chapter 8. Reports

This chapter describe using the IBM Z Connectivity Mapping Tool to generate, view, save, and print reports.

Important: Keep in mind that reports reflect the *current* state of data that is saved.

Viewing available reports

Note: The installer responsible for connecting I/O cables during system setup should use "The Port Report." Sorting the report by location is recommended to streamline the process. This report serves as a guide for labeling each cable and every label must include either the PCHID or the cage/slot/port designation.

Reports are accessible when an IBM Connectivity Mapping Tool session has been initiated. Users looking to access a report need to load a previously mapped session or create a new one. The **Reports** navigation link displays in the masthead at the top of the tool's window when a session is active.

Figure 20 on page 31 displays this option.

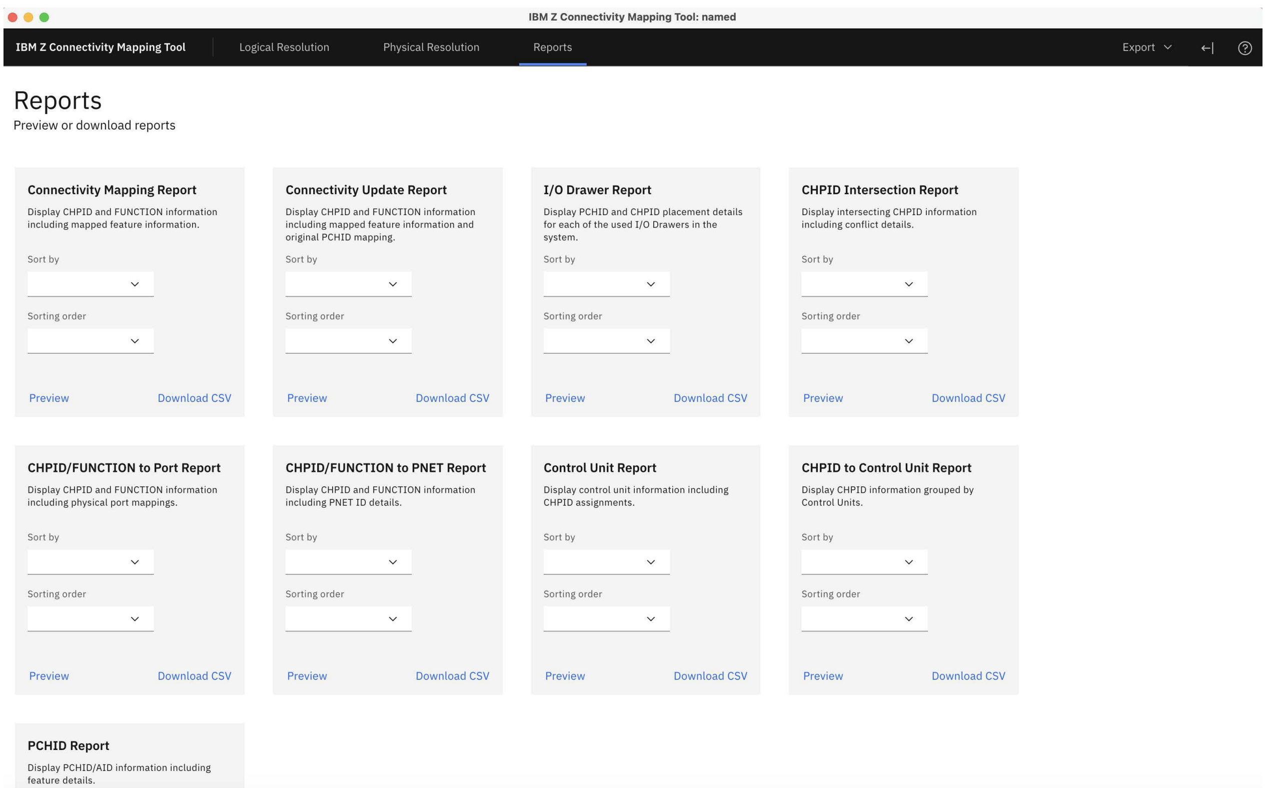


Figure 20. Reports navigation

A tile view displays information regarding all available reports on the **Reports** window. This display includes the report name, report description, and sorting options if applicable. Not all reports are sortable. Each report has a **Preview** and **Download CSV** option that can be selected depending on the user needs.

All available reports display as shown in the in Figure Figure 20 on page 31. Sorting options for each report are determined by the data it contains. Each sort by option can either be sorted in ascending or descending order.

Previewing reports

Perform the following steps to preview a report:

1. Identify a report to preview on the report tile display as shown in Figure 20 on page 31.
2. If the report has sorting options, select a type and direction from the Sort by and Sort order dropdowns. If no sorting options are selected, the report displays unsorted.
3. When all preview selections are made, click **Preview** in the bottom left of the tile. Figure 21 on page 32 displays a report tile with the selections made.

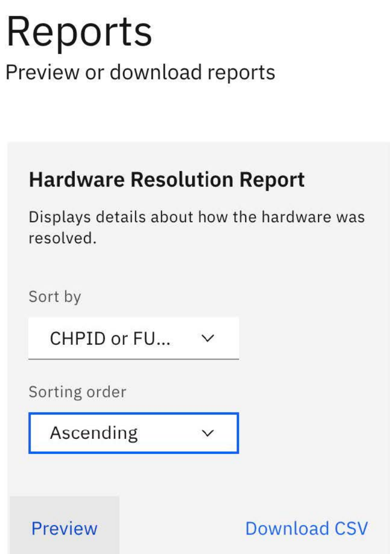
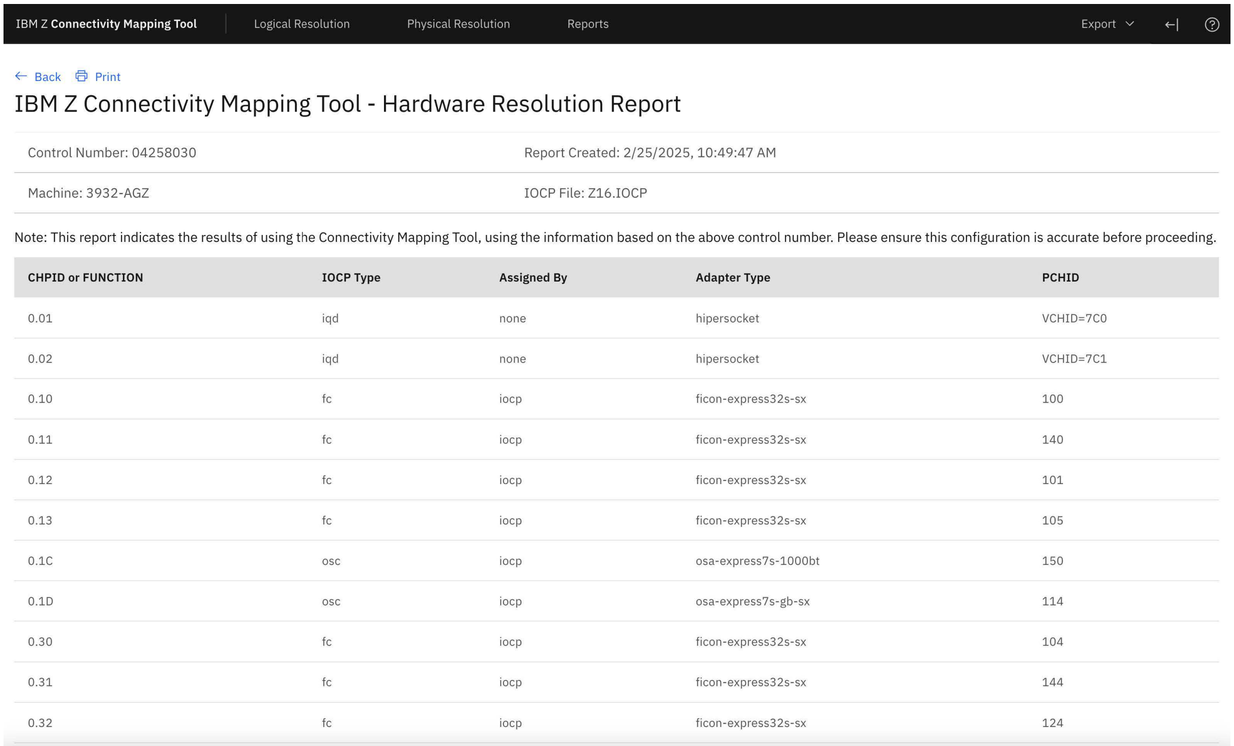


Figure 21. Reports preview selections

4. The IBM Z Connectivity Mapping Tool generates the Preview report view based on sorting options selected.



IBM Z Connectivity Mapping Tool | Logical Resolution | Physical Resolution | Reports | Export

Back Print

IBM Z Connectivity Mapping Tool - Hardware Resolution Report

Control Number: 04258030 Report Created: 2/25/2025, 10:49:47 AM

Machine: 3932-AGZ IOCP File: Z16.IOCP

Note: This report indicates the results of using the Connectivity Mapping Tool, using the information based on the above control number. Please ensure this configuration is accurate before proceeding.

CHPID or FUNCTION	IOCP Type	Assigned By	Adapter Type	PCHID
0.01	iqd	none	hipersocket	VCHID=7C0
0.02	iqd	none	hipersocket	VCHID=7C1
0.10	fc	iocp	ficon-express32s-sx	100
0.11	fc	iocp	ficon-express32s-sx	140
0.12	fc	iocp	ficon-express32s-sx	101
0.13	fc	iocp	ficon-express32s-sx	105
0.1C	osc	iocp	osa-express7s-1000bt	150
0.1D	osc	iocp	osa-express7s-gb-sx	114
0.30	fc	iocp	ficon-express32s-sx	104
0.31	fc	iocp	ficon-express32s-sx	144
0.32	fc	iocp	ficon-express32s-sx	124

Figure 22. Preview report

5. When previewing a report, the **Back** and **Print** options become available and the top left of the page.

   Select **Back** to navigate back to the Reports tile view. Select **Print** to launch the print dialogue .

Downloading reports

To save an individual report, identify the desired report tile as shown in Figure Figure 20 on page 31. Select sorting options as desired. Select the **Download CSV** option on the report tile after making selections. The selected download file dialogue associated with the operating system displays. Enter a name for the report and save it to a targeted location.

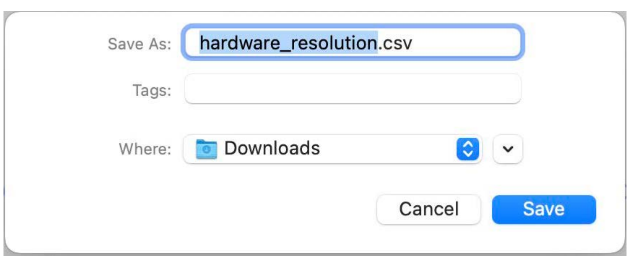


Figure 23. Downloading reports

Chapter 9. Troubleshooting and support

This chapter provides directions for reporting a problem or submitting a suggestion on the Connectivity Mapping Tool through Resource Link.

Submitting a problem or suggestion

Users can report a problem or submit a suggestion through Resource Link. Alternatively, problems can be reported by an IBM representative or IBM business partner.

Submitting a problem or suggestion with Resource Link

IBM monitors feedback from Resource Link during normal US business hours.

Perform the following steps to submit a problem or suggestion to the tool developers:

1. On the Resource Link site, select the blue **Feedback** bar on the right-hand side of the screen to open the Feedback form as shown in Figure Figure 24 on page 35.
2. Select the type of feedback you wish to give: Suggestion, Compliment, Bug/Issue.
3. For the Specific Feature, select **IBM Z Connectivity Mapping Tool**.
4. Enter any comments in the Feedback field.

   Note: Ensure you include the version of the tool you are using. This information is available on the download page.
5. Complete the field for name (optional) and IBM email for follow-up.
6. Once all fields are completed, click **Submit**.

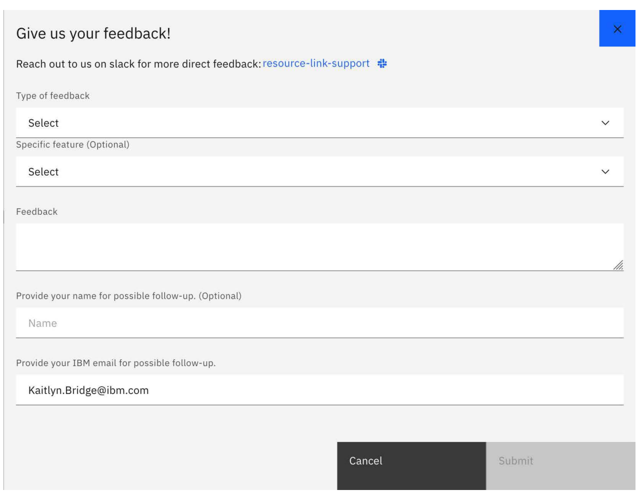


Figure 24. Feedback

Appendix A. Notices

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Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

United Kingdom Notice

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55032. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

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ＶＣＣＩ－Ａ

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This statement applies to products less than or equal to 20 A per phase.

高調波電流規格　JIS C 61000-3-2 適合品

These statements apply to products greater than 20 A, single-phase.

高調波電流規格　JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類：６（単相、ＰＦＣ回路付）
換算係数：０

These statements apply to products greater than 20 A per phase, three-phase.

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類 ：５（３相、ＰＦＣ回路付）
換算係数 ：０

People's Republic of China Notice

警告:在居住环境中,运行此设备可能会造成无线电干扰。

Declaration: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may need to perform practical action.

Taiwan Notice

CNS 13438:

警告使用者：
此為甲類資訊技術設備，
於居住環境中使用時，
可能會造成射頻擾動，在此種情況下，
使用者會被要求採取某些適當的對策。

CNS 15936:

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니
판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의
지역에서 사용하는 것을 목적으로 합니다.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

Electromagnetic Interference (EMI) Statement - Kingdom of Saudi Arabia Notice

قد يتسبب هذا المنتج في حدوث تداخل إذا تم استخدامه في المناطق السكنية.

ويجب تجنب هذا الاستخدام ما لم يتخذ المستخدم تدابير خاصة لتقليل الانبعاثات الكهرومغناطيسية لمنع التداخل مع استقبال البث الإذاعي والتلفزيوني.

تحذير: هذا الجهاز متوافق مع الفئة أ من SASO CISPR 32

في البيئة السكنية، قد يتسبب هذا الجهاز في حدوث تداخل لاسلكي.

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