IBM i
Connecting to IBM i
Operations Console
7.1
Before using this information and the product it supports, read the information in "Notices for software topics," on page 69.
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Operations Console

The Operations Console acts as a system console for you to access and administer your systems.

IBM® facilitates interaction with your systems by providing management consoles that can be accessed through terminals and PCs. The Operations Console is an installable component of the IBM i Access for Windows licensed program. Using Operations Console, you can access and control the console and control panel functions either locally or remotely through one or many PCs, which facilitates many administrative functions.

Operations Console uses 5250 emulation provided by either IBM i Access for Windows or IBM Personal Communications to emulate a console. To emulate a system control panel, Operations Console provides a graphical control panel. To enable communications between a system and a PC, Operations Console can use a local area network (LAN) and TCP/IP connections. These remote PCs can then function as a console, which allows easier system management and access.

Enhanced authentication and data encryption provide network security for console procedures. Operations Console network connections use a variation of Secure Sockets Layer (SSL), that supports device and user authentication without certificates.

If you plan to use Operations Console to manage System i® hardware, see the Managing Operations Console topic collection in the IBM Systems Hardware Information Center.

Related information:

What's new for IBM i 7.1

Read about new or significantly changed information for the Operations Console topic collection.

- Support for local console direct attached has been removed.
- Support for Windows 2000 has been removed.

How to see what's new or changed

To help you see where technical changes have been made, the information center uses:

- The ➡ image to mark where new or changed information begins.
- The ⭚ image to mark where new or changed information ends.

In PDF files, you might see revision bars (|) in the left margin of new and changed information.

To find other information about what's new or changed this release, see the Memo to users.

PDF file for Operations Console

You can view and print a PDF file of this information.

To view or download the PDF version of this document, select Operations Console (470 KB).

Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF link in your browser.
2. Click the option that saves the PDF locally.
3. Navigate to the directory in which you want to save the PDF.
4. Click Save.

**Downloading Adobe Reader**

You need Adobe Reader installed on your system to view or print these PDFs. You can download a free copy from the [Adobe Web site](http://www.adobe.com/products/acrobat/readstep.html).

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**Planning considerations for Operations Console**

Before you begin setting up your Operations Console, determine how to best configure it.

After you complete the planning requirements, you can create a setup checklist that will list the Operations Console prerequisites for your system.

**Related concepts:**

"PC preparations for Operations Console" on page 18

After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.

**Planning considerations for your configuration**

To plan for your Operations Console configuration, you need to find out the specific connectivity types that are allowed by the various Operations Console configurations.

The scenarios included offer specific configurations examples to help you select a console configuration most suited to your needs. If you plan ahead, you can include additional features in your configuration.

**Important:** If you call a service representative to set up your new system, the PC that you are going to use as a console must be ready to be connected to your system. This includes having all cables ready and all software installed. For example, you must already have your Windows operating system and IBM i Access for Windows installed on the PC.

**Console planning considerations**

When you plan for Operations Console for one or more of your systems, consider these points.

The following information applies to all systems:

- Unlike previous versions of IBM i, this release and subsequent releases will support only the console type that is currently configured. If no console type is specified, such as when a new logical partition is being created, the supporting hardware IOP specified during the creation process takes precedence. If the available hardware contains more than one adapter for a selected console type, then the first console workstation to connect will be configured to become the console.

- There is also a special set of console options called **Allow console recovery and console can be taken over by another console**. This set of functions allows Operations Console to take control from another console device. The default value of this console option is disabled.
  - When the option is enabled:
    - The first Operations Console device connected becomes the console. Additional LAN-connected Operations Console devices will have a special DST sign-on.
    - All other 5250-based connections will have the new Console Information Status window.
    - Console recovery without the loss of the job is available.
  - When the option is disabled:
    - All 5250-based connections will be presented the new Console Information Status window.
Console recovery without the loss of the job is not available.

- Operations Console, network (LAN), and twinaxial workstations, can coexist as console devices if you remember these rules:
  - Only one device can be active at a time.
  - A twinaxial workstation on any twinaxial workstation controller adapter with port 0 (addressed either 0 or 1) or port 1 (addressed either 0 or 1) can become a console device if twinaxial console is the console type selected. If twinaxial console is selected as the console type then Operations Console devices may not be started.

- Operations Console allows multiple LAN connections to a single system or logical partition, but only one 5250 session can have control of a system at a time. An active console is the command interface to a system through 5250 emulation or IBM Personal Communications that is currently interacting with the system. More than one Operations Console device might have data on the screen but only one is actually active.

- IBM i models start counting logical partitions from 1 (even if it is the only partition) instead of 0. For the console to connect properly, your client configuration must match the logical partition. This configuration is especially important if you rely on the BOOTP process to configure the system with its network data.

- The client PC also allows multiple local console connections to the system configuration for a single PC.

- There is a maximum of 26 Operations Console active emulator sessions available per Operations Console PC client.

- Try to avoid putting your Operations Console on the same IOP as the storage devices.
  - There might be configurations when this cannot be avoided.
  - During very heavy usage of storage devices, the console might appear to stop working temporarily, but it should resume operation shortly. If the console is placed on the same IOP as the storage devices, enable the console options Allow console recovery and console can be taken over by another console.

The following information pertains to console takeover and recovery:

- For IBM i there is a special set of functions known as console takeover and recovery, which allows a LAN-connected Operations Console to take control from another console device. Use the following information to help determine what console devices are best for your work environment and how to deploy these devices to take advantage of these functions.

  - **Takeover** is the process used for a LAN-connected console device to take control from the current console device. The user signed on to the PC that wishes to take control requires special authority and is initiating the takeover from a new menu.

  - **Recovery** is the process of regaining control of the job running on the console after a problem with the console was encountered. The recovery process may be to the same console device or a different console device and may be facilitated by additional work to enable a device using a different connectivity. The exception is twinaxial console which does not use the same type of 5250 emulation and thus cannot recover the console without data loss.

When the takeover option is enabled and each console capable device running 5250 emulation is properly connected, a screen of data is presented regardless of whether it is the active console. In V5R4 and later releases, more than one device will have data on the screen after the console has been established. This results in no blank console screens showing Disconnected when initially connecting a device. The new function now allows the job at the console to be transferred to another device without causing loss of data.

This function is accomplished by suspending the data stream to a console that loses a connection or is being taken over, save further data and then send that data to the next device to become the console,
even if the device is the same former console. Recoverability is essentially taking over the console from the same or different qualified device regardless of what the former console was doing.

The following information pertains to nonpartitioned partitions:
- Console supporting hardware may be required to be located in specific slot locations, based on model.

The following information pertains to a multi-partitioned environment:
- If you plan to use Operations Console as your primary console or as a backup console, you must tag the IOA to support the primary console.
- When more than one console adapter is available for a single IOP, the adapter with the lowest bus address is chosen for use by Operations Console. For example, you tag an IOP that has two LAN adapters installed. The system uses the first adapter found on the bus. However, during an IPL the first adapter might not be ready in time and the system can select the second adapter. This process can prevent the console from starting immediately or you might not be able to use that resource for your intended purposes. It is recommended that you install only one console-capable adapter that matches your configurations for a single IOP or tag the IOA instead.
- The term alternate console is referring to a twinaxial console type located in another IOP tagged as the alternate console. Operations Console and HMC type consoles do not use resources tagged as the alternate console.

Note: Tagging the same IOP as both the primary console and the alternate console may result in the inability to select a console. If you have a twinaxial adapter in the same IOP as your primary console’s adapter, consider the twinaxial adapter to be a backup console, not an alternate console. You only have to change the console type to take advantage of the twinaxial adapter for the console.

Related reference:
"Takeover or recovery of an Operations Console connection” on page 24
You can use these functions to take control of another console device.
"Planning considerations for your backup console”
Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

Planning considerations for your backup console:

Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

Considerations for a backup console
- The adapter location is fixed, or at least limited, for independent systems. Based on your system hardware requirements, you might have limited choices of console types. Try to accommodate at least one additional console type, if possible.
- Consider using the take over and recovery option as part of your backup console strategy. However, the hardware used for the new console type must exist and be available at the time of recovery.
- If you are working in a partitioned environment, consider:
  - In a logical partition environment, the term alternate console refers to the twinaxial console type located in another input/output processor (IOP) or another input/output adapter (IOA) that is tagged as the alternate console. If a failure of the primary console (twinaxial only) is detected, the system automatically tries the alternate console’s IOP or IOA. This function gives you another level of protection. Tagging a single IOP as both the primary console and the alternate console can result
in errors when selecting a console. Further isolation can be planned by placing the alternate console
IOP on a different bus so that failures of the primary console's bus cannot prevent a console from
being available.

- Tagging an IOP that has two similar console adapters reporting to it. For example, two 2849
  adapters for the same IOP can sometimes make it difficult to determine, in advance, which adapter
  is for the console. When tagging the IOP, make sure that it only has one console-capable adapter per
  connectivity (for example, only one 2849). Each adapter can support a different console type but
  only one adapter type is present. The lowest addressed adapter on the bus is attempted first. But if
  that adapter is slow in reporting to the system, another adapter might get selected instead, when
  two adapters of the same connectivity are present. Another example might be that the IOP has both
  a 2838 and a 2849 Ethernet adapter reporting to it. They are different adapters but have the same
  connectivity for the console.

- Consider a shared resource environment in which you can allocate and deallocate a console
  supporting IOP to a partition on a part-time basis. Many work environments rarely need a console
device on a full-time basis and you can reduce your initial cost of dedicated hardware by
  implementing this concept.

- If the load source storage device fails and the system recovery includes the use of the IBM
  distribution Licensed Internal Code media instead of a customer backup, and the system is using
  Operations Console (LAN), you might have to use another console type for the initial portion of the
  system recovery.

Configuration types for backup consoles

When planning the configuration of the backup console or consoles remember that recovering from the
loss of the console depends on many factors. Some of these factors include, the model and series, the
hardware resources available, the previous console type, and the intended console type. Recovery might
consist of repairing the currently failed console or temporarily replacing it with another console type.
Most changes of a console type can be performed without the need for an IPL but there may be
circumstances in which an IPL will still be necessary. When using the console service functions (65+21),
console-supporting hardware must be installed and available prior to performing the function. Any
partition tagging of resources must also have been done already.

**Important:** If you plan to use Operations Console local console on a LAN as a backup to another console
type, the network adapter must be located in a console designated slot or in a properly
tagged IOP or IOA. If not previously configured, the BOOTP process is used to configure the
system.

Backup console configuration considerations

- If you access your system remotely, consider off-site console capability or another type of connectivity
  for the console. A local console on a network can be backed up with an additional local console on a
  network PC.

- In a logical partition or multiple-system environment, you will most likely be using multiple local
  consoles on a network (LAN) configuration on a single PC as your primary consoles. Consider
  additional PCs using this same type configuration. Avoid supporting too many consoles on the same
  PC if possible. The PC resources can be easily overwhelmed when supporting multiple consoles and
  remote control panels.

- Consider multiple local console on a network configurations in large environments so that each PC has
  a core set of console responsibilities and the overlap coverage of backup configurations with each
  other. For example, if you have a PC that supports 10 local consoles on a network configuration and
  another PC with the same number of primary consoles for another 10 partitions, instead of backing up
  each PC with the other's configuration, you add a third PC and spread the 20 consoles out so that two
  PCs back up a portion of each PC's primary console configurations. Another consideration is a
dedicated PC to be the backup of a certain number of consoles, but not connected until necessary.
Note: If more than one local console on a network is planned, be certain to create additional service tools device IDs on the system before you start configuring the Operations Console PC. Each PC connecting to the same target system or logical partition must have a unique service tools device ID.

In summary, consider incorporating as much redundancy as possible into your console configuration. You can reduce your exposure to a catastrophic console failure by using another method to provide a console in place, or by making compromises and adjustments for the various hardware requirements necessary to overcome the various levels of failures.

For more information on switching between console devices, see the Managing your multiple consoles topic.

Related reference:

“Console planning considerations” on page 2
When you plan for Operations Console for one or more of your systems, consider these points.

“Takeover or recovery of an Operations Console connection” on page 24
You can use these functions to take control of another console device.

“Preparation for your network environment” on page 9
To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

“Management of multiple consoles” on page 31
If you have more than one workstation that is capable of being the console to the same system or partition, there might be more than one way of using those devices as the console, depending on your configuration and circumstances.

“Scenario: Consoles for multiple systems or partitions” on page 16
This scenario discusses a situation in which you want to manage multiple systems or partitions.

“Takeover or recovery of an Operations Console connection” on page 24
You can use these functions to take control of another console device.

“Preparation for your network environment” on page 9
To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

**Verification of Operations Console requirements**

Before using Operations Console, ensure that you have met all the hardware, software, and cabling requirements for Operations Console.

**Operations Console hardware requirements:**

You need to meet the PC and hardware requirements for an Operations Console configuration.

**Note:** For models 5xx, go to the **Operations Console hardware requirements** topic in the IBM Systems Hardware Information Center and search for Managing Operations Console.

**Table 1. PC requirements - processor and memory**

<table>
<thead>
<tr>
<th>Operating System (1,2)</th>
<th>Operations Console PC</th>
</tr>
</thead>
</table>
| Windows XP Professional| • Pentium 500 MHz (P6 or equivalent compatible microprocessor)  
                        | • 256 MB memory minimum |
| Windows Vista          | • Pentium 800 MHz  
                        | • 512 MB memory minimum |
| Windows 7             | No specific requirement |
Notes:

1. See the IBM i Access Web site for any updated PC requirements.

Important: IBM i models start counting logical partitions from 1 (even if it is the only partition) instead of 0. For the console to connect properly, your client configuration must match the logical partition. This configuration is especially important if you rely on the BOOTP process to configure the system with its network data.

If you want to use an Operations Console local console on a network (LAN), you need to install the LAN adapter for Operations Console according to your model. To find out the specifics of your system, you can use the Display Hardware Resources (DSPHDWRSC) command. Table 2 shows the supported cards for LAN connectivity.

Table 2. Supported cards for LAN connectivity

<table>
<thead>
<tr>
<th>Card name or number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2744</td>
<td>PCI 100 Mbps Token ring Adapter</td>
</tr>
<tr>
<td>2838</td>
<td>PCI 10/100 Mbps Ethernet IOA</td>
</tr>
<tr>
<td>2849</td>
<td>PCI 10/100 Mbps Ethernet IOA</td>
</tr>
<tr>
<td>Host Ethernet Adaptor (HEA)³</td>
<td>PCI 10/100/1000 Mbps or 10 Gbps Ethernet</td>
</tr>
<tr>
<td>57xx³</td>
<td>PCI 10/100/1000 Mbps or 10 Gbps Ethernet</td>
</tr>
<tr>
<td>268C</td>
<td>Virtual Ethernet adapter (VLAN)</td>
</tr>
</tbody>
</table>

Notes:

1. LAN console is supported on Virtual Ethernet Adapter (VLAN). A virtual Ethernet adapter is defined on Host Ethernet Adaptor (HEA) or using VIOS.
2. LAN console is not supported with line descriptions which are configured for Ethernet Link Aggregation.
3. See [Hardware requirements for Ethernet](#) for supported adapters and speeds.

Related tasks:

- Changing the console from a twinaxial console to an Operations Console local console on a network (LAN) in a nonpartitioned system” on page 33
  To change from a twinaxial console to an Operations Console local console on a network (LAN), you must use the existing console to complete these steps on the system.
- Changing the console from a twinaxial console to an Operations Console local console on a network (LAN) in a logical partition” on page 33
  To change from a twinaxial console to an Operations Console local console on a network (LAN), you must perform these steps on the system using the existing console before turning off the system or doing an initial program load (IPL).

Related reference:

- Scenario: Consoles for multiple systems or partitions” on page 16
  This scenario discusses a situation in which you want to manage multiple systems or partitions.
- Preparation for your network environment” on page 9
  To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.
- Operations Console software requirements” on page 8
  You need to meet these software requirements for working with Operations Console.
- Changing from a twinaxial console to an Operations Console local console on a network (LAN)” on page 32
  To change from a twinaxial console to an Operations Console local console, you need to perform a set of steps on both the PC and the system.
To change from an Operations Console local console on a network (LAN) to a twinaxial console, you must complete a set of steps on the system and, optionally, on the PC.

Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

**Related information:**
- IBM i Access Home Page
- IBM Systems Support Web site
- Display Hardware Resources (DSPHDWRSC) command
- TCP/IP techniques to connect virtual Ethernet to external LANs
- Hardware requirements for Ethernet

**Operations Console software requirements:**

You need to meet these software requirements for working with Operations Console.

Before you continue, make sure that you have satisfied the Operations Console hardware requirements according to your intended configuration. Operations Console is supported on Windows XP Professional and Windows Vista.

PC5250 or IBM Personal Communications V5.9 (V5.7 with CICS® system definition data set (CSD) 1 minimum) needs to be installed for the console only. It is not required for configurations that are used only for remote control panel.

**Related reference:**
- Operations Console hardware requirements” on page 6

You need to meet the PC and hardware requirements for an Operations Console configuration.

**Planning considerations for your Operations Console installation or upgrade**

To plan for your Operations Console installation or upgrade, you need to know this information.

**Prerequisite information for Operations Console users upgrading to or installing i 7.1**

You must comply with the following items before upgrading or installing your software (IBM i Licensed Internal Code) to i 7.1:

1. When you receive the IBM i release upgrade, all of the user IDs included with the operating system are expired, except for 11111111 (eight 1's). For all upgrades and installations, you need to establish a connection between the System i platform and Operations Console using the service tools user ID of 11111111. This prevents any failed re-authentication of the client connection to the system caused by expired user IDs. This is especially important for automated installations and upgrades.

2. It is recommended that you update IBM i Access for Windows to 7.1 before you upgrade the IBM i operating system.

**Note:** Failure to comply with the above actions may prevent the console from working correctly during the upgrade or installation.

**Important:** During a manual IPL of the system and if no console has been specified before, you receive two additional displays to confirm the setting of the console type. The first requires that you accept your current console type, and the second shows that a value did not previously exist (a zero is present for the old value) and the new value is shown. Press Enter to exit and set the console type automatically. The IPL then continues to the IPL or Install the System
display. This condition is most likely to occur during the installation of a new partition, but it can happen on your first manual IPL, for example, during the A-mode IPL following the restore of Licensed Internal Code, or during the upgrade or installation when a console value of zero is found.

Migration to Operations Console before your system upgrade

If you are migrating from a different console type to Operations Console on your new system, it is important that you configure your new Operations Console PC before beginning the upgrade. The Operations Console features that match the connectivity you plan to use should be specified as part of the order for your new system. In this way, at the point in the upgrade instructions where console functions are required on the new system, you can perform them on your new Operations Console device.

Also, when migrating a former load source device that was used with Operations Console local console on a network configuration, and this load source device is to become a load source device in a new partition, the LAN adapter must be deallocated before removing the device from the old partition and installing it in the new partition.

When you upgrade your system, a change in system serial numbers could prevent the client from answering the BOOTP request if you are relying on this method to configure the service host name on the new system.

If the result of your system upgrade includes a Hardware Management Console (HMC), make sure to use this as the system console until your upgrade is complete. Because some upgrades are staged, your intended console might lack the necessary resources for a period of time. Because the HMC uses virtual resources, you will not have problems with a lack of resources for another console type.

Related tasks:

- “Installing IBM i Access for Windows” on page 19
  Before you use Operations Console, you must install IBM i Access for Windows.
- “Deallocating or moving the LAN adapter card from use by Operations Console” on page 54
  During a migration, you might need to deallocate the LAN card from use by Operations Console. You need to deallocate the LAN card if you are not planning on using an Operations Console local console on a network configuration or the service tools server.

Related information:

- Installing, upgrading, or deleting IBM i and related software

Preparation for your network environment

To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

Important: You need to install the LAN adapter for Operations Console according to your model.

If your system is new and you chose a local console on a network configuration, the adapter is already allocated for use by the system. The LAN adapter is dedicated for service tools. It is suggested that you restrict LAN topologies for LAN-attached local consoles to a single, physical ring, hub, switch, or router environment. If the local console on a network is used in a larger network topology, it is suggested that you use broadcast (DHCP) packet filtering. This might be as simple as connecting the PC and system using an inexpensive hub or router. Temporarily, you could also use an Ethernet crossover cable (when using a 2849 adapter). When you have only a single PC or few devices connected to the system using a hub, and these devices do not connect to another network or the Internet, you can then use any numeric numbers for addresses, for example, 1.1.1.x or 10.220.215.x (where x can be 2 through 254, but avoid x.x.x.1, which might cause problems in some hubs). However, if you have a network that many users share, or in which the devices are connected to the Internet, consult a network administrator for addresses.
A crossover cable is a standard network cable that has the transmit and receive signal wires reversed. This virtually allows each end to act as if a hub, switch, or router were between them. The use of a crossover cable might also require a nonstandard network configuration at the system and PC.

**Network security**

It is suggested that you treat the console over a LAN connection with the same physical security considerations and controls a twinaxial console. For instance, consider configuring a local console on a network separate from the main network (or the company intranet) and strictly controlling access to the PC that acts as the console.

**BOOTstrap Protocol**

A local Operations Console on a network uses the BOOTstrap Protocol (BOOTP) to configure the system service IP communications stack. The IP stack configuration plus the system serial number and the partition ID are requested in the Operations Console configuration wizard. The system broadcasts a BOOTP request. The Operations Console PC replies with the information submitted during the configuration wizard. The system then stores and uses the configuration information for the service IP communications stack.

The system will perform a BOOTP when the console type is set to Operations Console (LAN) and the system does not contain a valid IP address for the service host name (service interface).

The Operations Console PC must be placed on a network that can be accessed by the system. This can be the same physical network or a network that permits broadcast packets to flow. This is an initial setup requirement. Normal Operations Console operation does not require this. It is suggested that this setup occur on the same physical network.

Starting with IBM i 6.1, Operations Console can detect systems capable of being configured with less user interaction. If this condition is detected, the PC and system attempt to exchange information for a new configuration. If the information exchange is successful, the system uses this information during the setup of the connection at the PC. This detection reduces mistakes caused by entering the wrong IP address or the partition ID. This detection can take place only if both the PC and the system are running 6.1 or later. Otherwise, a traditional BOOTP takes place and you must supply all the data for the system.

The BOOTP request carries the system serial number and partition ID. The system serial number and partition ID are used to assign the IP configuration information. If you are having problems configuring the service IP communications stack, verify that the Operations Console PC is on the same physical network, and that the system serial number and partition ID are correct in the configuration.

A local console on a network (LAN) uses ports 2300, 2323, 3001, and 3002. To use Operations Console in a different physical network the router and firewall must allow IP traffic on these ports.

The success of BOOTP is dependent on the network hardware used to connect the system and the PC. In some cases, you might need a different device to configure a console connection using system service tools (SST). To use BOOTP, the network hardware used must be capable of autonegotiation of speed and duplex when using the 2838 Ethernet Adapter for the Operations Console connection.

Although the system and PC can still perform a standard BOOTP operation as described here, beginning in 6.1 a function was added to allow the automatic discovery of a connection between the system and a PC. This function, called VSDISCOVER, is a proprietary mechanism used solely for Operations Console. Both the system and PC listen for a special broadcast frame from the network and when received there is a negotiation using ports 67 and 68 and the system and PC can use the data exchanged to configure itself, if needed. In addition, the PC creates a configured connection that the user can start a console session with. This VSDISCOVER function is the default mechanism for configuring a connection. The BOOTP process is used when VSDISCOVER is not necessary, such as when you already have a
configured connection and the network data needs to be reset for some reason.

**Related reference:**

- "Planning considerations for your backup console" on page 4
- "Operations Console hardware requirements" on page 6

Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

**Security of your Operations Console configuration**

Operations Console security consists of service device authentication, user authentication, data privacy, and data integrity.

User authentication security is required to sign on to the console display.

The Operations Console client code requires less user interaction than previous releases when you are connecting a local console on a network configuration. By default, you do not need to maintain the access password unless you need to remain in a manually maintained environment. The system can also maintain the service tools device IDs. See the Operations Console simplification topic for more details. The system requires the same process to successfully connect, but part of this can be performed by Operations Console.

The following list gives you an overview of your Operations Console LAN security as shown in Figure 1 on page 12.

1. A user enters the correct password.
2. Operations Console sends the service tools device ID (QCONSOLE) and its encrypted password to the system.
3. The system checks the two values. If they match, the system updates both the device and DST with a newly encrypted password.
4. The connection process then validates the service tools user ID and password before sending the system console display to the PC.
The IBM i console security consists of:

**Service device authentication**

This security assures that one physical device is the console. Operations Console local console on a network uses a version of Secure Sockets Layer (SSL) that supports device and user authentication, but without using certificates.

**Device authentication**

The device authentication is based on a service tools device ID. By default, the system administers service tools device IDs. The initial value for the number of automatically created service tools device IDs is set to 10. With the default service tools device ID QCONSOLE, 11 PCs can be connected to a system at the same time, each with a unique service tools device ID. If you set this value to zero, you will have to administer the service tools device IDs manually. Service tools device IDs are administered manually in dedicated service tools (DST) and system service tools (SST). They consist of a service tools device ID and a service tools device ID password. The

*Figure 1. Operations Console LAN security*
default service tools device ID is QCONSOLE and the default password is QCONSOLE. An Operations Console local console on a network encrypts and changes the password during each successful connection. You must use the default password to initially set up your system if you use a local console on a network (LAN).

**Note:** Auto created device IDs do not automatically have the Remote Control Panel (RCP) privilege granted. This privilege can be changed with an option in the DST environment on the DST Service tools security data menu. The default service tools device ID QCONSOLE has the RCP privilege granted by default.

The device authentication requires a unique service tools device ID for each PC that is configured with a local console on a network (LAN) connection.

When using a local console on a network (LAN), the configuration wizard determines if the system is capable of automatically creating a service tools device ID. If it is, the system skips the process for the user to create a service tools device ID. If you need to manually assign a user-created service tools device ID to a new configuration without turning off the autocrate function, simply disconnect the PC from the network while you create the configuration so that Operations Console cannot validate the function. You will then be prompted for the user-created service tools device ID. By default, the initial service tools device ID password is set to the name of the service tools device ID in uppercase.

**Note:** The access password protects the service tools device ID information (service tools device ID and password) on the PC. By default, Operations Console manages the access password for you. During the configuration process, you are not presented a window in which to assign an access password. However, should you elect to manually administer this password, you can change it using the **Properties and the Access Password** tab.

When establishing a network connection, the Operations Console no longer prompts you for the access password to access the encrypted service tools device ID and password unless you have manually set it after the configuration was created. However, you are prompted for a valid service tools user ID and password.

**User authentication**

This security provides assurance as to who is using the service device. All problems related to user authentication are the same regardless of console type. For more information, see the Service tools topic.

**Data privacy**

This security provides confidence that the console data can only be read by the intended recipient. If the physical connection is secure as discussed under service device authentication, the console data remains protected. To protect the data, ensure that only authorized people enter the computer room.

Operations Console local console on a network uses a secure network connection.

**Data integrity**

This security provides confidence that the console data has not changed en route to the recipient. If the physical connection is secure, the console data remains protected. An Operations Console local console on a network uses a secure network connection.

**Data encryption**

Enhanced authentication and data encryption provide network security for console procedures. Operations Console local console on a network uses a version of SSL which supports device and user authentication but without using certificates.

**Administration**

Operations Console administration allows system administrators to control access to console functions, including the remote control panel. When using Operations Console local console on a network, device
and user authentication are controlled through the service tools device ID.

**Important:** Consider the following situations when administering Operations Console local console over a network:

- For the remote control panel, mode selections require security authorization for the user that authenticates the connection, such as that provided by QSECOFR. Mode selections include Manual, Normal, Auto, and Secure. Auto and Secure are only available on systems with a keystick. Also, when connecting the remote control panel using a network, the service tools device ID must have authority to the control panel data on the system or on the partition that the remote control panel connects to.

- When a mismatch occurs in the service tools device ID password between the system and the Operations Console PC, you might need to resynchronize the password on the system.
- A mismatch occurs if one of the following conditions happens:
  - Your PC fails.
  - You decide to exchange the PC for a different one.
  - You upgrade the system and Autocreate service tools device IDs on the system is set to zero or you are using Licensed Internal Code earlier than IBM i 7.1

  For more information, see Operations Console simplification.

- Because QCONSOLE is a default service tools device ID, if you choose not to use this device ID, it is suggested that you temporarily configure a connection using this ID to successfully connect. Then, delete the configuration but do not reset the device ID on the system. This prevents unauthorized access from someone using the known default service tools device ID. If you need to use this device ID later, you can reset it then using the control panel or menus.

- If you implement a network security tool that probes ports for intrusion protection, be aware that Operations Console uses ports 449, 2300, 2323, 3001, and 3002 for normal operations. If your tool probes any of these ports, it might cause loss of the console, which might result in an IPL to recover. Exclude these ports from intrusion protection tests.

**Console control features**

Beginning with version 6.1.1, the display of the Console Information Status screen has been set by default to be bypassed. This setting reduces the number of screens displayed before the IBM i screen is displayed. Similar to takeover when the IBM i screen is resumed, a user can take over from whoever last signed on to the IBM i. If IBM i Operations console detects that the same user (which means the same PC IP address, the same Device ID, and the same User ID) and with the Skipped setting, the normal Takeover Sign on screen will also be skipped. If this feature is not desired, it can be disabled by setting the option to Show.

**Protection tips**

When using an Operations Console local console on a network, it is suggested that you complete the following tasks:

1. If you changed the value of Autocreate service tools device IDs on the system to 0, do the following:
   - Create an additional service tools device ID for each PC that will be used as a console with console and control panel attributes.
   - For more information, see Operations Console simplification.

2. Add one or two additional backup device IDs for use in an emergency. This is not necessary if you use the option Autocreate service tools device IDs and its value is not zero.

3. Choose nontrivial access passwords. This is not necessary if you let the Operations Console manage this password.

4. Change your password for the following DST user IDs: QSECOFR, 22222222, and QSRV.
Note: Do not change the password for user 11111111. This is the only user that is included in the system without an expired password. If you experience a problem with authentication using another user ID, you can attempt to authenticate with 11111111/11111111.

5. Add backup service tools user IDs with enough authority to enable or disable user and service tools device IDs.

Related concepts:
- [Operations Console simplification” on page 44](#)
  Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

Related tasks:
- [Changing the RCP privilege on autocr`
  This topic steps you through the process of changing the RCP privilege on autocr
`
  This topic steps you through the process of changing the display console status screen option.
`
  This topic steps you through the process of changing the console F18 takeover option.

Related reference:
- [“Resynchronizing the PC and service tools device ID password” on page 48](#)
  By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocr create service tools device IDs is set to 0, then you must manually manage the IDs and their passwords.
- [“Remote control panel” on page 18](#)
  A remote control panel connects to the system through a local area network (LAN). With remote control panel, you can perform most of the control panel functions from a local or a remote location.

Related information:
- [Service tools user IDs and passwords](#)

## Preparation for your Operations Console and System i Navigator configuration

Both System i Navigator and Operations Console can be run on a single PC. Depending on how you connect Operations Console to your system, these network configuration options are available.

System i Navigator is the graphical interface for managing and administering your system from your Windows desktop. System i Navigator makes operation and administration of systems easier and more productive.

Operations Console lets you use a local or remote PC to access and control an IBM i console, a control panel, or both. Operations Console enables connections or console activities across a local area network (LAN), along with enabling directly cabled connections. A single PC can have multiple connections to multiple systems and can be the console for multiple systems. An example is having a logically partitioned system using the same PC as the console for all partitions. Because each partition is considered a separate system, you need a separate connection to the partition for which you want to use the console. Operations Console allows multiple connections to a single system, but only one PC can have control of the system at a time. Based on the Operations Console connectivity, you can have one of these methods of configuration:

- The PC used as a local console on a network might require an additional network connection. System i Navigator requires a network connection to the network adapter and configured IBM i line description. Operations Console uses the service network adapter as defined by the service host name (interface name). If the network adapter and configured IBM i line description and the service network adapter as defined by the service host name (interface name) are on the same network, an additional PC LAN adapter is not needed. This is illustrated in the following figure.
Related information:

System i Navigator

**Scenario: Understanding your configuration**

- This scenario helps you understand the configuration for your environment.

- Use the following scenario to help assist you in understanding your Operations Console configuration.

- Keep in mind that this scenario applies only to nonpartitioned systems.

**Scenario: Consoles for multiple systems or partitions:**

This scenario discusses a situation in which you want to manage multiple systems or partitions.

Your company owns an IBM i product, and you want to use the PC to manage your system. You need to manage multiple systems or partitions from one console. You have a secured network that you can configure your console on.

For this scenario, configure a local console on a network.
Advantages

- You can configure a single PC to be the console for several different systems or partitions as long as they are connected to the service connection network. A maximum of 26 consoles can be active at a time, but you might have a virtually unlimited number of configurations.
- The administrator does not need to be physically near the system to manage the console.
- Security features are available to protect your console connections.
- A local console on a network is the connectivity of choice for partitions in an LPAR environment.
- Multiple PCs can be configured as a console to a system or partition, but only one PC can act as an active console at a time.

Disadvantages

- No console is available when a network failure takes place unless a backup console is available.
  - Configure a twinaxial console for backup.
- Your system requires a separate LAN card to be used by the console or other service tools.

Related concepts:
- "PC preparations for Operations Console" on page 18
- After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.

Related reference:
- "Operations Console hardware requirements" on page 6
- You need to meet the PC and hardware requirements for an Operations Console configuration.
- "Planning considerations for your backup console" on page 4
- Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

Related information:
- Logical partitions

Planning considerations for your control panel

- To make a connection to the control panel, you need to configure a remote control panel. All IDs that want access need proper authority.

- Remote control panel is a graphical interface to the control panel. The remote control panel allows you to perform most of the control panel functions from a local or a remote location. By default, user-created user IDs will have these permissions.

- The user must be granted access to a partition's remote control panel and functions to use the remote control panel. If a local console on a network is being used, then the service tools device ID must also be granted access to that partition's remote control panel to use this feature.

- By default, users are no longer automatically granted access to the remote control panel for the partition. But access can be granted by an administrator for the user ID. The user that authenticates a connection must also have authority to the respective partition's keylock to change the mode.

Use these links to review your control panel options, see comparisons of the control panels, and find setup instructions:
- To review your control panel options, see comparisons, and find setup instructions in the Control Panel topic.
- To solve problems with the remote control panel, see the Troubleshoot remote control panel problem topic.
When setting up your initial connection, you might encounter problems accessing your control panels.

**Remote control panel**
A remote control panel connects to the system through a local area network (LAN). With remote control panel, you can perform most of the control panel functions from a local or a remote location.

- The local console on a network no longer automatically selects the remote control panel function by default. Use Properties to select the function if you want to use the remote control panel. Also, the remote control panel option might not be available for selection until after the first successful connection is established and authorities are verified.
  - The remote control panels for the logical partitions have the same functions available as the functions provided by the real panel, including the power-off function.
  - The remote control panel is disabled or missing from any configuration where the device ID is not authorized to display control panel functions.
    - The remote control panel is disabled after the first connection if it was selected but is not authorized.
    - The remote control panel is missing after the first connection if it was not selected.
  - After the device ID is authorized to use remote control panel functions, the remote control panel option reappears in Properties, on the next connection.

**PC preparations for Operations Console**

After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.

**Related concepts:**
“Planning considerations for Operations Console” on page 2
Before you begin setting up your Operations Console, determine how to best configure it.

**Related reference:**
“Configuring the PC to use the new console type after changing from a twinaxial console to an Operations Console local console on a network (LAN)” on page 34
To change from a twinaxial console to an Operations Console local console on a network (LAN), you must configure the PC to use the new console type.

“Scenario: Consoles for multiple systems or partitions” on page 16
This scenario discusses a situation in which you want to manage multiple systems or partitions.

**Completing the setup prerequisite checklist**

You need to complete the Operations Console prerequisite checklist for the configuration that you will be installing on your PC.

If you are not sure which configuration you need, see the Planning considerations for Operations Console topic.

**Note:** If you are working with a printed PDF rather than using the interactive interview, the PDF includes the entire checklist and all of the setup tasks.

Select the configuration you will be installing on your PC:

**Related concepts:**
“Planning considerations for Operations Console” on page 2
Before you begin setting up your Operations Console, determine how to best configure it.
Setting up a local console on a network
You need to complete the unique setup prerequisites checklist based on the configuration and the operating system you are using.

Select the operating system on which you are installing Operations Console on:

Completing prerequisite checklist for Windows XP: Local console on a network:
You need to complete this checklist to set up a local console on a network on Windows XP.

1. Meet Operations Console hardware requirements
2. Meet Operations Console software requirements
3. Install IBM i Access for Windows
4. Apply IBM i Access for Windows service packs
5. Configure a service host name (interface name)
6. Create service tools device IDs on the system
7. Configure Operations Console on the PC

Completing prerequisite checklist for Windows Vista: Local console on a network:
You need to complete this checklist to set up a local console on a network on Windows Vista.

1. Meet Operations Console hardware requirements
2. Meet Operations Console software requirements
3. Install IBM i Access for Windows
4. Apply IBM i Access for Windows service packs
5. Configure a service host name (interface name)
6. Create service tools device IDs on the system
7. Configure Operations Console on the PC

Completing required prerequisite tasks
Before you configure Operations Console, you need to complete each prerequisite task for your configuration and operating system.

Use your checklist that you created that lists the specific tasks that you need to complete. Your checklist lists only the tasks that you need based on your operating system and configuration type. If you have not created a checklist yet, see "PC preparations for Operations Console" on page 18.

View the entire prerequisite checklist:

Installing IBM i Access for Windows
Before you use Operations Console, you must install IBM i Access for Windows.

During the installation of IBM i Access for Windows, you install a 5250 emulator or IBM Personal Communications V5.9 (V5.7 CSD 1 minimum) and Operations Console support. See the System i Access Web site for up-to-date PC requirements.

To check whether you have IBM i Access for Windows installed, follow these steps:
1. Click Start and select Settings.
2. Click Control Panel.
3. Double-click Add/Remove Programs. If you are using Windows Vista, double-click Programs and Features.
5. To close Add/Remove Programs, click **Cancel**.

6. Close the Control Panel.

If you do not have IBM i Access for Windows installed, use the *IBM i Access for Windows* DVD, SK3T-4098 to install it:

1. Insert the *IBM i Access for Windows* DVD into the DVD drive.

2. Select the **IBM i Access for Windows** option to start the installation. Wait until the *IBM i Access for Windows* window appears.

3. To continue with the setup program, click **Next** and follow the prompts.

4. If you are installing IBM i Access for Windows for the first time, ensure that you have at least a minimum configuration for running Operations Console. If you are only adding the Operations Console component, add only the components necessary to meet this minimum configuration.

5. To ensure the minimum configuration takes place, select **Custom** or **Full** install and select at least the following components:
   a. **Required Programs**
   b. **5250 Display and Printer Emulator** (if IBM Personal Communications (V5.9 or V5.7 CICS system definition data set (CSD) 1 minimum) is not installed)
      You do not need a license to use 5250 Display Emulation only for Operations Console, even though the window says that you do.
      If your Operations Console configuration is going to support only the remote control panel, you do not need to install an emulator.
   c. **Operations Console**.

6. Click **Next** and follow the prompts.

7. **Apply IBM i Access for Windows service packs.**

Related reference:
"Planning considerations for your Operations Console installation or upgrade" on page 8
To plan for your Operations Console installation or upgrade, you need to know this information.

"Applying IBM i Access for Windows service packs"
You need to have the latest Service Pack program temporary fix (PTF) for IBM i Access for Windows and the latest level of IBM i Access for Windows on your PC.

Related information:

IBM i Access Web site
IBM i Access for Windows

Applying IBM i Access for Windows service packs:

You need to have the latest Service Pack program temporary fix (PTF) for IBM i Access for Windows and the latest level of IBM i Access for Windows on your PC.

Service packs are available in a PC-executable form at the following Web sites:

• The IBM FTP site: [ftp://ftp.software.ibm.com](ftp://ftp.software.ibm.com) Navigate down to the directory path that matches the version you have installed:
  • version V5R4M0: as400/products/clientaccess/win32/v5r4m0/servicepack
  • version 6.1: as400/products/clientaccess/win32/v6r1m0/servicepack
  • version 7.1: as400/products/clientaccess/win32/v7r1m0/servicepack

Related reference:
If you encounter connection problems when connecting a console, Operations Console provides status messages to assist you in troubleshooting the connections.

Related information:
IBM i Access Service Packs Web site

**Configuring Operations Console on the PC**

When you have completed your Operations Console planning and your Set up Operations Console checklist, you are ready to begin the Operations Console configuration wizard.

**Notes:**
- You must have Administrator rights to create or alter a configuration.
- If you are installing Operations Console for a new system, power on the system at this time.

To start Operations Console on the PC, follow these steps:

1. Click **Start**.
2. If you are using Windows XP, select **Programs**. If you are using Windows Vista, select **All Programs**.
3. Select **IBM i Access for Windows**. It is assumed that the system is powered on and is in the process of or has completed an IPL.
   - Allow at least 10 minutes for the IPL process to reach a usable state before continuing. This is to ensure that the system can respond to the query the PC performs during the configuration wizard. If the system has an attention light with either a SRC of A6005008 or A9002000, continue with the configuration wizard. If you get a different SRC, you might have a hardware problem that could prevent this process from completing successfully. In this case, you might be asked to provide additional data during the configuration wizard.
4. Select **Operations Console**.
   - If Operations Console does not appear, you need to complete an IBM i Access for Windows selective setup. Click **Start > Programs > IBM i Access for Windows > Selective Setup**.
5. Use the appropriate instructions for your desired configured connection to complete the setup wizard.

**Important**: IBM i models start counting logical partitions from 1 (even if it is the only partition) instead of 0. For the console to connect properly, your client configuration must match the logical partition. This configuration is especially important if you rely on the BOOTP process to configure the system with its network data.

You can use the connection’s **Properties > Configuration** tab to select or deselect the function you want to use for this connection.

To start your connection, highlight the connection name, and then use one of these methods:

1. Right-click the connection name and select **Connect**.
2. Click the connection icon in the toolbar.
3. Click the connection drop-down list and select **Connect**.

View the online help associated with using Operations Console by selecting **Help** from the Operations Console window Help menu.

**Related concepts:**
- Planning considerations for Operations Console on page 2
- PC preparations for Operations Console on page 18

Before you begin setting up your Operations Console, determine how to best configure it.

After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.
Configuring a local console on a network (LAN):

To create a local console on a network (LAN), follow these steps.

1. Click **Start** > **Programs** > **IBM i Access for Windows** > **Operations Console** to start Operations Console.

   **Note:** If no configuration exists, a setup wizard automatically starts. If Operations Console has a previous configuration, it opens with the existing configurations and does not start the setup wizard. In such a case, click **Connection** and select **New Connection** to start the setup wizard manually.

2. In the Welcome window, click **Next**.

3. If you get the Configure Operations Console Connection dialog, click **Next**. If you do not want to see this dialog again, you can select the **Do not ask me again** option before clicking **Next**.

4. On the **Select Configuration** window, leave **Local console on a network (LAN)** selected. Then, click **Next**.

5. On the Specify Service Host Name window, enter the service host name (service interface name) of the system or partition you want to connect to.

   To create the service host name (service interface), use one of the following ways:
   
   - Manually assign the name along with the network configuration using the current console or another workstation.
   - Let the PC assign the name and IP information.

   Click **Next** to allow the system to search for the system on the network. If the PC receives information back from the network or the target service interface, the **Service TCP/IP Address** shows the IP address returned.

6. Verify the IP address shown is correct, and then click **Next**.

7. Verify or supply data for all the required fields. Then, click **Next**.

   Partition numbering starts at 1.

8. If this is the first console connection to the system, accept the default QCONSOLE service tools device ID provided in the field. If you have created a specific service tools device ID for this configured connection, enter it now. Then, click **Next**. This takes you to the Complete window.

9. Click **Finish** to save the configuration and exit the setup wizard.

If you plan to use the remote control panel function with this configured connection, you need to make a successful connection before you can select the option in **Properties**. This allows Operations Console to determine that the service tools device ID being used for this connection has permission to the remote control panel functions on the system.

**Note:** You no longer have to assign an access password. Operations Console has made this assignment and will automatically manage it. If, however, you elect to change this password in **Properties**, you will take control from Operations Console and you will have to manually enter it when prompted at the time of a connection. See Operations Console simplification for more information.

**Related concepts:**

- "**Operations Console simplification**” on page 44

Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related tasks:**

- "**Configuring a service host name (interface name)**” on page 52

The service host name (interface name) is the name that identifies the System i service connection on your network that is used for service tools, which includes an Operations Console local console on a network (LAN) configuration.

**Related information:**

IBM i: Connecting to IBM i Operations Console
Connecting a local console on a network to a system:

Connecting a local console on a network (LAN) to a system enables you to have an active console and a functional remote control panel (if configured).

An active console is a command interface to a System i platform (5250 emulation) that is currently interacting with the system. You can use a functional remote control panel to perform most control panel functions (depending on the partition to which you are connected) as if you were at the system.

If you have problems when performing some of these steps, see the Network connection errors topic for possible solutions.

To connect a local console on a network to a system, follow these steps:

1. Open Operations Console to start the connection.
   a. Click Start and select Programs.
   b. Select IBM i Access for Windows.
   c. Click Operations Console.

   By default, Operations Console does not automatically attempt to connect a local console on a network to a system. If you selected Start connection when Operations Console starts on the Properties page, the local console connects to the system automatically.

2. If you did not select Start connection when Operations Console starts in Properties, you need to connect to the system as follows:
   a. Select the configuration name.
   b. From the Connection menu, click Connect.

3. In the Service Tools Sign-on window, sign on using your assigned service tools user ID and password. If you see the LAN Service Tools Sign-on window, enter your access password, service tools user ID, and service tools password to authorize the connection between the local console and system.

   **Note:** If you manually changed the access password, the system can no longer automatically supply it and you need to enter it here.

   After you sign on successfully, the connection status shows Connected.

4. Confirm that the console and remote control panel, if configured, appears.

To use your PC to access another system, you need to connect to another system.

**Related tasks:**

[“Connecting to another system” on page 28](#)

After another connection is created, you can perform these steps to connect Operations Console to another system.

**Related reference:**

[“Network connection errors” on page 59](#)

These are solutions to problems that occur when a local console fails to connect to a system over a network.

[“Security of your Operations Console configuration” on page 11](#)

Operations Console security consists of service device authentication, user authentication, data privacy, and data integrity.

[“Troubleshooting status message” on page 58](#)

If you encounter connection problems when connecting a console, Operations Console provides status messages to assist you in troubleshooting the connections.

**Related information:**
Managing Operations Console

You can manage your Operation Console by performing tasks such as changing the console configuration, switching between different console types, and changing passwords.

After you complete your Operations Console planning and set up your connection, you have several options to help you manage your local console connections.

Related concepts:

“Planning considerations for Operations Console” on page 2

Before you begin setting up your Operations Console, determine how to best configure it.

“PC preparations for Operations Console” on page 18

After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.

Takeover or recovery of an Operations Console connection

You can use these functions to take control of another console device.

A special set of functions included in IBM i allow an Operations Console to take control from another console device. The two main actions that you can do are:

- **Takeover** is the process used for a LAN-connected console-capable device to take control from the current LAN-connected console device.
- **Recovery** is the process of regaining control of the job running on the console after a problem with the console was encountered. The recovery process may be to the same console device or a different console device and may be facilitated by additional work to enable a device using a different connectivity. The exception is twinaxial console which does not use the same type of 5250 emulation and thus cannot recover the console.

Every console-capable device running 5250 emulation, regardless of connectivity, will be presented a window of data regardless of whether it is the console when it successfully connects. This means that more than one device will have data on the window after the console has been established. A console device will not have a blank window showing **Disconnected**. This action allows the job at the console to be "transferred" to another device without causing loss of data. When the console option for takeover is enabled, the system also has enhanced recoverability from loss of the console.

The recovery action is accomplished by suspending the data stream to a console that loses a connection, or is being taken over, saving further data and then sending that data to the next device to become the console, even if the device is the same former console. Recoverability is essentially just taking over the console from the same or different qualified device regardless of what the former console was doing.

The default setting for the console take over and recovery function is **disabled**. If this function is disabled, all console-capable devices will open the **Console Information Status** window whenever they are not the active console.

Benefits of these functions include convenience and redundancy. Console-capable devices can be placed around a site, or multiple sites, allowing users to move around and gain control of the system from any of these devices. Whatever the previous console's activity was, the new console is at the exact same place, even during the process of restarting the system or installing the IBM i operating system. When the console option for takeover is enabled, the system also has enhanced recoverability from the loss of the console.

Related reference:
When you plan for Operations Console for one or more of your systems, consider these points.

Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

If you have more than one workstation that is capable of being the console to the same system or partition, there might be more than one way of using those devices as the console, depending on your configuration and circumstances.

**Takeover details**
Here is the additional information about the console takeover function.

- This function must be enabled if you want to take over the console or be protected from the loss of the console using the recovery function.
- The option *Allow console recovery and console can be taken over by another console* is enabled on the Select Console window in DST or SST.
- This function does not include support for twinaxial consoles. Only Operations Console workstations, which use 5250 emulation, can use this function.
- Any 5250 emulation-based console device can be used to recover a loss of the console by changing the console type. This may require a reallocation of hardware to support the new console type.
- The DST user ID used to sign on at an eligible device must also have the user privilege of take over console, a new feature for V5R4.
- Only devices with the same attributes (for example: 24x80 or 27x132) can perform a take over. For example, if device LAN1 is running in 24x80 mode and LAN2 is running in 27x132 mode, and LAN1 is the console, LAN2 will see NO in the *Take over the console* field.
- Data on the Console Information Status screen does not change. Currently, there is no method to automatically refresh the data. You can manually cause a refresh of all fields except the Take over the console field by pressing Enter. The user would have to exit this screen and sign on again to see a change to that field.
- Takeover is supported in a D-mode IPL. Two devices can be connected, with data, at the same time during a D-mode IPL.

**Related reference:**

*Recovery details*
Here is the additional information about the console recovery function.

**Recovery details**
Here is the additional information about the console recovery function.

- The recovery of the console using a device with the same console connectivity is directly tied to the take over option. If you do not want take over capability but do want recovery from loss of the console, you must still enable the take over option.
- Console recovery utilizes the take over function. Recovery can be from the same device or another device of the same connectivity. For example, if you are using Operations Console LAN and have multiple PCs set up to be the console and the existing console fails you can use the take over function from the same PC, after correcting the reason for the failure, or from another PC. Regardless of what the former console was doing, the new console will be in the same job, at the same step, as the original console would have been. The job continues even though the console was not operational.
- The recoverability of the console using a different console connectivity provides additional options for the user. If you have a backup console plan that involves the need for a change in the console type, consider the following:
  - For ease of adapting recovery, you can place all console supporting adapters for use by the same IOP. This reduces the number of steps necessary to accomplish a recovery.
The console type change can be immediate, if the system is not partitioned and depending on the method used to change the console. Examples would be:
- Using DST or SST to change the console type would allow the console to change only at the next IPL. Following this action with a force DST (function 21) using the control panel or RCP might not always work either.
- Changing tags in the partitioned environment requires an IPL to cause a change of the console.
- However, using the console service functions (65+21) on a nonpartitioned system, forces the system to do this search and activates the appropriate hardware and tasks immediately.

Supporting hardware for each console type you want to use for recovery must be available at the time of recovery. You also need to change the console type, either using an available menu or using the console service functions (65+21).

In order to accomplish a recovery using a different console type, you must set the new console type before attempting the takeover. This means that either the supporting hardware must already be available, including any logical partition tagging, or you have to move supporting hardware, physically or logically, before attempting the recovery. Then, you will have to use one of the methods to change the console type to the desired setting. You can use an existing workstation and SST, if available, the native macro, or the console service functions (65+21).

In V5R4, a D-mode IPL with the take over function, one console device taking over for another, is supported.

If you change the console type value during a D-mode IPL, for example using 65+21, you should be able to connect another device as long as the new console type has supporting hardware and a device.

Related reference:
“Takeover details” on page 25
Here is the additional information about the console takeover function.
“Using the console service functions (65+21)” on page 40
Console service functions (65+21) are the emergency console recovery functions.

Enabling console takeover
Before you can enable console takeover, you must have the Take over console privilege.

Use the procedure following to grant Take over console privilege and then continue with the next procedure to enable console takeover.

To add the Take over console privilege to a user, perform the following steps:

Note: To perform any of the following procedures using SST, select the option Work with service tools user IDs and Devices everywhere it says select Work with DST environment and skip the step Select System Devices.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST).
2. Select Work with DST environment.
3. Select Service tools user IDs.
4. Type a 7 on the line in front of the desired user ID and press Enter.
5. Scroll down until you find the option Take over console and place a 2 on that line to grant the user this privilege and press Enter.

To repeat this procedure for additional user IDs, repeat steps 4 and 5.

This privilege will be used the next time the user ID signs on.

Note: When a user signs on at a device capable of taking over the console the status of the Take over the console field is updated. In order to reflect a change, such as a user being granted the Take over console privilege, the user would have to exit the Console Information Status window, using F3 or F12 and sign on again.
To enable the console takeover and recovery, perform the following:

a. Access Dedicated Service Tools (DST) or System Service Tools (SST).
b. Select **Work with DST environment**.
c. Select **System devices** (skip this step if using SST).
d. Select **Select Console**.
e. Type a 1 in the option column for **Allow console recovery and console can be taken over by another console** and press Enter.

The console takeover option will take effect immediately.

**Scenario: Takeover and recovery**

This scenario can help you understand the takeover and recovery options.

**Scenario: LAN connected devices only with takeover enabled:**

This scenario describes what happens during an IPL when console takeover is enabled and more than one LAN-connected device is available.

The LAN devices are called LAN1, LAN2, and LAN3. The IPL is being performed in unattended (Normal) mode.

At the point in an IPL when the console device is being determined, it is more or less a race condition if more than one device is connecting at a time. The first device to connect, of the type specified by the console type setting (LAN in our example), becomes the console and will be presented with the usual console screens.

For our example let's say LAN1 is the first device connected. During the IPL this device will show the IPL status changes just like any other console and eventually the IBM i sign on window. LAN2 and LAN3 will show a special DST signon screen with a new line of data stating **ATTENTION: This device can become the console**. The rest of the window will be the same as any other DST signon window. At LAN2 a user with the user privilege of take over console signs on. This user will now be presented the same **Console Information Status** screen and the take over the console field will show a **YES** indicating that takeover is possible. At LAN3 a user without the take over console privilege signs on. The take over the console field will show as **NO** since the user does not have the correct authority for takeover.

At this point, only one device has met all the conditions for a console takeover. At the bottom of the window is F10 (Take over console connection). Pressing F10 presents the user with the **Take over Console Connection From Another User** window. This is a confirmation window that gives the user a last chance to cancel the takeover. Selecting 1 and then pressing Enter at this point causes the takeover to occur.

Almost immediately, LAN1 gets the special DST sign-on window and LAN2, the device that initiated the takeover, has the exact same window that LAN1 had when the transfer took place. The job, if something was running, does not know that this action took place. In fact, the original console could have been installing Licensed Internal Code or the IBM i operating system, or it could have been running a complete system save in restricted state and the system does not know it. You can even disconnect the console connection and come back later, reconnect, and you can still get the current job's window data. If a large amount of window data was sent by the job and could not be delivered, the data will be stored until later. When a console is reconnected by an authorized user (has the takeover console privilege) from an eligible device, the user might see fast window refreshes until all the stored data has been delivered. Actually, doing a disconnection and a reconnection is considered a recovery (not a takeover).

The data present at LAN3 will not change after the takeover. Currently, there is no method to automatically refresh the data. However, if the user at LAN3 pressed Enter, a manual refresh of all fields except the Take over the console field would occur. The user would have to exit this screen and sign on again to see the change to that field.
Managing your console configuration
You can manage your local console configurations with these tasks.

Connecting a local console to a system
You can connect a local console on a network to a system. After you create a connection, you can connect to another system.

Connecting to another system:

After another connection is created, you can perform these steps to connect Operations Console to another system.

When using Operations Console, you can have multiple configurations and connect to several systems at the same time.

It is assumed that the additional connection has been created already.

Follow these steps to connect to another system:
1. On the Operations Console Connection window, select the configuration name that you want to connect.
2. From the Connection menu, click Connect.

Note: All supported PC operating systems can connect multiple network configurations at the same time allowing a single PC to be the console for multiple systems or partitions.

Changing a console configuration
You might need to change an existing local console to meet your needs while using Operations Console.

To accomplish this, you must be a member of the Administrators group to change or create a local console. If you are changing a system name, you must delete the configuration and re-create it with the new name.

Related tasks:
“Deleting a console configuration” on page 29
You might need to delete an existing local console to meet your specific needs while using Operations Console. You must be a member of the Administrators group to delete a console.

Changing a local console on a network (LAN):

Follow this information to change a local console on a network (LAN).

To accomplish this, you must be a member of the Administrators group to change or create a local console. If you are changing a system name, you must delete the configuration and re-create it with the new name.

Important: If network data will be changed, you need to delete and re-create the connection configuration. Also, close and restart Operations Console before you try to connect a new configuration. This action removes all cached values associated with any old configurations.

To change a local console on a network (LAN), follow these steps:
1. Select the configuration name.
2. Click Disconnect. Wait until the status shows Disconnected at the console.
3. Select the configuration name.
4. From the Connection menu, click Properties.
5. Select the Configuration tab.
6. Make your changes and click OK.

Deleting a console configuration
You might need to delete an existing local console to meet your specific needs while using Operations Console. You must be a member of the Administrators group to delete a console.

Note: You can also use the Delete key on the keyboard. Highlight the configuration that you want to delete and press the Delete key.

To delete an existing local console, follow these steps:
1. If your local console is connected to a system, disconnect it as follows; otherwise, go to step 2:
   a. Select the configuration name from the Operations Console window.
   b. From the Connection menu, click Disconnect. The connection status showsDisconnecting.
   c. Wait until the connection status showsDisconnected at the local console.
2. Select the configuration name from the Operations Console window.
3. From the Connection menu, click Delete.
4. Click Yes to confirm the deletion.

Related tasks:
[Changing a console configuration” on page 28]
You might need to change an existing local console to meet your needs while using Operations Console.

Using the Properties page
On the Properties page, you can find information about the system associated with the connected configuration and make changes to an existing configuration.

If the partition number is showing **** then there is a configuration error associated with the configured connection. The error may be wrong partition ID or possibly even wrong service host name IP address.

The General tab contains information about the system that you are connected to. The Log Directory field shows the path to the Operations Console data logs and is the only field that can be edited. The service tools device ID name used for the connection is shown and the Device ID tab is not shown.

The Configuration tab contains options that actually change what functions are used and how the configuration connects. Options not available for the associated configuration is disabled.

Answer BOOTP is the option that allows the system administrator to determine which configuration for a given PC supplies the IP data to the system. New systems or logical partitions that attempt to use a local console on a network might be using BOOTP. If more than one PC or configuration is allowed to supply the data, the first PC to respond to the broadcast packet supplies this data. Controlling which PC supplies this data might allow the administrator additional flexibility.

Note: An initial local console on a network configuration is configured for only the console. The remote control panel is not enabled automatically. This is where you turn on or off any of the functions as needed. Also, the remote control panel option is not available until the configured connection is successfully connected for the first time and permissions have been verified.

The Device ID tab is no longer available. The PC automatically handles any resets necessary. The system's service tools device ID must be reset separately only if the option Autocreate service tools device IDs has been set to zero. For more information, see Operations Console simplification.

The Access Password tab is where you can change the access password. The access password is used, in part, to authenticate the device making the connection. If you manually change this password, the system will no longer manage the access password and you might be required to enter it each time you make a connection. For more information, see Operations Console simplification.

Operations Console  29
While on the Properties page, you can use the ? help for more information. Click on ?, the ? is now attached to your cursor. Move the ? to the field you want more information on and click again. A context sensitive help dialog window appears containing information regarding just that field.

**Related concepts:**
- “Operations Console simplification” on page 44

Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related reference:**
- “Preparation for your network environment” on page 9

To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

**Customizing the Operations Console window**

Operations Console provides more flexibility when you interact with it through its graphical interface. You can customize the Operations Console window to view and interact with information that is most important to you.

Each time Operations Console starts initially, it searches for new systems to be connected. If no new systems are detected and there are no previously configured connections, the setup wizard automatically starts.

On the initial startup of Operations Console, a drop-down menu Options is available.

- **Show Warnings** This option can be used to prevent many of the common dialog windows from showing. For example, the confirming a delete function dialog window will not be displayed if this is not selected.
- **Prerequisite Warning** The dialog presented during the configuration wizard concerning the requirements can be turned off using this option.
- **Use Single Sign-on** This option provides the ability to share common signon data when connecting multiple configurations at the same time. This allows the use of a single signon dialog window instead of one for each connection.
- **Double-Click** This option has two items associated with it. The first is for expanding or collapsing the tree structure, the + (plus sign) control. Instead of a single click to expand or collapse you can change the function to use a double-click. The second item requires the user to use another method for starting a connection instead of double-clicking on the configuration name.

If you are familiar with the older releases of Operations Console, you might have used the second button to change a configuration. The second button takes you to the Properties page of the selected configuration. All changes to the configuration of Operations Console are made through the Properties page.

The icon for configured connections uses a red or a green indicator to show which configurations are connected and which are not connected. The + (plus sign) beside each configured connection is a standard Windows expand and collapse function. Each configured connection expands out into separate functions associated with that connection.

You can use the drag and drop functions to configure connections. You can customize the list to appear the way you want it to appear. This will allow you to group configurations together so a common function can be performed on multiple connections at the same time. In addition to drag and drop, the standard Windows tagging methods for selecting more than one connection apply here. Connections most likely to share functions can be grouped at the top of the list, for example.
Management of multiple consoles

If you have more than one workstation that is capable of being the console to the same system or partition, there might be more than one way of using those devices as the console, depending on your configuration and circumstances.

Related reference:

- "Planning considerations for your backup console” on page 4
- "Takeover or recovery of an Operations Console connection” on page 24

Most system plans include a level of redundancy to allow for the event of hardware failures; however, many people do not consider the console in their plans. To recover quickly from an unexpected loss of your console, you need to plan for a backup console.

Multiple local PC consoles on a network

When a workstation is already a console and another local console on a network attempts to become the console, the connection is successful and the console attempting to connect is presented with a sign-on window or status window. Which window you see depends on whether the option Allow console recovery and console can be taken over by another console is enabled or not. If the option is enabled, then you are presented with a sign-on window to verify whether you have permission to perform a takeover operation. If the option is not enabled, then you are presented with the Console Information Status window. The reason will be displayed at the bottom of the window. In this case, takeover is not enabled.

The Console Information Status window shows which device is currently the console based on the last successful connection. Many connections of this type can be connected but only one can be the active console. Also, leaving the newly connected PC in this state will not allow the console activities to be automatically transferred to this PC. In this case you have two choices.

- Disconnect the connection using the Operations Console window. To disconnect the connection, follow these steps:
  1. Select the connection name you want to disconnect.
  2. Click Connection > Disconnect.

- Disconnect the emulator session. To disconnect the emulator, follow these steps:
  1. In the emulator window, click Communication.
  2. Select Disconnect.

If no device is acting as the console the next time a connection is made, either through Operations Console or the emulator, this PC will become the console. It is up to you to determine whether or not this method is the correct way to manage console activities.

Changing from one console type to another

Depending on how your console connection is set up, you can change to a different console type.

As part of your migration, you might need to deallocate the LAN adapter from use by the Operations Console. For instructions on deallocating or moving the LAN adapter, see the Deallocating or moving the LAN adapter card topic.

If you are using an IBM i model that uses a Hardware Management Console (HMC), you can change from HMC to Operations Console or from Operations Console to HMC. For further details, see the Managing consoles, interfaces, and terminals > Changing consoles, interfaces, and terminals topic in the IBM Systems Hardware Information Center.

For information regarding the Hardware Management Console (HMC), see the IBM Systems Hardware Information Center.
Related tasks:

“Deallocating or moving the LAN adapter card from use by Operations Console” on page 54

During a migration, you might need to deallocate the LAN card from use by Operations Console. You need to deallocate the LAN card if you are not planning on using an Operations Console local console on a network configuration or the service tools server.

Related information:

Electronic customer support
IBM Systems Hardware Information Center

Switching from one console type to another when the current console is not operational

If you develop a problem with the current console, you can use one of these methods to change the console type.

- If you are using a LAN-connected PC for the console and have another PC set up to be the console, you might be able to use the other PC for the console until the problem with the first console is fixed.
- Use SST from another workstation.
- Use the console service functions (65+21).
- Use the appropriate native macro from another workstation.

Note: Any hardware allocations or configurations will have to be accomplished before connecting with another connectivity. For example, if you are using a shared IOP in a partitioned environment you can deallocate and allocate the resource from one partition to another, if your hardware supports this method. If you planned for a backup console some or all of this work may already be done. If you do not have a backup console in place, some tasks may require one or more IPLs to get the system into a state where you can use the new console.

Assuming that all hardware and configurations have been done, you would disconnect the existing console (LAN-connected); use the console service functions (65+21), native macro, or SST from another workstation to set the console type. Then using the console service functions (65+21) or native macro OPSCONSOLE RESTART automatically activates the adapter.

Note: There are several console service functions (65+21) that might be needed to recover or debug an Operations Console problem depending on the problem, the connectivity used for the current console, the target console type, and the current state of the system. If you are unsure of any function or recovery action, contact your service provider for assistance.

Related reference:

“Using the console service functions (65+21)” on page 40
Console service functions (65+21) are the emergency console recovery functions.

Changing from a twinaxial console to an Operations Console local console on a network (LAN)

To change from a twinaxial console to an Operations Console local console, you need to perform a set of steps on both the PC and the system.

Before you begin, ensure that you have satisfied all the Operations Console hardware requirements for the PC and the system.

Related reference:

“Operations Console hardware requirements” on page 6
You need to meet the PC and hardware requirements for an Operations Console configuration.
Changing the console from a twinaxial console to an Operations Console local console on a network (LAN) in a nonpartitioned system:

To change from a twinaxial console to an Operations Console local console on a network (LAN), you must use the existing console to complete these steps on the system.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST). You must unlock the SST option "Service tools device IDs" before it is usable.
2. Select Work with DST environment.
3. Select System Devices (skip this step if using SST).
4. Select Select Console.
5. Select the new console type.
   a. The Verify Operations Console Adapters window appears. This is the resource found by the system to be used for your LAN connection. If you receive a message stating that the LAN adapter was not found, you need to satisfy the hardware requirements for Operations Console.
   b. Press F11 to configure the adapter.
   c. Enter the appropriate network data.
   d. Press F7 to store the data.
   e. Press F14 to activate the adapter for use by Operations Console.
6. Press F3 until you return to the DST main menu.

The system is now configured for use by your intended console type. You must do an initial program load (IPL) of the system so that it can use the new console.

If you do not plan to use the twinaxial device as a backup console do not remove it or its adapter at this time. You may need it to debug a problem.

The system value QAUTOCFG must be set to on. Use one of the following to verify or set this system value:
   • Use the WRKSYSVAL QAUTOCFG command.
   • During a manual IPL, in the IPL Options window, select Y for Set major system options. Then, for Enable automatic configuration, select Y.

Related reference:

"Operations Console hardware requirements" on page 6
You need to meet the PC and hardware requirements for an Operations Console configuration.

"Configuring the PC to use the new console type after changing from a twinaxial console to an Operations Console local console on a network (LAN)" on page 34
To change from a twinaxial console to an Operations Console local console on a network (LAN), you must configure the PC to use the new console type.

Related information:

Access service tools

Changing the console from a twinaxial console to an Operations Console local console on a network (LAN) in a logical partition:

To change from a twinaxial console to an Operations Console local console on a network (LAN), you must perform these steps on the system using the existing console before turning off the system or doing an initial program load (IPL).
Note: If you need to add or move adapters to satisfy the hardware requirements for Operations Console, do this work before starting these migration steps. Do not move or remove the twinaxial adapter from its current input and output processor (IOP) at this time.

1. Select **Work with DST environment**.
2. Select **System Devices** (skip this step if using SST).
3. Select **Select Console**.
4. Use one of the following console choices to select the new console type.
   - Select Operations Console (LAN), option 3, and do the following:
     a. The Verify Operations Console Adapters window appears. This is the resource found by the system to be used for your LAN connection. If you receive the message **No valid LAN adapter available** you did not satisfy the hardware requirements for Operations Console. If so, use F3 to exit to the DST main menu, then, start this topic again at step 1 above.
     b. Press F11 to configure the adapter.
     c. Enter the appropriate network data.
     d. Press F7 to store the data.
     e. Press F14 to activate the adapter for use by Operations Console.
5. Press F3 until you return to the DST main menu.

The system is now configured for use by your intended console type. You must do an initial program load (IPL) of the system so that it can use the new console.

If you do not plan to use the twinaxial device as an backup console do not remove it or its adapter at this time. You may need it to debug a problem.

The system value QAUTOCFG must be set to ON. Use one of the following methods to verify or set this system value:

- Use the `WRKSYSVAL QAUTOCFG` command.
- During a manual IPL, in the IPL Options window, select Y for **Set major system options**. Then, for **Enable automatic configuration**, select Y.

Related reference:

- “Operations Console hardware requirements” on page 6
- “Configuring the PC to use the new console type after changing from a twinaxial console to an Operations Console local console on a network (LAN)”

To change from a twinaxial console to an Operations Console local console on a network (LAN), you must configure the PC to use the new console type.

**Related information:**

Access service tools

Configuring the PC to use the new console type after changing from a twinaxial console to an Operations Console local console on a network (LAN):

To change from a twinaxial console to an Operations Console local console on a network (LAN), you must configure the PC to use the new console type.

It is preferred that you perform an initial program load (IPL) to ensure there are no errors. Then, at a later time, remove or move any hardware you planned for.

It is preferred that you turn off the system when removing adapter cards or cables.

Note: If the new console fails to work in IBM i you may need to use another workstation to manually delete the controller and device description associated with the old console device.
After you complete the planning requirements and know which configuration and PC operating system you will be using, you can go through one of the predefined checklists for setting up Operations Console. You can also create a customized checklist and complete that.

**Changing from an Operations Console local console on a network (LAN) to a twinaxial console**

To change from an Operations Console local console on a network (LAN) to a twinaxial console, you must complete a set of steps on the system and, optionally, on the PC.

Before you begin, make sure that you have satisfied all the Operations Console hardware requirements for the PC and the system.

**Related reference:**

[“Operations Console hardware requirements” on page 6](#)

You need to meet the PC and hardware requirements for an Operations Console configuration.

**Changing the console from an Operations Console local console on a network (LAN) to a twinaxial console in a nonpartitioned system:**

To change from an Operations Console local console on a network (LAN) to a twinaxial console, follow these steps on the system using the existing console.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST).
2. Select **Work with DST environment**.
3. Select **System Devices** (skip this step if using SST).
4. Select **Select Console**.
5. If you are currently using Operations Console local console on a network (LAN), select Operations Console (LAN) and follow these steps to deallocate the network adapter:

   **Note:** If this resource will be used for the service tools server (System i Connections) or you plan to use the local console on a network (LAN) as a backup console, you do not need to do the clear operation. If either of these choices is true, continue with step 5e.

   a. Select **Operations Console (LAN)**. The LAN adapter currently in use should be shown.
   b. Press F11.
   c. Press F6 to clear the configuration data.
   d. Press F7 to store this new value. Optionally, you can deactivate the network card by pressing F13.
   e. Press F12 twice to exit this window.
   f. Select **Select Console**.
6. Select **Twinaxial**.
7. Press F3 to return to the DST main menu.

The system is now configured for use by your intended console type. You must do an initial program load (IPL) of the system so that it can use the new console.

The system value QAUTOCFG must be set to on. Use one of the following to verify or set this system value on the system:

- Use the WRKSYSVAL QAUTOCFG command.
- During a manual IPL, in the IPL Options window, select **Y** for Set major system options. Then, for Enable automatic configuration, select **Y**.

**Related tasks:**
During a migration, you might need to deallocate the LAN card from use by Operations Console. You need to deallocate the LAN card if you are not planning on using an Operations Console local console on a network configuration or the service tools server.

**Performing optional steps on the PC when changing from an Operations Console local console on a network (LAN) to a twinaxial console**

If the PC will not be used for Operations Console, follow these steps:

**Related information:**
- [Access service tools](#)

Changing the console from an Operations Console local console on a network (LAN) to a twinaxial console in a logical partition:

To change from an Operations Console local console on a network (LAN) to a twinaxial cable, you need to follow these steps on the system using the existing console.

**Note:** If you need to add or move adapters to satisfy the hardware requirements for the twinaxial console, do this work before starting these steps. Do not move or remove the twinaxial adapter from its current input and output processor (IOP) at this time.

1. Select **Work with DST environment**.
2. Select **System Devices** (skip this step if using SST).
3. Select **Select Console**.
4. If you are currently using Operations Console local console on a network (LAN), select Operations Console local console on a network (LAN) and follow these steps to deallocate the network adapter:
   **Note:** If this resource will be used for the service tools server (System i Connections) or you plan to use the local console on a network (LAN) as a backup console then you do not need to do the clear operation. If either of these choices is true, continue with step 13e.
   a. Select **Operations Console (LAN)**. The LAN adapter currently in use should be shown.
   b. Press F11.
   c. Press F6 to clear the configuration data.
   d. Press F7 to store this new value.
   e. Press F12 twice to exit this window.
   f. Select **Console**.
5. Select **Twinaxial**.
6. Press F3 to return to the DST main menu.

The system is now configured for use by your intended console type. You must do an initial program load (IPL) of the system so that it can use the new console.

If you do not plan to use Operations Console as a backup console, do not remove or move it or its adapter at this time. You may need it to debug problems.

The system value QAUTOCFG must be set to ON. Use one of the following methods to verify or set this system value on the system:

- Use the **WRKSYSVAL QAUTOCFG** command.
- During a manual IPL, in the IPL Options window, select Y for **Set major system options**. Then, for **Enable automatic configuration**, select Y.

Continue with Performing optional steps on the PC when changing from an Operations console to a twinaxial console.

**Related tasks:**

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Performing optional steps on the PC when changing from an Operations Console local console on a network (LAN) to a twinaxial console:

If the PC will not be used for Operations Console, follow these steps:

**Important:** Perform these steps only after you are sure there are no problems with the twinaxial console.

1. Disconnect the current console connection. To disconnect, do the following:
   a. Select the configuration name (under IBM i Connection). This is the name that Operations Console uses to refer to a specific system.
   b. From the Connection menu, click **Disconnect**. The connection status shows **Disconnecting**.
   c. Wait for the status to show **Disconnected**.
2. Cable the twinaxial console to the system and power on the twinaxial console and the system.
3. Perform an initial program load (IPL) to ensure there are no errors. Then, at a later time, remove or move any hardware you planned for. When you are satisfied with your new console delete the current configuration if you will not be using the cabled connection as a backup console. To delete the configuration, do the following:
   a. Select the configuration name (under IBM i Connection).
   b. From the Connection menu, click **Delete**.
   c. Click **Yes** to confirm the deletion.
4. Turn off the PC and remove any hardware and cables that are no longer needed at this time. It is recommended that you turn off the system before removing any cables or adapters from the system.

**Note:** If the new console fails to work you may need to use another workstation to manually delete the controller and device description associated with the old console device.

**Related tasks:**
- [Changing the console from an Operations Console local console on a network (LAN) to a twinaxial console in a nonpartitioned system](#) on page 35
- [Changing the console from an Operations Console local console on a network (LAN) to a twinaxial console in a logical partition](#) on page 36

To change from an Operations Console local console on a network (LAN) to a twinaxial console in a nonpartitioned system, follow these steps on the system using the existing console.

To change from an Operations Console local console on a network (LAN) to a twinaxial cable, you need to follow these steps on the system using the existing console.

**Managing your local console on a network**

After you configure a local console on a network, you can manage your console by performing tasks such as managing the service tools device ID password and access password, creating service tools device ID, and configuring a service host name.

**Changing keyboard definitions**

If you change your keyboard definitions, the system can perform an action that is different from the default setting when you press a key.

To change your keyboard definitions, follow these steps:
1. In the emulator window, using the drop-down menu, do the following:
   a. Click **Edit**.
   b. Click **Preferences**.
   c. Click **Keyboard**.
2. Click **User-Defined**.
3. Click **Browse**, and then navigate to where IBM i Access for Windows was installed. Then, expand **Client Access > Emulator > Private**.

   **Note:** If you are using IBM Personal Communications the default path would be **Documents and Settings > User Name > Application Data > IBM > Personal Communications**
4. Select your choice.
5. Click **OK** twice.

**Changing the mode of the emulator between 3179 and 3477**

There are times when you might need to change the mode of the emulator from its current setting to something wider or narrower depending on what you are viewing.

By default, the emulator is set to 24 X 80 (3179), so viewing a spooled file or vlog requires you to use the keyboard to shift right and left in the window. In this case, it might be more convenient to use the 27 X 132 (3477) mode.

**Note:** During the transition from one mode to the other, the console is disconnected and reconnected.

To change the mode of the emulator, follow these steps:
1. In the emulator window, click **Communications**.
2. Select **Configure**, and then click **Session Parameters**.
3. Select the desired screen size and click **OK**.
4. Click **OK** to end the connection.
5. Click **OK** to close the emulator session.

If the option **Allow console recovery and console can be taken over by another console** is not enabled, the console returns to the sign-on window and is in the correct mode. You can exit these instructions.

If the option **Allow console recovery and console can be taken over by another console** is enabled, the console returns to the sign-on window, but the Console Information Status window does not open and the option to take over control is most likely set to no. This is due to a change in the emulator’s attributes and the new console type does not match that of the current console when it connected. At this point, you need to take one of the following actions:
- Press F18 to switch to this console device.
- Use system service tools (SST) from another workstation to run the macro OPSCONSOLE RESTART.
- Use the console service functions (65+21) to run functions 65, 21, 21, which restarts the console.

The console closes again, but it should reconnect in two or three minutes.

**Important:** Console recovery is not attempted. This forces a power off and power on of the console device, so it appears as a new console device to the system. To resume a console session, do not use these actions.

**Related tasks:**
"Using the OPSCONSOLE macro" on page 42

The OPSCONSOLE macro is the system-side debugging and analysis tool for collecting data for or managing console-related work.

**Related reference:**
Console service functions (65+21) are the emergency console recovery functions.

**Starting the system using a manual IPL**

You can start your system by performing a manual initial program load (IPL).

These instructions assume the system is powered off. If the system is powered on, use one of the various methods available to start the manual IPL.

To perform a manual IPL, follow these steps:

1. Look at the Function/Data display on the control panel. Systems with a keystick should show the mode as Manual and 01 B in the Function/Data display.
   
   Systems without a keystick should show as 01 BM in the Function/Data display.

2. If the system is in Manual mode and will IPL on the B side, then go to step 8. If the system is not in Manual mode or not set to IPL on the B side, then continue with step 3.

3. If the Function/Data display is lit, then, continue with step 4. If the Function/Data display is not lit, make sure there is power available to the system.

4. Press Up or Down until 02 appears in the Function/Data display.

   **Note:** If your system uses a keystick, insert it now and select Manual by using the Mode button.

5. Press Enter on the control panel.

6. Press Up or Down until B M appears in the Function/Data display. If your system uses a keystick, select B. The Function/Data display should show 02 B.

7. Press Enter on the control panel.

8. Press Power on the control panel. The system takes approximately 10 to 45 minutes to power on and progress through an IPL far enough to continue with these instructions. You should see that the data changes in the Function/Data display. The last step of the IPL may take up to 30 minutes to complete or the Attention light may turn on.

9. Reference code x6004031 or x6004508 (where x can be any letter) will appear in the Function/Data display and remain for up to 30 minutes.

10. When the system has completed the initial phase of the manual IPL it should show 01 B and you have a console.

   **Note:** Some system reference codes (SRCs) can be displayed without the attention light being on. One example is x6xx450x (where the x can be any letter or number). These SRC codes typically indicate that the system detected an unexpected condition, and the console might have data indicating this condition. This condition and the resulting console data precede the IPL or Install the System window.

   If the Attention light is lit, then go to step 11.

   If the Attention light is not lit and you do not have a console, then, consider the following:

   - Your system may not have progressed through an IPL far enough to continue with these instructions. Wait at least 30 minutes before going any further.
   - If, after 30 minutes, you do not see any system activity and the Attention light did not light: See the information about handling and reporting system problems in the Troubleshooting and service topic.
   - When the problem has been resolved, start at the beginning of this section again.

11. If you see System Reference Code (SRC) x6xx500x (where the x can be any letter or number) in the Function/Data display, then, go to the Troubleshoot system reference code (SRC) data topic for details. If you do not see System Reference Code (SRC) x6xx500x (where the x can be any letter or number) in the Function/Data display, then, see the information about handling and reporting system problems in the Troubleshooting and service topic.
Note: If you are working with a console related problem the most common SRC code reported would be A6005008. If you see any reference code of A600500x (where x can be any number) then you can proceed with any console service functions (65+21) to debug or make changes.

**Related reference:**
“Troubleshooting system reference code data” on page 61

If you receive any of these system reference codes (SRCs), you might have some problems in your Operations Console configuration.

**Using the console service functions (65+21)**

Console service functions (65+21) are the emergency console recovery functions.

Note: This is a service function that requires familiarity of control panel functions. Improper use of this service function can cause the system to become unstable. Call your local support for assistance if you have concerns about making your system unstable.

The following functions are available using the console service functions (65+21):

- **Change the console type value (01-04)**
  
  You can use the console service functions (65+21) to change the console type from its current value to another. For example, assume that you ordered your system with Operations Console LAN, but you are having trouble getting it to work.

- **Display current IP addresses used by LAN console (A1)**
  
  This option will display IPv4 addresses in Word 13. Multiple IP addresses may exist, so additional console service functions (65+21) are required to see the next values. When Words 13 - 17 are zero, option (C3) will start.

- **Clear the resource and configuration for the LAN adapter used by Operations Console (C3)**
  
  With this option, you can disassociate the current LAN adapter used for Operations Console. You might use this option to overcome a mistake in the configuration. For example, assume that you made a typing error and entered another device’s IP address. At connection time, the client configured the system’s LAN adapter for use by the console, but the console fails to connect because the other device is active. This option clears the system’s network data for the console and allows you to delete the client’s configuration so that you can start over and make the BOOTP work again.

  Depending on your intent to clear the LAN adapter configuration you might also want to stop and restart the LAN adapter. The example here would benefit from following the clear function with a deactivate and activate (A3) function to save time from having to do an IPL.

- **Set the server configuration IP address to a known address (C4)**
  
  This option is used when DHCP or BOOTP fails to set the server IP address.

- **Deactivate followed by an activate of the LAN adapter used by Operations Console (A3)**

  With this option, you can reset the LAN adapter used by Operations Console, when some network problem causes the system to get into a bad state and the console cannot become active. This forces the LAN adapter to deactivate, and then start back up again. This might clear up the problem, providing the original problem that caused the connection failure has been solved.

  This option may be used in place of an IPL for some circumstances, such as after a clear of the LAN adapter configuration.

- **Dump Operations Console flight recorders to vlogs (DD)**
Note: This option will not work if the system performs IPL in D-mode.
This option will allow you to capture valuable debug information regarding a console connection failure for support personnel. This method is less intrusive than performing a main storage dump which would force an IPL. By using the console service functions (65+21) an attempt is made to gather all the flight recorder logs from the many parts of the code used by Operations Console. A set of vlogs is created for major code 4A00 and minor code 0500. These vlogs can then be sent to your service provider for analysis.

Note: When possible, perform an IPL on the system to guarantee all vlogs get created even if the IPL will fail. The intent is that LIC has started the vlog tasks prior to performing the dump of flight recorders.

The following functions are available when not managed by an HMC. The values displayed depend on the model and code level.

- Enabling or disabling the embedded Ethernet port and add-on LAN adapters (E1, E2, D1, D2)

Note: For a list of supported adapters, go to the Operations Console hardware requirements topic. All the adapters in the table are available for add-on LAN adapter. The HEA is controlled by embedded Ethernet port value and VLAN is controlled by the management console.

- Selecting an individual LAN adapter location (B1, B2, B3, B4, B5, B6, B7, B8, B9, BA)
- Selecting an individual asynchronous adapter location (F1, F2, F3, F4, F5, F6, F7, F8, F9, FA)

How console service functions work

The following is an overview of how console service functions works:

Note: If your system is not in manual mode, and the extended functions are not activated, or both, follow these steps:
1. If your system uses a keystick, insert it in the key slot.
2. Place the system into manual mode by using the system’s control panel.

The following codes will allow you to track your progress:

A6nn 500x

Where nn means:
- 00 = No console defined
- 01 = Twinax console
- 02 = Direct attached Operations Console (obsolete in 7.1)
- 03 = LAN Operations Console
- 04 = Hardware Management Console (HMC)
- A1 = Display current IP addresses used by LAN console
- C3 = Clear LAN configuration
- C4 = Set the server configuration IP address to a known address
- A3 = Deactivate followed by an activate of the LAN Operations Console adapter
- DD = Dump all console related flight recorder into a set of vlogs
- E1 = Enable Ethernet embedded port
- E2 = Enable add-on LAN adapters
- D1 = Disable Ethernet embedded port
- D2 = Disable add-on LAN adapters
- Bn = Enable LAN adapter in slot (C1, C2, C3, C4, C5, C6, C7, C8, C9, CA)
- Fn = Enable asynchronous adapter in slot (C1, C2, C3, C4, C5, C6, C7, C8, C9, CA)

Notes:
1. Selecting 03 may also require a function A3 to activate the LAN adapter in rare cases. Also, if a LAN connected console is connected, the emulator may go to a Disconnected state. If so, you can start it again by clicking Communication and selecting Connect.

Where x means:
A6nn 500A
You are displaying the current console type setting.
A6nn 500B
You did a second 65+21 pair so you are in edit mode.
A6nn 500C
You executed a second 21 to cause an action, such as setting the console to another value.
A6nn 500D
You waited too long after entering edit mode to cause an action so you will have to enter edit mode again if you intended to make a change. A 21 at this time will force the console to DST, not cause an action.

An example of a console change would be:
The console type is 01 (twinaxial) and you want to use LAN (03).

65 - 21 = A601 500A You are in display mode and the console type is 01
65 - 21 = A602 500B You entered edit mode and incremented the counter
65 - 21 = A603 500B You incremented the counter again
21 = A603 500C You invoked the action (set the console type to 03)

Related reference:
“Preparation for your network environment” on page 9

To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

Using the OPSCONSOLE macro
The OPSCONSOLE macro is the system-side debugging and analysis tool for collecting data for or managing console-related work.

IBM-supplied macros are advanced debug and analysis tools resident on the system. These tools are intended to be used only with the direction of support personnel, because inappropriate use of these tools can cause unpredictable problems with your system. If you are not comfortable in the service tools area, you should call your service provider for assistance before using these tools. These instructions assume you do not have a console device but do have another workstation capable of using the system service tools (SST or DST).

Note: Improper use of IBM-supplied macros could result in a change requiring a complete system reload.

It is strongly suggested that you use these IBM-supplied macros only at the request of a support representative.

To use the Operations Console IBM-supplied macro support, follow these steps:
1. Access Service Tools using SST or DST.
2. Select Start a service tool.
4. Select Display/Alter storage.
5. Select Licensed Internal Code (LIC) data.
6. Select Advanced analysis. (You will have to page down to see this option.)
7. Page down until you find the OPSCONSOLE option. Then, place a 1 next to the option and press Enter. You should be on the Specify Advanced Analysis Options window. The command should show as OPSCONSOLE.
8. Enter the appropriate option and any required parameters in the Options field. Use the following options based on the function you are running:
   - Change the console type = cnslt type x (where x is 1, 2, 3, or 4)
   - Clear the resource and configuration for the Operations Console LAN adapter = cnfglan -clear
   - Dump Operations Console-related flight recorders to vlogs = dump -vlog
   - Deactivate the LAN adapter for a local console on a network (LAN) = deactlan
   - Activate the LAN adapter for a local console on a network (LAN) = actlan
   - Restart the console device (any console) = restart

   **Note:** Use the restart option when you need to remove the current console from service and allow the system to determine whether to start or restart a console. You can use the restart option to correct a problem with the original console or when switching from one console type to another.

The following are takeover Console Information Status window commands:
   - To show the takeover Console Information Status window, use the showstatus command.
   - To not show the takeover Console Information Status window, use the skipstatus command.
   - To allow the F18 console takeover, use the takeon command.
   - To not allow the F18 console takeover, use the takeoff command.

The following options are only used when the system is not managed by a Hardware Management Console (HMC):
   - Enable the embedded Ethernet port = enbintlan. Use this command if you want to use the embedded port for the console.
   - Disable the embedded Ethernet port = disintlan. Use this command if you want to use a LAN console resource other than the embedded port. You must have enabled support to use the external resource, such as running the macro enbextlan.
   - Enable an add-on adapter = enbextlan. Use this command to take advantage of the faster network capability from one of these adapters instead of your current network adapter.
   - Select a specific LAN adapter location = enblslot x (x is 1 thru 10 depending on model)
   - Clear the LAN adapter location = clrlslot
   - Disable an add-on adapter = disextlan. Use this command if you want to prevent the use of this LAN adapter for use as a console.
   - Enable both the embedded port and the add-on adapter = enboth. Use this command if you want to make your current model use these resources as the default settings for a new model.
   - Disable both the embedded port and the add-on adapter = disboth. Use this command if you have a System i model and do not want the adapters used for the console.
   - Display configuration flags = dspcfg. Use this command if a service and support representative requested this information. This macro returns the state of the embedded port, the state of the add-on LAN adapter, the selected LAN adapter slot, and other configuration settings.

**Unlocking service tools device IDs in SST**

With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).
From the Work with Service Tools User IDs And Devices display, select the Service tools device IDs option. By default, this option is locked to prevent unauthorized changes to existing service tools device IDs, the creation of new IDs, or the deletion of IDs. To unlock this SST option, you must use dedicated service tools (DST). This task requires the user to have Service tool security privilege to perform the actions. To unlock the service tools device IDs menu option, complete the following tasks:

**Note:** By default, the service tools device IDs option is locked. If you receive the message The user cannot perform the option selected, it indicates that the option has not been unlocked.

1. Access Dedicated Service Tools (DST).
2. Select Work with DST environment > Service tools security data.
3. Type 7 next to the Work with lock for device IDs from SST option and press Enter.

The status displays as Enabled, indicating that the service tools device ID has been unlocked.

**Related tasks:**

- “Resetting the service tools device ID password on the system” on page 48
  This procedure is only necessary if the system option Autocr create service tools device IDs is set to 0 and the system is no longer maintaining service tools device IDs.

- “Resetting the service tools device ID password by using a console session with another device” on page 48
  If you can obtain a console session or access System Service Tools (SST) using another device, reset the service tools device ID password. By doing this, the service tools device ID password becomes the service tools device ID name, in uppercase.

- “Resetting the service tools device ID password by using unused service tools device ID” on page 49
  If you do not have another device (PC or other terminal) to sign on to the system, but do have an unused service tools device ID, do the following on the PC.

- “Resetting the QCONSOLE service device ID password by using the control panel or the remote control panel” on page 49
  If you cannot use another service tools device (PC or other terminal) or service tools device ID to sign on and you are using the QCONSOLE service tools device ID, you need to use the control panel or the remote control panel to reset the service tools device ID password.

- “Changing network values for Operations Console (LAN)” on page 55
  If you need to make a change to the network adapter used for Operations Console (LAN), such as a new IP address, use these instructions.

**Related reference:**

- “Considerations for changing the service tools device ID passwords” on page 46
  You need to review these considerations before you reset the service tools device ID password.

- “Unable to sign on because of a lost or expired password or disabled user ID” on page 66
  You can use this information to correct a problem when the takeover function isn’t working.

**Operations Console simplification**

Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

Operations Console automates working with service tools device IDs. The system, by default, is set to maintain up to 10 service tools device IDs of a maximum value of 49 in addition to QCONSOLE. You no longer have to manually create a device ID when adding a PC to connect into a system or partition. Also, Operations Console takes control of the access password activity for you. The authentication process remains the same, but when this function is active, you are not asked to enter the access password during a connection. However, you must provide a DST user ID and password to successfully connect. This function does not affect any console type.
Autocreate service tools device IDs

By default, the IBM i operating system sets the value of the Autocreate service tools device IDs option to 10. This default value gives you 11 connections to be automatically managed. You have QCONSOLE as a default ID and then 10 additional service tools device IDs. These display as QCONSOLE00, QCONSOLE01, through whatever value is set. It is recommended that you have at least one spare so you need not remember to increase the value if you try to add an additional connection. These service tools device IDs are listed in the Work with Service Tools Device IDs window so you can keep track of how many are created. However, the device ID QCONSOLE is listed and can be used normally.

For example, if you create a service tools device ID with a name of QCONSOLE02, the ID is expected to be used by a specific PC and is not given out automatically. The system treats user-created service tools device IDs differently than those IDs automatically used. When the autocreate function generates a new service tools device ID, it skips all similarly named user-created device IDs and assigns a number that is not used. Therefore, it is possible to have a named QCONSOLEnn with a number (nn) larger than the maximum number of auto-created device IDs.

You can change the default value of the Autocreate service tools device IDs option by performing the instructions in Changing the value of the autocreate device ID option topic.

This function is used for any new configured connections you create. This means that if you upgraded from a prior release of Operations Console on the PC, your current configurations are retained and continue to work just as they did before. However, if the PC and system do get out of synchronization, instead of issuing an error message to resynchronize them, this function automatically recovers the issue.

When you create a local console on a network configured connection, you need to enter the name of the service interface (service host name.) The name you use depends on the circumstances for the connection. For example, if this is a new system and this is the first console to connect, then the name might be whatever you want to call it or it might be what a DHCP server gave it.

Note: Auto created device IDs do not automatically have the Remote Control Panel (RCP) privilege granted. This privilege can be changed with an option in DST Service tools security data menu. The default service tools device ID QCONSOLE has the RCP privilege granted by default.

Automatic management of the access password

By default, you cannot set an access password when you create an Operations Console configuration. An access password is automatically generated and supplied to the connection process at the appropriate time. You do not need to know this password as it is automatically managed by the system.

However, if you do want to change the access password, you can do this on the Properties page. Changing this password causes the automatic process of supplying the password to be disabled. You need to enter your access password for any connection that requires an access password.

The sign-on process requires a valid DST user ID and password to be entered to authenticate the user.

Automatic discovery of systems

When Operations Console starts, a search for qualified systems begins. A qualified system is any system running IBM i 6.1 or later. It does not need to have Operations Console as the console type. If the PC gets a response from the network for any qualified systems, Operations Console creates a configuration for that system. It also preserves any pre-existing configured connections. A qualified system must have a value set for the Autocreate service tools device IDs option, which has a default value of 10. If this value is zero, the system might not report correctly and therefore might not show up in this auto-generated list.
of systems. This auto-discovery function occurs any time Operations Console begins or when performed on-demand by holding down the alt key, the shift key, and then pressing w. This causes Operations Console to begin a new search for eligible systems.

**Note:** Beginning in i 7.1 there is a new toolbar icon which performs the same auto-discovery function as the Alt+Shift+w key sequence.

**Important:** If a system shows up in the list of configured connections, it does not guarantee that the system can be connected to. In rare cases, there are conditions in which the system is able to satisfy the requirements to report but not meet all requirements for a connection.

**Related tasks:**
- "Changing the value of the autocr create device ID option” on page 52
  This topic steps you through the process of changing the value used by local consoles on a network to automatically manage service tools device IDs.
- "Creating service tools device IDs on the system” on page 51
  You will need to set up service tools device IDs on the system for a local console on a network configuration.
- "Changing the RCP privilege on autocr eat e device IDs” on page 52
  This topic steps you through the process of changing the RCP privilege on autocr eat e device IDs.

**Considerations for changing the service tools device ID passwords**

You need to review these considerations before you reset the service tools device ID password.

By default, the system and PC automatically maintain service tools device IDs. If you elect to set the option Autocr eat e service tools device IDs to 0, then you must manually manage these device IDs. Consider the following information if you elect to manually manage the device IDs.

**Note:** You must unlock the SST option before the option is usable.

- The service tools device ID password on the PC must be the same as the service tools device ID password on the system. If you change one, you have to change the other.
- By default, the PC automatically creates and manages the access password and you cannot set this password during the creation of a configuration. However, if you need to manually manage the access password, you can change the password on the Properties page and you might have to supply this password when making a connection.
- Operations Console changes and re-encrypts the service tools device ID password during each successful connection.
- If you delete the local console on a network configuration after making at least one successful connection, you need to reset the service tools device ID password on the system before you reuse the profile for a new local console on a network configuration. If the configuration uses QCONSOLE as the device ID, do not reset the device ID until you are again ready to use it. By default you do not need to manage this unless you elected to set the system option Autocr eat e service tools device IDs to 0.

**Related concepts:**
- “Operations Console simplification” on page 44
  Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related tasks:**
- "Unlocking service tools device IDs in SST” on page 43
  With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

**Related reference:**
- "Resynchronizing the PC and service tools device ID password” on page 48
  By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocr eat e service tools
device IDs is set to 0, then you must manually manage the IDs and their passwords.

Changing the service tools device ID password on the PC and system
There is no advantage of changing the service tools device ID password unless the passwords on the PC and system are out of synchronization.

**Changing the service tools device ID password on the PC and system**
There is no advantage of changing the service tools device ID password unless the passwords on the PC and system are out of synchronization.

By default, the system manages the service tools device IDs and its password. As a result, you do not need to resynchronize the device ID passwords manually.

You can resynchronize the PC and service tools device ID password to make them both the same again. Since this password is actually changed at each successful connection, manually changing the password, except for synchronization, is not recommended.

**Related concepts:**
[“Operations Console simplification” on page 44](#)
Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related reference:**
[“Considerations for changing the service tools device ID passwords” on page 46](#)
You need to review these considerations before you reset the service tools device ID password.
[“Resynchronizing the PC and service tools device ID password” on page 48](#)
By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocreate service tools device IDs is set to 0, then you must manually manage the IDs and their passwords.

**Changing the access password**
You can change the password used to access the service tools device ID information at any time after the creation of a new local console on a network configuration. If you are working with partitions, you can change this password for the corresponding partition.

By default, the system automatically creates and maintains an access password. If you manually change the access password in **Properties**, you take control of this password and might have to provide it each time you make a connection.

**Note:** The password is case sensitive and can be a maximum of 128 characters of mixed case. It is important that you remember this password. You must use this password during the connection process to sign on through the LAN Service Tools Sign-on window.

To use the connection properties to change the access password, follow these steps:
1. Select the connection name for which you will be changing the access password.
2. Click **Connection > Properties**.
3. Select the **Access Password** tab.
4. For **Current Password** enter what you currently use for the access password.
5. Enter the new password into the **New Password** and **Confirm password** fields, and then click **OK**.

**Related concepts:**
[“Operations Console simplification” on page 44](#)
Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.
Resynchronizing the PC and service tools device ID password

By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocreate service tools device IDs is set to 0, then you must manually manage the IDs and their passwords.

When a mismatch occurs in the service tools device ID password between the system and the Operations Console PC, you need to resynchronize the password by performing recovery steps on both the PC and the system.

Note: You need to access Dedicated Service Tools (DST) or System Service Tools (SST) to reset using the service tool device. If there is already a console device present, you can use it. Otherwise, you might need to temporarily attach another console such as:

- Using a different local console on a network (LAN), if available.
- Reconfigure the same local console on a network (LAN) using an unused emergency service tools device ID.
- Using a twinaxial-attached console.
- Use the control panel or remote control panel to reset QCONSOLE.

Related tasks:

- “Creating service tools device IDs on the system” on page 51
  You will need to set up service tools device IDs on the system for a local console on a network configuration.

Related reference:

- “Considerations for changing the service tools device ID passwords” on page 46
  You need to review these considerations before you reset the service tools device ID password.

Resetting the service tools device ID password on the system:

This procedure is only necessary if the system option Autocreate service tools device IDs is set to 0 and the system is no longer maintaining service tools device IDs.

To reset the service tools device ID password on the system, you need to perform these steps.

Note: To perform the following procedure using SST, select the option Work with service tools user IDs and Devices everywhere it says select Work with DST environment and skip the step Select System devices. You must unlock the SST option before the option is usable.

Related tasks:

- “Unlocking service tools device IDs in SST” on page 43
  With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).
- “Resetting the service tools device ID password on the PC” on page 50
  You no longer need to manually reset a connections service tools device ID password on the client PC.

Related information:

Access service tools

Reseting the service tools device ID password by using a console session with another device:

If you can obtain a console session or access System Service Tools (SST) using another device, reset the service tools device ID password. By doing this, the service tools device ID password becomes the service tools device ID name, in uppercase.

To reset the service tools device ID, follow these steps:
1. Access Dedicated Service Tools (DST) or SST.
2. From the DST main menu, do the following steps:
   a. Select **Work with DST environment**.
   b. Select **Service tools device IDs**.

3. Type 2 in front of the service tools device ID to be reset, and then press Enter.

4. Press Enter again to confirm the reset.

   **Note:** When you reset the password in DST, the service tools device ID password becomes the service tools device ID name in uppercase. If you delete and create a device ID, you also need to delete and create the connection on the PC.

**Related tasks:**

"Unlocking service tools device IDs in SST” on page 43

With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

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**Resetting the service tools device ID password by using unused service tools device ID:**

If you do not have another device (PC or other terminal) to sign on to the system, but do have an unused service tools device ID, do the following on the PC.

1. Delete the current configuration as follows:
   a. Under System i Connection, select the configuration name.
   b. From the **Connection** menu, click **Delete**.
   c. Click **Yes** to confirm the deletion if prompted.

2. Use the unused service tool device ID to create a new configuration.

3. Use one of the previous methods to reset the failing service tools device ID after connecting.

**Related tasks:**

"Unlocking service tools device IDs in SST” on page 43

With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

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**Resetting the QCONSOLE service device ID password by using the control panel or the remote control panel:**

If you cannot use another service tools device (PC or other terminal) or service tools device ID to sign on and you are using the QCONSOLE service tools device ID, you need to use the control panel or the remote control panel to reset the service tools device ID password.

**Note:** To increase the success rate of resetting with the control panel, it is recommended that you disconnect the configured connection before you begin the reset procedure.

To reset the service tools device ID password, follow these steps:

1. Place the system in manual mode. In the Function/Data display, systems without a keystore shows the mode as 01 B; systems with a keystore shows the mode as Manual and 01 B.

2. Use the following information to help determine your progress and success of the reset:

   **Note:** If your system uses the double-row Function/Data display control panel, you might need to perform a function 11 to display the results (D1008065). Allow at least 15 seconds for the initial function 65 to complete before doing a function 11 if the display does not respond with the D1008065.

The double-row display control panel presents data like this:

```
xxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
```
Each word is 8 characters but 4 words are displayed at a time for functions 12 through 19. For example, requesting function 12 provides you:

word__12word_13
word__14word_15

Requesting function 13 provides you:

word__16word_17
word__18word_19

The data provided in the words can be accessed using many different methods.

**Important:** In order to know where you are in the process, the following information is provided:

- Word 17 of the SRC D1008065 will contain the the number of function 65s you have done. When it reaches a count of 7, the reset of the service tools device ID password will take place. Word 18 will then be set to 00000000.
- Word 18 will show 00000001 until you have entered the seventh function 65. When the reset has completed, this word will be set to 00000000 unless more than five minutes have elapsed.

**Note:** If you enter function 65 more than seven times, the count will start over.

3. Use one of the following methods to reset the QCONSOLE service tools device ID depending on the partition type:

   - For nonpartitioned systems, follow these steps:
     a. From the control panel, use the Up or Down buttons so that Function/Data display shows 25. Then press the Enter button. The Function/Data display should show 25 00.
     b. Use the Up button once to increment the data to 26. Then, press the Enter button. The system will most likely respond with 01 B in the Function/Data display.
     **Note:** If the system responds with 65 FF repeat steps a and b again.
     c. Using the Down button, decrement the data to 65, and then press the Enter button. The system will respond with 65 00. After processing the function the system will respond with a D1008065. Repeat this step so that you have entered 7 function 65s. You will have five minutes to complete this task. When the seventh 65 is entered and if it is found that greater than five minutes have elapsed, the reset will not be processed and the count will return to zero. Check WORD17 to verify that the system handled each request. Entering the 65s quickly may cause the system to miss the entries.

Proceed to reset the service tools device ID password on the PC.

**Related tasks:**

- “Unlocking service tools device IDs in SST” on page 43

With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

**Resetting the service tools device ID password on the PC:**

You no longer need to manually reset a connections service tools device ID password on the client PC.

If the password is reset on the system, the next connection made by the client automatically tries the reset password if using the current value fails. If successful, the newly generated password is saved for the next connection.
If you suspect that the automatic process failed, contact your service provider for assistance.

Related tasks:

"Resetting the service tools device ID password on the system” on page 48

This procedure is only necessary if the system option Autocreate service tools device IDs is set to 0 and the system is no longer maintaining service tools device IDs.

Creating service tools device IDs on the system

You will need to set up service tools device IDs on the system for a local console on a network configuration.

By default, the system maintains service tools device IDs automatically. You only need to do this procedure if the system option Autocreate service tools device IDs is set to 0.

Note: To perform the following procedure using system service tools (SST), select the option Work with service tools user IDs and Devices everywhere it says select Work with DST environment and skip Step 3. You must unlock the SST option before the option is usable.

1. Access dedicated service tools (DST) or system service tools (SST).
2. Select Work with DST environment.
3. Select Service tools device IDs.
4. Use option 1 to create a new service tools device ID and enter the new service tools device ID name in the first blank name field. Press Enter.
5. You can enter a description. Press Enter. You have finished creating a service tools device ID.

Note: The device ID and the service tools user ID must have the proper authorities granted before the remote control panel and all its functions are available for the associated partition. To verify or change the service tools device ID attributes you can press F5 (change attributes on the "Create Service Tools Device ID" screen or enter a 7 in front of the device ID on the "Work with Service Tools Device IDs” screen.

6. To create additional service tools device IDs, repeat the steps starting at step 4.
7. Press F3 when you finish creating your service tools device IDs.

Notes:

1. If you reset a service tools device ID, the password becomes the name of your service tools device ID in uppercase.
2. If you have more than one PC connected to your console, you need to create several service tools device IDs.
3. Sometimes the service tools device ID password must be changed, such as when the password has to be resynchronized between the PC and the system. When a mismatch occurs in the service tools device ID password between the system and the Operations Console PC, you need to resynchronize the password by doing recovery steps on both the PC and the system.
4. QCONSOLE cannot be left in a reset state on the system. This is considered a security exposure.

Related concepts:

"Operations Console simplification” on page 44

Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

Related reference:

"Resynchronizing the PC and service tools device ID password” on page 48

By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocreate service tools device IDs is set to 0, then you must manually manage the IDs and their passwords.
Changing the value of the autocr eate device ID option
This topic steps you through the process of changing the value used by local consoles on a network to automatically manage service tools device IDs.

To change the value of the autocr eate service tools device ID option, follow these steps:
1. Access Dedicated Service Tools (DST).
2. Select Work with DST environment.
3. Select Service tools security data.
4. Change the value for the option Autocreate service tools device IDs.
   If you set the value to zero, you disable this function and you will have to manually create and manage service tools device IDs. This includes resynchronizing the PC and system if the associated password gets out of synchronization. The maximum value allowed is 49.
5. Select option 11 in the Selection area. Then, press Enter to save the new value.

Changing the RCP privilege on autocr eate device IDs
This topic steps you through the process of changing the RCP privilege on autocr eate device IDs.

To change the RCP privilege on autocr eate device IDs, follow these steps:
1. Access Dedicated Service Tools (DST).
2. Select Work with DST environment.
3. Select Service tools security data.
4. Select option 12 in the Selection area. Then, press Enter to change the value.

The status should say granted instead of revoked which is the default.

Changing the value of the display console status screen option
This topic steps you through the process of changing the display console status screen option.

To change the display console status screen, follow these steps:
1. Access Dedicated Service Tools (DST).
2. Select Work with DST environment.
3. Select Service tools security data.
4. Select 13 (Display console status screen) and press Enter. The status can be Show or Skipped.

Changing the value of the Console F18 takeover option
This topic steps you through the process of changing the console F18 takeover option.

To change the console F18 takeover, follow these steps:
1. Access Dedicated Service Tools (DST).
2. Select Work with DST environment.
3. Select Service tools security data.
4. Select 14 (Console F18 takeover) and press Enter. The status can be Enabled or Disabled.

Configuring a service host name (interface name)
The service host name (interface name) is the name that identifies the System i service connection on your network that is used for service tools, which includes an Operations Console local console on a network (LAN) configuration.
You need a service host name (interface name) any time a console or remote control panel is being connected using a network connection. One reason to add this function is when a system has been logically partitioned.

Regardless of which method you use to implement the configuration data, the actual name and associated address used for the service host name depends on the network environment in which the system will be placed. The implementation method has no bearing on whether the configured connection is the first connection. Follow these guidelines when entering the name for the service host:

- For small network infrastructures in which only a few devices are connected, you can typically specify anything you want for the name and associated address. When you set up a small network, you can specify the name and an address range.
- For large network infrastructures managed by IT personnel, a specific name might be required. This avoids confusion with other devices on the same network, and might be used to allow the network infrastructure's equipment to know in advance what the connection name is and what address the connection will use to communicate on the network. Alternatively, you might be able to specify an original name, but the address might be given to you by the network administrator.

There are two methods to create a service host name (interface name):

- A service host name (interface name) cannot be created during the manufacturing process for a system that has Operations Console local console on a network (LAN) configuration ordered. The LAN adapter is installed and the correct console type is specified. Then, when the user gets the system, the Operations Console configuration wizard, when completed, supplies the system with the customer network parameters, including the service host name (interface name). During the initial connection, this data finishes the system configuration for the network. This process is also known as **BOOTP**.
- The second method to create a service host name (interface name) is by using an existing console. This method could be used during a migration or an upgrade before disconnecting your old console. When using the following procedure, you can either verify or create the configuration for the System i service connection. You can find the service host name (interface name) by going into Dedicated Service Tools (DST), or System Service Tools (SST) on the partition that you are configuring and use the Configure Service Tools Adapter display. Enter the same name on the PC as the existing service host name (interface name) defined in DST or SST.

Note: You can also use any option pertaining to the service tools LAN adapter to verify the service host name or data.

To create a service host name (interface name):

Note: To perform the following procedure using SST, select the option **Work with service tools user IDs and Devices** everywhere it says select **Work with DST environment**. Also note that if you are using a console type other than Operations Console (LAN), you can use the option **Configure service tools LAN adapter** to create or change the service host name or its data.

Note: You might receive a message "No valid LAN adapter available". This message means that no adapter is available or no adapter is tagged for LAN console. Press F13 to obtain a list of LAN adapters that are not in use by the operating system. Place a 1 next to the adapter and press enter, then continue with step 7.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST).
2. Select **Work with DST environment**.
3. Select **System devices** (skip this step if using SST).
4. Select **Select Console**.
5. Select **Operations Console (LAN)** and press Enter. This should show Verify Operations Console Adapters.
6. Press F11 to configure.
7. The service host name (interface name) field contains the name. If you are creating a new service connection follow these steps:
   a. Enter the network data in the appropriate fields.
   b. Store your configuration by pressing F7.
   c. Activate the LAN adapter by pressing F14.
   d. Press F3 to exit.

Related reference:
“Preparation for your network environment” on page 9
To prepare for your network environment, you need to identify and comply with the minimum network configuration required to set up an Operations Console local console on a network (LAN) configuration.

Related information:
Service tools user IDs and passwords
Access service tools

Deallocating or moving the LAN adapter card from use by Operations Console
During a migration, you might need to deallocate the LAN card from use by Operations Console. You need to deallocate the LAN card if you are not planning on using an Operations Console local console on a network configuration or the service tools server.

After the LAN card is deallocated, you can move it or use it for another purpose. You must also be using a console type other than an Operations Console local console on a network (LAN) or the following steps will cause the console to disconnect. Follow these steps to deallocate the LAN adapter currently associated with an Operations Console local console on a network (LAN):

Note: To perform the following procedure using SST, select the option Work with service tools user IDs and Devices everywhere it says select Work with DST environment.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST).
2. Select Work with DST environment.
3. Select System devices (skip this step if using SST).
4. Select Select Console.
5. Select Operations Console (LAN). The LAN adapter currently in use need to be shown.
7. Press F6 to perform a clear.
8. Press F7 to store the new values.
9. If you are not using this resource for the console, press F13 to deallocate the adapter. You will be required to use another console type or resource on the next IPL.

   Note: After you exit this window, do not enter the configuration again. Entering the configuration again will reallocate the LAN adapter resource to Operations Console.

10. Press F12 twice to exit this window. You should have returned to the Work with System Devices window. If you are using SST, this returns you to Work With Service Tools User IDs and Devices.
11. Select Select Console.
12. Select the console type you want to use.

Important: You must change the console type to something other than Operations Console (LAN) or the adapter will get reallocated on the next IPL.

Related tasks:
“Changing the console from an Operations Console local console on a network (LAN) to a twinaxial console in a nonpartitioned system” on page 35
To change from an Operations Console to a twinaxial console local console on a network (LAN), follow
these steps on the system using the existing console.

**Related reference:**
- “Planning considerations for your Operations Console installation or upgrade” on page 8
  To plan for your Operations Console installation or upgrade, you need to know this information.
- “Changing from one console type to another” on page 31
  Depending on how your console connection is set up, you can change to a different console type.

**Related information:**
- Access service tools

### Changing network values for Operations Console (LAN)

If you need to make a change to the network adapter used for Operations Console (LAN), such as a new IP address, use these instructions.

**Note:** To perform the following procedure using SST, select the option **Work with service tools user IDs and Devices** everywhere it says select **Work with DST environment**.

1. Access Dedicated Service Tools (DST) or System Service Tools (SST).
2. Select **Work with DST environment**.
3. Select **System Devices** (skip this step if using SST).
4. Select **Select Console**.
5. Select **Operations Console (LAN)**. The LAN adapter currently in use should be shown.
7. Use one of the following methods to make your change:
   - If you are making a simple change, such as the IP address, enter the new values and continue with step 8.
   - If you will be changing the adapter card press F6 to perform a clear. Continue with step 8.
8. Press F7 to store the new values.
9. Press F3 until the DST main menu appears.

**Important:** If the change did not affect the network IP address or the service host name (interface name) you can exit these instructions now.

If you made a change that caused the network IP address or service host name (interface name) to be different for the currently configured connections, this change must be reflected on all PCs that connect to this service host name (interface name). Since you cannot modify the network IP address or service host name (interface name) of an existing connection's configuration on the client you will have to delete the current connection and re-create a new connection using the new network IP address. Continue with the next step.

10. Reset the service tools device ID password on the system. To do this, follow these steps:

    **Note:** You must unlock the SST option before the option is usable.
    a. Select **Work with DST environment**.
    b. Select **Service tools device IDs**.
    c. Type 2 in front of the service tools device ID to be reset, and press Enter.
    d. Press Enter again to confirm the reset.

    **Note:** When you reset the password in DST, the device ID password becomes the device ID name in uppercase.

    **Important:** If more than one PC connects to this service host name (interface name) using a network connection you will have to delete the configurations and therefore reset the service tools device IDs of those PCs as well. To reset another service tools device ID, repeat this step.
e. Press F3 until the DST main menu appears.

11. There are two methods for completing the necessary work in order to allow a new IP address or service host name (interface name). The first is using an IPL. This is the recommended method because you will have more control over when you do the remaining work on the PC. The system will continue to use the old values until an IPL or manual intervention. The second method is to perform the manual intervention, at this time. Perform one of the sets of steps below to complete the network changes.

- **Using an IPL**

This method requires that the client reconfiguration be complete prior to establishing the next connection using Operations Console on a network. If you are currently using the console connected via LAN you would normally start an IPL, it is recommended that the IPL be an attended IPL, and you can reconfigure the client during the initial stages of the IPL. You could, for example, use a different PC as the console instead of the one you currently have connected. You could do the configuration on that PC using the steps here, then after the IPL has been started you could disconnect the current console PC’s connection and start a connection on the other PC with the newly created configuration. In this manner you could reconfigure the existing client at your leisure, before the next connection to the system.

a. Start an attended IPL on the system.
b. Continue with completing the PC changes.

- **Perform the manual intervention**

Perform these steps from the DST or SST main menu.

**Note:**

   a. To perform the following procedure using SST, select the option **Work with service tools user IDs and Devices** everywhere it says select **Work with DST environment** and skip the step **Select System Devices**.

a. Select **Work with DST environment**.
b. Select **System Devices** (skip this step if using SST).
c. Select **Select Console**.
d. Select **Operations Console (LAN)**. The LAN adapter currently in use should be shown.
e. Press F11.
f. Press F17 to deactivate and reactivate the LAN adapter card.

   **Note:** This will cause all LAN connected console PCs to go to **Connecting console** as a status. Also, if more than one LAN connected console PC is connected, the selection of the next console device is unpredictable.
g. Continue with completing the PC changes

The PC is now ready to make a connection. If you have already performed an IPL on the system, you are now ready to reconnect using the new network data.

**Related tasks:**

- "Unlocking service tools device IDs in SST” on page 43

  With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

- "Starting the system using a manual IPL” on page 39

  You can start your system by performing a manual initial program load (IPL).

- "Completing the PC changes” on page 57

  After making changes to the network values for Operations Console (LAN), you need to complete the changes to the PC.

**Related information:**
Completing the PC changes:

After making changes to the network values for Operations Console (LAN), you need to complete the changes to the PC.

1. To delete the old configuration, perform these steps:
   a. Select the configuration name (under System i Connection). This is the name that Operations Console uses to refer to a specific system.
   b. From the Connection menu, click Disconnect. The connection status shows Disconnecting.
   c. Wait for the status to show Disconnected.
   d. Select the configuration name (under System i Connection).
   e. From the Connection menu, click Delete.
   f. Click Yes to confirm the deletion if prompted.

2. Close and reopen Operations Console in order to purge the PC of network data associated with the configuration you are changing.

   **Note:** It is also suggested that you remove or alter the old entry in the **hosts** file on the PC. You can do a search or find for **hosts** then double-click the file when it is found to start the default editor.

3. Create a new configuration using the following steps:
   a. From the Connection menu, select **New configuration**.
   b. Continue the configuration and enter the new IP data or service host name at the appropriate time.
   c. Complete the rest of the new configuration.

---

**Troubleshooting Operations Console connection**

Problems can occur during an Operations Console session. The following topics are some solutions to common problems that are encountered during your initial setup and management of your configurations.

The Operations Console client (PC) keeps a set of logs that can be used by IBM development in assisting with customer issues. These logs are not meant to be used by the end user. Details of what to capture and its format change often to keep current with the types of issues being reported. If you report a problem to your service provider, you might be asked to send specific logs from the PC, as well as data captured by the system.

**Settings dialog window**

Operations Console has a built-in, hot-key-activated, settings dialog window that has special options used to help troubleshoot problems. The Settings window is activated by pressing and holding the **Alt** and **Shift** keys and then pressing the **s** key before releasing all three keys (**ALT+Shift+s**). The options to split the log files can be very helpful to your service provider, especially if you have many connection configurations. Splitting the logs so each configuration has its own log makes it easier to find problems. When only one connection has a problem, activity in other connections aren't seen in the log.

It is highly suggested that the user not make any other changes or turn on any other functions without advice from your service provider. Improper use of the options on this window may cause unpredictable behavior on any or all configured connections.

There is also a hot-key-activated function to capture the screen data when the connection is not responding correctly. To capture the screen data, select the configuration and press **Ctrl+C**. This will
dump the contents of the last ten screen buffers (three screens of data) and the timestamp they were received into the connection log. This log can be used by support or development to see what the last updates to the emulator were. Activating this process a second time without changes to the screen will not produce any more data to the connection log.

With the addition of autodiscovery of systems and PCs comes another hot-key activation function. When Operations Console is started, the discovery process is also started. If you have active connections to other systems and have just completed the setup of a new system that should be discoverable, you can start a new discovery process by pressing and holding the Alt and Shift keys, and then pressing the w key (Alt+Shift+w). When the discovery process is completed, your new system is shown and you can start a connection to it.

**Troubleshooting status message**

If you encounter connection problems when connecting a console, Operations Console provides status messages to assist you in troubleshooting the connections.

A status message indicates whether or not you have a connection problem. It is displayed under Status in the Connection details area of the Operations Console window.

Before you start troubleshooting the connection, install latest Service pack for IBM i Access for Windows.

**Related reference:**

[“Applying IBM i Access for Windows service packs” on page 20](#)

You need to have the latest Service Pack program temporary fix (PTF) for IBM i Access for Windows and the latest level of IBM i Access for Windows on your PC.

**Status messages when configuration is running normally**

These status messages help you identify whether you have connection problems.

These status messages indicate that you do not have connection problems:

**Connecting console or Connecting remote control panel**

This status message is the normal status while the console is making the initial connection to a system. If it shows for more than a couple of minutes, see Connecting console in the list of status messages that indicate connection problems.

**Pending authorization**

This status appears during an initial connection to a system when the Service Tools sign-on window appears. This status remains until the first user signs on successfully at a local console. A local console over a network (LAN) might present the Service Tools Sign-on or the LAN Service Tools Sign-on window depending on whether you have taken control of the access password. Subsequent connections to the same system do not prompt the user again.

**Connected**

This status appears at the local console after an initial connection to the system is completed (the user signed on successfully to Operations Console).

**Disconnecting**

This status appears at the local console when the local console user disconnects from a system and the PC is disconnecting the connection.

**Disconnected**

This status appears at the local console after the local console user disconnects from a system and the PC is no longer communicating with the system.

If the status message you received is not listed, see the Status messages when you have connection problems topic.

**Related reference:**
Status messages when you have connection problems

These status messages help you identify whether you have connection problems.

These status messages indicate that you do have connection problems:

Connecting

This status is the normal status while the console is making the initial connection to a system. If it shows for more than a couple of minutes, the connection failed. It also shows when the connection stops working after the initial connection, possibly because an IPL has occurred or network connectivity has been lost.

If the status message you received is not listed here, see the Status messages when configuration is running normally topic.

Related reference:

Remote control panel fails to start” on page 64
If your remote control panel fails to start, verify these items.

Troubleshooting connection problems

When setting up your initial connection, you might encounter problems connecting your Operations Console configuration.

Status messages when configuration is running normally” on page 58
These status messages help you identify whether you have connection problems.

Troubleshooting connection problems

When setting up your initial connection, you might encounter problems connecting your Operations Console configuration.

Local console connection problems

When setting up your local console, you might encounter problems connecting. Failure to connect is defined as problems resulting in the status not going to Connected and the emulator did not start.

Some connection problems might require the use of the console service functions (65+21) to make changes to the system or to do a specific function before a connection can be made.

Related reference:

Troubleshooting emulator problems” on page 61
When setting up your initial connection you may encounter emulator problems.

Network connection errors:

These are solutions to problems that occur when a local console fails to connect to a system over a network.

Try these possible solutions:

- Make sure the network is working.
- Verify that you provide the correct password that allows the system to access your service device information during the configuration wizard. Also, verify that you provide the correct service tools user ID and password.
- If you are using Ethernet for your network, you can use a crossover cable to directly connect the PC to the adapter temporarily. This cable isolates the PC and system from any potential problems on your network that might interfere with proper operations.

Remote control panel fails to start” on page 64
If your remote control panel fails to start, verify these items.
A crossover cable is a standard network cable but has the transmit and receive signal wires reversed. This virtually allows each end to act as if a hub, switch, or router were between them. The use of a crossover cable might also require a nonstandard network configuration at the system and PC.

**Error message: The connection to the system is not a secure connection:**

You may receive this error message: The connection to the system is not a secure connection.

These messages appropriately appear during a D-mode (installation) IPL. Authentication is not performed and the remote control panel (LAN) is not supported for this IPL type.

**Related reference:**

"Authentication errors"

While you are connecting a local console to a system, you may encounter local console connection problems. These are solutions to errors that occur when Operations Console cannot complete a connection between a system and a local console (PC). The errors consist of software configuration problems or unrecognizable service tool user IDs.

**Local console status remains Connecting:**

These are solutions to problems that prevent the local console from connecting to the system due to improper hardware or software configurations.

- Verify that the system name and the local console name are correct.
- If you are using Ethernet for your network, you can use a crossover cable to directly connect the PC to the adapter temporarily. This cable isolates the PC and system from any potential problems on your network that might interfere with proper operations.

A crossover cable is a standard network cable but has the transmit and receive signal wires reversed. This virtually allows each end to act as if a hub, switch, or router were between them.

**Unexpected disconnections:**

If the PC has power management capabilities, it should have this function disabled.

Most PCs, and especially notebooks, reset the communications ports when starting power management after the specified time. This can potentially disconnect the established connection. Therefore, a local console that goes into power saver mode might disconnect from the system.

**Troubleshooting authentication problems**

When setting up your initial connection, you might encounter authentication problems.

**Authentication errors**

While you are connecting a local console to a system, you may encounter local console connection problems. These are solutions to errors that occur when Operations Console cannot complete a connection between a system and a local console (PC). The errors consist of software configuration problems or unrecognizable service tool user IDs.

The following tip is only valid if the system option Autocreate service tools device IDs has a value of 0 and you no longer want the system to automatically maintain service tools device IDs.

**Tip:** Verify that you are entering a valid service tools user ID and password when using the configuration wizard.

You might also receive an error message regarding a secure connection.

**Related concepts:**
Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related reference:**

"Error message: The connection to the system is not a secure connection" on page 60

You may receive this error message: The connection to the system is not a secure connection.

**Troubleshooting emulator problems**

When setting up your initial connection you may encounter emulator problems.

If the emulator window did not start and the connection status is not Connected, refer to the Local console connection problems topic.

**Related reference:**

"Local console connection problems” on page 59

When setting up your local console, you might encounter problems connecting. Failure to connect is defined as problems resulting in the status not going to Connected and the emulator did not start.

**Troubleshooting system reference code data**

If you receive any of these system reference codes (SRCs), you might have some problems in your Operations Console configuration.

Refer to the sections below to find information about specific system reference codes and troubleshooting options.

Console-related system reference codes might require the use of the console service functions (65+21) to change a setting or to do a function.

**System reference code A6nn500x**

These are the system reference codes (SRCs) used to access console types and console tasks.

These SRCs are associated with the operation of the control panel method to change the console type or accomplish a console task when the console or other workstation is not available.

**Remember:** nn can be any alphanumeric designation.

- A6nn 500A - You are displaying the current console type setting.
- A6nn 500B - You did a second 65+21 so you are in edit mode.
- A6nn 500C - You executed a second 21 to cause an action, such as setting the console to another value.
- A6nn 500D - You waited too long after entering edit mode to cause an action so you will have to reenter edit mode again if you intended to make the change. A 21 at this time will force the console to DST, not cause an action.

**Related reference:**

"Using the console service functions (65+21)” on page 40

Console service functions (65+21) are the emergency console recovery functions.

**System reference code A6005001, A6005004, and A6005007**

These system reference codes (SRCs) might be displayed for twinaxial consoles.

**A6005001**

A console resource (controller) was not found during a manual IPL.
A console device was not found during a manual IPL. A twinaxial controller was found but may not be used. This is only indicating the presence of a controller. It is not indicating the controller may be defective.

A console device was not found during a manual IPL. This SRC is also indicating the presence of hardware that might indicate another console type other than twinaxial was found. This reference code is not indicating a failure of that hardware or that it is the intended console.

These SRCs, as well as the attention light, are reset when a console is detected and becomes active. If one of these SRCs exists for a long time, you might need to perform an IPL to try to find a console device, depending on many factors, including the model and the hardware present. You can force the system to try finding the console again by using function 21 from the control panel, remote control panel, or virtual control panel. You can also use the 65+21 functions to gather data or attempt recovery.

**System reference code A6005008**

Use this table if you received system reference code (SRC) A6005008. If an IPL did not find a console and if the console type is set to anything except a 1, the system will display code A6005008.

- If you are attempting to use a twinaxial console, the only data relevant in this SRC is word 16. Use the following table to determine the twinaxial failure. The first 4 characters of this word contains the last 4 characters of the original failure type. For example, if word 16 contained 50010001, the twinaxial-related SRC would be A6005001 and the console type is set to use a twinaxial console. Refer to that SRC.

- If you are attempting to use Operations Console, select the appropriate section in the following table by referring to this list:
  - Local console on a network uses words 13, 14, and 15.

**Note:** If you just replaced the LAN adapter associated with Operations Console (LAN), you need to wait at least 35 minutes for the system to find and use the new LAN adapter. In this case, when the system is satisfied, it starts using the new adapter. The console should start, and the SRC is no longer shown.

<table>
<thead>
<tr>
<th>LAN</th>
<th>If Word 13 value is:</th>
<th>Failure</th>
<th>Word 14 means:</th>
<th>Word 15 means:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>The LAN connection is active and has received TCP/UDP/RAW packets (e.g. ping). However, the PC failed to connect.</td>
<td>IP address</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>No supported HW detected or HW detected is not expected (for example, you replaced the LAN IOA so the serial number is different)</td>
<td></td>
<td>In some cases the serial number of the expected adapter may be shown.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>LAN IOA failed to report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If Word 13 value is:</td>
<td>Failure</td>
<td>Word 14 means:</td>
<td>Word 15 means:</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---------</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Hardware error</td>
<td>Common error codes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 53001A80, 53002AC0,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CC10031A: Network,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• cable or the LAN adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• may not be operational.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 00000000: This error code</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• indicates the adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• reported but has not</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• been initialized yet. This</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• is not considered an</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• error, at this time. The</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• adapter should be</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• activated shortly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For other error codes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• contact your service</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• provider.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 4                    | BOOTP status: If attempts |
|                      | are zero, then BOOTP is |
|                      | ready, when called. If  |
|                      | attempts have a value, then  |
|                      | the PC did not respond  |

| 5                    | The system’s LAN  |
|                      | connection is active but the  |
|                      | PC failed to connect. Are  |
|                      | the PC and system on the  |
|                      | same network and using  |
|                      | the same protocol? Can the  |
|                      | PC ping the system? (ping  |
|                      | serverhostname)  |

Word 16

Word 16 in the form of xxxx yy zz means the following:

- xxxx where:
  - The twinaxial-related SRC is represented by the first 4 characters.
- yy where:
  - 0A = No console tagged
- zz where:
  - 00 = Not defined by user (old default value)
  - 01 = Twinaxial
  - 02 = Operations Console (Direct) (obsolete)
  - 03 = Operations Console (LAN )
  - 04 = Hardware Management Console (HMC) or Thin Console

<table>
<thead>
<tr>
<th>If Word 17 value is:</th>
<th>Failure</th>
<th>Word 18 means:</th>
<th>Word 19 means:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Async card not detected</td>
<td>Card position</td>
<td>Card type</td>
</tr>
<tr>
<td>2</td>
<td>No cables detected</td>
<td>Card position</td>
<td>Card type</td>
</tr>
<tr>
<td>3</td>
<td>Wrong cable detected</td>
<td>Card position</td>
<td>Cable ID</td>
</tr>
<tr>
<td>4</td>
<td>Port in use</td>
<td>Card position</td>
<td>Card type</td>
</tr>
</tbody>
</table>
If Word 17 value is: | Failure | Word 18 means: | Word 19 means: |
--- | --- | --- | --- |
FA | Not configured for direct cable | | |

**Note:** It is expected that a D-mode IPL with a new load source direct access storage device (DASD) will show the console type value of 00. Examples of when this can occur might be that the copy of data from a failing DASD did not copy all data or you are installing a new logical partition. Also, there are times when the DASD is late reporting an the console type value was not retrieved in time. In these cases you can use the console service function to set a console type value or attempt to contact the console again.

**System reference code A6005082**
Here are some possible reasons you received system reference code (SRC) A6005082.

- If the system displays this SRC, it typically means that a console was found but lost the console connection.
- If the console is reassigned and the system can locate a console, the SRC is no longer shown.
- The console type does not affect this SRC.
- Only issued in attended mode IPLs.

**System reference code A9002000**
Here are some possible reasons you received system reference code (SRC) A9002000.

- If the system displays this SRC, it typically means that a console was not found by the IBM i operating system.
- The system value QAUTOCFG must be set to ON. IBM i is unable to create the new console device if it is off.
- If you just migrated the console from one type to another and the new console fails to work in IBM i you may need to use another workstation to manually delete the controller and device description associated with the old console device.

**Note:** You might be able to use the console service functions (65+21) to assist in a recovery or to gather debug data.

**IPL step C6004031 takes longer than expected**
The IBM i operating system can detect the hardware resource for a console.

Depending on what other console-capable resources might be found plus the time it takes to walk the bus, this activity has increased the amount of time spent at this IPL step in the startup process.

**Troubleshooting remote control panel problems**
When setting up your initial connection, you might encounter problems accessing your control panels.

**Remote control panel fails to start**
If your remote control panel fails to start, verify these items.

- Verify that the cable is properly connected.
- A reason the remote control panel fails to start might be that either the user ID or service tools device ID being used does not have permission to use the remote control panel.

**Unable to use the mode function**
When you are unable to use the mode function, you should verify that the authenticated connection has the correct privileges to use the mode function on a remote control panel.
If you are unable to use the mode function on a remote control panel or virtual control panel, check that the user that authenticated the connection (Service Tools Sign-on) has the **Partition remote panel key** privilege for the partition that the user is connected to.

To ensure you have the proper privileges for the connection to the partition, follow these steps:
1. Access Dedicated Service Tools (DST).
2. Select **Work with DST environment**.
3. Select **Service tools user profiles**.
4. Select **Change privileges** (option 7).

That user must be granted the privilege, **Partition remote panel key** by partition, in order to use the mode function. If the system supports the keystick, the keystick must be inserted before the mode function is active.

**Related information:**

- Access service tools

**Authentication problems**

Here are two common authentication related problems and suggestions to correct them.

By default, the system automatically creates and maintains an access password. If you manually change the access password in **Properties**, you take control of this password and have to provide it each time you make a connection. This increases the chances of meeting the following authentication problems.

- **Failure to authenticate.**
  
  Error message: The current access password entered is not valid. Please enter the valid access password.
  
  This message typically means that the access password you entered in the LAN Service Tools Sign-on window is not the same as the password you entered when you manually assigned the access password in **Properties**. Make sure that the caps lock is not active and re-enter the access password using the password you assigned, taking into account any case sensitivity you might have used.

- **Failure to connect the Remote Control Panel.**
  
  Error message: The PC service tools device ID password and the IBM i service tools device ID password do not match. Either the service tools device ID (name) is already in use or the passwords must be RESET on this PC and the IBM i.
  
  This indicates that the service tools device ID password is incorrect.
  
  The service device ID password stored on the PC no longer matches the value stored on the system. In rare cases, this password gets out of synchronization and you need to reset the value back to the original default values on both the PC and the system.

**Related concepts:**

- "Operations Console simplification" on page 44

  Operations Console can automatically create service tools device IDs, manage access passwords, and discover systems.

**Related reference:**

- "Resynchronizing the PC and service tools device ID password" on page 48

  By default, the system creates and maintains the service tools device ID and its password. You should not have to manually resynchronize the password. However, if the system option Autocreate service tools device IDs is set to 0, then you must manually manage the IDs and their passwords.

**Troubleshooting configuration wizard problems**

Here are the solutions to problems encountered while you are completing the Operations Console configuration wizard.
Old network data interfering with reconfiguration of network connectivity
If you are configuring a local console on a network (LAN) and the user keeps getting an old IP address, which might be wrong but you cannot get to it without changing the name, you might need to edit the hosts file on the PC. You might need to edit the file and remove the entry in question.

Notes:
1. It is also suggested that you remove or alter the old entry in the hosts file on the PC. You can do a search or find for hosts then double-click the file when it is found to start the default editor.
2. Operations Console should be closed and restarted before attempting to connect a new configuration. This action will remove all cached values associated with any old configurations.

Troubleshooting other Operations Console problems
Here are some problems with your Operations Console not covered in the other troubleshooting sections.

Operations Console remains in QCTL
This situation typically shows up after a migration, but could be found at any time you have been working with resources. QCONSOLE still remains in QCTL when you would have expected it to be reassigned as another workstation.

Be sure that the system has not performed an IPL with DEBUG turned on. A good indication is that no other interactive subsystem has started, if present, and others may also be absent. Check SYSVAL QIPLTYPE it should be 0.

Note: If the new console fails to work in IBM i you may need to use another workstation to manually delete the controller and device description associated with the old console device.

System requests do not work
Here are the solutions for when system requests do not work.

When using Operations Console, SYSREQ corresponds to Shift+ESC and is defined as the default for PC5250 emulation.

Most keyboards have a Print Screen key, also labeled as SYSREQ and would be activated by using that key with the Ctrl key, however Windows reserves this key for the Print Screen function.

You must remap the keyboard by using the operating system, not PC5250, in order to change it.

Unable to sign on because of a lost or expired password or disabled user ID
You can use this information to correct a problem when the takeover function isn't working.

If you have the special DST sign-on screen but find yourself unable to sign on because of either a disabled user ID or expired password, you can attempt the first steps of recovery by doing the following:
1. Make certain that no other devices (PCs) that normally are eligible to become the console are connected.
2. Perform the console service functions (65+21) using 65, 21, 21.

This will cause the console to be lost temporarily. The device should then become the console with a sign-on screen appropriate to the system state, assuming that it matches the current console type setting. For example, if the system was IPLed to command entry, then you would see the IBM i sign-on screen. You can then sign on using any user ID with the authority to continue the recovery of the DST user ID that has the problem.

Related tasks:
With the Work with service tools user IDs and Devices option, you can change Operations Console configuration data from system service tools (SST).

The user cannot perform the option selected
Here is a solution to try when you receive the message the user cannot perform the option selected.

You might receive this message under the following circumstances:
• You are working with a local console on a network (LAN) configuration.
• You made an attempt to access the Service tools device IDs option on the Work With Service Tools User IDs and Devices window within SST.

This error message indicates that the option is not unlocked. You need to unlock the option before continuing.

 Related tasks:

 Related information for Operations Console

Web sites and other information center topic collections contain information that relates to the Operations Console topic collection. You can view or print any of the PDF files.

Web site

• IBM i Access Web site (http://www.ibm.com/systems/i/software/access/)
  This Web site includes online product information about IBM i Access and Operations Console.

Other information

• IBM i Access for Windows: Installation and setup
  This topic collection describes how to install and configure IBM i Access for Windows on both the system and the PC. Installation and configuration are necessary on both the system and the PC.
• Logical partitions
  Logical partitions let you distribute resources within a single system to make it operate as if it were two or more independent systems.
• Data migrations
  This topic collection describes how to migrate data from one system or partition to another system or partition. When performing a data migration, the source system and the target system must have different serial numbers.
Appendix. Notices for software topics

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