

Visara

Master Console Center

Installation Preparation Guide

P/N 707132-001



Technical Support

Contacting the Visara Intellicenter

For US domestic customers, Visara provides technical support through its Intellicenter, 8:30 - 5:00 (ET) Monday through Friday at 888-542-7282.

Calls outside these hours are handled by automatic pager, so expect a delay. You can also call through our switchboard at 919-882-0200. For support outside the US, please contact the company that has sold the product to you.

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Contents

Technical Support.....	2
Contacting the Visara Intellicenter	2
Notices	2
List of Figures.....	5
List of Tables	5
About This Guide	7
Purpose of This Guide.....	7
Questions/Issues/Concerns.....	7
See Also	7
Organization	7
Chapter 1 Introduction and Checklist	9
What happens during MCC Installation?	10
Master Console Center Pre-Installation Requirements.....	11
Chapter 2 Site Preparation and Installation Overview	15
Site Preparation.....	16
Site Installation	17
MCC Installation	18
Critical Milestones	18
What's After Installation?	18
Task Monitoring.....	18
Startup/IPL	18
Health Monitoring	19
Chapter 3 Power Requirements.....	21
Power Requirements	22
Power Installation	22
Chapter 4 MCC Network.....	23
Overview	24
MCC Network Specifications	25
Physical Connections	25
Network Planning	25
Reliability Considerations	26
Diagrams of Example Networks	27
Dedicated MCC Network.....	27
Corporate Network Only	28
Combination Dedicated and Corporate Network	29
Chapter 5 Connectivity Interfaces.....	31
Types of Equipment that can be connected	32
Cabling Requirements.....	33
Device Interface Preparation	34

Mainframe Coax.....	34
OS Consoles	36
RS/6000	40
MVS Console Models/Colors - EBUS	40
Monochrome	40
Base Color	40
Extended Color	41
MVS Mainframe Console Operation.....	42
Missing Interrupt Handler (MIH) Problem with MVS.....	45
VTAM 327x console/terminal	46
Non-Mainframe System Consoles.....	46
Chapter 6 Preparation of User Interfaces	47
Thin Client Overview	48
Placement	48
User Account Info.....	48
MCC STARS MVS Agent.....	49
Overview	49
Planning For MCCSTARS Installation.....	49

List of Figures

Figure 1 Dedicated MCC Network..... 27
Figure 2 Corporate Network Only..... 28
Figure 3 Combination Dedicated and Corporate Network 29

List of Tables

Table 1 Power Requirements..... 22
Table 2 MCC Connectivity Chart..... 32
Table 3 Color Support Options..... 41

About This Guide

Purpose of This Guide

This guide is intended to help ensure a successful installation of the Visara Master Console Center (MCC). It outlines site preparation requirements and installation steps. Critical path milestones are noted because delays of these tasks directly affect the entire installation timeline, including the arrival of Visara personnel to the install site.

Questions/Issues/Concerns

For questions, issues, or concerns related to site preparation and installations please contact your Visara International Sales Representative.

See Also

For additional information, refer to the *Software Installation Guide*, which describes how to install the MCC software or update existing MCC software.

Organization

Chapter	Topic
Chapter 1 Introduction and Checklist	This chapter provides a brief overview of what will happen during the installation of the MCC hardware
Chapter 2 Site Preparation and Installation Overview	Provides a list of the basic steps involved in preparing for the MCC installation.
Chapter 3 Power Requirements	Provides details of needed power and installation of the power cable provided by Visara.
Chapter 4 MCC Network	Provides details of the TCP/IP network needed for communication between the MCC server and user interfaces.
Chapter 5 Connectivity Interfaces	Details the physical cabling and systems work required to prepare for the MCC installation.
Chapter 6 Preparation of User Interfaces	This chapter provides guidance for the customer in placing and providing cabling for the Thin Client / workstations from which the MCC is operated.

Chapter 1 Introduction and Checklist

This chapter provides a brief overview of what will happen during the installation of the MCC hardware, together with detailed requirements to be completed by the customer to ensure that installation is completed in a timely manner.

What happens during MCC Installation?

Most of the installation process is preparation; actual setup time of the MCC equipment is less than a day.

Many questions and issues may arise during this process. Please contact your Visara sales rep or the Visara customer service directly for assistance.

The physical preparation for the installation of the MCC consists of site preparation, console preparation, network preparation, cable installation, and power installation.

The MCC consists of both hardware and software. Physically, the hardware is mounted in a rack and is installed in the data center. The software runs on the MCC server and utilizes the hardware interfaces. Software installation is described in the *Software Installation Guide*.

Large MCC installations may require multiple racks. Please verify the physical configuration requirements with Visara customer services.

On installation day, the Visara technician will meet with the appropriate customer personnel to discuss any remaining questions. Following this meeting, the MCC will be unpacked and installed. If all pre-installation requirements have been met, the initial installation should take less than a day (time may vary due to extenuating circumstances).

Master Console Center Pre-Installation Requirements

The following procedure tells the customer how to prepare for the installation of the Master Console Center. It should also be used as a checklist to ensure each step has been completed. Each item should be signed off by a representative of the customer as it is completed, and a date and initials placed in the right two columns of the form. This identifies the person to whom questions should be directed if necessary. Please have completed checklists available on-site during installation.

Function to be performed	Date Done	Initials
1. Supply Visara with the name of your site's focal point person during site installation/customization. (This should have been done with the completion of the Installation Form.)		
2. Determine where on the raised floor the MCC will be placed.		
3. Arrange for an analog telephone line (and phone number) for the MCC modem.		
4. Obtain a RJ-11 telephone cord that will reach from the floor to the MCC. (A standard phone extension cord of 6' will normally suffice.)		
5. Arrange for work area space for each MCC unit's Thin Client / workstation(s).		
6. Assign an IP address to the MCC server and supply the proper <i>subnet mask</i> . (See <i>Chapter 4 MCC Network</i> for details.)		
7. Assign an IP address to each Thin Client / workstation and supply the proper subnet mask for each workstation. (See <i>Chapter 4 MCC Network</i> for details.)		
8. Supply the gateway IP address for each Thin Client / workstation if any will be located at sites other than the MCC server location site and/or if the workstations will be on multiple subnets. (See <i>Chapter 4 MCC Network</i> for details.)		
9. Assign the gateway IP address for the MCC. (See <i>Chapter 4 MCC Network</i> for details.)		
10. Supply the IP addresses to Visara. This should have been done on the Installation Form.		

11. Prepare the proper length Ethernet cables to attach the Thin Client / workstation(s) to your network.		
12. Assure power is available for each Thin Client / workstation (i.e. there must be a power strip within reach of the workstation).		
13. Check connectivity between all the proposed IP addresses assigned for MCC use (pinging in both directions is satisfactory).		
14. Prepare the proper length coax cables to attach the console(s) and printer console(s). DO NOT USE BALUNS.		
15. Prepare the proper length and type of cables to attach the "System console(s)" - please check that you have the proper cable		
Sites with MVS systems:		
1. Provide the ipaddress(es) for SCON units.		
2. Provide the TCP/IP port to be used for MCC server and MCCSTARS software. The default is port 2769		
3. Assign one non-SNA (327x) alternate console address for each LPAR the MCC will monitor.		
4. Update the MVS/VM software (e.g. MVS CONSOLxx member) as required.		
5. Check connectivity between the control unit(s) and the assigned addresses using a standard 327x terminal or TN3270 client to ensure they are properly defined.		
6. Supply a printout of the addresses to Visara in input format (e.g., for each MVS LPAR, supply the CONSOLxx member that will be used to IPL in an MCC environment)		
7. Supply a printout of the addresses to Visara in output format (e.g., for each MVS LPAR, supply the output of a "D C" command when the proposed console is active (in use).		
8. Assign one alternate "System Console" (for IPL/NIP) for each physical machine on which LPAR monitoring will occur.		
9. Update the MVS/VM software (e.g. MVSCP or HCD member) as required (e.g., MVS NIPCON addresses) to add in the "new System Console(s)" from which an IPL can be performed; for testing, the "new" System Console should always be the "alternate" (not the primary) console from which an IPL can be performed		

10. Supply a printout of the addresses to Visara in input format (e.g., for each MVS LPAR, give the MVSCP entry, HCD NIPCON entry, etc.).		
11. Supply Visara with a copy of the “IPL and SHUTDOWN PROCEDURES” for each LPAR the MCC will IPL. This is typically a manual for operators, and/or a listing of the steps necessary to perform some or all of these startup/shutdown actions).		
12. Supply Visara with a copy of the “SOFTWARE OPERATIONS PROCEDURES” for each LPAR the MCC will monitor. This is typically a manual for operators, and/or a listing of the steps that current automation takes in performing some or all of these daily operation actions).		
13. Identify and supply a list of all software to be monitored for each LPAR (e.g., for an MVS LPAR, use a “D A,ALL”, and check off those address spaces that are to be active at all times (typically all your started tasks, and potentially some batch jobs, especially if you run CICS, etc.))		
14. Identify the commands required to “start”, “stop normal”, and “stop abnormal” each task in question (e.g., “S IMSPROD”, “F IMSPROD,SHUT IMMED”, “FORCE IMSPROD,ARM”). If multiple commands are required (even if they must be issued on multiple LPARS), be sure to supply ALL THE COMMANDS. For example, it might be necessary to check that IMSPROD is down on LPAR X prior to starting IMSPROD on LPAR Y - this takes multiple commands).		
15. Identify current “operational automation” to be replaced (e.g., supply Visara with your “AUTOMATE” listings) and any special requirements you may have (e.g., “need to gather information from multiple hosts in order to make an automation decision”, etc.). Please supply the list in IEBCOPY format if feasible, rather than on printed hardcopy.		
16. If you want VTAM terminal emulation on the MCC server, please indicate the number of terminals required.		

Telnet/RS232 Consoles:		
1. Identify non-mainframe hosts you want to monitor/control (e.g., UNIX servers, AS-400s, etc.). (This was done with the completion of the Quotation Form.)		
2. Specify the method of desired communication between the MCC and each non-mainframe host (RS232 or TELNET).		
3. For each TELNET access, supply the IP address required for access.		
4. Verify that network connectivity exists between telnet hosts & the MCC.		
5. For each TELNET access, supply a user-account so the MCC can “log in”. This information must be available for Visara personnel at installation.		
6. If you want terminal emulation available at the Thin Client / workstation(s), please indicate the number and type (s) of terminals required.		
General (all consoles):		
1. Identify “new automation” procedures you would like performed.		
2. Supply Visara with a list of “trial objectives” so we can be sure your trial runs smoothly (e.g., “we are interested only in console consolidation”, “we’d like to see console consolidation, IPL, some level of automation”, etc.)		
3. Supply Visara with a list of trial USERIDs. These IDs should be from four to eight characters in length, and you should indicate whether each user is allowed to: <ul style="list-style-type: none"> ▪ “VIEW ONLY” just see, not alter. For example, no MVS COMMAND authority, etc.)), ▪ “OPERATE” (see and alter. For example, issue MVS Commands, or ▪ “OPERATE and ADMINISTER”. An administrator can add additional GROUPS and USERIDs within those groups. GROUPS control access authority levels. USERIDs control access to the system - each userid is associated with one or more groups. 		
4. Decide on “production” requirements. For example, do you want the MCC network separated from your normal network traffic? Do you need additional bandwidth and/or facilities? Do you have a backup plan? When will you need training?		

Chapter 2 Site Preparation and Installation Overview

This chapter outlines the main site preparation and installation steps to be completed. For questions, issues, or concerns related to site preparation and installations please contact your Visara Sales Representative.

Site Preparation

Site preparation activities are principally the responsibility of the customer; Visara will assist where appropriate.

Project Preparation

- Assign customer's personnel to the MCC installation and automation team(s).
- Establish goals and timelines, including determining which systems to interface with and their implementation order. Identify the systems to implement with highest priority.

Location preparation

- Determine where to place the MCC rack. Ensure the tile cutouts needed for cables are completed.
- Determine where to place the Thin Client / workstation(s).

Network preparation (Chapter 4 MCC Network)

- Determine how to implement the MCC network for the Thin Client / workstation(s).
- Determine what systems to connect to the MCC via telnet/VT100 connectivity.
- Determine IP addresses and subnets needed for :
 - MCC Servers(s)
 - Thin Client / workstation(s)
 - Each system accessed via telnet
 - Gateways for MCC & Thin Client / workstations(s)

Systems preparation (Chapter 5 Connectivity Interfaces)

- Determine interface needs and types: RS232/VT100, Telnet/VT100, SNMP Trap, Coax, etc.
- Generate mainframe consoles, including OS, system, NIP, and master configurations.
- Assign user accounts, particularly for UNIX and AS/400.

Site Installation

Site installation activities listed below are principally the responsibility of the customer; Visara will assist where appropriate.

Power installation (Chapter 3 Power Requirements)

- Run the appropriate service to the MCC server installation location.

Cable installation.

<p><i>Note:</i> This is not a complete list, see Chapter 4 MCC Network and Chapter 5 Connectivity Interfaces for more details.</p>
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- Run coax cable from each controller (3174 or other) port to the MCC rack installation location.
- Enable the MCC's IP address for remote client support on all HMCs.
- Run network cable from the appropriate systems (or a drop from the corporate network) to the MCC server installation location for telnet/VT100 access.
- Connect MCC to Network. Depends on network design decisions. Final requirement is Ethernet access from each Thin Client / workstation to the MCC server.
- Install analog phone line for the modem and phone.

MCC Installation

MCC installation activities listed below are principally the responsibility of Visara. See *Planning For MCCSTARS Installation* for more information.

- Setup and test MCC equipment.
- Connect and test system interfaces.
- Final configuration adjustments, such as additional user account creation, security, console/system naming.

Critical Milestones

Although installation of the MCC is usually a quick and pain-free event, missed milestones in the site preparation schedule will have a serious impact on the scheduling and subsequent success of the installation. It is Visara's goal to eliminate delay of and disruption on installation day through detailed and careful pre-installation preparation. Following is a list of critical milestones that will have an impact on the successful installation if incomplete

- MCC power outlet installation.
- MCC network cabling and address assignments for the MCC.
- Device interface preparation, particularly mainframe console gens and cable installation.

What's After Installation?

After the MCC installation steps are complete, the Master Console Center is installed and fully usable. The next steps depend on customer goals. Following are some suggestions from Visara.

Task Monitoring

One of the easier steps to implement next is task (job, daemon, or program) monitoring, including automated starting and stopping. Much of the automation for task monitoring is provided as example scripts by Visara. The customer needs only to set up the appropriate configuration files.

Startup/IPL

After Task Monitoring is implemented, it is relatively easy to complete full IPL automation since successful task startup is part of the IPL procedure.

Health Monitoring

Health monitoring of systems - utilization, disk space, etc. - can also be easy to implement with the example scripts provided by Visara.

Chapter 3 Power Requirements

This chapter describes the power supplies required by the MCC server. The customer is responsible for ensuring the available power meets the specifications.

Power Requirements

Table 1 outlines the power service requirements for various locations:

Location	Volts	Hertz	Amps
United States	125	60	20
Europe / Asia	220	50	15
Japan	125	60	20
Australia / Other: Setup as needed per site			

Table 1 Power Requirements

Power Installation

The following list outlines the power installation steps:

- The customer's electrician must run the proper voltage service with a junction box and a standard outlet to within 2' (0.5m) of the MCC server installation location.
- A Visara technical representative will contact the customer two weeks before the scheduled MCC installation to verify that the MCC power outlet has been successfully installed.

<p><i>Note:</i> Failure to install and test the MCC power outlet will delay the MCC installation.</p>

Chapter 4 MCC Network

This chapter provides requirements and specifications for the Ethernet network to which the MCC will be connected. It is the customer's responsibility to provide the appropriate network cabling.

Overview

The MCC is a client/server system. The communication between the MCC server and the user interfaces (Thin Client / workstations) occurs over an Ethernet network running TCP/IP. Generally, the customer's network team assigns the IP address for each piece of equipment. IP addresses are needed for each component of the MCC system: the MCC server, each Thin Client / workstations and may include SCONs or iCONs (whether in the data center or located at a remote location). Due to the critical nature of the MCC system, Visara recommends using a separate subnet for the MCC servers and primary Thin Client / workstations

The MCC network connects the Thin Client / workstations to the MCC server. The network can be a simple LAN configuration or a large WAN configuration; it depends on the customer needs. For example, a workstation placed across the hall will operate in the same way as a workstation located 2000 miles away with the appropriate network in place.

The server is an Intel based server running RedHat Linux. The user interface on the Thin Client / workstation is X Windows/Motif.

MCC Network Specifications

Physical Connections

RJ-45 terminated must be run to each Thin Client / workstation, and to the location of each MCC server. The MCC server may be plugged into any hub/switch/router as will any Thin Client / workstations that are connected directly to the MCC (instead of through the customer's corporate network).

Network Planning

Visara recommends using a separate IP subnet large enough for all MCC units, workstations, and SCON/iCON units.

<p><i>Note:</i> Devices connected to the MCC (for example, UNIX hosts to be monitored through telnet) need not be on this same subnet, but the MCC must be able to connect through the network to them.</p>

If the IP addresses of the MCC server(s) and all user interfaces can be supplied to Visara by the customer before shipment, the MCC can be pre-configured with this information prior to shipping instead of configuring on-site.

Reliability Considerations

Even the most scrupulously designed network can fail. Because of this, the MCC has been designed to continue running even if communications are lost to all attached user interfaces. All scheduled scripts and automated rules will continue to run. However, users may be unable to interact directly with the consoles controlled by the MCC.

The network design issue of Thin Client / workstation connectivity - directly connecting any Thin Client / workstation to the MCC server or using the corporate network - must be carefully considered and resolved.

Using only the corporate network has advantages and disadvantages. One of the largest advantages is ease of use – the network is already there. One of the largest disadvantages is stability: service can be easily disrupted by normal use, such as network traffic overloads or simple maintenance mistakes.

Using only a dedicated network also has advantages and disadvantages. One of the largest advantages is isolation – it is difficult for the outside world to affect it. One of the largest disadvantages is installation - new wires, new routers, and other additional hardware will be required. In the end, a combination of using both the corporate network for non critical stations and the direct connection is usually the best solution.

For fault tolerance considerations, Visara recommends directly connecting at least one workstation to the MCC network hub. If the corporate network fails in any way, the dedicated MCC network connection between the workstation and the MCC network hub is still up, and console access is fully available with that workstation.

Diagrams of Example Networks

Dedicated MCC Network

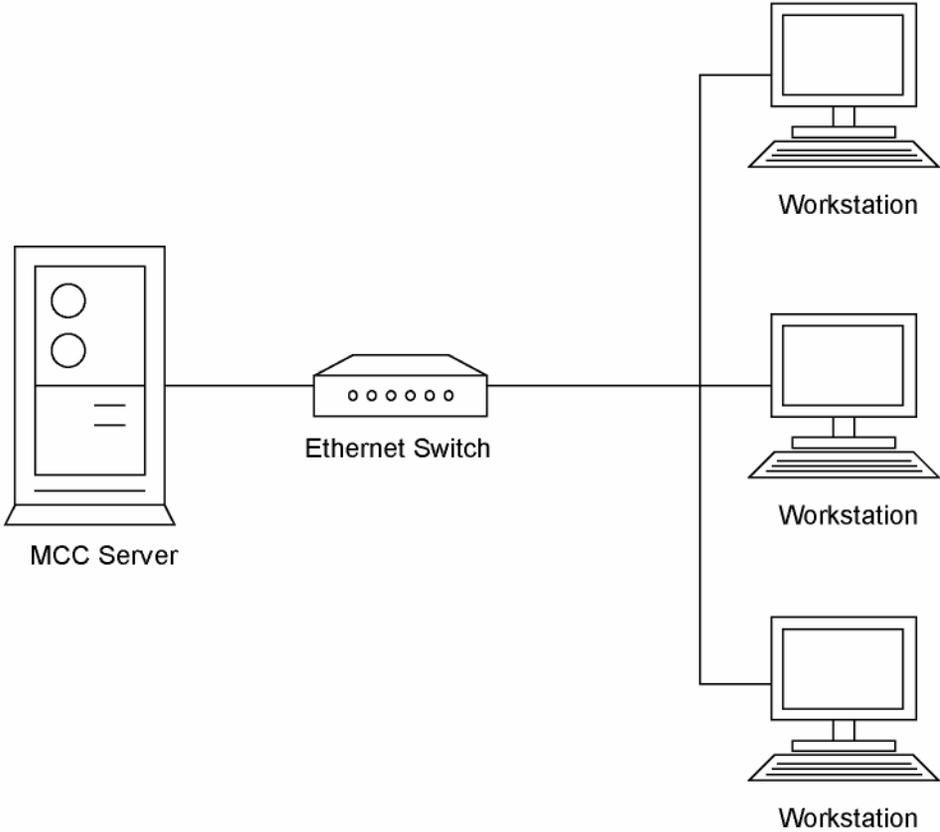


Figure 1 Dedicated MCC Network

Corporate Network Only

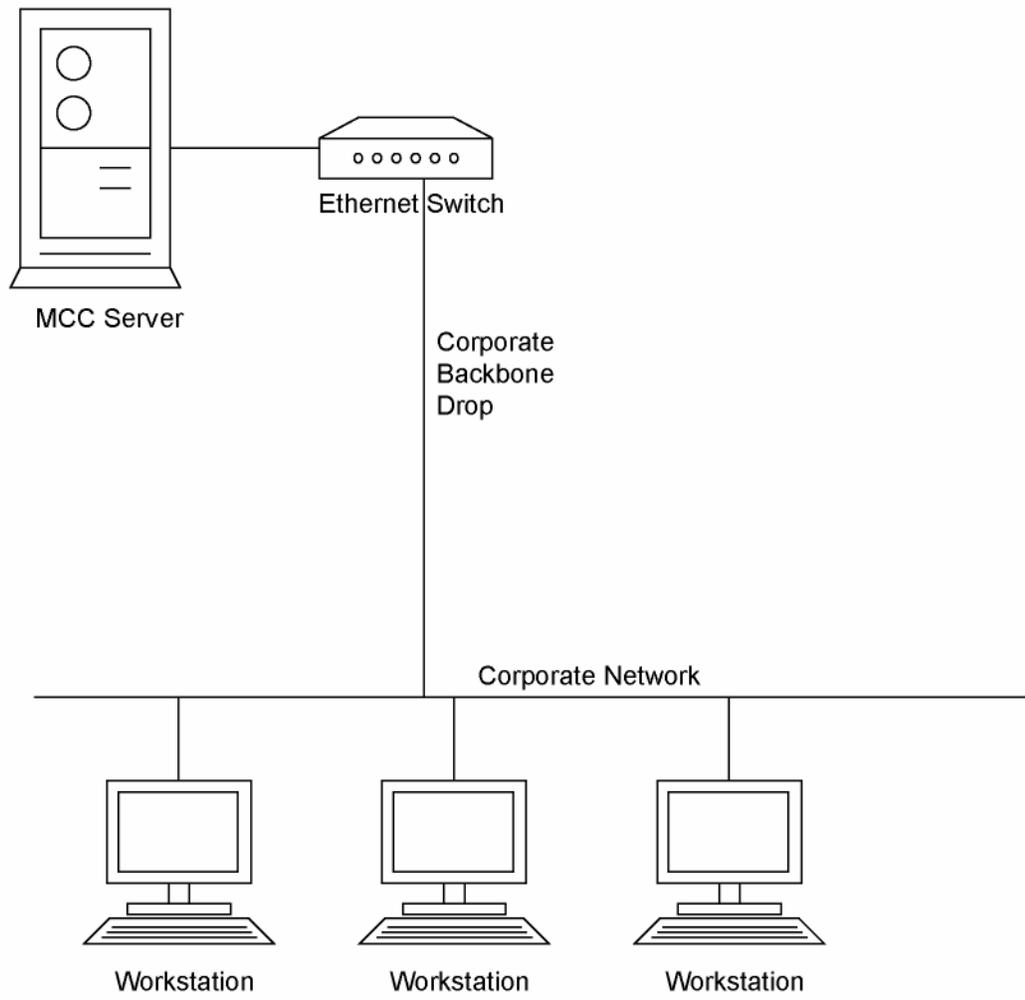


Figure 2 Corporate Network Only

Combination Dedicated and Corporate Network

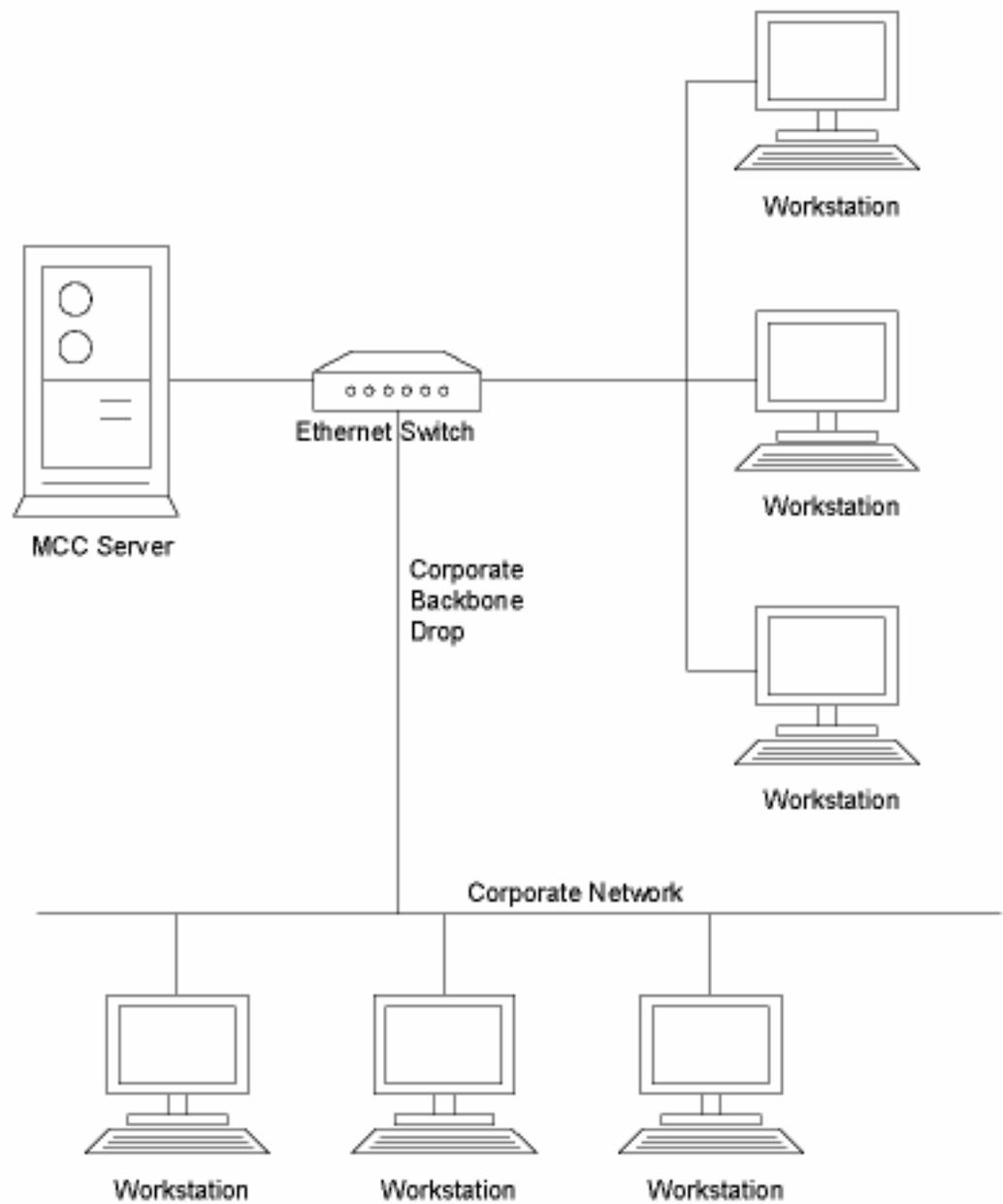


Figure 3 Combination Dedicated and Corporate Network

Chapter 5 Connectivity Interfaces

This chapter provides an overview of preparing the console interfaces required for the MCC. The customer is responsible for these activities, with assistance from Visara personnel where necessary.

Types of Equipment that can be connected

Table 2 lists the various systems from which the MCC can receive information:

System	How to Connect to MCC	Notes
Windows NT	telnet, VNC	Requires additional telnet service that is not supplied with Windows.
Unix	telnet	
Tandem	telnet	RS232 requires Tandem AWAN server.
VAX/VMS	telnet	
AS/400	VT5250	Requires iCON unit
Novell NetWare	telnet	May require an IP package installed on the server.
Mainframe HMC	browser	Requires HMC agent on the MCC server
Mainframe 3270	TN3270	Requires SCON unit, or other TN3270 interface device

Table 2 MCC Connectivity Chart

Cabling Requirements

Each console or session to be interfaced to the MCC must have TCP/IP link installed from the point of origin to the MCC server. The point of origin may be, for example, a 3174, an HP-9000 server, or some other TCP/IP controlled device. Examples of consoles include:

- A **hardware management console**, to select an LPAR to IPL, for SAD display, etc.
- A **system console**, to monitor a system's activity and messages.
- A **VTAM console**, for access to TSO, IMS, IDMS, CICS, etc.
- A **UNIX console**, to BOOT and/or monitor a system's activity and messages.
- A managed network switch or remote power device, for monitoring and control of other functions.

Examples of acceptable console interface cables are:

- Coax cable run from 3174/3274 ports.
- Coax cable run from a mainframe hardware, and/or system console port.
- TCP/IP cable run from a UNIX server.
- A network cable for TELNET and/or Browser access.

All cables should have at least four (4) feet of slack at the MCC rack location (measured vertically up from the floor). For correct installation and proper management, all cables **MUST** be identified and labeled with a unique identification scheme. The scheme can be as simple as a unique number for each cable. Many customers utilize a combination of system name, console id, and/or system port.

Note: Failure to install and test the Interface Cabling prior to arrival of the MCC equipment will delay the MCC installation. Coax should be tested using "live" 327x consoles/printers. TELNET connections should be tested with TELNET or PING commands.

Device Interface Preparation

Mainframe Coax

The first guideline when gen'ing consoles for use with the MCC is "don't do anything different than you do today when gen'ing for standard operating system and/or VTAM consoles". It is simplest to pretend you are gen'ing for real (physical) 327x and NIP consoles. Thinking of the process this way will simplify your understanding of the process of getting the MCC up and running.

However, the instructions that follow (especially for the CONSOLxx member of SYS1.PARMLIB for MVS systems) show certain parameters that are required for proper operation. It is not necessarily possible just to "clone" an existing CONSOLE definition statement from the existing CONSOLxx member when making a console that will work properly with the MCC.

The second guideline when determining the number of mainframe operating consoles for use with the MCC is "1 per physical CPU", plus "2 per MVS LPAR", plus "1 per VM", plus "1 per DOS", plus "1 per VTAM console". The only exception occurs when multiple VTAM connections are supported by Virtual Terminal products such as TPX and Super-Session. In this case, the number of VTAM consoles required (if any) depends on how many X-windows terminals will be in use simultaneously. For example, using one coax port for VTAM 327x access when you have four X-terminals attached to the MCC may be insufficient, as only one X-Terminal user can use the coax connection at a time; they can all share it, but serially.

To any mainframe operating system (once IPL'd), the MCC simply appears to be one or more 327x type consoles. For example, the MCC SCON units are loaded at initialization time with firmware that can emulate a 327x device protocol, a hardware console (e.g., 3090) protocol, and so on. Each such emulation acts just like a dumb terminal or printer. Therefore, configure the interfaces similarly to an operator's OS console, printer console, or VTAM terminal as appropriate (in other words, as a 327x). If the MCC is required to IPL, the MCC can appear as a "hardware console". The MCC hardware console support requires a separate connection, as do all real (physical) hardware mainframe consoles, regardless of the connection type. However, only one hardware console is required per physical CPU, whereas a pair of consoles (one I/O console and one printer console) is required for each MVS LPAR, or one integrated I/O console for VM LPAR and/or DOS LPAR).

Most installations require adding additional consoles during the test phase, so as not to disrupt current operations. This requires updates to SYS1.PARMLIB's CONSOLxx member(s) and system's related NIPCON information. NIPCON is the console that processes the NIP (nucleus initialization program) CONsole messages, such as SET SYSTEM PARAMETERS.

Each MVS LPAR needs at least one MVS console for full bi-directional functionality. Remember that creating or modifying consoles requires system oriented definition updates in the appropriate dataset(s), and an IPL for them to take effect. For example, on MVS update MVS/CP and/or HCD for 327x I/O definitions and/or NIPCON, and the CONSOLxx member of SYS1.PARMLIB. Alternatively, remove existing cables for existing consoles - HARDWARE (for IPL), place them in the MCC ports instead of in the existing equipment.

When defining consoles, be sure to set the appropriate values, using the examples below

IEF403I and IEF404I may be used by the MCC to monitor MVS production task status. Scripts frequently use these messages (among others) to determine when a "state change" has occurred in a task that is being monitored. If the messages did not appear because of an incorrect CONSOLxx definition, MPF suppression, automation product suppression (OPS/MVS, AUTOMATE, etc.), or user exit (for example, IEAVMXIT) suppression, the "state change" would go undetected.

OS Consoles

Following are examples and explanations of how to define OS consoles to MVS, that is, the 327x console ports for MVS.

Definition of terms used

- **SYSTEM CONSOLE.** A console used by the running operating system (for example, MVS, VS, DOS) to communicate with the operator using either an I/O console (327x) or a “printer console” (3286-2/3287). The I/O console is used by system operators to issue START, STOP (P), MODIFY (F) and similar commands. The “printer console” is used as a hardcopy device (printed material if the device is real), or as a line-by-line output medium (if the device is virtual or emulated, for example, the MCC system).
- **NIP CONSOLE.** A console used during the IPL of an operating system (for example, MVS, VS, DOS) to respond to messages necessary to get the system into a mode where test/production work can be accomplished.
- **A NIP CONSOLE is not necessarily a SYSTEM CONSOLE.** However, it may be the same console if its device address appears in SYS1.PARMLIB’s “CONSOLxx” member (MVS). Therefore, if you want to IPL from the MCC (as operators do from their 327x SYSTEM CONSOLE), add the requisite NIPCON and CONSOLxx entries. Otherwise, leave out the NIPCON entry.
- **CONSOLxx member of SYS1.PARMLIB.** A parameter library member used at MVS initialization time to identify “I/O and printer consoles”, among other options.

Defining the NIP Console(s) and System Console(s)

Be sure the NIP console(s) and/or system console(s) are defined to MVS/CP and/or HCD, depending on the release of MVS. Because of the MVS console requirement, the console used by the MCC must be defined in the MVS/CP and/or HCD, as follows:

1. Define the 327x console device(s) in the *I/O section* as a 3270-x, where, or “X”, “2”, “3”, “4”, or “5” if using an SCON; for example, 3270-X).
2. Define the console device again if you intend to IPL from it from the MCC workstation (that is, to answer “SET SYSTEM PARAMETERS WTOR, etc.), but this time, in the NIPCON section. This step applies only to consoles, not to “printer consoles”). For testing, place the MCC 327x NIPCON second in the list, so that you can check functionality by powering off the first device in the NIPCON list. Once working properly, switch the order of the first two entries.
3. Define the console in SYS1.PARMLIB member CONSOLxx as MVS System Consoles.

Examples of I/O Definition Entry

An I/O definition entry for an “I/O console” (a 327x type of SYSTEM CONSOLE):

```
/Number Type +      OS      1--- 2--- 3--- 4--- 5--- 6--- 7---
8---
...
_019E   3270-X      Y      0180
...
etc.
```

A NIPCON definition entry for an “NIP console” (a 327x type of SYSTEM CONSOLE):

```
/ Order  Device  Device Type
   Number Number
     2    019E   3270-X
...
etc.
```

where nnn represents the first entry in the NIPCON list. For testing, an existing device that was used for NIP prior to the installation of the MCC.

Note: During initial product installation and testing, the MCC NIP CONSOLE should not be listed first in the NIPCON list. It is preferable to list the MCC NIP CONSOLE second. In this way, during testing, you can power off the current MVS NIP CONSOLE (the one that is first in the NIPCON list). This forces MVS to select the next NIP CONSOLE in the list, which will be the MCC-attached NIP CONSOLE). This allows IPL to occur from that console, which is the X-terminal attached to the MCC.

Note: The NIP CONSOLE and the I/O SYSTEM CONSOLE can be the same device. If so, only one MCC coax port is required. If not, two MCC coax ports are necessary. Using a single port is recommended, since there is no degradation. Using two ports achieves no performance gain and is less cost effective.

1. Ensure the NIP console(s) and/or system console(s) are defined to the CONSOLxx member of SYS1.PARMLIB (for MVS) or other appropriate libraries for VM and/or DOS. An MVS example follows:

In SYS1.PARMLIB(CONSOLxx), add the definitions for the I/O console(s) and the Printer console(s). In the examples above, the I/O console is device address 19E and the Printer console is device address 19F. The NIP console address is the same as the I/O console address (19E), so it only needs to be defined once. Assume, for this example, that I/O console address 700 is the MASTER CONSOLE, and is also the first in the NIPCON list. Also note that address 700 was not shown in the preceding examples. Here is the I/O console entry for the MCC, which also happens to be the NIP console:

```

CONSOLE DEVNUM(19E)
NAME(MCCCON)1
ALTERNAME(othercon)
AUTH(MASTER)2
MFORM(T,S,J)3
MONITOR(JOBNAMES-T)4
DEL(R)5
ROUTCODE(ALL)6
UNIT(3270-X)7
USE(FC)
UD(Y)
AREA(10)
CON(N)
SEG(19)
RNUM(19)
RTME(01)

```

Refer to footnote 7 if you want **4-color** support for consoles.

Code **BOLD** information as shown (check footnotes) – very important for footnote 7.

Non-Bold information is here for reference purposes only. Code as appropriate for your account.

- 1 Note that consoles can be “named” as of MVS 4.2. Naming the consoles saves time when coding scripts, as described in the Scripting Guide). Where possible, the name chosen should be the same on EVERY LPAR with which the MCC will communicate. For example, if you have 10 LPARS and have chosen the name “MCCPRN”, use this name in the SYS1.PARMLIB(CONSOLxx) member on EVERY LPAR. Some restrictions apply in a SYSPLEX environment – see MVS Initialization and Tuning Reference (CONSOLxx).
- 2 Note that the console operator will not be able to issue FORCE, VARY MSTCONS, and similar commands, with any less authority on SP4 (or greater) systems. This does not make the console the MASTER, it only grants MASTER authority. Since there is only ONE master authority terminal in systems prior to SP4 (specifically SP2 (MVS X/A)), the MCC console should be the MASTER CONSOLE. Coding AUTH(MASTER) on any other console is invalid - you must code AUTH(ALL) or AUTH(INFO) on those consoles). In any case, when the MCC console is not the MASTER, important messages may not appear when MVS disabled message services and/or automation products (e.g., OPS/MVS) direct important highlighted messages at the MASTER CONSOLE only (or any other console for which the MCC does not qualify for receipt of specifically directed messages).
- 3 Scripts distributed by Visara as well as most scripts shared by users depend on the first three words of a message being TIME, SYSTEMID, and JOBID (where the fields are available (e.g., no JOBID is available for an IEF403I on a job started with “SUB=MSTR”). Only required on printer ports.
- 4 Task monitoring script(s) distributed by Visara depend on receiving IEF403I and IEF404I messages via the “printer console port” (when the connection is via COAX). MONITOR(JOBNAMES) causes MVS to send these messages to “printer consoles”, assuming they are not otherwise suppressed. Task monitoring scripts may not operate successfully without this specification.
- 5 Although any console mode is acceptable, it is “best” to start in “ROLL MODE” so the console does not back up with “Non-Deletable messages” especially during initial product testing. If you choose to use “RD”, the console(s) should (normally) be attended. However, MCC scripts can prevent console backup by setting the appropriate consoles to ROLL MODE if the consoles begin to back up (IEA404A, IEA405E).
- 6 It is “best” to send all non-suppressed messages to the MCC, so that scripts will not miss any messages. Alter route codes (if desired) after initial product testing.
- 7 Query support allows this specification. The EBUS settings in SYSTEM.CFG (see the *Administration Guide*) allows specification of the desired model (model 2 or 4 are supported on a CBUS on a MCC; models 2, 3, 4, or 5 are supported on an EBUS on a MCC). See Color Support on page 40.

RS/6000

The default terminal type for AIX on the RS/600 machine is “dumb”. However, the MCC only supports VT100 emulation, which can cause display and key problems. Ensure that any user who wishes to log on to AIX from the MCC has the TERM variable set to VT100 by their login profile. (Generally, in the file ~/.profile, but this can depend upon the shell set for that user.)

MVS Console Models/Colors

Three types of color support are provided:

- Monochrome (MONO)
- Base Color (4-color)
- Extended Color (7-color)

Monochrome

Monochrome displays data in ONE basic color (most vendors used green, Visara recommends blue as easier to view). MCC supports a minimum of three colors:

- Blue – standard messages
- White – high-intensity messages and WTORs
- Green – the command input area at the bottom of the screen.

Monochrome mode provides a mixture of 3278-3279 features.

Consequently, the MCC’s system.cfg file must be set for model 2, 3, 4, or 5. The CONSOLxx UNIT parameter must be set for -2, -3, -4, or -5 (EBUS). See Table 3 for details.

Base Color

Base color provides four colors, supported with standard 3270 attributes (high and low intensity mixed with protected and unprotected). For four color displays (red, white, green, and blue), set up the MCC’s system.cfg file for model 2 (only), and the CONSOLxx UNIT parameter for 3279-2A or 3279-3A. There is no four color support for model 4 or model 5 terminals.

Extended Color

Extended Color provides seven colors, supported with an Extended Data Stream by Extended Attribute Bytes. The colors available are red, white, green, blue, yellow, pink, and turquoise. MCC supports seven color “extended data streams.” If you require seven color support, set up the MCC’s system.cfg file for model 2 or 3, and the CONSOL_{xx} UNIT parameter for 3279-2B or -3B. There is no seven color support for model 4 or model 5 terminals.

Model to emulate	Color Support	MVS CONSOL_{xx} entry	System.cfg EMULATION = value
Model 2	MONO	3278-2	327X-2
Model 2	4-Colors	3279-2A	327X-2
Model 2	7-Colors	3279-2B	327X-2
Model 3	MONO	3278-3	327X-3
Model 3	4-Colors	3279-3A	327X-3
Model 3	7-Colors	3279-3B	327X-3
Model 4	MONO	3278-4	327X-4
Model 4	4-Colors	No support	No support
Model 4	7-Colors	3270-X	327X-4
Model 5	MONO	3278-5	327X-5
Model 5	4-Colors	No support	No support
Model 5	7-Colors	3270-X	327X-5

Table 3 Color Support Options

Note that the “suggested” CONSOL_{xx} entry in the preceding tables can always be replaced with 3270-X⁸. However, this results in the most color possible, based on the EMULATION= operand. Setting 3270-X in the CONSOL_{xx} member for any attached EBUS console will result in 7-colors, regardless of the EMULATION= operand setting.

⁸ The Control Unit (i.e. 3174) must support Read Partition Query. In addition, if you plan to substitute a REAL terminal/device (for testing) in addition to plugging into the SCON, the terminal/device must support Read Partition Query. The SCON has this support built in.

MVS Mainframe Console Operation

Operating MVS system consoles in a MCC environment is no different to operating MVS system consoles in a non-MCC environment. However, a review of common commands used to control consoles may be helpful, since MCC consoles frequently include “extra” consoles not necessarily seen in MVS console setup. The MCC also includes new equipment that can cause operational confusion, simply because operators are unfamiliar with it.

As with any MVS console, customer personnel assign addresses, update MVSCP/HCD, and update the CONSOLxx member of PARMLIB for MCC consoles, just as for standard 327x consoles. It is imperative that operations personnel are informed by the customer of the assigned addresses and operational procedures, if they vary from standard console operational procedures. This ensures that the consoles can be properly managed by operations personnel or automation. This activity should be completed by customer personnel prior to devices being plugged into the MCC unit, since the devices will become active shortly afterwards.

Most MVS systems utilizing the MCC will have “printer” consoles assigned. A printer console does not have a keyboard, and therefore *may* be designated as an OUTPUT ONLY device. OUTPUT ONLY console device commands are preceded by “O-” (that is, the letter O followed by a dash). For example, to vary a standard (keyboard attached console) online, enter:

V xxx,ONLINE (use this format for I/O consoles)

If problems occur, try entering the first format of the command. If it doesn't work, try the second format.

The same syntax applies to OFFLINE commands:

V xxx,OFFLINE (use this format for devices to be used as I/O consoles)

MVS defined consoles (see SYS1.PARMLIB member CONSOLxx) are not active as consoles until they are “varied” into console status. Varying a console ONLINE does not make a SYS1.PARMLIB defined (see member CONSOLxx) console recognizable to MVS as a console. To do this use another form of vary command, as follows (this should only be issued after the device is ONLINE to MVS):

V xxx,CONSOLE (use this format for I/O consoles)

The commands above should be issued once the device is in the ONLINE status. MVS takes care of this during IPL, but console manipulation after IPL requires manual or automated commands (as previously shown).

In addition, certain error situations require additional MVS console commands. The following are a limited set of commands, but are those likely to be most useful in a MCC based environment:

V xxx,OFFLINE,FORCE (use this format for I/O consoles that refuse to come offline with a **V xxx,OFFLINE** command)

Note: MVS will produce a WTOR to check if you intend to **FORCE** this device offline. Respond “YES”.

Once the console is offline due to one of the prior commands, a standard “**V xxx,ONLINE**” will not suffice. It is necessary to issue:

V xxx,ONLINE,UNCOND (use this format for I/O consoles that have previously been taken offline with a **V xxx,OFFLINE,FORCE** command)

In certain cases (I/O errors due to cabling problems, etc.), a console (I/O or OUTPUT ONLY) may “back up”. MVS makes the console operator aware of this situation by one or more messages, for example, **IEA404A**, **IEA405E**. These messages state that a particular console is reaching or has reached its buffer limit. As a result of this, a number of messages are “queued” to be delivered, but are being “held” by MVS pending resolution of the problem. In a MCC environment, it is likely that the CONSOLE in question is nowhere near the console operators. In this case, as with standard MVS, it is necessary to “relieve” the backup before the system begins to deteriorate, causing undesirable results due to waits, timeouts, and abends. This action must be taken immediately, so that potential problems that could result from this backup are averted.

The simplest action to take is to issue a VARY online (see previous examples) to get the console out of console status. This command returns the device to MVS device online status, and MVS no longer recognizes the device as an MVS console. However, it still recognizes the device as being capable of becoming a console through a VARY console command. The “backup” condition is alleviated immediately, through re-routing or simple elimination of the messages. If the messages destined for the “backed up” console must be “redirected” to a “live console” (one that is currently functioning properly), issue the console redirection command; for example,

```
K Q,R=nn|name|HC{,L=cc|name}
```

Where nn is the “id” of the console device to which the “backed up” messages are being routed. In the unlikely event this command is being issued from the “backed up” console itself, the **L=** keyword and its operand are not required. MVS consoles have ids; they may or may not have names.

Use the MVS command “D C” to see all the consoles that are currently assigned. Enter this command from the MASTER console, or the console on which the message indicating that a console was “backed up” appeared. The “numbers” in the left-most portion of the line displays are the console ids. The numbers that follow the “/” (if any) are the alternate console ids. These are the ids of the console(s) that will be used to receive messages if the console whose id (to the left of the “/”) fails. At the same time, check the **NBUF=** value. A number that is in the hundreds or thousands normally indicates a problem, especially if a “backed up” message has appeared. It is the console with the high **NBUF=** value whose id is required if opting for the “**K Q**” type recovery. Now, assuming the console that is backed up has an id of 03, and the working console has an id of 01, issue:

```
K Q,R=01,L=03
```

The messages that were backed up on console 03 will now be presented on console 01. Earlier, we stated that issuing a VARY ONLINE was an easy escape from the backed up problem. If you didn’t issue the VARY ONLINE command prior to issuing the “K Q” command, try issuing it after the “K Q” command. If a console is backed up, there must be some sort of problem (for example, with a cable or controller). Issuing a VARY ONLINE command causes the console to go “out of service”, and the alternate console (if any) begins to receive the messages originally destined for the out of service console. Issuing the “K Q” command alleviates the problem, but it is likely that manual intervention will be required to fix the problem. If so, the console should be put ONLINE (or taken OFFLINE) until the problem is resolved, ensuring another backup does not occur during problem resolution. Issuing the “K Q” prior to the offline command guarantees that the messages that were backed up are not be lost, assuming the **R=** console is available.

Missing Interrupt Handler (MIH) Problem with MVS

All MCC installations monitoring MVS systems should create or update their SYS1.PARMLIB (or the equivalent PDS) member IECIOSxx, where xx is a 2-byte EBCDIC field (numbers and/or letters). If this update is not made, Missing Interrupt Handler (MIH) errors will be generated. The update should contain at least one "card image" that (starting with the letters MIH in column 1) looks like this:

```
MIH TIME=00:00,DEV=(xxx)
```

Or

```
MIH TIME=00:00,DEV=(xxx,yyy,zzz,etc.)
```

Replace the lower case letters by the device address or addresses of the MCC printer port, for example:

```
MIH TIME=00:00,DEV=(711)
```

Or

```
MIH TIME=00:00,DEV=(711,715,72F)
```

This change stops MVS from presenting a "pseudo device end" for the MCC printer port, which takes it out of service. When the MCC presents the "real device end", it is once again ready to receive printer port bound data.

To have this change take place immediately, enter the following on an MVS (Master or Master authority) Console:

```
T IOS=xx
```

To have the settings in place for EVERY IPL, ensure the IEASYSxx member of SYS1.PARMLIB contains a card image that looks like this:

```
IOS=xx
```

where xx represents the two EBCDIC characters appended to the name of the IECIOSxx member.

It is also possible to add the MCC consoles into the list, but only after MVS has presented a "missing device end" message for a MCC Console. This happens rarely compared to a printer, since the printer is usually an output only device. Consequently, it is assumed a printer has "real" paper in it, and will take some time to dump the data in the device buffer onto the printer's paper.

VTAM 327x console/terminal

A VTAM console/terminal is a 327x type device

Define VTAM consoles in the same way as OS consoles, as described earlier. This time, instead of updating CONSOLxx, simply update the VTAM definitions or pull existing coax connections over to the MCC.

This type of session allows a user to log into TSO, CICS, IDMS, IMS, JOBTRACK, CA-7, etc., from the MCC.

Non-Mainframe System Consoles

Telnet

Consoles, for example, UNIX on an HP-9000, AIX, AS400, can be reached by telnet.

Advantages? No additional connections on the MCC unit.

Disadvantages? No ability to take the UNIX box to single user mode or halt the CPU. Loss of IP connectivity (or an intermediary WAN connection) means loss of telnet to the devices. Also, telnets have an adverse affect on performance for both the MCC and the monitored host.

RS232

Consoles can also be reached by RS232 connections from a terminal server using VT100 or 3151 emulation.

Advantages? Ability to drop the UNIX box to single user mode or fully halt it. The box need not be up and running for RS232 to reach it. The network is not used for local attachments; however nailed modem and/or WAN connections may use it for remote attachments. No performance loss will result to the MCC or monitored host.

Disadvantages? Additional connections required to the MCC unit. The terminal servers typically use RJ45 connectors, so cables are required to convert from RS232 to RJ45.

Chapter 6 Preparation of User Interfaces

This chapter provides guidance for the customer in placing and providing cabling for the Thin Client / workstations from which the MCC is operated.

Thin Client Overview

The Thin Client is a user interface workstation to the MCC. Additional Thin Clients can easily be added at any time in the future.

Placement

Once the initial quantity of MCC workstations are determined, consider the following placement issues:

- The customer must determine how many of the MCC workstations will be directly connected to the MCC network hub. If any of the MCC workstations are connected directly, do not exceed the Ethernet UTP wiring limitation of 100 meters. The customer must run Category 5 Ethernet cable between the MCC server and the MCC workstations, minimally leaving 6' of slack at the MCC rack location (measured vertically up from the floor). Ensure you label each cable.
- MCC workstations that are connected to the MCC via the customer's corporate network can be placed at any location there is network access. This requires a corporate network drop to the MCC hub.
- For additional network information, refer to Chapter 4 MCC Network.

Note: For network fault tolerance, Visara recommends connecting at least one workstation directly.

Note: Failure to install and test the Ethernet cabling will delay the MCC installation.

User Account Info

At this point, you can start planning user account information. A user is any person, group, or location that will have access to the MCC. The minimum information needed to start a user account is a user name, password, and MCC access rights. The system administrator can add and edit user account information at any time. Through the security editor in the MCC GUI, the administrator also can assign specific permissions to user groups.

MCC STARS MVS Agent

Overview

MCCSTARS is an agent (authorized program) that runs on your z/OS systems to ensure that all MVS high priority messages are sent to the MCC server as alerts. It also monitors Delete Operator Message actions to see when alerts can be deleted. z/OS systems normally produce only a few messages a second. Unfortunately, during some outages and critical situations hundreds of messages a second may be produced. This is precisely when it is critical for the alerts to appear on the MCC alert window.

By default, MCCSTARS uses information provided by the issuing program about each message (descriptor codes). Messages flagged as action required or requiring operator response is automatically sent to the MCC server. There a user written script can decide whether the message is to be ignored, cause an alert, issue an SNMP trap to another system and/or whether an Email is to be sent. As the issuing program indicates that the required action is complete, the alert is automatically deleted.

In addition, messages may be filtered on z/OS. Here some action required messages may be ignored or some informational messages may be sent to the MCC server to generate alerts. For example, a remote printing package may issue an action required message when a remote laser printer runs out of paper. Since this problem is typically handled by remote users, it may be desired to filter out these alerts on z/OS, before sending them to the MCC server. Another example might be the production CICS system. z/OS will produce an IEF450I job ended message when CICS PROD ends. You may wish to forward this message to the MCC server so that an alert can be produced.

Typically, MCCSTARS is installed before the MCC server is installed. Visara suggests that the default settings be used, initially, so that all action messages cause alerts. As you become more familiar with MCCSTARS you may wish to modify the `mccstars_exit.scr`, provided, to enhance your environment. Finally, if desired modify the filters on z/OS to suppress messages or turn informational messages into alerts.

Planning For MCCSTARS Installation

Contact Visara technical support for the MCCSTARS installation materials and browse the MCCSTARS Installation And Administration Manual. Several MVS data sets are provided in TSO transmit format, including a PDSE load library, a parameter library and a MCCSTARS Started Task cataloged procedure.

Many customers install and start running MCCSTARS before the MCC server is installed. MCCSTARS must be started after TCPIP and Unix System Services. This can be insured by putting an entry into your TCPIP PROFILE data set. The user ID it runs under must have an OMVS segment. Further information is available in the MCCSTARS Installation and Administration Manual.

