hp AlphaServer ES47/ES80/GS1280

Installation Information

Revision 4.0

This help file covers the installation of both the cabinet and pedestal forms of the hp *AlphaServer ES*47, the *ES*80 and all models of the hp *AlphaServer GS*1280.

May 2004

Regulatory Notices for Series ET2003

FCC Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (i.e., personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user. The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC ID on the label. Class A devices do not have an FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

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

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC rules and regulations.

Declaration of Conformity for products marked with the FCC logo – United States only

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

For questions regarding your product, contact:

Hewlett-Packard Development Company, L.P. P. O. Box 692000, Mail Stop 530113

Houston, Texas 77269-2000 or, call

1-800- 652-6672 (1-800-OK COMPAQ)

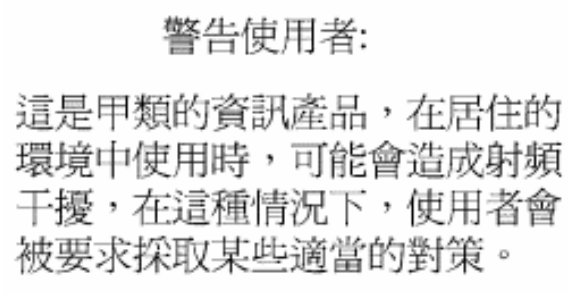
For questions regarding this FCC declaration, contact:

Hewlett-Packard Development Company, L.P. P. O. Box 692000, Mail Stop 510101

Houston, Texas 77269-2000 or, call (281) 514-3333

To identify this product, refer to the part, series, or model number found on the product.

Taiwanese Notice



Japanese Notice

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Canadian Notice **(Avis Canadien)**

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN55022 (CISPR 22) – Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) – Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) – Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) – Power Line Flicker
- EN60950 (IEC60950) – Product Safety

Table of Contents

Chapter 1 Overview

The *AlphaServer ES47, ES80, and GS1280* are systems built around HP's *Alpha* chip technology. The latest version of this chip now includes inter-processor ports, an I/O port, and two memory controllers. With this design, it is possible to build machines without a system bus or switch because processors can communicate directly to other processors in a mesh of processors. An I/O chip with four I/O ports was developed to form the bridge between the CPU and three PCI/PCI-X buses and an AGP bus

These building block components are placed on building block modules which are placed in building block drawers. Two CPUs are placed on a dual processor module. The I/O chip, known as the IO7 chip, is placed on an I/O riser module. The dual-processor module is placed in either a 2P drawer or an 8P drawer. The I/O riser module is place in either a standard I/O drawer or a high-performance I/O drawer.

It is the drawers and modules that make it possible to build systems with from 2 to 64 processors. When 2P drawers are used, a system with up to 8 processors can be built. When 8P drawers are used, a system with up to 64 processors can be built.

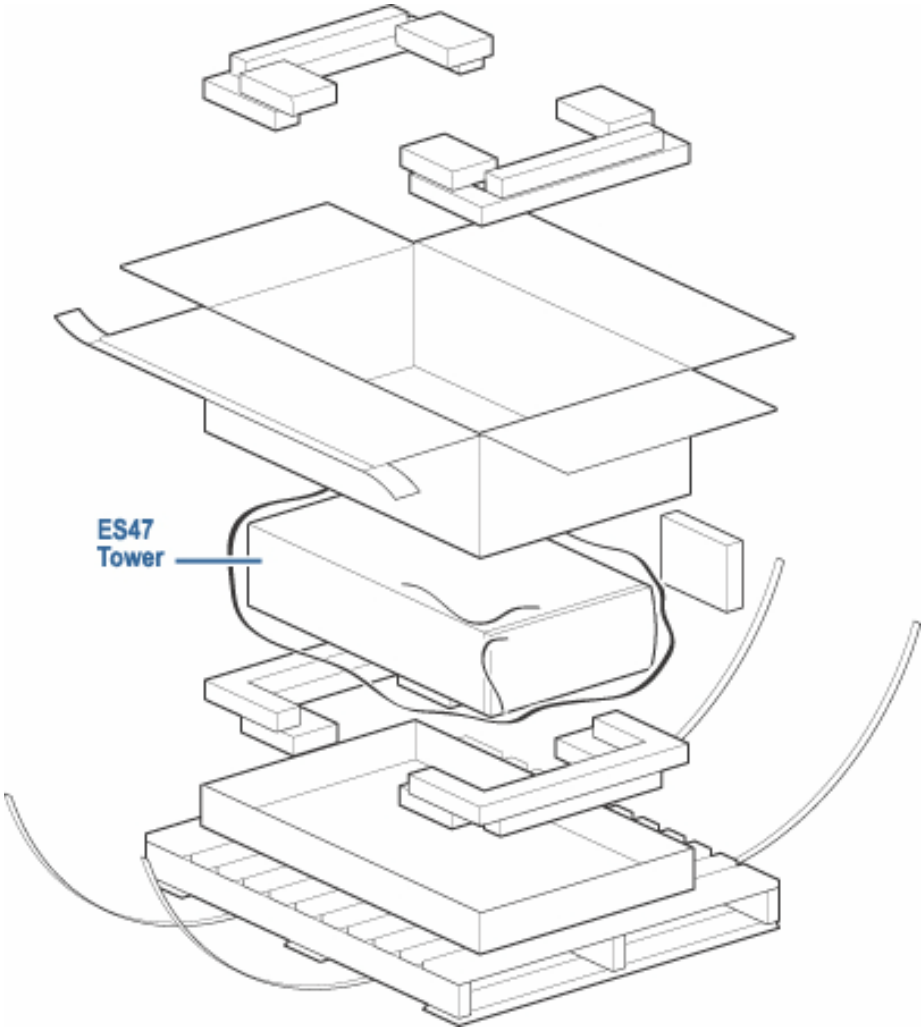
Chapter 2 Installations

2.1 ES47 Tower

The ES47 tower comes with a single 2P drawer and embedded I/O.

1. Unpack and de-skid the system.
2. Place the tower to the desired location.
3. Install the floor stand. Pull the floor stands apart, place the tower on them, and press the floor stand against the sides of the tower.
4. Connect a LAN (PC) console, or Connect a Serial Line console, or Connect a Graphics Terminal console, or AMS Console Connection.
5. Verify the installation.

2.1.1 Unpacking the ES47 Tower



The ES47 tower weighs approximately 120 pounds. Take appropriate precautions when unpacking and moving the system.

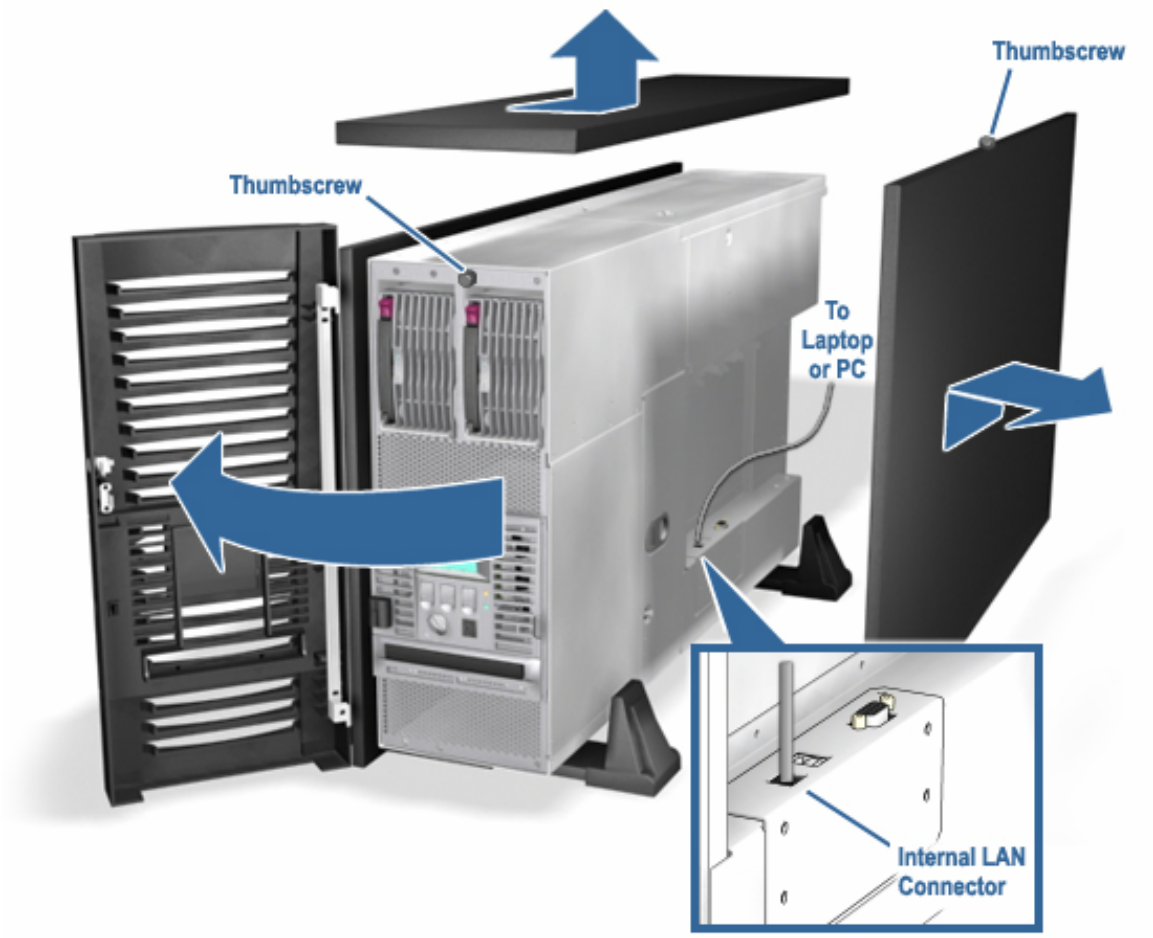
To unpack the ES47:

1. Cut the two packing straps holding the box to the pallet.
2. Open the top of the box.
3. Take out the two styrofoam packs at the top.
4. Lift the cardboard carton off the styrofoam that is the bottom of the box.
5. Remove the tower and its stand.

2.1.2 Install the ES47 Tower Floor Stand

Install the floor stand. Pull the floor stands apart, place the tower on them, and press the floor stands against the sides of the tower.

2.1.3 ES47 Tower LAN (PC) Console Connection



2.1.4 Making the hardware connection:

1. Open the front door.
2. Unscrew the captive screw that holds the top cover to the frame.
3. Pull the top cover back and off the frame.
4. Unscrew the captive screw that holds the right side panel to the frame.
5. Lift the right side panel off the frame
6. Using a BN24Q-xx cable, (a crossover network cable) connect a PC/laptop to the network receptacle now available on the bottom shelf.
7. Lay the cable on the shelf so that it exits the back of the tower.
8. Replace the side panel and cover.

2.1.4.1 Setting up the PC/laptop:

The procedure listed here is Microsoft Windows 2000 specific.

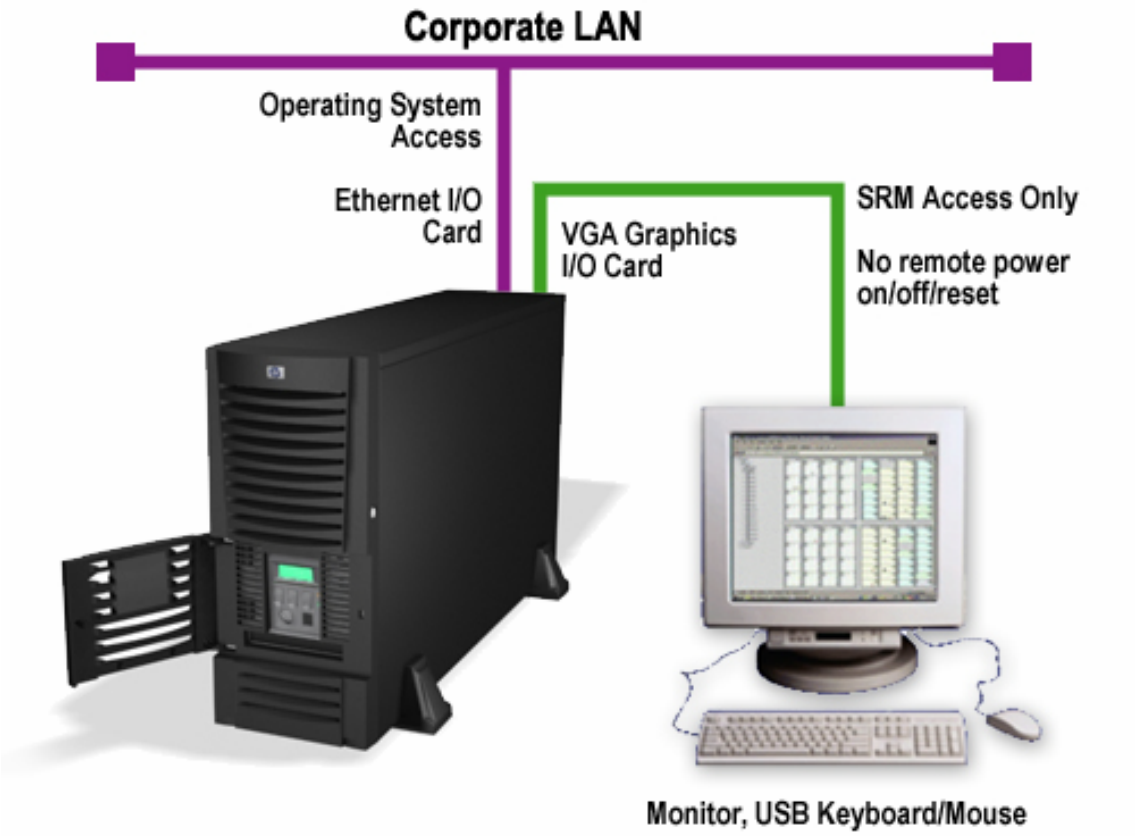
1. To set up your PC/laptop on the internal LAN, it needs a specific LAN address; use 10.253.0.254.
   Do that by following this procedure:
   Click on **start**, **settings**, **network and dial-up connections**.
   Select **local area connections**.
   Click on **properties**.
   Select **Internet protocol (TCP/IP)**
   Change from **Obtain an IP address automatically** to **Use for following IP address**.
   Enter the following in the Internet Properties (TCP/IP) Properties Box:

Field	**Enter**
IP address field	10.253.0.1 - this is a special fixed IP address on the internal LAN that points to the PMU.
Subnet mask field	255.0.0.0
Default gateway	leave blank

Back out of all the dialog boxes by clicking on **close**.
Set up a telnet address of 10.253.0.1. This is the PMU's (Platform Management Utility) address.
Start a telnet session to address 10.253.0.1.
Apply power to the system by putting the circuit breakers on the PDU in the on position. The MBM> prompt should appear on the PC/laptop.

Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Utility (AMU) from a PC running Windows.

2.1.5 ES47 Tower Graphics Terminal Console Connection



With this connection you use the buttons on the OCP to power on and off the system. The graphics terminal has access to the SRM console and the operating system.

This type of console does not have access to the MBM. To establish access to the MBM, necessary for HP support, a serial / telnet connection is also needed. The customer should be consulted on how they would like this to occur. (See any of the other console connections described in sections 2.1.4, 2.1.6, and 2.1.7.)

2.1.5.1 Making the hardware connection:

1. Connect your graphic terminal to the graphic card in the ES47 tower's AGP port .

2.1.5.2 Setting up:

1. Use the OCP pushbuttons to power up the system.
2. Hit return on the graphics terminal.
3. Type the **set console graphics** command.
4. You should see the P00>>> prompt.

2.1.6 ES47 Tower Serial Line Console Connection

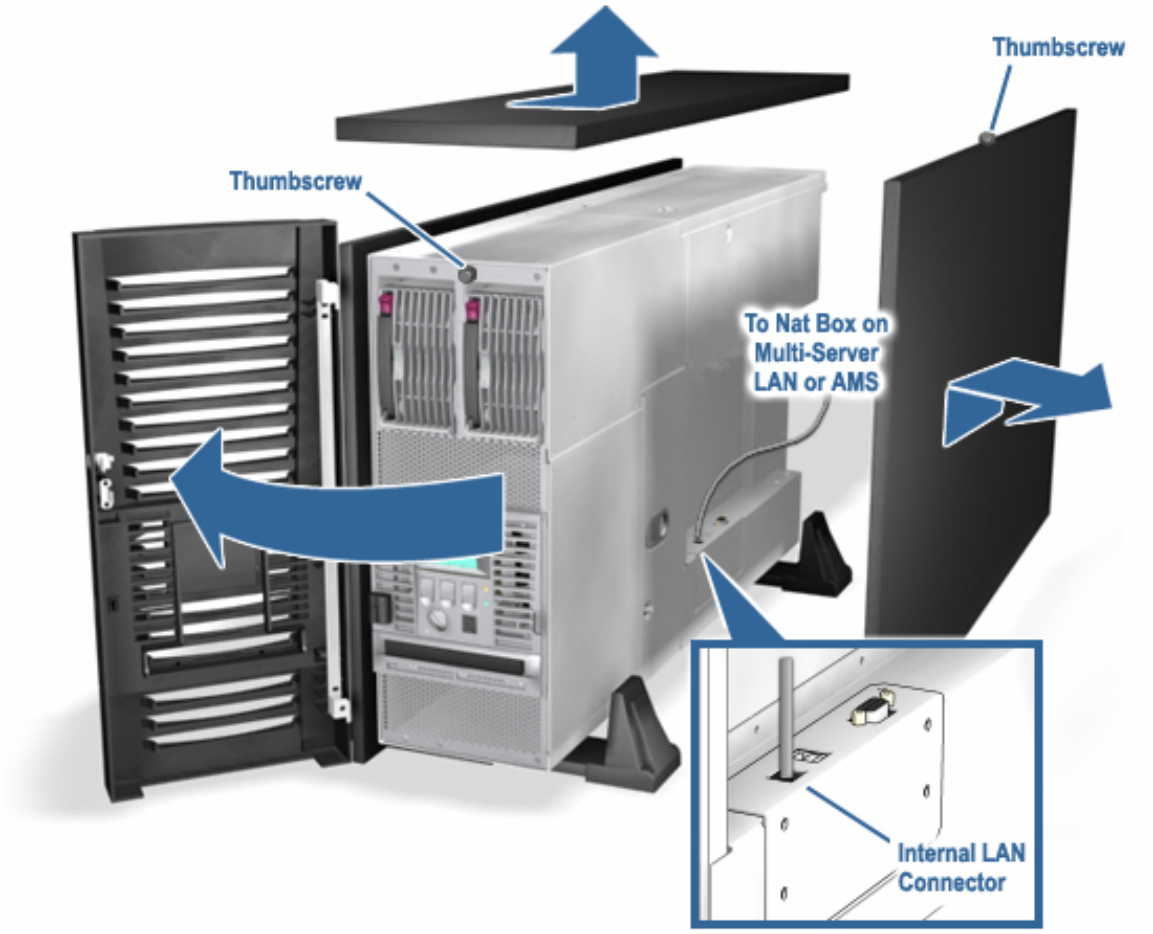
2.1.6.1 Making the hardware connection:

1. Open the front door.
2. Unscrew the captive screw that holds the top cover to the frame.
3. Pull the top cover back and off the frame.
4. Unscrew the captive screw that holds the right side panel to the frame.
5. Lift the right side panel off the frame
6. Using a serial line cable, connect a PC/laptop to the serial line receptacle now available on the bottom shelf.
7. Lay the cable on the shelf so that it exits the back of the tower.
8. Replace the side panel and cover.

2.1.6.2 Setting up the PC/laptop:

Baud rate = 9600
Byte size = 8 bit
Parity = none

2.1.7 ES47 Tower AMS Console Connection



2.1.7.1 Making the hardware connection:

1. Open the front door.
2. Unscrew the captive screw that holds the top cover to the frame.
3. Pull the top cover back and off the frame.
4. Unscrew the captive screw that holds the right side panel to the frame.
5. Lift the right side panel off the frame.
6. Using a BN24Q-xx cable, (a crossover network cable) connect an ethernet card in an AlphaServer workstation running Tru64 UNIX to the MSB LAN connection in the Tower. **OR** using a BN25N connect a NAT box to the MSB LAN connection in the Tower.
7. Lay the cable on the shelf so that it exits the back of the tower.
8. Replace the side panel and cover.

If the customer intends to use the AlphaServer Management Station to control multiple ES47 Towers or other ES and GS series systems, the following additional hardware must be setup.

1. The LAN side of NAT box connected to the ES47 tower. See connect and set-up a NAT box.
2. The WAN side of the NAT box connected to multi-server LAN HUB.
3. The AMS setup to point to the WAN side of the NAT box. See setup the AMS on the Multi-Server LAN.

2.1.7.2 Setting up the AMS:

Assuming a direct connection from the AMS to the ES47 Tower:

1. Put the AMS on the corporate LAN. See setting up AMS to the corporate LAN.
2. Point the AMS to the MBM internal LAN connection. To do this follow the instructions for setting up the AMS on the Multi-Server LAN **AND** make the following change to that procedure. In step 6, when configuring Tu1 change the IP address field from 90.0.0.2 to 10.253.0.1. Leave the subnet mask 255.255.0.0
3. Install the AMS software using its installation and user documentation. Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Station (AMS) from an AlphaServer workstation running Tru64 UNIX.

2.2 ES47 Cabinet

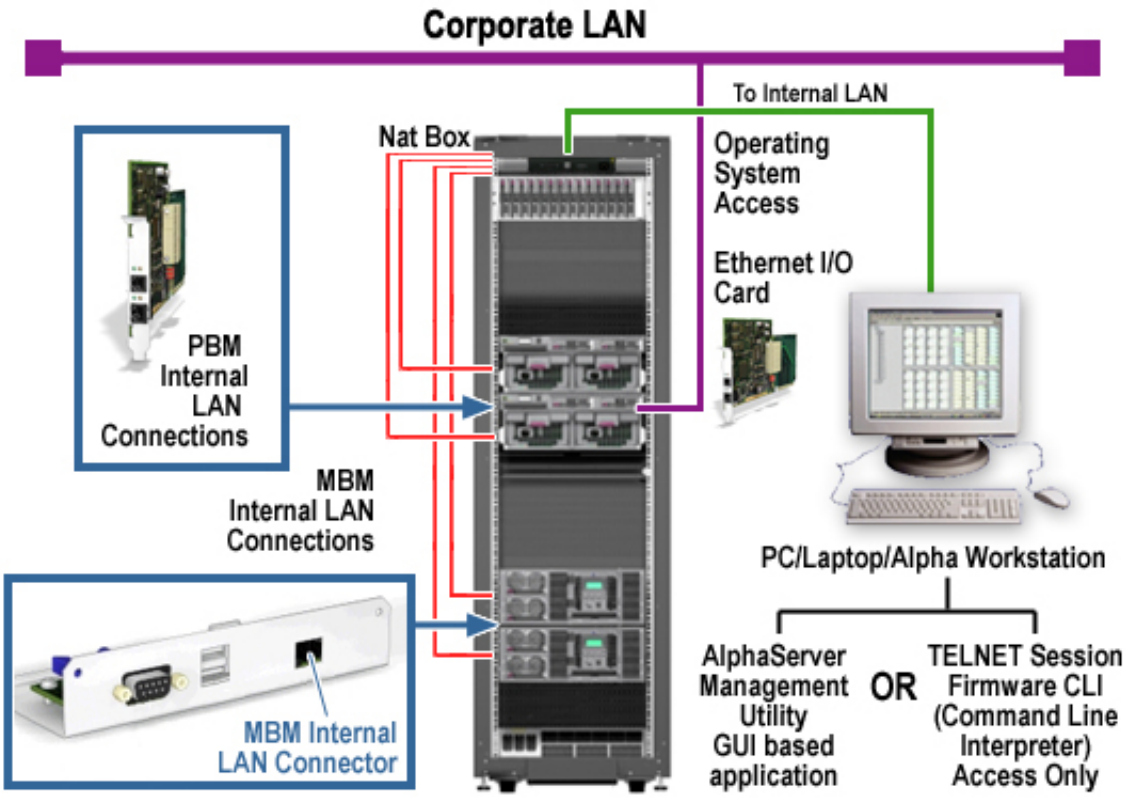
The ES47 comes in a single cabinet with one or two 2P drawers.

1. Unpack and de-skid the system.
2. Roll the cabinet to the desired location.
3. Level the system using the four leveling feet at the bottom four corners of the cabinet. Lower the leveling feet until the castor in each corner are free to rotate and the feet, not the castors, support the weight of the cabinet. At the rear of each cabinet you will find an extension bar with two non-load-bearing leveling feet - they should be lowered until they make contact with the floor.
4. All cable connections should be made in a single cabinet system. Check to make sure that cables are secure.
5. There are two shipping brackets at the front that secure the 2P drawers to the cabinet's side rails. On each side, remove the screw that secures the drawer to the bracket.
6. There are two orange shipping brackets at the back that secure the I/O drawers to the cabinet's side rails. On each side, remove the brackets and screws; save them with the system for use later should the system be moved.
7. Choose the console connection the customer has selected from the following possible connections.

ES47 Cabinet with single M4 System Using a PC
ES47 Cabinet with single M4 System Using an AMS

Verify the installation.

2.2.1 ES47 Cabinet with a Single M4 System Using a PC

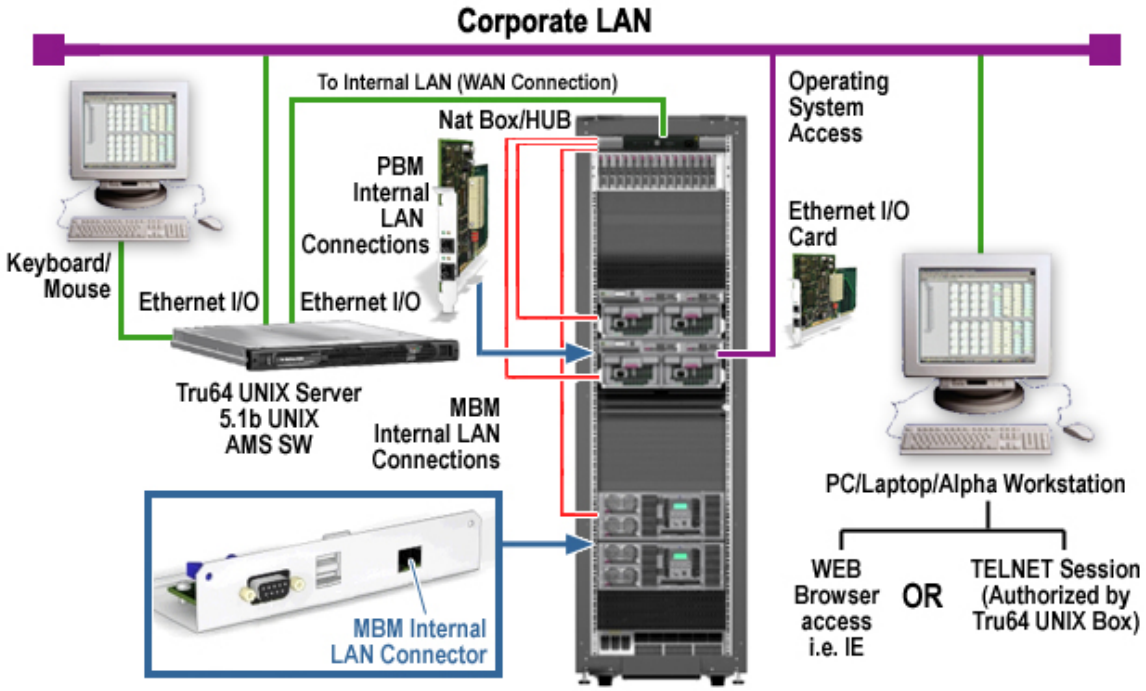


2.2.1.1 Making the hardware connection:

1. Set up the NAT box between the internal LAN and the multi-server LAN.
2. Use the second BX25G-xx cable to connect the NAT box's **WAN connection** to an ethernet card in the PC. If you followed the directions for setting up the NAT box, the WAN side of the NAT box has an address of 90.0.100.1
3. Start a telnet session on your PC to address <nat box address>:23 (23 is the PMUs port address)
4. The MBM> prompt should appear on your PC

Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Utility (AMU) from a PC running windows.

2.2.2 ES47 Cabinet with a Single M4 System Using AMS



2.2.2.1 Making the hardware connection:

1. Set up the NAT box between the internal LAN and the multi-server LAN.
2. Use the second BN25G-xx cable to connect the NAT box's **WAN connection** to the HUB set up for the multi-server LAN.
3. Set up the AMS on the multi-server LAN.
4. Set up the AMS on the corporate LAN.
5. Install the AMS software using its installation and user documentation.

Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Station (AMS) from an AlphaServer workstation running Tru64 UNIX.

2.3 ES80 Installation

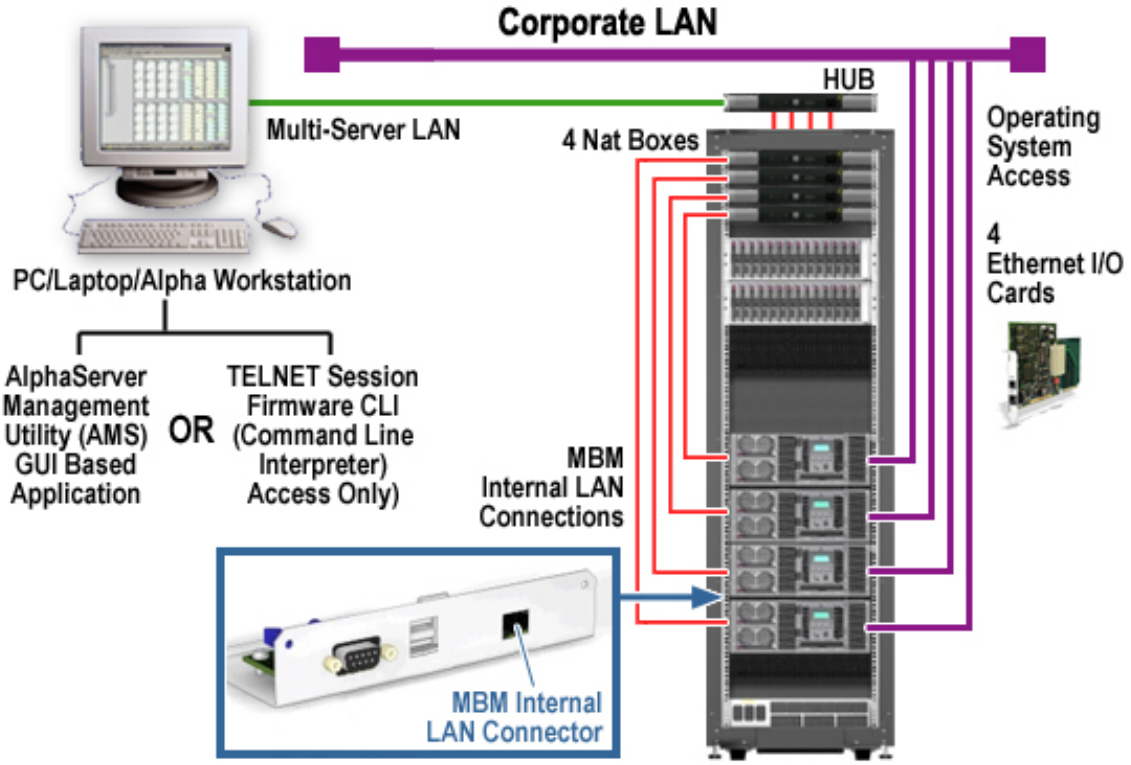
The ES80 comes in a single cabinet with three or four 2P drawers.

1. Unpack and de-skid the system.
2. Roll the cabinet to the desired location.
3. Level the system using the four leveling feet at the bottom four corners of the cabinet. Lower the leveling feet until the castor in each corner are free to rotate and the feet, not the castors, support the weight of the cabinet. At the rear of each cabinet you will find an extension bar with two non-load-bearing leveling feet - they should be lowered until they make contact with the floor.
4. All cable connections should be made in a single cabinet system. Check to make sure that cables are secure.
5. There are two shipping brackets at the front that secure the 2P drawers to the cabinet's side rails. On each side, remove the screw that secures the drawer to the bracket.
6. There are two orange shipping brackets at the back that secure the I/O drawers to the cabinet's side rails. On each side, remove the brackets and screws; save them with the system for use later should the system be moved.
7. Under normal circumstances an expander cabinet does not come with this system, however, should one arrive, place the cabinet to the right of the system cabinet and follow the procedure for installing an expander cabinet.
8. Connect and set up the NAT box.
8. Choose the console connection the customer has selected from the following possible connections.

ES80 Cabinet with 4 Separate Systems Using a PC
ES80 Cabinet with 4 Separate Systems Using a VGA
ES80 Cabinet with 4 Separate Systems Using an AMS
ES80 Cabinet with 4 Separate Systems Using the serial line
ES47 Cabinet with single M4 System Using a PC
ES47 Cabinet with single M4 System Using an AMS

9. Verify the installation.

2.3.1 ES80 Cabinet with (3) 4 Separate Systems Using a PC



If the customer has decided to use a single or several PCs to control an ES80 cabinet that has 4 separate 2P systems, each system must have its own NAT box connecting to the MBM in each drawer. A single HUB is connected to the WAN side of each NAT box and a PC running AMU or telnet sessions act as the console.

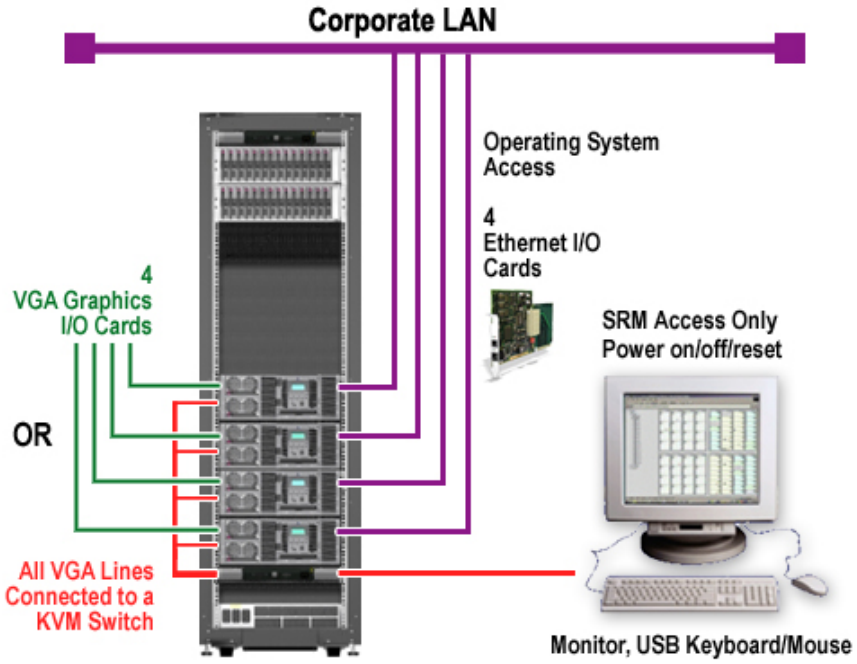
2.3.1.1 Making the hardware connection:

In this case, each 2P drawer has its own NAT box. You can have 4 separate PCs, each connected to the WAN side of each NAT box, or have 1 PC connected to a HUB similar to a multi-server LAN to which each NAT box is connected. This procedure assumes the latter configuration.

1. Set up the NAT box between the internal LAN and the multi-server LAN. When doing this, make sure that each NAT box has its own unique address. Suggested are: 90.0.100.1 for the first; 90.0.100.1 for the second; 90.0.100.2 for the third; and so for the fourth.
2. Use a BN25G-xx cable to connect the NAT box's **WAN connection** to the multi-server LAN HUB.
3. Connect an ethernet card in the PC to the multi-server LAN HUB again using a BN25G-xx cable. You may as well give the PC an address of 90.0.0.102 as you would an AMS.
4. Start telnet sessions on your PC to address <nat box address>:23 (23 is the PMUs port address). By setting up 4 sessions each pointing to a different NAT box you'll have control of each 2P system
5. The MBM> prompt should appear on your PC

Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Utility (AMU) from a PC running windows.

2.3.2 ES80 Cabinet with (3) 4 Separate Systems Using a Graphic Terminal



If the customer has decided to use a single or several VGAs to control an ES80 cabinet that has 4 separate 2P systems, each system (drawer) must have its own graphics card connecting to a VGA or to a KVM switch (not supported by Open VMS). With this type of connection, the VGA only has SRM console access and each drawer must be powered up by using the OCP pushbuttons.

Since the SRM console environment variable is set to serial in manufacturing, after power-up, issue the **set console graphic** command.

This type of console does not have access to the MBM. To establish access to the MBM, necessary for HP support, a serial / telnet connection is also needed. The customer should be consulted on how they would like this to occur. (See any of the other console connections described in sections 2.3.1, 2.3.3, and 2.3.4.)

2.3.2.1 Making the hardware connection:

In this case, each 2P drawer has its own graphics card in its AGP port. You can have 4 separate VGAs, each connected a graphics card or have one VGA connected to a KVM switch. This procedure assumes the latter configuration.

1. Connect each graphic card in the each 2P drawer to the KVM switch.
2. Connect your graphics terminal to the KVM switch.

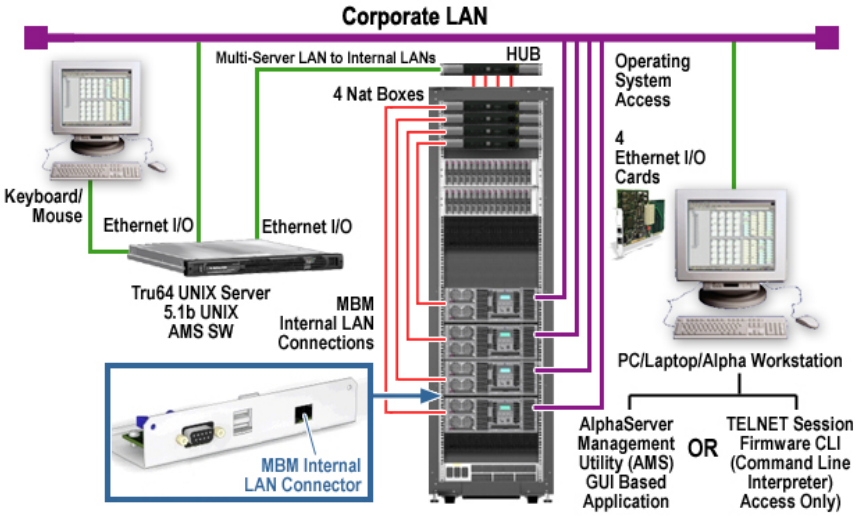
Refer to the KVM switch documentation for configuration information.

2.3.2.2 Setting up:

1. Use the keyswitch or the OCP pushbuttons to power up the system.
2. Hit return on the graphics terminal.
3. Type the **set console graphics** command.

4. You should see the P00>>> prompt.

2.3.3 ES80 Cabinet with (3) 4 Separate Systems Using an AMS



If the customer has decided to use an AMS to control an ES80 cabinet that has 4 separate 2P systems, each system must have its own NAT box connecting to the MBM in the 2P drawer. A separate HUB is connected to the WAN side of each NAT box and an ethernet card in the AlphaServer Management Station. The second ethernet card is connected to the corporate LAN. Any PC user on the corporate LAN running AMU or a telnet sessions and given appropriate AMS can come through the AMS and act as the console for any of the four systems.

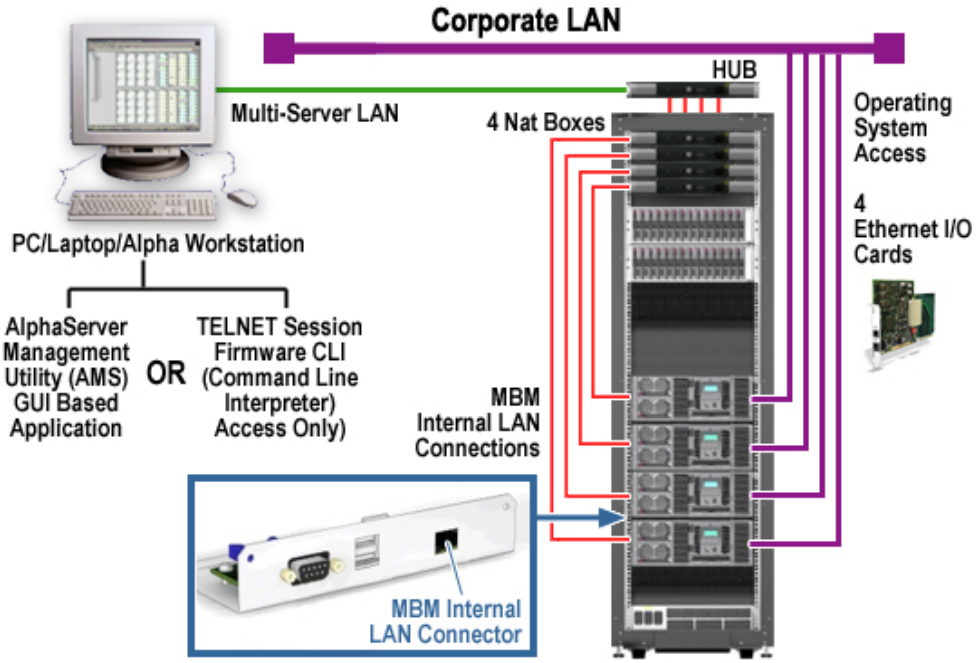
2.3.3.1 Making the hardware connection:

In this case, each 2P drawer has its own NAT box.

1. Set up the NAT box between the internal LAN and the multi-server LAN. When doing this, make sure that each NAT box has its own unique address. Suggested are: 90.0.100.1 for the first; 90.0.100.2 for the second; 90.0.100.3 for the third; and so fourth.
2. Use a BN25G-xx cable to connect each NAT box's **WAN connection** to the multi-server LAN HUB.
3. Set up the AMS on the multi-server LAN.
4. Set up the AMS on the corporate LAN.
5. Install the AMS software using its installation and user documentation.

Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Station (AMS) from an AlphaServer workstation running Tru64 UNIX, VMS, or Linux. Refer to AMU online help for instructions on using AMU on a PC running Linux or Windows.

2.3.4 ES80 Cabinet with (3) 4 Separate Systems Using Serial Lines



If the customer has decided to use the serial lines to control an ES80 cabinet that has 4 separate 2P systems, each system (drawer) must have its own PC connected to the MBM serial port or each serial port connected to a terminal server connected to a PC running telnet sessions. With this type of connection, the PC(s) has direct access to the MBM and can power on/off/reset the system using MBM> commands.

2.3.4.1 Making the hardware connection:

In this case, the serial port on the top of the each 2P drawer is connected to the serial port on a PC or laptop or is connected to a terminal server. This procedure assumes the latter configuration.

1. Connect each the serial port in the each 2P drawer to a terminal server.
2. Connect the serial port of your PC or laptop to the terminal server.

Refer to the terminal server documentation for configuration information.

2.3.4.2 Setting up the PC/laptop:

Baud rate = 9600
Byte size = 8 bit
Parity = none

2.4 Installing an ES47 or ES80 System into a Cabinet

Customers may already have H9A45-ZD (41U) or H9A40-ZA (34U) 29 deep cabinets and wish to place either an ES47 and or ES80 systems in them. An installation of this sort requires the installation of rails.

How the customer configures the system determines whether or not a NAT box needs to be installed. If a NAT box is needed, it should have been ordered separately and comes with its own installation instructions.

Steps for installing a 2P base system include:

1. Check parts
2. Remove Power from the Cabinet
3. Prepare the Cabinet
4. Install the Drawer Brackets
5. Attach the ground wire
6. Install the 2P drawer
7. Install the IP cables
8. Connect the internal LAN, ground, and power cables
9. Install I/O Cable support
10. Replace the side panel
11. Set drawer IDs
12. Proceed with normal ES47 or ES80 installation

2.4.1 Check NAT Box Availability and Parts

1. If the system you are installing has two or more drawers of any sort, it requires a dedicated NAT box. If such is the case, install the NAT box now.
2. Then unpack your system and check the contents.

Each base system ships with the designated number of 2P drawers (1 drawer for M2, 2 drawers for M4, 3 drawers for M6 and 4 drawers for M8), a rack kit for installing each drawer, and documentation. It also includes operating system licenses and software.

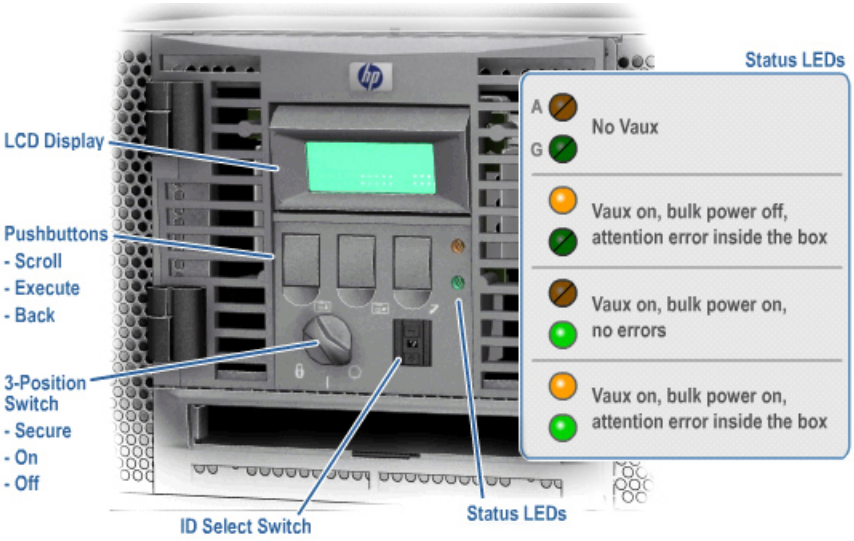
OVMS	OVMS ES47 or ES80 base license kit System management software Enterprise integration server license package
Software	Tru64 ES47 or ES80 base license kit System management software

Check the contents of the rack kit. (one for each drawer)

Rack Kit (CK-BA60A-AA)

Amt	P/N	Description
2	17-00442-03	Power cord, 2.5M long
1	17-04991-03	Ground wire, 8AWG, #10
1	17-05097-04	Internal LAN cable assembly
2	74-62102-01	Plate stop bracket
1	74-62195-01	Right slide bracket
1	74-62196-01	Left slide bracket
2	74-62199-01	Clip, front, mtg
6	90-09984-18	Screws, M5 X 0.8 X 12mm long
16	90-09984-41	Screws, Phillips pan head, SEMS, 18mm
20	90-11476-01	Nut Cage
2	70-41070-01	Cable retainer
1	90-07651-00	Locking washer
1	128557-001	Screw, self-tapping, 5.5mmx12mm
10	90-07031-00	Ties for bundling cables
1	70-41166-01	Wire handle for PCI
1	90-09984-19	Screw M4 X 0.7 X 8mm long

2.4.2 Remove Power from the Cabinet

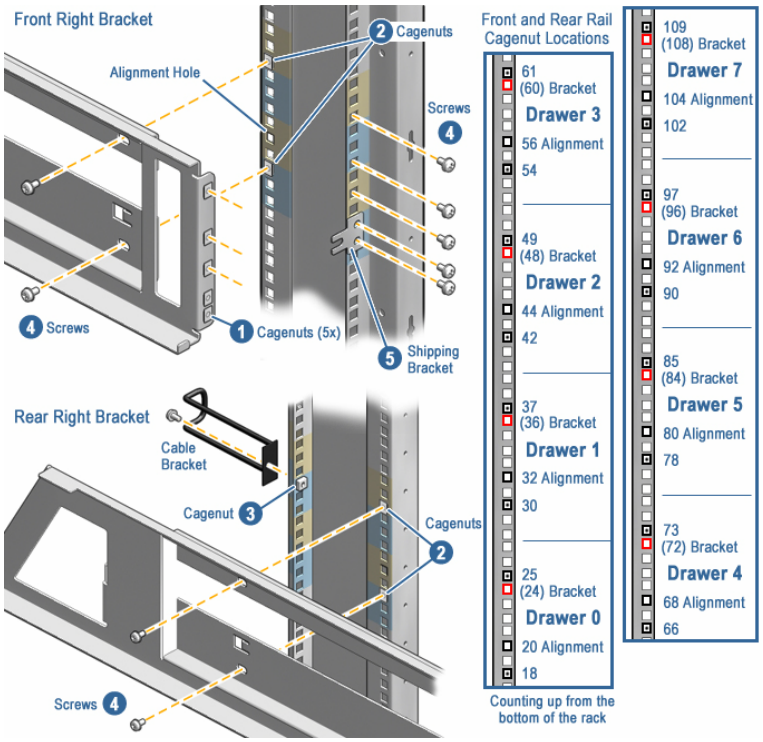


1. Perform an orderly shut down of the systems in the cabinet.
2. Turn off power to the cabinet at the OCP by turning the 3-position switch to 0.
3. Unplug the power supplies.

2.4.3 Prepare the Cabinet

1. Open the front door. ❶
2. The top panel is secured with clips. To remove it, push up firmly and lift it up. ❷ Set the top panel aside.
3. Remove the screw at the bottom of the panel (front and rear). ❸
4. Starting at the bottom of the panel, pull the panel away from the cabinet
5. Lift the side panel out and up, and remove it. ❹

2.4.4 Install the Drawer Brackets



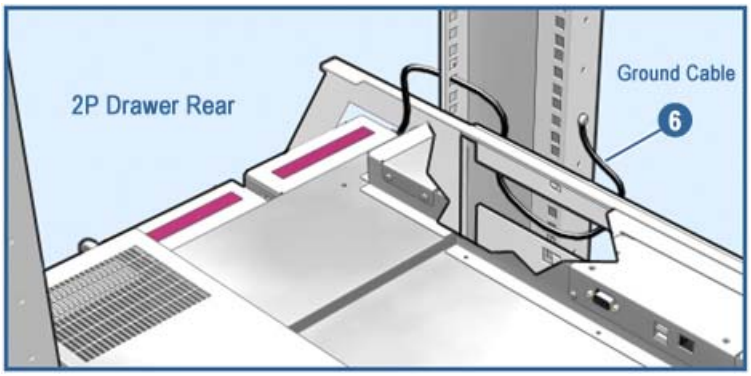
Bracket Alignment for 2P Drawers

Drawer	Bracket	Cagenuts	Alignment
0	24	18, 25	20
1	36	30, 37	32
2	48	42, 49	48
3	60	54, 61	60
4	72	66, 73	68
5	84	78, 85	80
6	96	90, 97	92
7	108	102, 109	104

Install the brackets in the cabinet as follows.

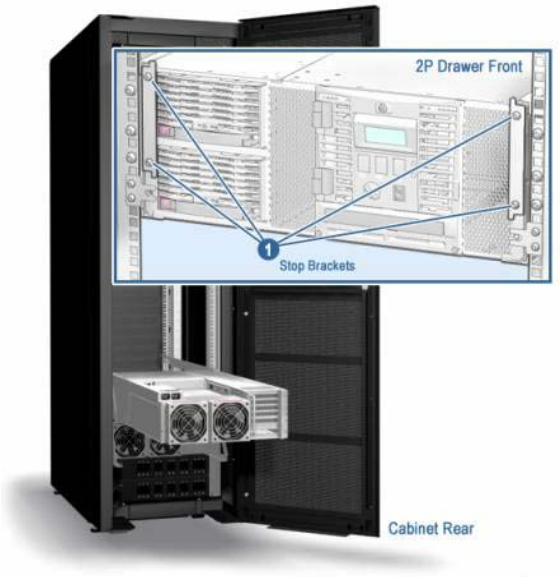
1. Install cagenuts (5) on each 2P drawer bracket (or c-channel) ❶.
2. Install cagenuts (8) on front and rear vertical rails ❷. The figure shows the proper U locations for each 2P drawer.
3. Install cagenuts (2) on the rear vertical rails to mount the cable brackets ❸.
4. Install each 2P drawer bracket using M6 screws ❹.
5. At the front of the cabinet, attach a shipping bracket using two M6 screws to each vertical rail ❺.

2.4.5 Attach the Ground Wire



9. Route the ground cable through the vertical rail
10. Using a star washer, terminal lug, and self-tapping screw, attach the cable to the rear surface of the vertical rail ❻.
11. You will attach the other end to the drawer later.

2.4.6 Install the 2P Drawer



CAUTION:
At least two people are required to lift and install the 2P drawer in the cabinet. When installing drawers towards the top of the cabinet, use lift equipment.
The approximate weight of a 2P drawer is 100 pounds.

1. At the rear of the cabinet, lift and rest the front of the 2P drawer onto the brackets and carefully slide it to the front of the cabinet.
2. At the front of the cabinet, install the safety stop bracket directly into the installed drawer front ❶. Using two M4 screws, tighten the safety stop bracket into the two holes on each side of the drawer.

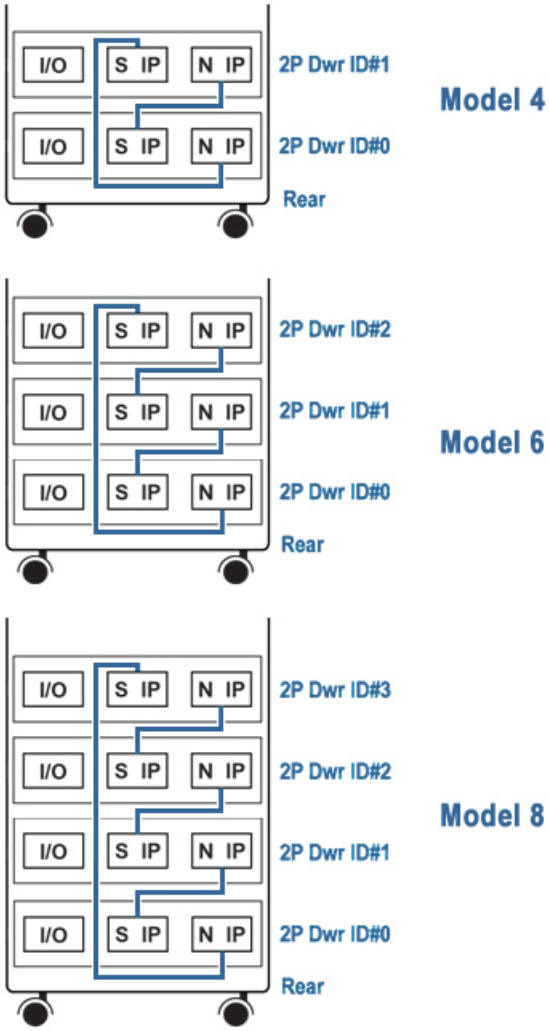
2.4.6.1 Repeat for each drawer

1. Install the drawer brackets
2. Attach the ground wire
3. Install the 2P drawer

Warning: Have only one drawer pulled out at any given time, to maintain cabinet stability.

2.4.7 Install the IP Cables

You need to install IP cables only if you are installing an EX47-M4 or an ES80-M4, M6, or M8. Otherwise continue with step 8.



Warning: Have only one drawer pulled out at any given time, to maintain cabinet stability.

For ease of example, the following instructions cable a system that has been installed starting with drawer ID#0. If your system is installed in IDs #4 though 7, please modify the instructions accordingly.

1. From the rear of the cabinet, slide out the newly installed 2P drawer ID#1.
   Remove the North and South cable covers from drawer ID#1 and slide it back into the cabinet.
   Slide out drawer ID#0 below.
   Cable the north port of drawer ID#0 to the south port of drawer ID#1.

If you are installing an M4 system, go directly to step 4.

2. Slide out the newly installed 2P drawer ID#2.
   Remove the North and South cable covers from drawer ID#2 and slide it back into the cabinet.
   Slide out drawer ID#1 below.
   Cable the north port of drawer ID#1 to the south port of drawer ID#2.

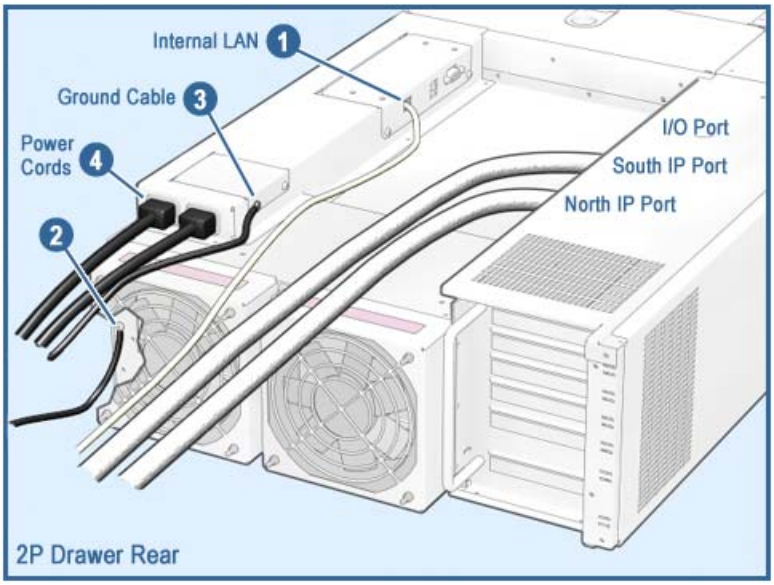
If you are installing an M6 system, go directly to step 4.

3. Slide out the newly installed 2P drawer ID#3.
   Remove the North and South cable covers from drawer ID#3 and slide it back into the cabinet.
   Slide out drawer ID#2 below.
   Cable the north port of drawer ID#2 to the south port of drawer ID#3.

If you are installing an M8 system, continue to step 4.

4. Cable the north port of drawer ID#0 to the south port of your topmost drawer.

2.4.8 Connect Internal LAN, Ground, & Power Cables



Note: Create a proper service loop. Allow enough Internal LAN and power cable to enable full extension when the drawer is pulled out, for service.

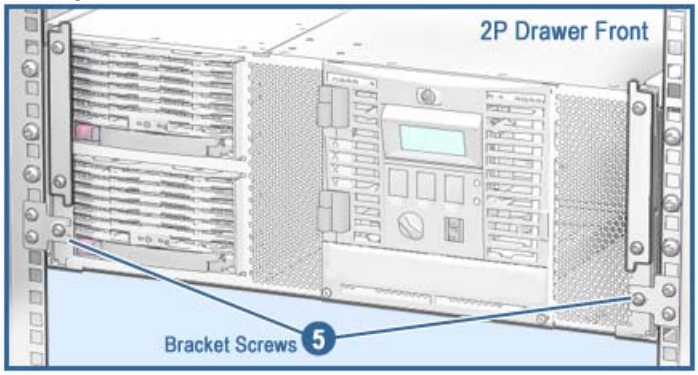
9. Plug the internal LAN cable into drawer ID#1 ❶ and route the cable up the right vertical rail to the NAT box. Connect the cable to the NAT box.

10. Secure the ground cable that you earlier threaded through the hole in the left rail at location ❷ or for earlier models at location ❸.

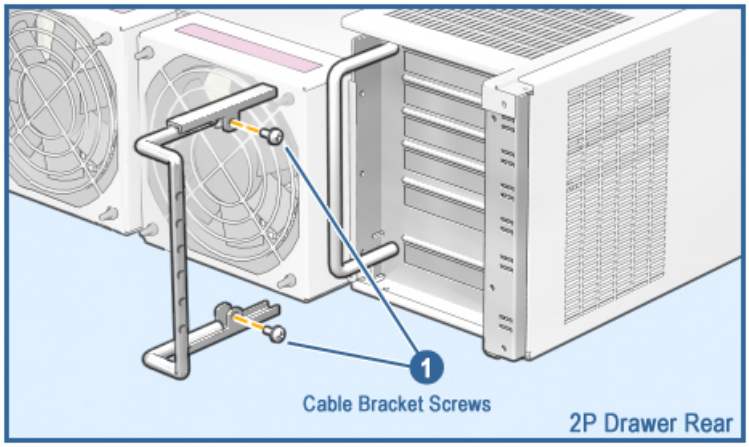
11. Install the two power cords into the drawer ❹ and plug them into the cabinets power distribution unit (PDU).
    If the cabinet has a second PDU installed for power redundancy, then plug each cord into separate PDUs, to configure power redundancy to this newly installed drawer.

12. Use a tie wrap to secure the power and internal LAN cables to the drawer.
13. Slide the drawer in.
14. Install the third screw to secure the drawer to the rails (❺ in the figure below).

Installing Drawer-stop Brackets



2.4.9 Install I/O Cable Support



Working from the rear of the cabinet:

1. Find the black I/O cable extension bracket.
2. Slip the bracket over the handle on the rear of each 2P drawer.
3. Secure the bracket by tightening it with 2 screws ❶in the graphic above.
4. Gather the I/O cables and tie wrap them onto the extension bracket.

2.4.10 Replace the Side Panel

4. Hook the top of the side panel onto the cabinet. Working top down, press the side panel onto the cabinet frame. ❶ Push the bottom in tightly.

5. Press the top panel back onto the cabinet frame. ❷

6. Insert and tighten the screws at the bottom of the side panels (front and rear). ❸
7. Close the cabinet doors. ❹

2.4.11 Set Drawer IDs

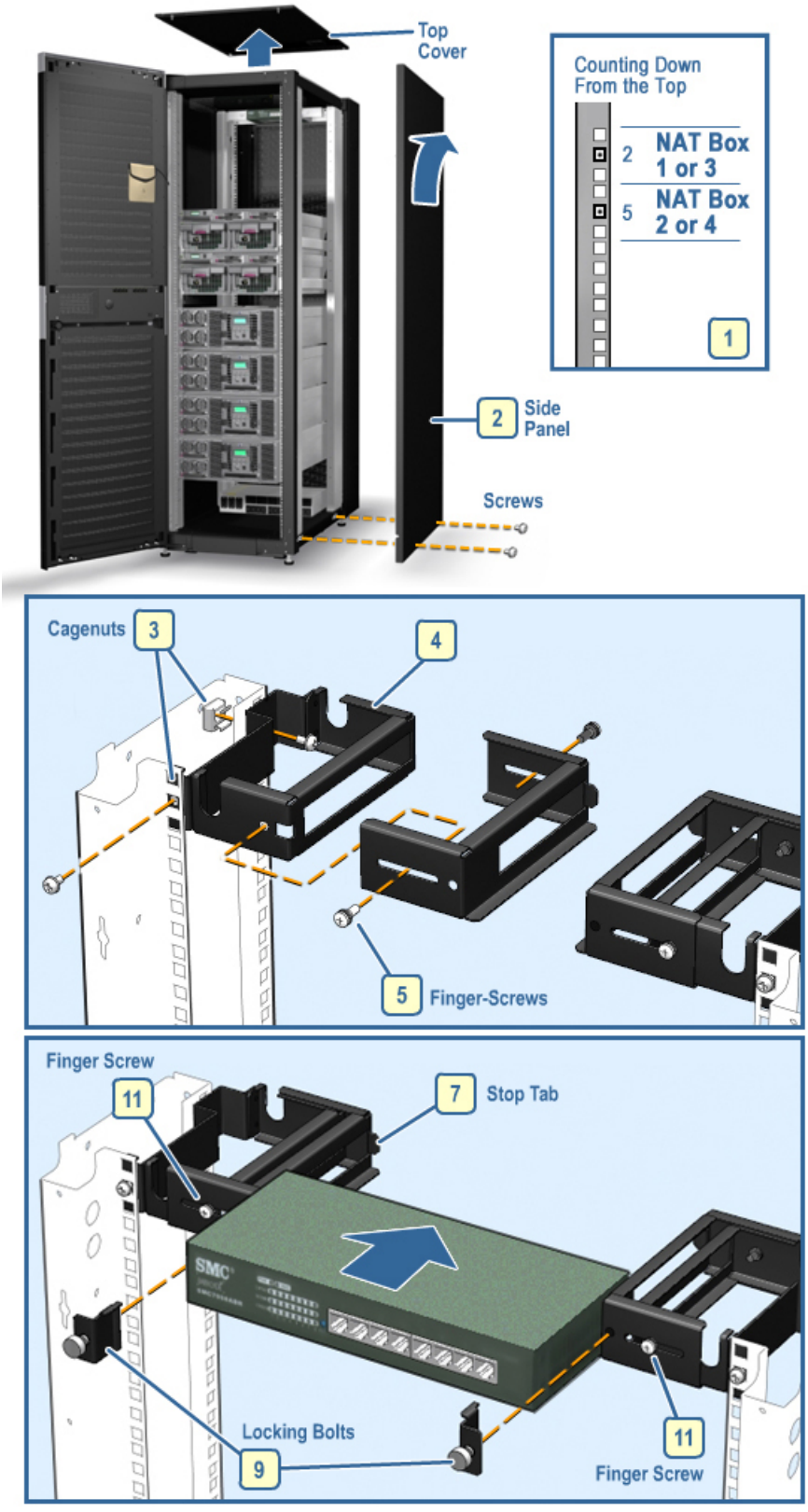
Each component must have a unique ID and should follow these guidelines.

- Where possible, drawer IDs, both processor and I/O, should follow a pattern set by their position in the cabinet – 0 being the bottom position and 7 being the top position.
- Processor drawers should be below I/O drawers and can have a value from 0 to 3.
- I/O drawers are placed above processor drawers and can have values from 0 to F (hex). (the push-wheel on the left must be 0)

2.4.12 Proceed with normal ES47 or ES80 Installation

- If you are installing an ES47, go to the ES47 installation procedure and continue with setting up the NAT box, if you need to, or connect the console.
- If you are installing an ES80, go to the ES80 installation procedure and continue with setting up the NAT box.

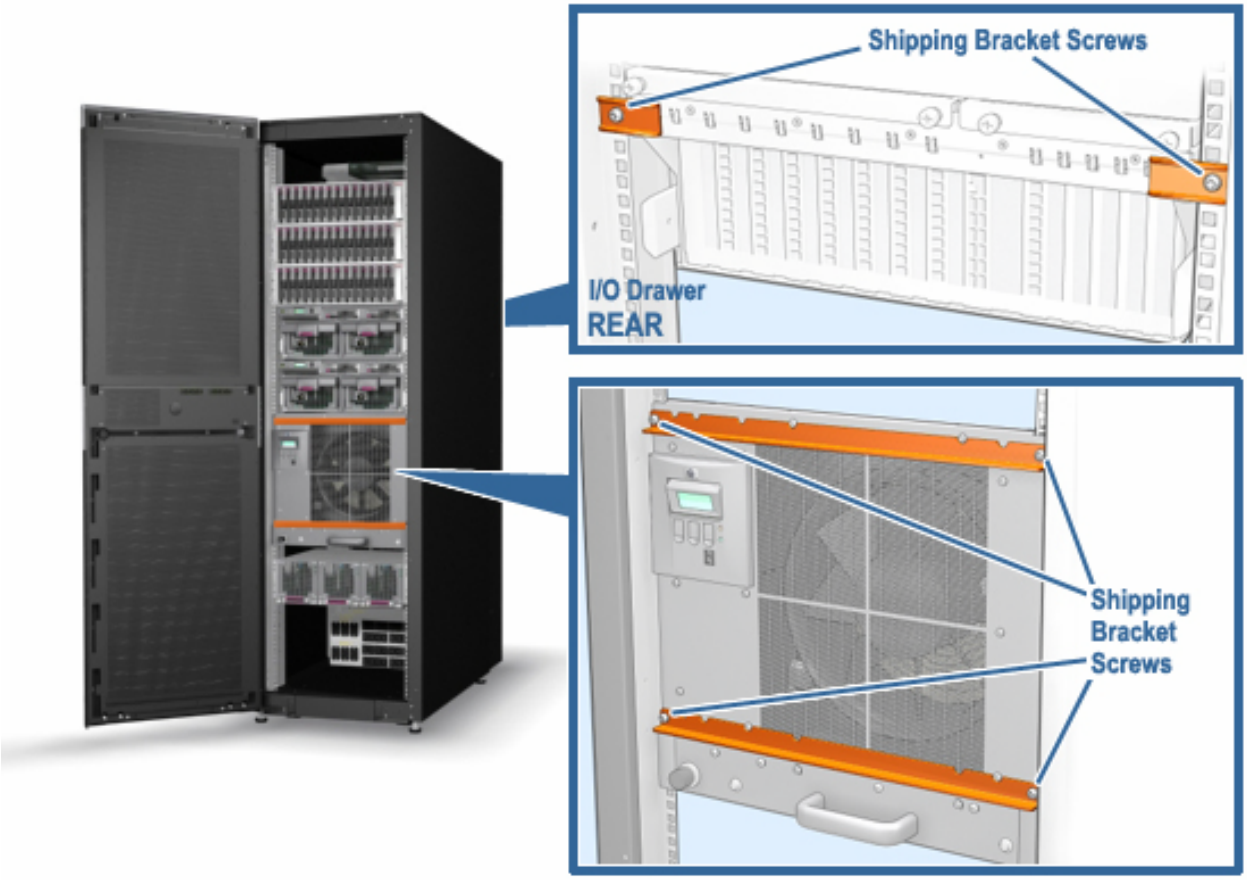
2.5 Install a NAT Box



This procedure applies only to ES47 and ES80 systems with more than one system in a cabinet. The number of NAT boxes in a cabinet is equal to the number of systems and can be installed in both the front and rear of a cabinet.

1. Determine where to install the NAT box.
2. Remove the cabinet panels.
3. Insert the cagenuts at the proper locations on both cabinet rails.
4. Mount the non-adjusting bracket to the rails.
5. Attach the adjustable brackets to the non-adjustable bracket using the finger-screws. Be sure the lip designed to hold the NAT box is on the bottom.
6. Loosely tighten.
7. Slide the NAT box onto the brackets and push it back until it stops.
8. Insert the small locking bolts at the front of the NAT box by each bracket.
9. Slide the locking bolt onto the brackets.
10. Tighten the captive screw to secure the box.
11. Tighten the finger-screws you left loose in step 6.

2.6 GS1280 - 8 Processor Model



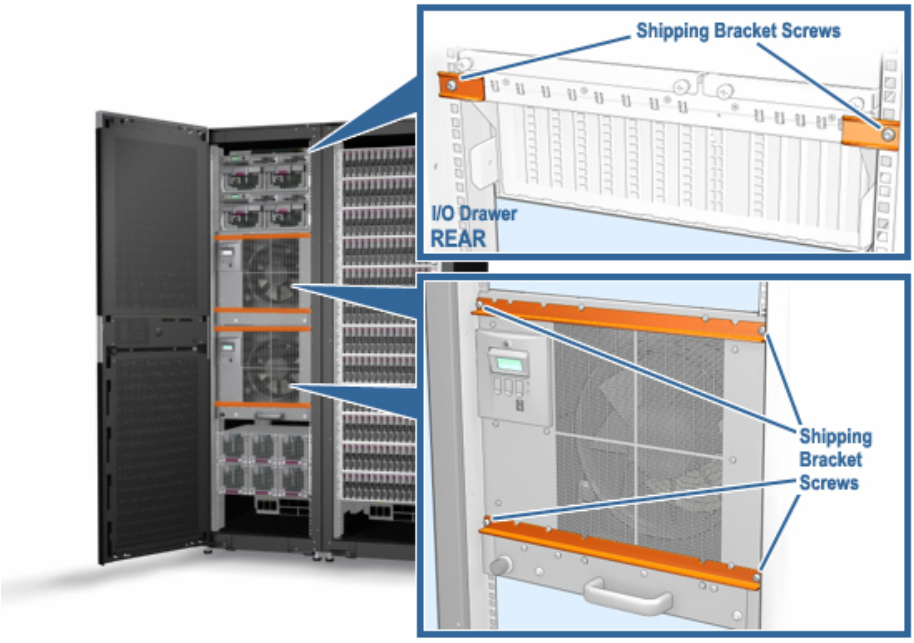
The 8 Processor model comes in two flavors: one with one with 8 processors in a single cabinet and one with 8 processors and one or two expander cabinets. In either case, power for the processors is in the cabinet with the processor drawer.

1. Unpack and de-skid the system cabinets.
2. Roll the cabinets to the place the customer wants them located and arrange them according to the cabinet placement rules for the given system.
3. If necessary, follow the procedure for installing an expander cabinet.
4. Level the system using the four leveling feet at the bottom four corners of the cabinet. Lower the leveling feet until the castor in each corner are free to rotate and the feet, not the castors, support the weight of the cabinet. At the rear of the cabinet you will find an extension bar with two non-load-bearing leveling feet - they should be lowered until they make contact with the floor.
5. Remove the orange shipping brackets and their screws; save them with the system for use later should the system be moved.
6. There are two orange shipping brackets at the back that secure the I/O drawers to the cabinet's side rails. On each side, remove the brackets and screws; save them with the system for use later should the system be moved.
7. All cable connections should be made in a single cabinet system. Check to make sure that cables are secure.
8. Connect to and set up the NAT box.
9. Connect the console.
10. Verify the installation.

2.6.1 8P Model Placement

Expansion of the 8P system alternates from side to side. The system cabinet's ID is 0, the first expansion cabinet is placed to the right and has a cabinet ID of 1, the second expansion cabinet is placed to the left of the system cabinet and has a cabinet ID of 2. Any other expansion cabinets follow this right to left pattern with incrementing cabinet IDs.

2.7 GS1280 - 16 Processor Model



The 16 Processor model consists of a cabinet with two 8P drawers and may or may not have an expander cabinet. Power is in the cabinet with the 8p drawers

1. Unpack and de-skid the system.
2. Roll the cabinets to the desired location and arrange them according to the cabinet placement rules for the given system.
3. If applicable, follow the procedure for installing an expander cabinet.
4. Level the system using the four leveling feet at the bottom four corners of the cabinet. Lower the leveling feet until the castor in each corner are free to rotate and the feet, not the castors, support the weight of the cabinet. At the rear of each cabinet you will find an extension bar with two non-load-bearing leveling feet - they should be lowered until they make contact with the floor. (insert graphic of leveling feet)
5. Remove the orange shipping brackets and their screws; save them with the system for use later should the system be moved.
6. There are two orange shipping brackets at the back that secure the I/O drawers to the cabinet's side rails. On each side, remove the brackets and screws; save them with the system for use later should the system be moved.
7. All cable connections should be made in a single cabinet system. Check to make sure that cables are secure.
8. Connect to and set up the NAT box.
9. Connect the console.
10. Verify the installation.

2.7.1 16P Model Placement

Expansion of the 16P system alternates from side to side. The system cabinet's ID is 0, the first expansion cabinet is placed to the right and has a cabinet ID of 1, the second expansion cabinet is placed to the left of the system cabinet and has a cabinet ID of 2. Any other expansion cabinets follow this right to left pattern with incrementing cabinet IDs.

2.7.2 Exception

If the customer is planning to upgrade a 16P to a 32P, then expand to the right only. When the second 16P is added, you'll be expanding to the left.

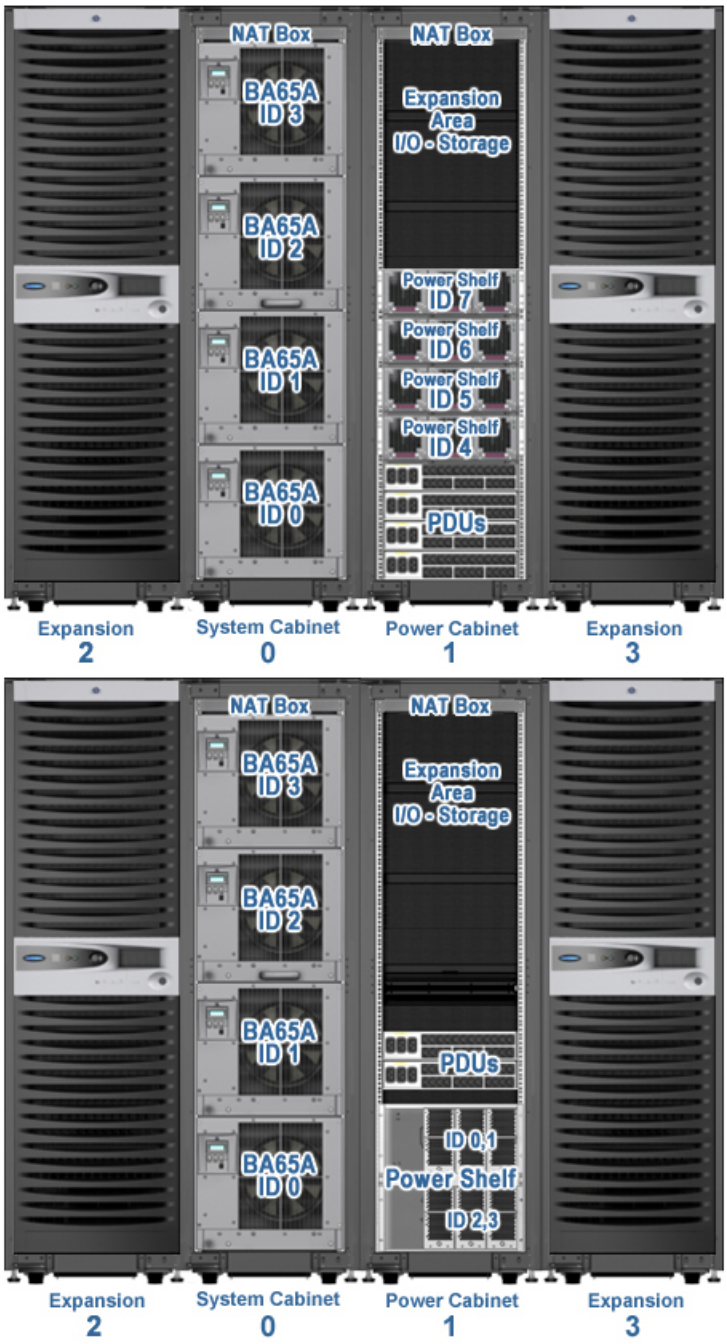
2.8 GS1280 - 32 Processor Model

The 32 Processor model at a minimum has two cabinets, a system cabinet and a power cabinet. There are two versions, one with a 60 Amp input power source and another with a 30 Amp input power source.

Installing a 32P system

1. Unpack and de-skid the system cabinets.
2. Roll the cabinets to the place the customer wants them located and arrange them according to the cabinet placement rules for the given system.
3. Level the system using the four leveling feet at the bottom four corners of the cabinet. Lower the leveling feet until the castor in each corner are free to rotate and the feet, not the castors, support the weight of the cabinet. At the rear of each cabinet you will find an extension bar with two non-load-bearing leveling feet - they should be lowered until they make contact with the floor.
   (insert graphic of leveling feet)
4. Remove and save the orange shipping brackets and their screws - you need not put them back on the system.
5. Follow the procedure for installing a power cabinet.
6. If applicable follow the procedure for installing an expander cabinet.
7. Connect power.
8. Connect I/O cables.
9. Connect to and set up the NAT box.
10. Daisy-chain the NAT boxes together.
11. Connect the console.
12. Verify the installation.

2.8.1 32P Model Cabinet Placement



Expansion of the 32P system alternates from side to side. The first system cabinet's ID is 0, the first expansion cabinet is placed to the left of the system cabinet and has a cabinet ID of 2, the second expansion cabinet is placed to the right of the power cabinet and has a cabinet ID of 3. Any other expansion cabinets follow this left to right pattern with incrementing cabinet IDs.

Since there is only one power cabinet containing either 30 Amp or 60 Amp input power, cabinet placement is the same in both cases.

2.8.2 32P I/O Configuration Table

32P System (1 Cabinet)

I/O Cable Placement — QTY IO7's

EV's	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
32	0,0	1,0	2,0	3,0	0,5	1,5	2,5	3,5	0,1	1,1	2,1	3,1	0,4	1,4	2,4	3,4
28	0,0	1,0	2,0	3,0	0,5	1,5	2,5	3,5	0,1	1,1	2,1	3,1	0,4	1,4	2,4	3,4
24	0,0	1,0	2,0	3,0	0,5	1,5	2,5	3,5	0,1	1,1	2,1	3,1	0,4	1,4	2,4	3,4
20	0,0	1,0	2,0	3,0	0,5	1,5	2,5	3,5	0,1	1,1	2,1	3,1	0,4	1,4	2,4	3,4
16	0,0	1,0	2,0	3,0	0,5	1,5	2,5	3,5	0,1	1,1	2,1	3,1	0,4	1,4	2,4	3,4
8	0,0	1,0	0,5	1,5	0,1	1,1	0,4	1,4								
4	0,0	1,0	0,1	1,1												
2	0,0	0,1														

I/O Slot Assignments (Drawer, Slot)

EV's	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
32	0,2	1,2	2,2	3,2	0,3	1,3	2,3	3,3	0,6	1,6	2,6	3,6	0,7	1,7	2,7	3,7
28	0,2	1,2	2,2	3,2	0,3	1,3	2,3	3,3	0,6	1,6	0,7	1,7				
24	0,2	1,2	2,2	3,2	0,3	1,3	2,3	3,3								
20	0,2	1,2	0,3	1,3												
16																
8																
4																
2																

I/O Slot Assignments (Drawer, Slot)

The chart shows the pattern of I/O riser connections to CPU I/O ports.

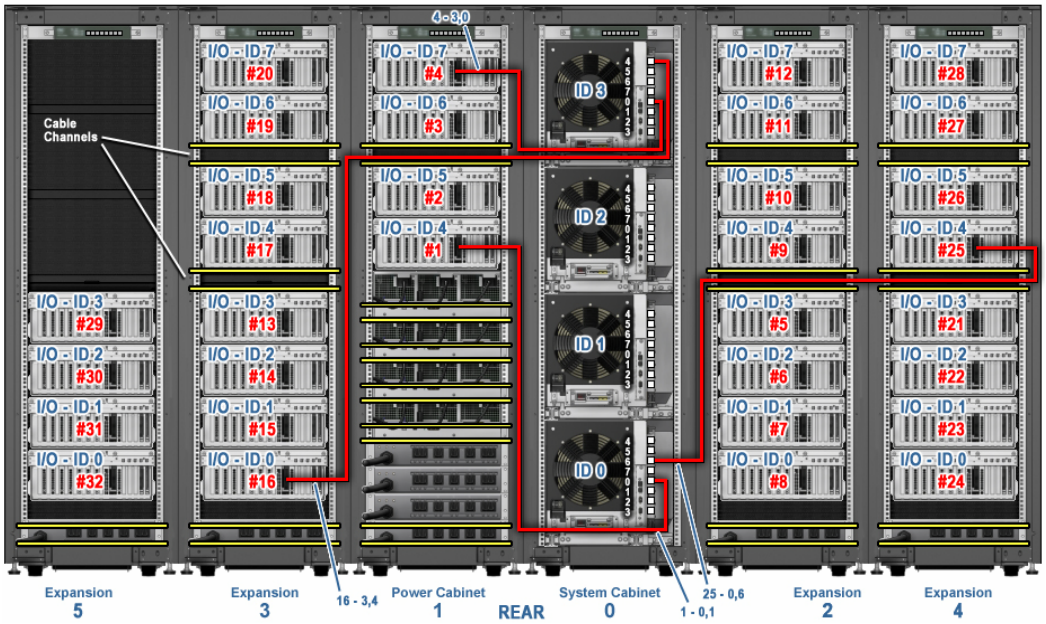
Here is an example of reading the chart.

Lets say you have a 32P system (maximum configuration) and 8 I/O drawers/risers. The following connections are made:

I/O drawer #	Chart		Drawer #	CPU #
1	0,0	=	0	0
2	1,0	=	1	0
3	2,0	=	2	0
4	3,0	=	3	0
5	0,5	=	0	5
6	1,5	=	1	5
7	2,5	=	2	5
8	3,5	=	3	5

So the I/O cable from PCI drawer 1 connects to CPU 0 in drawer 0.
The I/O cable from PCI drawer 4 connects to CPU0 in drawer 3.

2.8.3 32P I/O Routing



Physical conditions

1. In expander cabinets, there are two cable management channels across the cabinet; one between I/O drawers 4 and 5 and another between I/O drawers 6 and 7.
2. In 30 Amp power cabinets, there are two cable management channels across the cabinet; one between the power subracks and the first pair of I/O drawers and another between the two I/O drawer pairs.
3. In 60 Amp power cabinets, the number of cable management channels is dependent upon whether there is one or two 60 Amp chassis; there are two channels when there is one chassis and one channel when there are two chassis.
4. There are multiple areas available to pass cables from one cabinet to another.

The objective is to route the I/O cable from the I/O drawer to the correct 8P drawer and the correct CPU I/O port.

Conventions

1. If routing to 8P drawers 0 or 1, route the cable down either the expander cabinet or the power cabinet and enter the system cabinet from below.
2. If routing to 8P drawers 2 or 3, route the cables up in either the expander cabinet or power cabinet and enter the system cabinet from above.
3. In either case, enter the system cabinet as close as you can to the 8P drawer you are connecting to.

Examples

The graphic shows first how manufacturing would add I/O drawers to systems and second how cables are routed to four I/O drawers.

Manufacturing installs I/O drawers in the locations shown in the graphic. For example the 10th drawer is installed in cabinet 2 third down from the top.

Four routing examples are given:

1. Cable routing from 8P drawer 0, CPU0 to I/O drawer 1.
2. Cable routing from 8P drawer 3, CPU0 to I/O drawer 4.
3. Cable routing from 8P drawer 3, CPU4 to I/O drawer 16.
4. Cable routing from 8P drawer 0, CPU6 to I/O drawer 25.

2.9 GS1280 - 64 Processor Model

2.9.1 Installing a 64P System

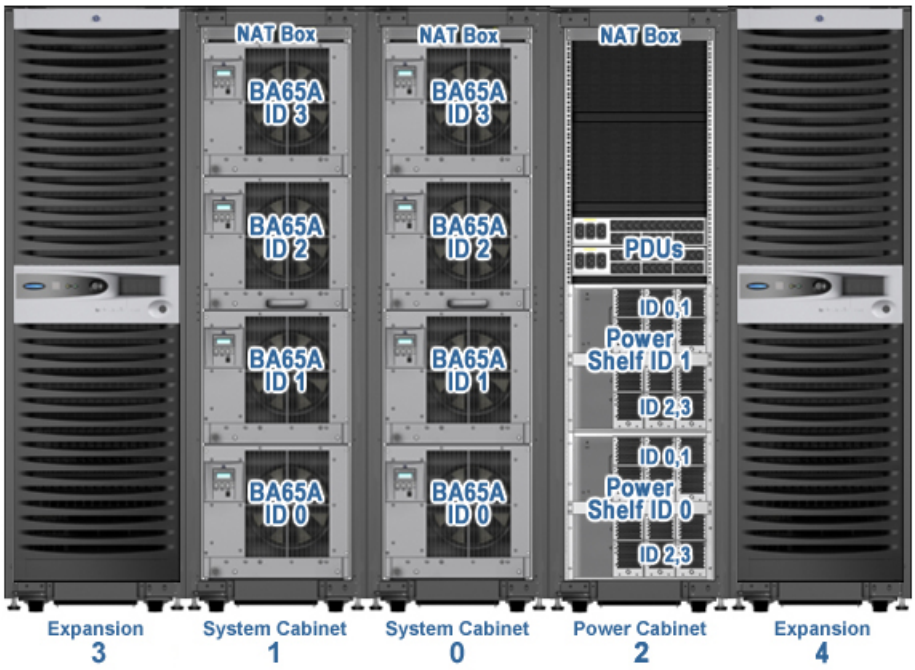
There are two versions of the 64 Processor model, one with an input power source of 60 Amps and another with an input power source of 30 Amps.

1. Unpack and de-skid the system cabinets.
2. Roll the cabinets to the place the customer wants them located and arrange them according to the cabinet placement rules for the given system.
3. Connect the system cabinets together.
4. Install the power cabinets.
5. Connect the power either 30 Amp or 60 Amp.
6. Install the IP cables.
7. Follow the procedure for installing an expander cabinets.
8. Connect the I/O cables.
9. Connect to and set up the NAT box.
10. Daisy-chain the NAT boxes together.
11. Connect the console.
12. Verify the installation.

2.9.2 64P Model Cabinet Placement

2.9.2.1 60 Amp powered

2.9.2.2 30 Amp powered



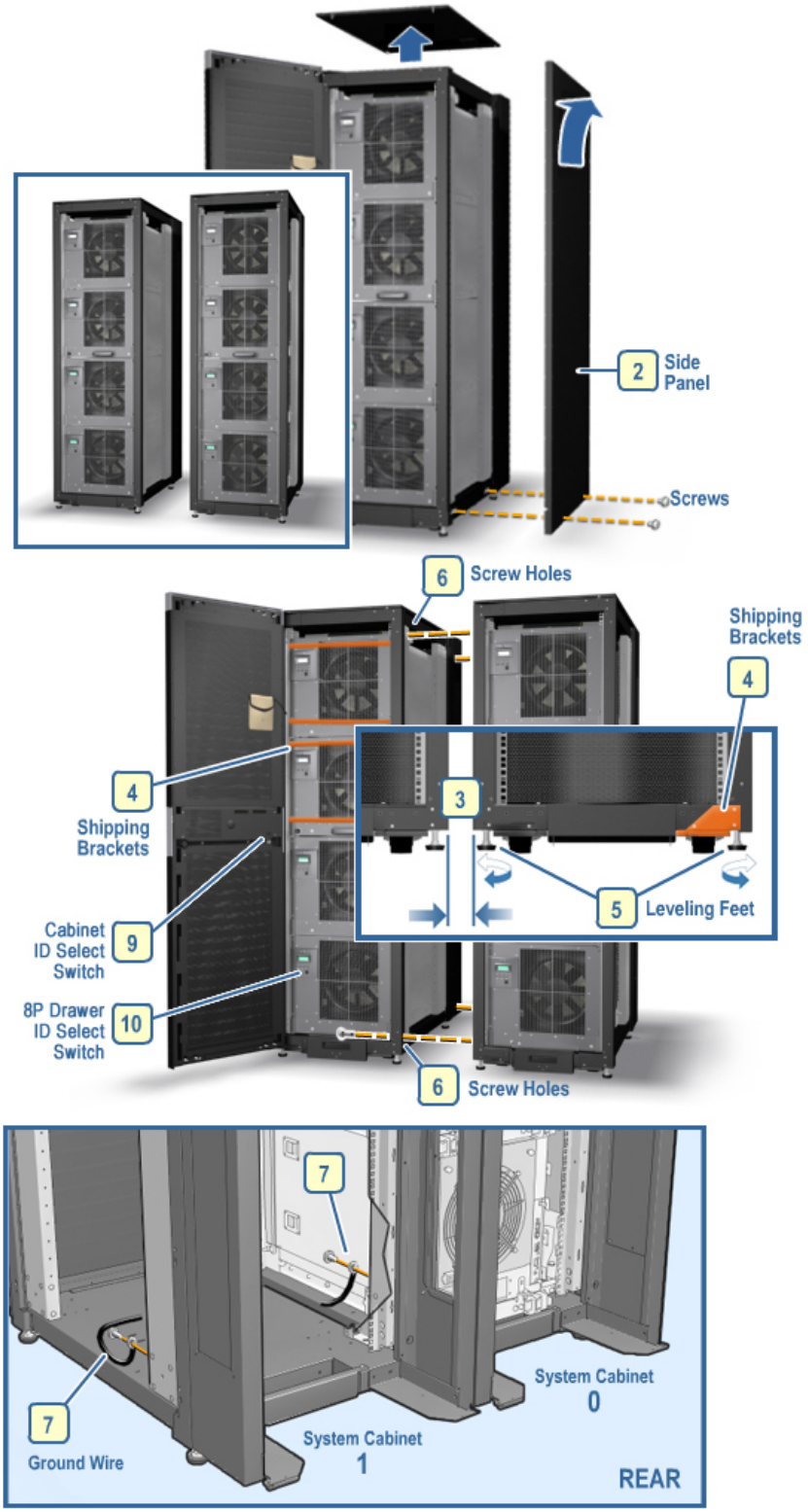
2.9.2.3 60 Amp powered

When 60 Amp power is used expansion of the 64P system alternates from side to side. However, system cabinet 0 is to the right of system cabinet 1. The single power cabinet is placed to the right of system cabinet 0 and the first expansion cabinet (ID = 2) is placed to the left of system cabinet 1. The second expansion cabinet has a cabinet ID of 3 and is placed to the right of the power cabinet. The result is that odd cabinet IDs expand to the left and even cabinet IDs expand to the right. Any other expansion cabinets follow this right to left pattern with incrementing cabinet IDs.

2.9.2.4 30 Amp powered

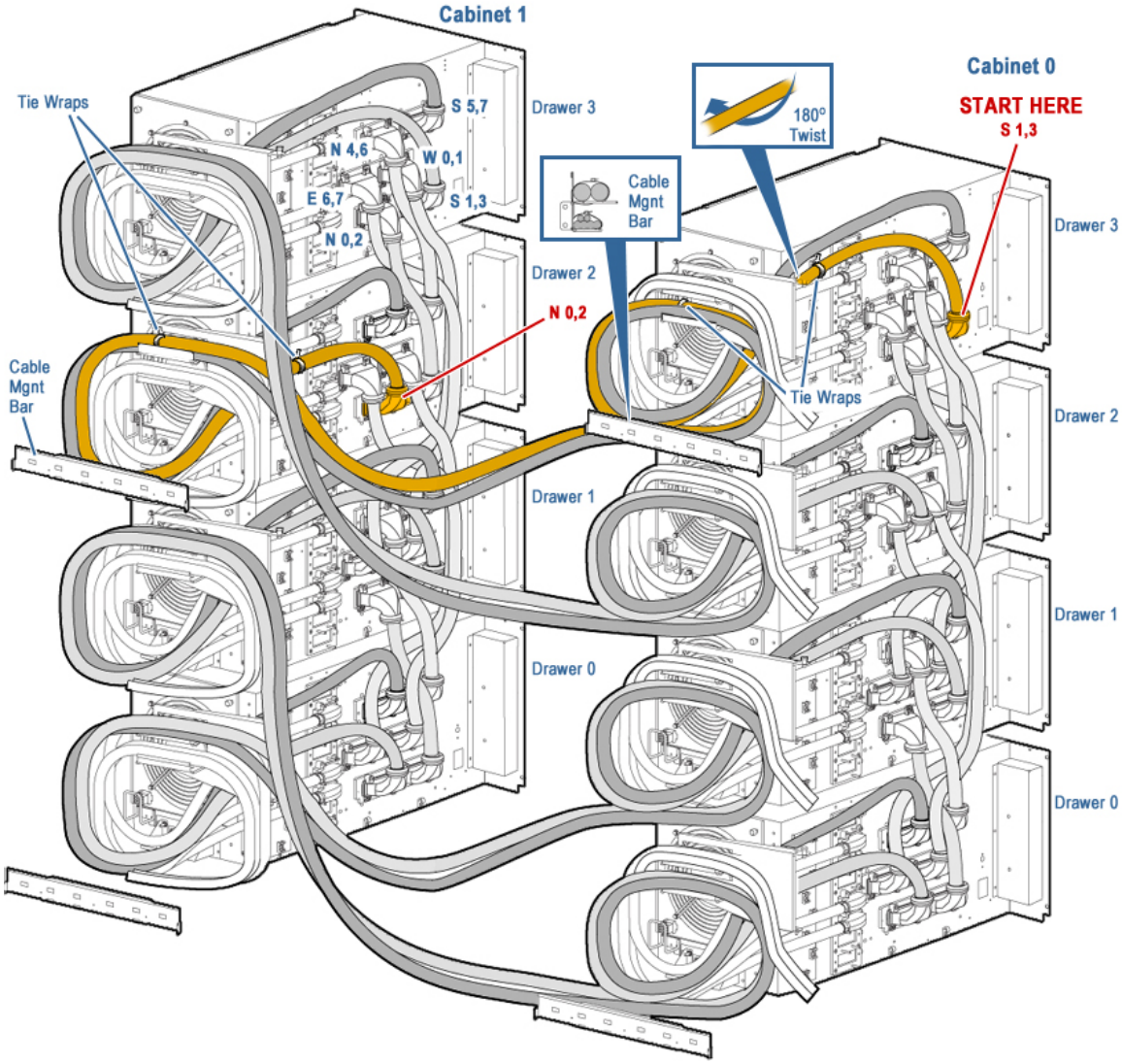
When 30 Amp power is used expansion of the 64P system alternates from side to side. System cabinet 0 is to the left of system cabinet 1 and the first expansion cabinet is placed to the left of the power cabinet associated with system cabinet 0 and has a cabinet ID of 4, the second expansion cabinet is placed to the right of the second power cabinet and has a cabinet ID of 5. The result is that odd cabinet IDs expand to the right and even cabinet IDs expand to the left. Any other expansion cabinets follow this right to left pattern with incrementing cabinet IDs.

2.9.3 Connect System Cabinets (64P)



1. You should already have determined the location of the power cabinet relative to other cabinets making up the system.
2. Remove both side panels from both system cabinets.
3. Roll the two system cabinet as close as possible to each other and align the front and rear surfaces.
4. Remove the orange shipping brackets and their screws; save them with the system for use later should the system be moved.
5. Align the cabinet heights by adjusting the leveling feet.
6. Use the four screws from the joining kit (PN 70-40120-02) to join the cabinets together. (graphic shows screw placement.)
7. Connect the ground wire to both cabinets. (graphic shows ground cable placement.)
8. Power cords from the PDUs to the power subracks should be in place.
9. Set the cabinet ID number on the front door OCP push wheel; 0 for the one on the right and 1 for the one on the left. (from the front)
10. Set the push wheel ID number on each drawer OCP according to the rules for setting drawer IDs.
11. Cable installation is handled later in this procedure.

2.9.4 Cable System Cabinets (64P)



IP cabling inside the cabinets is done in manufacturing and the 64P system ships with eight loose IP cables that get installed between CPUs in cabinet 0 and CPUs in cabinet 1. This procedure is best done by two people.

1. Remove the IP cables from the box they come in, lay them out as straight as possible on the floor.
2. Label each end of the cables with the location of its connection to a particular CPU IP port. Here are the suggested labels.

Cable #	From Cabinet 0		To Cabinet 1	
	Drawer	Label	Drawer	Label
1	3	From C0, D3 South 1, 3	2	To C1, D2 North 0, 2
2	3	From C0, D3 South 5, 7	2	To C1, D2 North 4, 6
3	2	From C0, D2 North 0, 2	3	To C1, D3 South 1, 3
4	2	From C0, D2 North 4, 6	3	To C1, D3 South 5, 7
5	1	From C0, D1 South 1, 3	0	To C1, D0 North 0, 2
6	1	From C0, D1 South 5, 7	0	To C1, D0 North 4, 6
7	0	From C0, D0 North 0, 2	1	To C1, D1 South 1, 3
8	0	From C0, D0 North 4, 6	1	To C1, D1 South 5, 7

3. Pull out the drawers in system cabinet 0 and 1.
4. Beginning with cable #1 attach the end marked D3 South 1,3 to its CPU IP port on the side of drawer 3.
5. Tie wrap the cable to the back of the drawer. (See graphic.)
6. Put a 180 degree clockwise twist in the cable and lay it on the lower tray of the cable pivot arm. Tie wrap the cable so it keeps its twist.
7. Test that when you push the drawers back into the cabinet, the cable pivot arm pivots and a controlled service loop is created.
8. Place the cable onto the top channel of the cable management bar at the rear of the cabinet and thread it into system cabinet 1.
9. Connect the other end to CPU IP port on the side of drawer 3 in cabinet 1.
10. Tie wrap the cable to the back of the drawer. (See graphic.)
11. Repeat step 6 on this end of the cable.
12. Test that when you push the drawers back into the cabinet, the cable pivot arm pivots and a controlled service loop is created.
13. Repeat steps 4 through 12 for each cable changing the specific connections to CPU IP ports appropriately.
14. Dress each cable - in particular tie wrap the cables to the cable management bar in system cabinet 0

2.9.5 64P I/O Configuration Table

64P System

I/O Cable Placement **QTY IO7's**

EV's	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
32	0,0,0	1,0,0	0,3,0	1,3,0	0,1,0	1,1,0	0,2,0	1,2,0	0,0,5	1,0,5	0,3,5	1,3,5	0,1,5	1,1,5	0,2,5	1,2,5
16	0,0,0	1,0,0	0,1,0	1,1,0	0,0,1	1,0,1	0,1,1	1,1,1	0,0,5	1,0,5	0,1,5	1,1,5	0,0,4	1,0,4	0,1,4	1,1,4
8	0,0,0	1,0,0	0,1,0	1,1,0	0,0,1	1,0,1	0,1,1	1,1,1								
6	0,0,0	1,0,0	0,1,0	0,1,1	0,0,1	1,0,1										
4	0,0,0	0,1,0	0,0,1	0,1,1												
2	0,0,0	0,0,1														

I/O Slot Assignments (Drawer, Slot)

EV's	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
32	0,0,1	1,0,1	0,3,1	1,3,1	0,1,1	1,1,1	0,2,1	1,2,1	0,0,4	1,0,4	0,3,4	1,3,4	0,1,4	1,1,4	0,2,4	1,2,4
16																
8																
6																
4																
2																

EV's	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
64	0,0,2	1,0,2	0,1,2	1,1,2	0,0,3	1,0,3	0,1,3	1,1,3	0,2,2	1,2,2	0,3,2	1,3,2	0,2,3	1,2,3	0,3,3	1,3,3
56	0,0,2	1,0,2	0,1,2	1,1,2	0,0,3	1,0,3	0,1,3	1,1,3	0,2,2	1,2,2	0,3,2	1,3,2	0,2,3	1,2,3	0,3,3	1,3,3
48	0,0,2	1,0,2	0,1,2	1,1,2	0,0,3	1,0,3	0,1,3	1,1,3	0,2,2	1,2,2	0,3,2	1,3,2	0,2,3	1,2,3	0,3,3	1,3,3
40	0,0,2	1,0,2	0,1,2	1,1,2	0,0,3	1,0,3	0,1,3	1,1,3								

EV's	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
64	0,0,6	1,0,6	0,1,6	1,1,6	0,0,7	1,0,7	0,1,7	1,1,7	0,2,6	1,2,6	0,3,6	1,3,6	0,2,7	1,2,7	0,3,7	1,3,7
56	0,0,6	1,0,6	0,1,6	1,1,6	0,0,7	1,0,7	0,1,7	1,1,7								
48																
40																

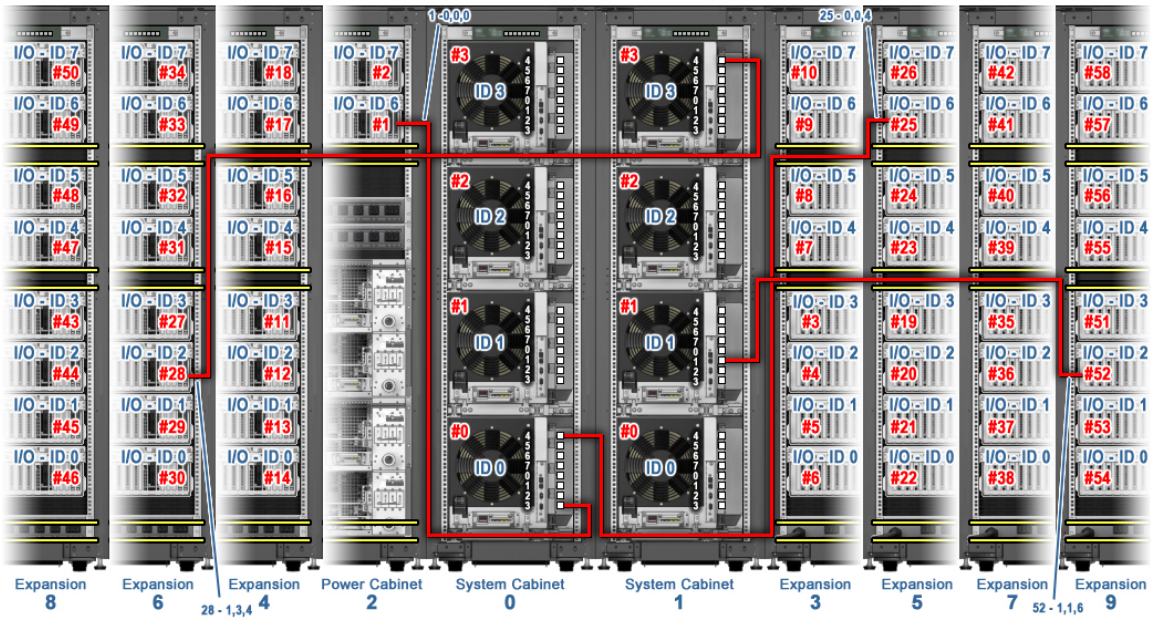
I/O Slot Assignments (Drawer, Slot)

The chart shows the pattern of I/O riser connections to CPU I/O ports.
Here is how to read the chart.
Lets say you have a 64P system (maximum configuration) and 8 I/O drawers/risers. The following connections are made:

Chart Numbering	I/O drawer #	Cabinet #	Drawer #	CPU #
0,0,0 =	1	0	0	0
1,0,0 =	2	1	0	0
0,3,0 =	3	0	3	0
1,3,0 =	4	1	3	0
0,1,0 =	5	0	1	0
1,1,0 =	6	1	1	0
0.2,0 =	7	0	2	0
1,2,0 =	8	1	2	0

So the I/O cable from PCI drawer 1 connects to CPU 0 in drawer 0 in cabinet 0.
The I/O cable from PCI drawer 4 connects to CPU0 in drawer 3 in cabinet 1.

2.9.6 64P I/O Routing Conventions



2.9.6.1 Physical conditions.

1. In expander cabinets, there are two cable management channels across the cabinet; one between I/O drawers 4 and 5 and another between I/O drawers 6 and 7.
2. In power cabinets, there is a single cable management channel across the cabinet between I/O drawers 2 and 3.
3. In power cabinets, I/O cables may pass through the cabinet at the power subrack level.
4. There are multiple areas available to pass cables from one cabinet to another.

The objective is to route the I/O cable from the I/O drawer to the correct 8P drawer and the correct CPU I/O port.

The information given here is for ideal electrical conditions, in practice, physical constraints may not make the connections possible. Ideal physical conditions would dictate that all I/O connections from cabinet 0 be made to its right and that all I/O connections from cabinet 1 be made to its left when looking at the cabinet from the rear.

2.9.6.2 Conventions

1. If routing to 8P drawers 0 or 1, route the cable down either the expander cabinet or the power cabinet and enter the system cabinet from below.
2. If routing to 8P drawers 2 or 3, route the cables up in either the expander cabinet or power cabinet and enter the system cabinet from above.
3. In either case, enter the system cabinet as close as you can to the 8P drawer you are connecting to.

2.9.6.3 Examples

The graphic shows first how manufacturing would add I/O drawers to systems and second how cables are routed to four I/O drawers.

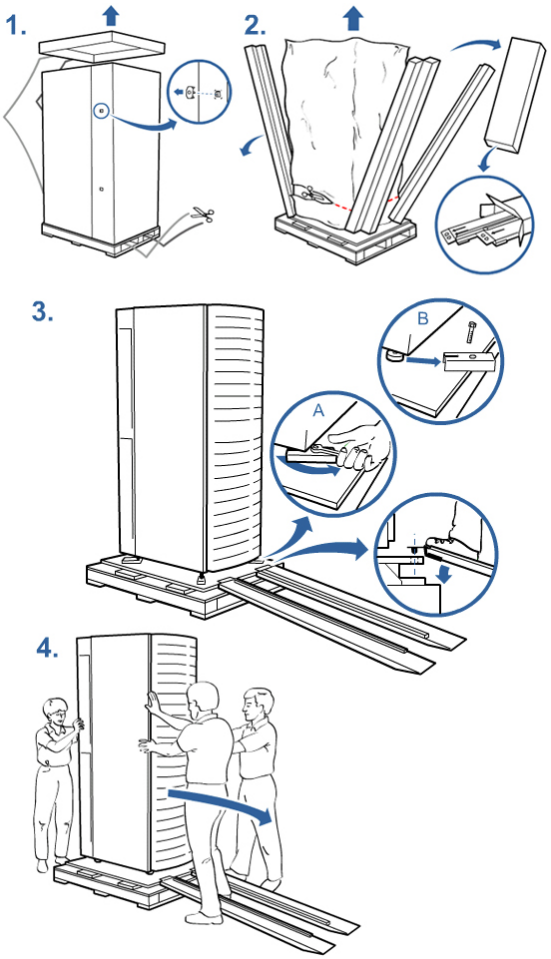
Manufacturing installs I/O drawers in the locations shown in the graphic. For example the 10th drawer is installed in cabinet 2 third down from the top.

Four routing examples are given:

1. Cable routing from cabinet 1, 8P drawer 1, CPU0 to I/O drawer 6.
2. Cable routing from cabinet 1, 8P drawer 0, CPU2 to I/O drawer 34.
3. Cable routing from cabinet 1, 8P drawer 2, CPU2 to I/O drawer 42. (this is an example of an ideal electrical connection and a non-ideal physical routing.)
4. Cable routing from cabinet 0, 8P drawer 2, CPU5 to I/O drawer 15.

Chapter 3Common Events

3.1 Unpacking and De-Skidding



The larger of these systems are extremely heavy and require three people to de-skid them.

System cabinets are 2 meters tall and will not fit through doors that are 80 inches tall while on their skids. You may have to de-skid them before getting them into the computer room.

Be sure all stabilizer feet are raised before de-skidding.

Depending up where you are in the world, you may receive a system completely enveloped in heavy duty corrugated card board or "shrink wrapped". In either case, you'll have pictured instructions showing how to unpack and de-skid the system inside.

- Step 1 is pretty self explanatory: you cut the straps, remove the top, remove the screws hold the corrugated sides together and remove them. Obviously, if the system came

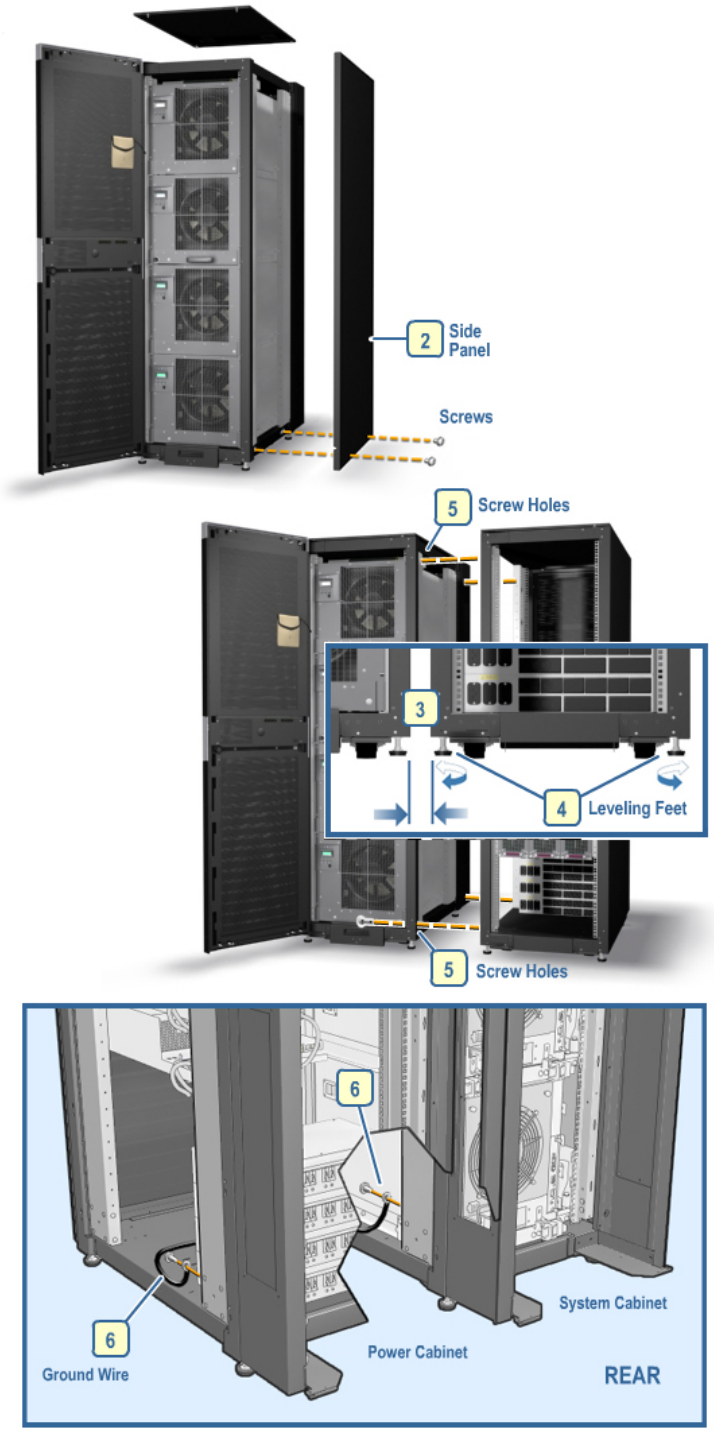
"shrink wrapped", you remove the wrap.

- Step 2, is self explanatory.

- Add to Step 3 the need to **rise all stabilizer feet** to their maximum height before de-skidding. This is important. If the feet are not raised, they may contact the floor at the bottom of the ramp and bend. Also, be sure to place the ramps on the pallet such that the ramp rails are "inside" the cabinet wheels.

- Step 4 indicates at least three people are required to remove the system from the skid. These systems can weigh up to 1600 pounds - three people are needed to control the system down the ramp.

3.2 Install a Power Cabinet

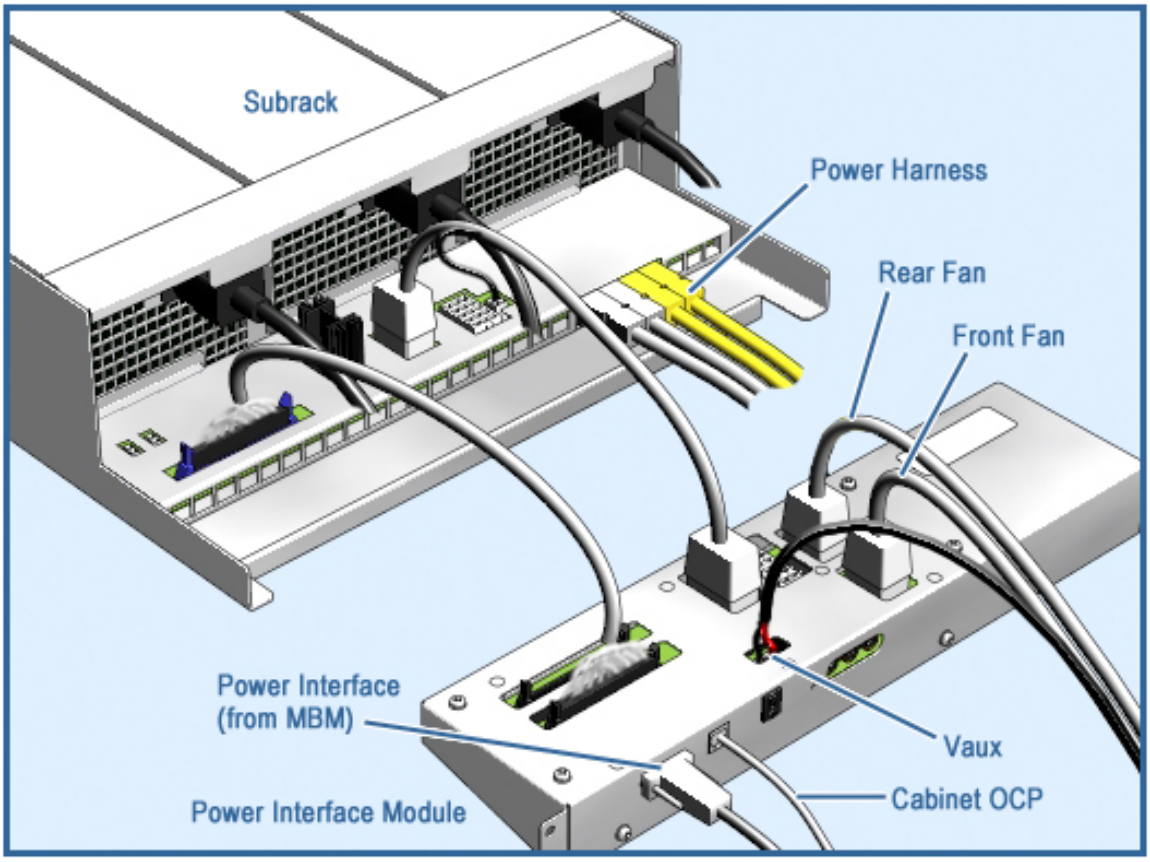


1. You should already have determined the location of the power cabinet relative to other cabinets making up the system.
2. Remove the panel, either right or left of both the power cabinet and its neighbor.
3. Roll the power cabinet as close as possible to its neighboring cabinet and align the front and rear surfaces.
4. Align the cabinet heights by adjusting the leveling feet.
5. Use the four screws from the joining kit (PN 70-40120-02) to join the cabinets together. (graphic shows screw placement.)
6. Connect the ground wire to both cabinets. (graphic shows ground cable placement.)
7. Power cords from the PDUs to the power subracks should be in place.
8. Set the cabinet ID number on the front door OCP push wheel according to the rules for setting cabinet IDs.
9. If the cabinet has I/O drawers, set the push wheel ID number on the drawer OCP according to the rules for setting drawer IDs.
10. Cable installation is handled later in this procedure.

3.3 Connect 32P/64P Power

There are two different power cabinets; one using 30 Amp PDUs and the other using 60 Amp PDUs. The power harnesses come from manufacturing in the system cabinet and should already be attached at the 8P drawer end.

3.3.1.1 30 Amp PDU Connection



Repeat the following procedure for each power subrack and 8P drawer.
Note power subracks and 8P drawers are stacked; connect the bottom drawer to the bottom subrack; connect the next higher drawer to the next higher subrack; etc.

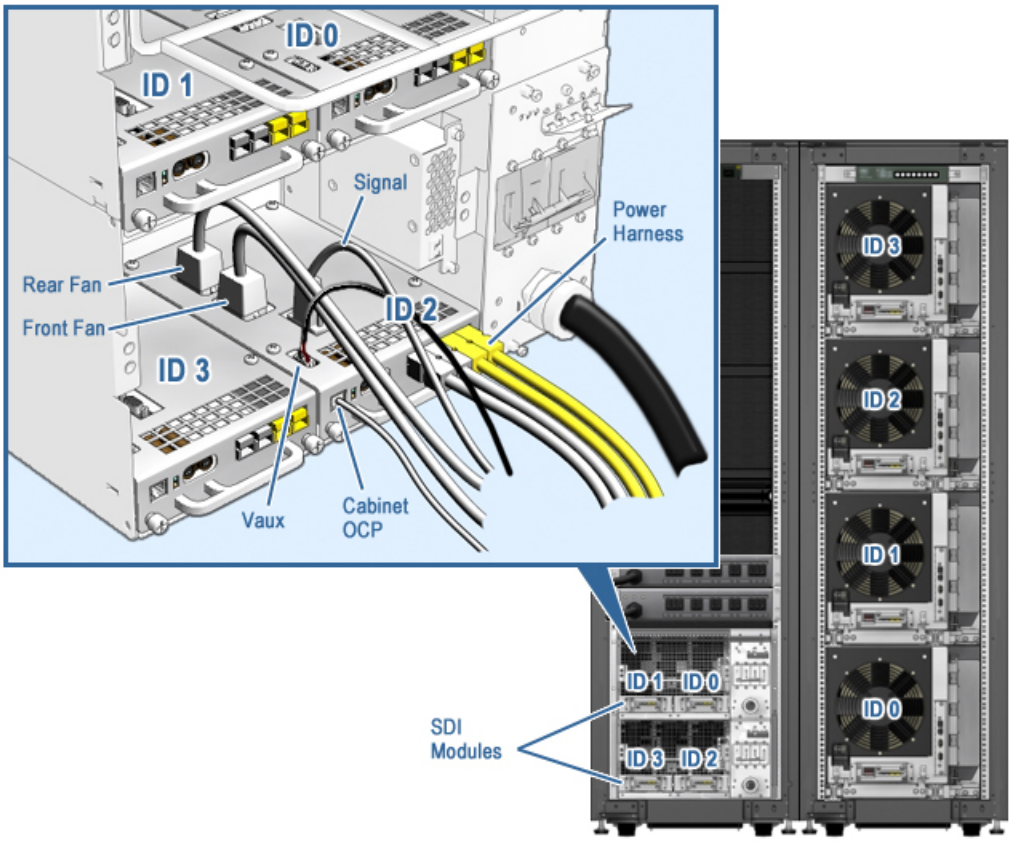
At the rear of the system:

1. Starting with lowest drawer, thread the power harness from the system cabinet along the lower channel at the rear of the cabinet and into the power cabinet.
2. With the drawers in the closed position, prepare the target power subrack by first loosening its power retaining bracket.
3. Install the power cords (yellow and gray) to the subrack. (Considerable force is necessary to make a good power connection.) Lift and tighten the power retaining bracket.
4. Plug the following into the power interface module:
   two position Vaux power cord
   two power cords to the fans
   The MBM power interface cord

Repeat steps 2 through 4 for all drawers.

Stepping to the front, pull the drawers out of the cabinet and make sure there is enough play in the power harnesses to allow the drawers to fully extend.

3.4 60 Amp Power Connection



The power harnesses come from manufacturing in the system cabinets and should already be attached at the 8P drawer end.

Repeat the following procedure for each SDI (Superdome Interface module) and 8P drawer. Use the graphic to identify which SDI is connected to which 8P drawer. When connecting to a 64 P system, the drawers in cabinet 0 connect to SDIs in the lower power sub unit and drawers in cabinet1 connect to SDIs in the upper power sub unit. The following table reflects proper connections.

Upper FEPS	SDI 1 Sys Cab1 drawer 1	SDI 0 Sys Cab1 drawer 0
	SDI 3 Sys Cab1 drawer 3	SDI 2 Sys Cab1 drawer 2
Lower FEPS	SDI 1 Sys Cab0 drawer 1	SDI 0 Sys Cab0 drawer 0
	SDI 3 Sys Cab0 drawer 3	SDI 2 Sys Cab0 drawer 2

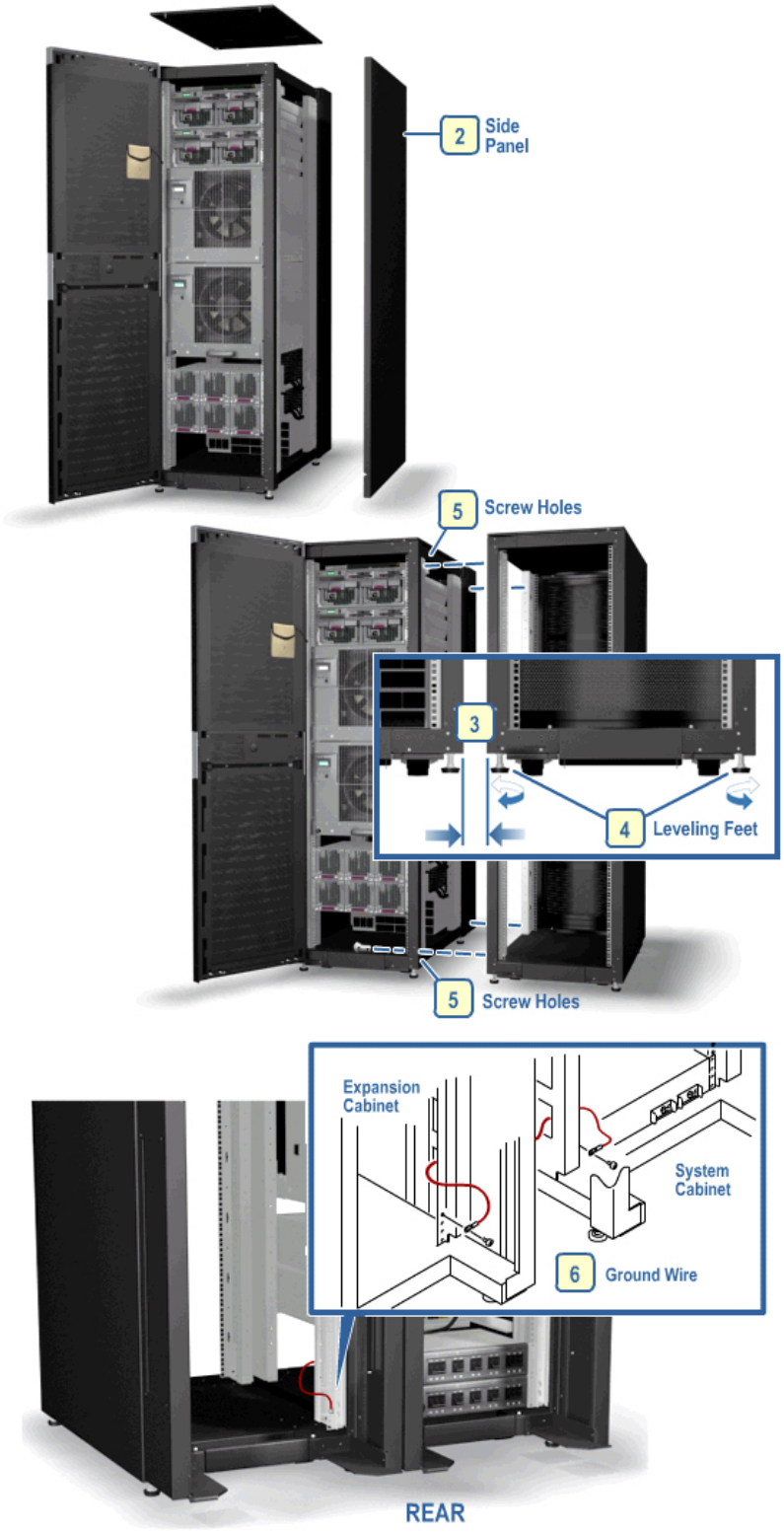
At the rear of the system:

1. Starting with lowest drawer, thread the power harness from the system cabinet along the lower channel at the rear of the cabinet and into the power cabinet.
2. With the drawers in the closed position, prepare the target power SDI by first loosening its power retaining bracket.
3. Install the power cords (yellow and gray) to the SDI. (Considerable force is necessary to make a good power connection.) Lift and tighten the power retaining bracket.
4. Plug the following into the SDI module:
   two position Vaux power cord
   two power cords to the fans
   The MBM power interface cord

Repeat steps 2 through 4 for all drawers.

Stepping to the front, pull the drawers out of the cabinet and make sure there is enough play in the power harnesses to allow the drawers to fully extend.

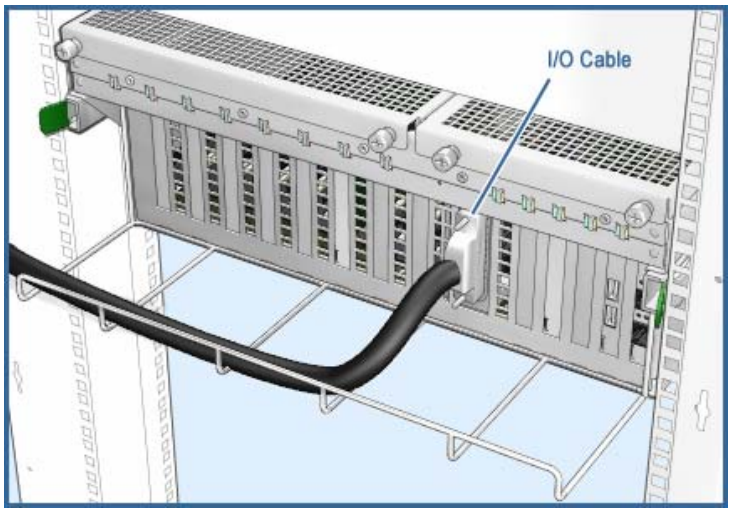
3.5 Installing an Expander Cabinet

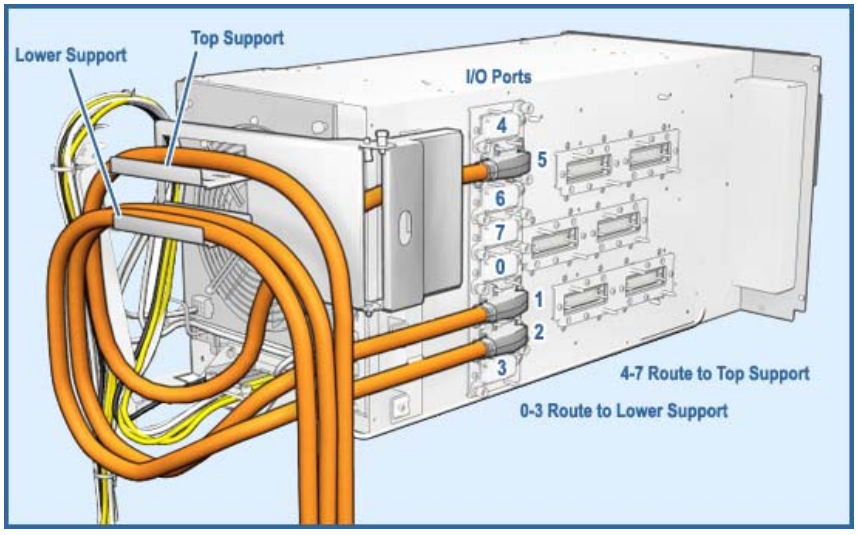


1. You should already have determined the location of the expander cabinet relative to other cabinets making up the system.
2. Remove the panel, either right or left of both the expander cabinet and its neighbor.
3. Roll the expander cabinet as close as possible to its neighboring cabinet and align the front and rear surfaces.
4. Align the cabinet heights by adjusting the leveling feet.
5. Use the four screws from the joining kit (PN 70-40120-02) to join the cabinets together. (graphic shows screw placement.)
6. Connect the ground wire to both cabinets. (graphic shows ground cable placement.)
7. Set the cabinet ID number on the front door OCP push wheel according to the rules for setting cabinet IDs.
8. If the cabinet has I/O drawers, set the push wheel ID number on the drawer OCP according to the rules for setting drawer IDs.
9. Cabling depends upon the contents of the expander cabinet and the contents of the system cabinet. I/O drawers must be connected using an IP cable to an I/O CPU connector. Storage shelves must be connected to storage shelf controllers in I/O drawers.

3.6 Connect the I/O Cables (32P/64P)

The I/O cables are left connected to I/O riser modules in I/O drawers in the power and expander cabinets. The other end of these cables connect to CPU I/O ports in 8P drawers in accordance with conventions found in the 32P/64P I/O configuration tables. And they are routed through these cabinets in accordance with 32P/64P I/O cable routing conventions. Slack that allows the drawers to be pulled from the cabinets is controlled by I/O cable loops.





1. Determine where each I/O cable goes by checking the 32P/64P I/O configuration table.
2. Route each cable through the cabinets to the proper I/O drawer. See the 32P/64P I/O routing conventions.
3. If the 8P drawers are not pulled out of the front of the cabinet, pull them out now.
4. Connect the I/O cable to the target CPU I/O port in the target drawer and secure the cable to the side of the drawer with the plastic wraps provided.
5. At the back of the machine push the I/O cable support arm flush to the inside of the cabinet
6. Drape the I/O cable over the lower support of the I/O cable support arm if the cable comes from CPU slots 0-3.
7. Drape the cable over the top support of the I/O cable support arm if the I/O cable comes from CPU slots 4-7. Drape the cable so that the bottom of the loop is a few inches above the loop created by a cable in step 6.
8. Loosely tie wrap the cable to the support.
9. Test the size of the loop by pushing the drawers into the cabinet and adjusting the loop so that the cable does not interfere with movement of the drawer out of or into the cabinet.
10. Once you are sure that the size of the loop is adequate, tighten the tie wrap on the I/O cable support arm.
11. Repeat steps 2 through 12 for each I/O cable in the system.

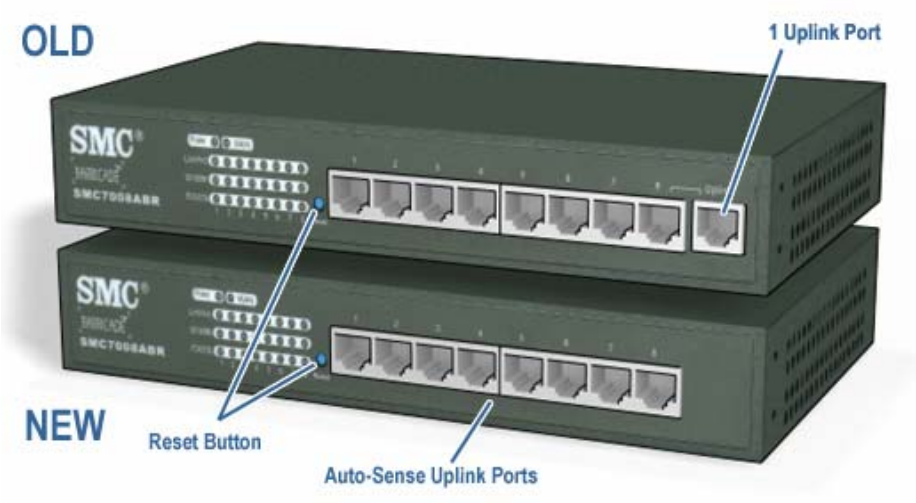
	Do **NOT** tie wrap I/O cables together; let them hang loosely independent of each other.

3.7 Connect and Set Up NAT box

The router box, sometimes referred to as a Cable/DSL router or a Network Address Translation box (NAT box), is a hardware bridge between two networks. In this case we are using NAT boxes to put individual internal LANs on a multi-server LAN or a corporate LAN. SMC makes a device that contains both the functions of a NAT box with a LAN HUB and it is this device we use.

There are two versions of this box, both are SMC 70008ABR routers. The differences are:

1. The older version has 8 ports with an additional uplink port.
2. The newer version has 8 auto-sense uplink ports.



3.7.1 What you need to set up a NAT box.

1. A NAT box. (part of these systems)
2. A choice made by the customer's system manager regarding which of the two possible LANs the system is to be attached to.
3. The following network addresses from the system manager:
   A static IP address and mask for the NAT box on the LAN
   Possibly two DNS addresses
   Possibly two WINS addresses
   A gateway address if applicable
4. Two LAN cables
5. A PC or lap top to set up the NAT box

3.7.2 NAT Box Overview

There are two sides to the NAT box, the LAN side connecting to the systems internal LAN and the WAN side connecting to either the multi-server LAN or the corporate WAN. The latter is not recommended since it leaves the system unprotected.

1. To set up the LAN side connect your PC to a port on the internal LAN side of the NAT box.
2. Make sure or configure your PC network connection is set to DHCP.
3. Configure the NAT box to the predetermined Fixed IP address of the NAT box.
   Note: This change of address causes the PC to disconnect from the NAT box.
4. Re-configure your PC to the fixed IP address on the internal LAN.
5. Re-connect your PC to the NAT box and configure the WAN side.
6. Connect the NAT box to the multi-server LAN or to the corporate LAN.

Keep the NAT box's user manual handy.

The NAT box should not be connected to the system's internal LAN before the PC configures it.

3.7.3 Reset the NAT box

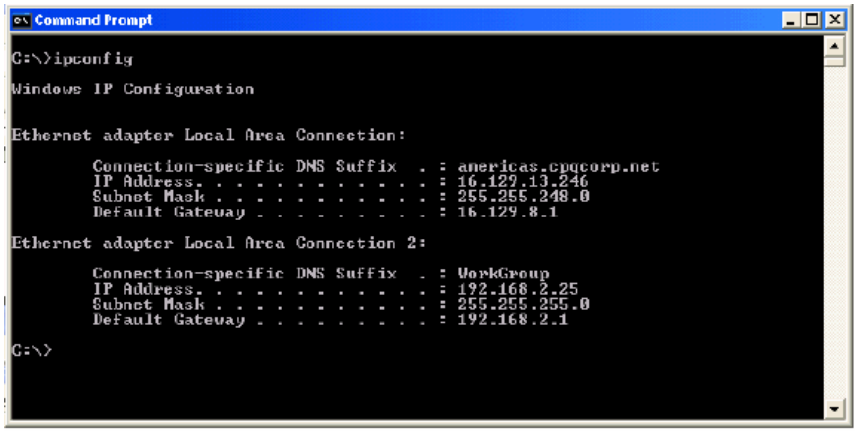
It is likely that your NAT box has been configured in manufacturing and you will have to reset it before you install it.

To reset:

1. If the NAT box is connected to the Internal LAN, remove all cables from MBMs and PBMs to the LAN side of the box
2. Press and hold the blue reset button for 5 seconds.
3. Wait for reset to complete.

3.7.4 NAT box Installation Procedure

1. Using a BN25G-xx (RJ45) cable connect your PC to any LAN port on the front of the NAT box in the system.
2. Make sure or configure your PC network connection is set to DHCP.
   - Click the **start** button, select **settings**, and **Network and Dial-up Connections**
   - Select **local area connections** and click on **properties**.
   - Select **Internet Protocol (TCP/IP)** and click on **properties**.
   - Verify or configure the adaptor to **Obtain an IP address automatically**.
   - Click the **OK button**.
3. Verify that the NAT box has provided your PC with an IP address. You can see this by bringing up a DOS window and issuing the **ipconfig** command. The address given by the NAT box should be **192.168.2.xx**. If you do not get this address, with a pen or pencil press and hold reset button on the front of the box.

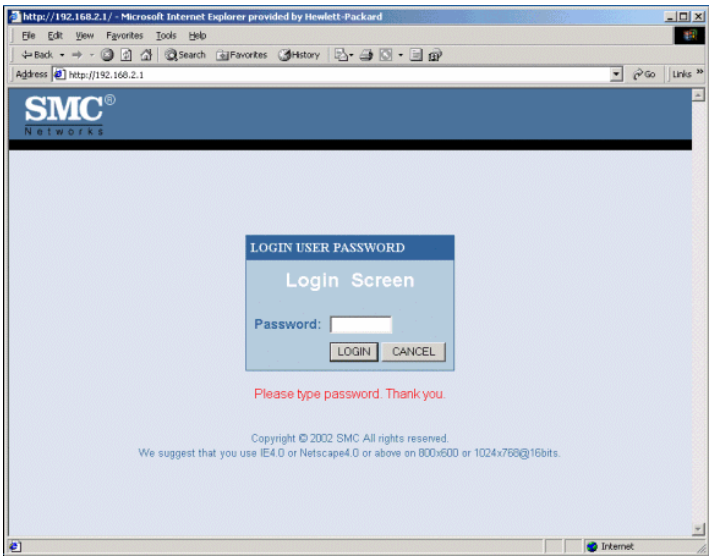


3.7.5 Configuring the NAT box.

Proceed if you are configuring a "new" NAT box.
See “configuring the old NAT box”, on page 105 if you are configuring an “old” NAT box.

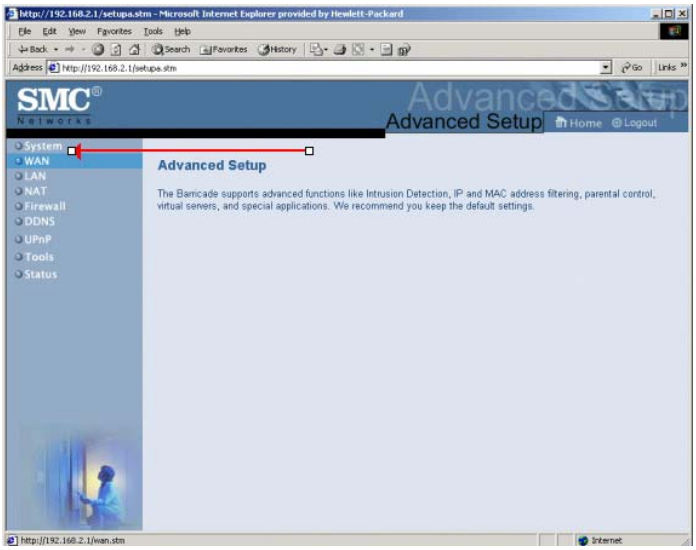
3.7.6 Setting up the WAN side of the box

- Bring up an Internet Explorer window on the PC and target the NAT box.
- First disable proxy settings on the browser and set the IP address given as the Default Gateway by the NAT box (this is the default, factory set address of the NAT box) - http://192.168.2.1:88.
- Once this is done the NAT box login screen appears.
- Leave the Password field empty and click on the Login **button.**

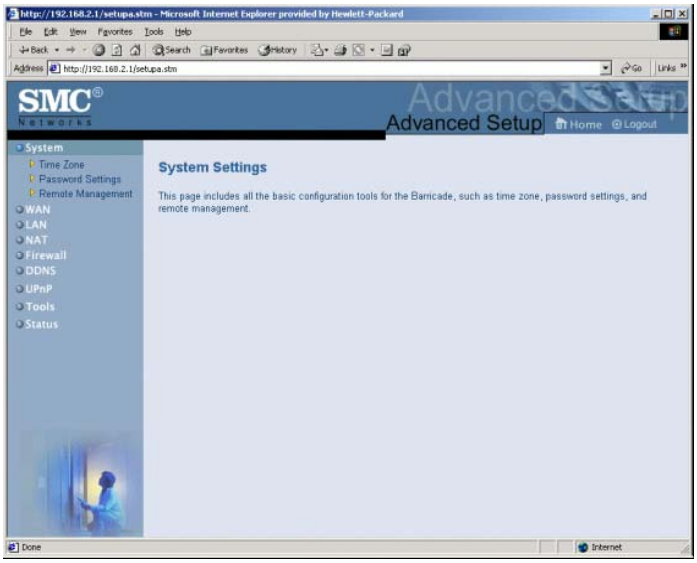


The following window appears.

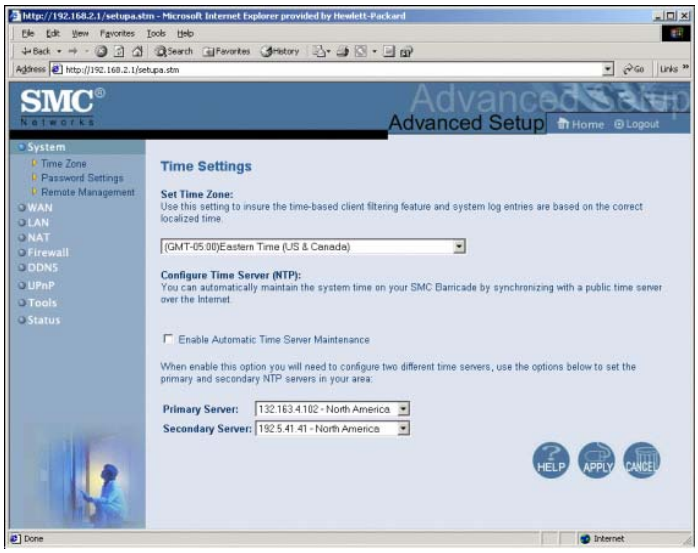
Click on Advanced Setup.



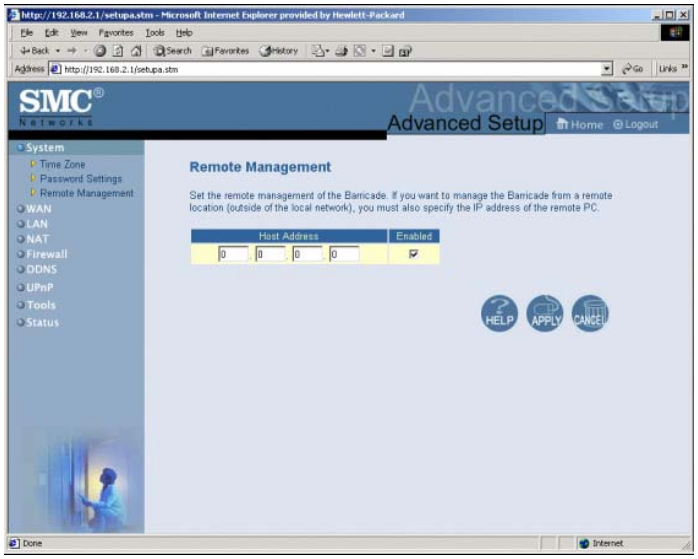
Click on System.



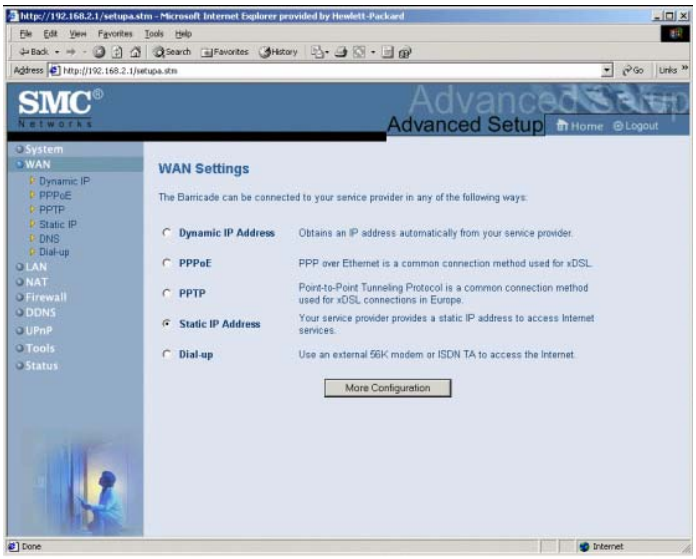
If this NAT box is used to connect to the server management LAN, click on TIME. Otherwise, skip to the LAN side setup.



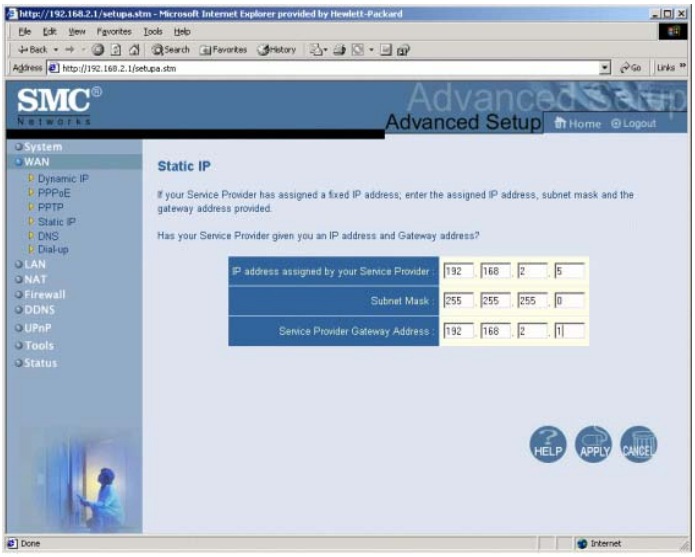
Select set time zone.
Disable Automatic Time Server Maintenance.
Apply.



Click on Remote.
Enable Remote Management.
Apply.



Open the WAN drop down menu.
Choose Static IP Address.
Click on the More Configuration button.

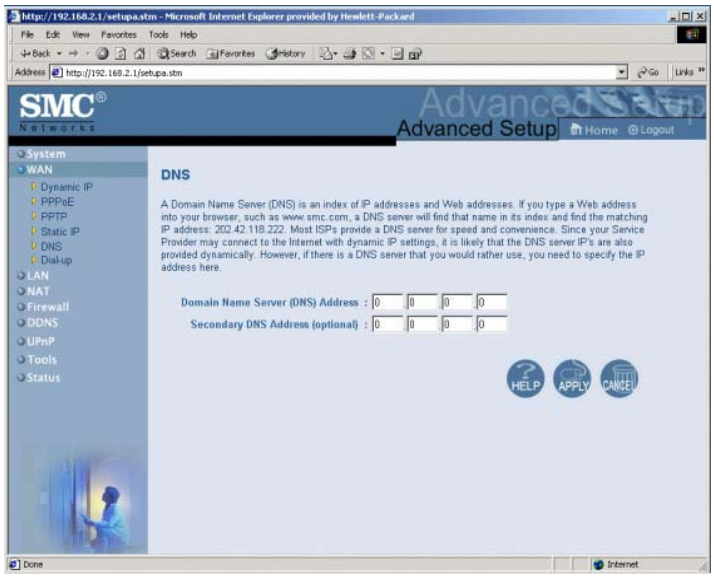


Enter the following:

Field	Enter for multi-server LAN	Enter for Corporate LAN
		Not recommended.
IP address assigned by your ISP field	Provided by the customer. (we recommend: 90.0.100.1 for the first sys. 90.0.100.2 for the second; 90.0.100.3 for the third...)	Provided by the customer. This is the address of the NAT box on the Corp-LAN.
Subnet Mask field	255.255.0.0	255.255.0.0 (or provided by the customer)
ISP Gateway Address field	90.0.0.102	If the customer follows our suggested addressing, this is the address of the AMS on the

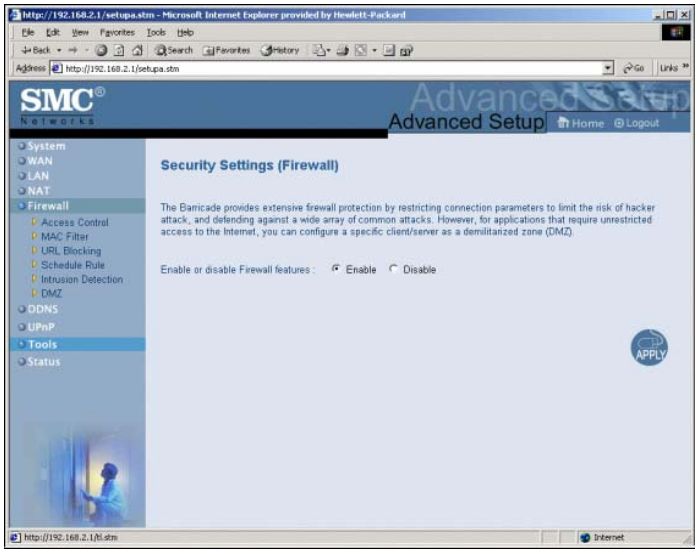
	corporate LAN. If the customer did not follow our suggested addressing scheme, you'll have to get this address from the customer.

Enter the Server management LAN IP Address provided by the customer, the Subnet Mask, and the Server Provider Gateway Address.
Apply.

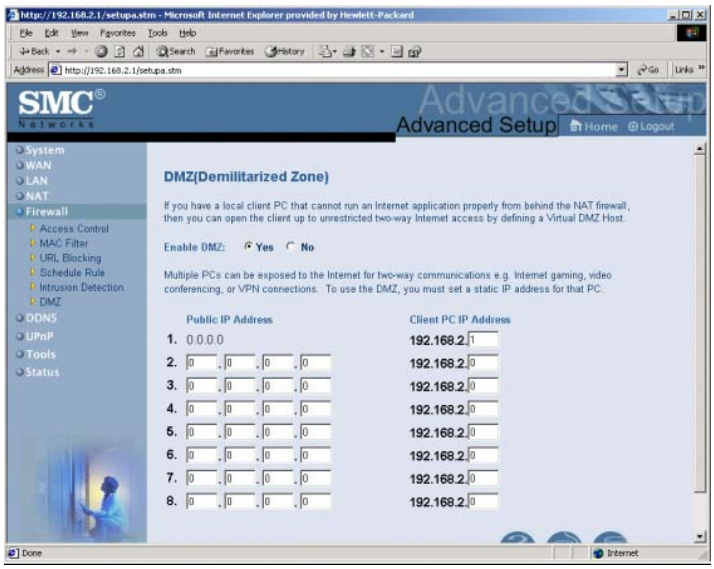


If the customer uses a Domain Name Server on the WAN to which the NAT box connects, enter the address assigned by the customer. These two addresses are necessary only if the customer uses a Domain Name Server. Note that these addresses are WINS addresses and differ from DNS addresses.

Field	Enter
Domain Name Server (DNS) address	Provided by the customer
Secondary DNS Address	Provided by the customer.

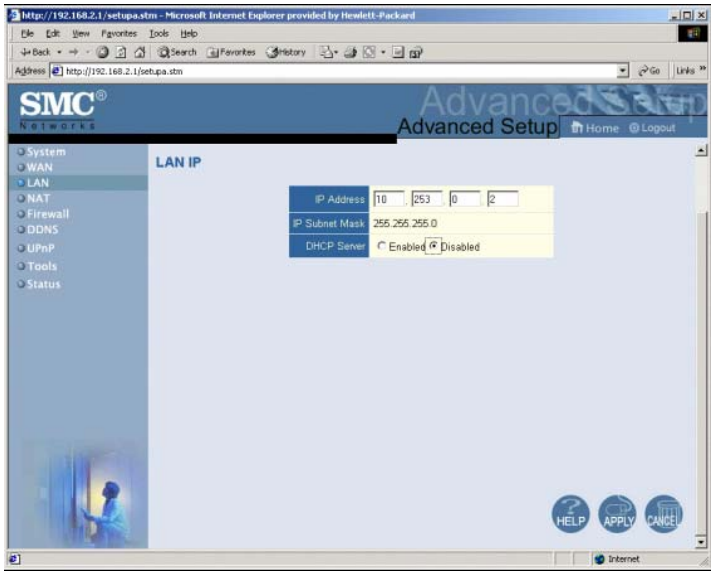


Click on Firewall to bring the firewall drop-down menu into view.
Enable the firewall.
Apply.



Click on DMZ to bring the DMZ drop-down menu into view.
Enable DMZ.
Enter "1" for the first IP address.
Note the 192.168.2.x sill auto change to 10-class when the LAN setup id entered.

Apply.



LAN Side Setup
Click on LAN to get to the LAN setup screen.

If this NAT box is connected to the Server Management LAN on the WAN side, change the IP address
from 192.168.2.1
to 10.253.0.2

If this NAT box is the second NAT box that is daisy-chained, leave 192.168.2.1 as the IP address.

If this NAT box is the third NAT box, change the IP address to 192.168.2.**2**

If this NAT box is the nth NAT box, change the IP address to 192.168.2.(n-1)

Disable DHCP.
Apply.

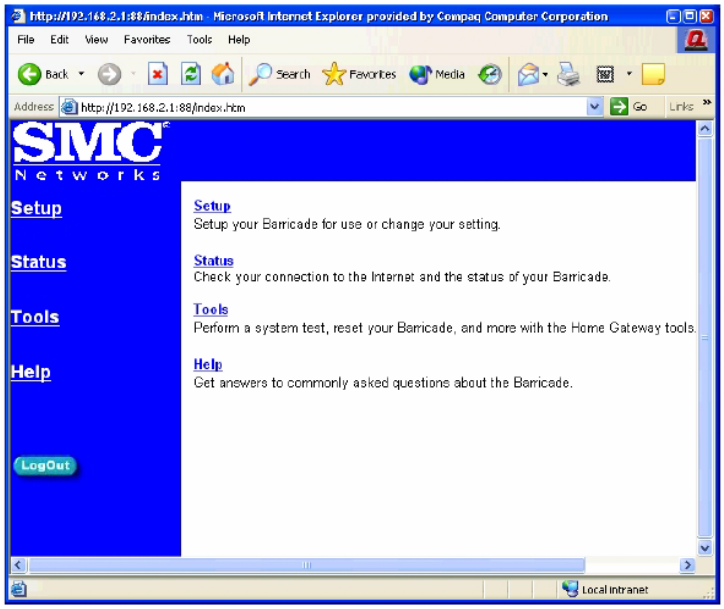
Note that the NAT box is no longer available to your laptop or PC because of this change of address, however setup is now complete.

3.8 Old NAT box setup

3.8.1 Setting up the WAN side of the box

Bring up an Internet Explorer window on the PC and target the NAT box. First disable proxy settings on the browser and set the IP address given as the Default Gateway by the NAT box (this is the default, factory set address of the NAT box) - http://192.168.2.1:88.
Once this is done the NAT box login screen appears.
Leave the Password field empty and click on the Login button.

The following window appears.



Click on Setup.
Click on Enter to bring up the setup wizard.
Click on Enter again to leave the Password blank.

If this NAT box is used to connect the server management LAN, click on TIME. Otherwise, skip to the LAN side setup.

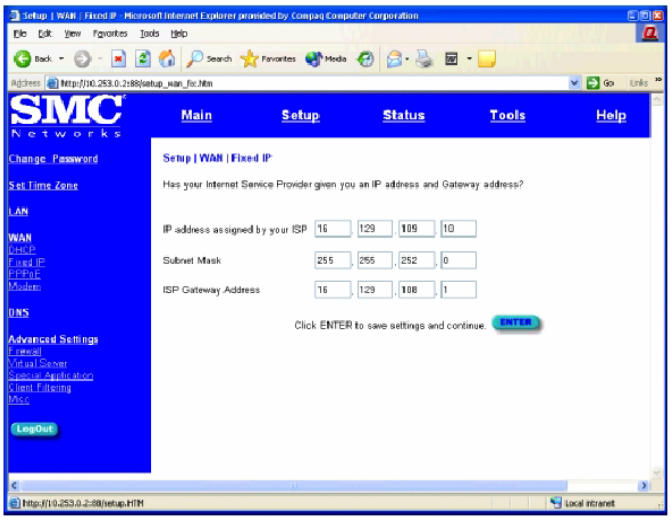
Click Enter.

Select **setup**.
Click on **WAN**.
Select **static IP address** and click on **More Configuration**.

Enter the following:

Field	Enter for multi-server LAN	Enter for Corporate LAN
		 Not recommended.
IP address assigned by your ISP field	Provided by the customer. (we recommend: 90.0.100.1 for the first sys. 90.0.100.2 for the second; 90.0.100.3 for the third...)	Provided by the customer. This is the address of the NAT box on the Corp-LAN.
Subnet Mask field	255.255.0.0	255.255.0.0 (or provided by the customer)
ISP Gateway Address field	90.0.0.102	If the customer follows our suggested addressing, this is the address of the AMS on the corporate LAN. If the customer did not follow our suggested addressing scheme, you'll have to get this address from the customer.

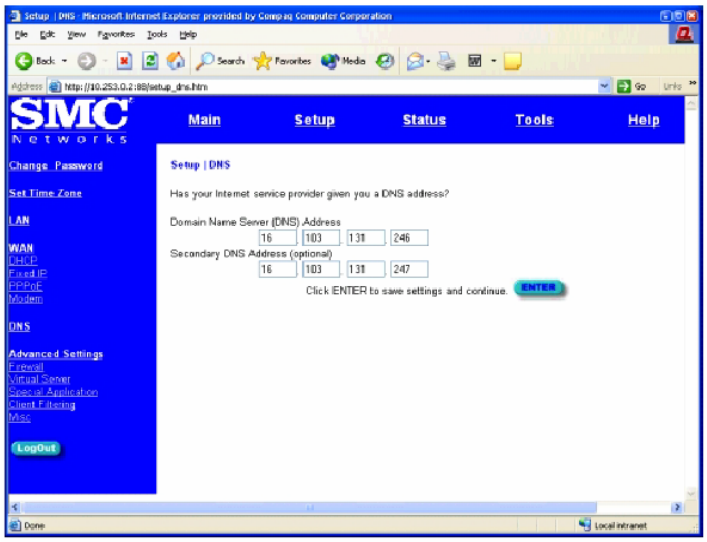
Like this:



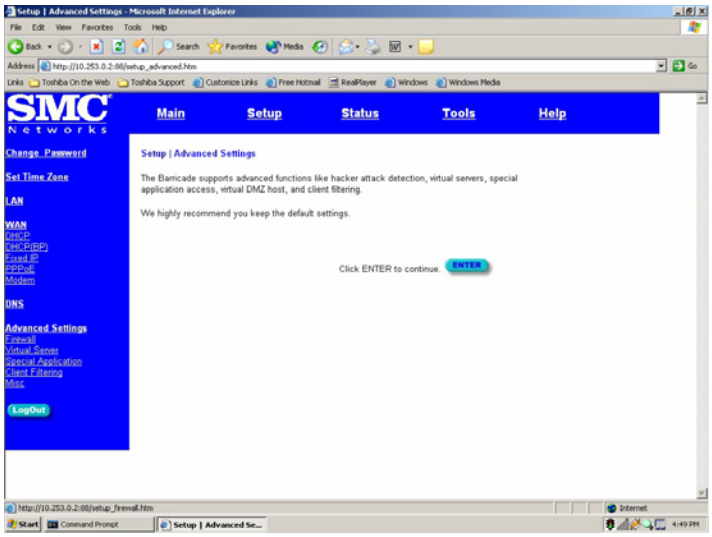
Click **Enter**.

If the customer uses a Domain Name Server on the WAN to which the NAT box connects, enter the address assigned by the customer. These two addresses are necessary only if the customer uses a Domain Name Server. Note that these addresses are WINS addresses and differ from DNS addresses.

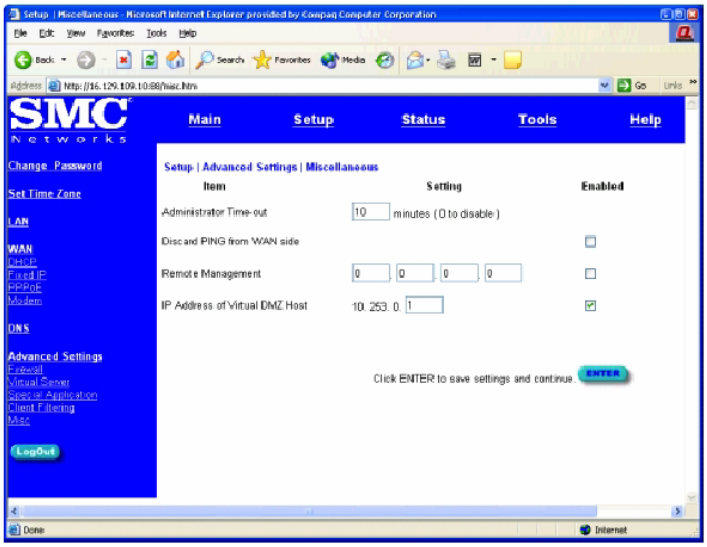
Field	Enter
Domain Name Server (DNS) address	Provided by the customer
Secondary DNS Address	Provided by the customer.



Click **Enter**.
The following Advanced Settings screen appears:



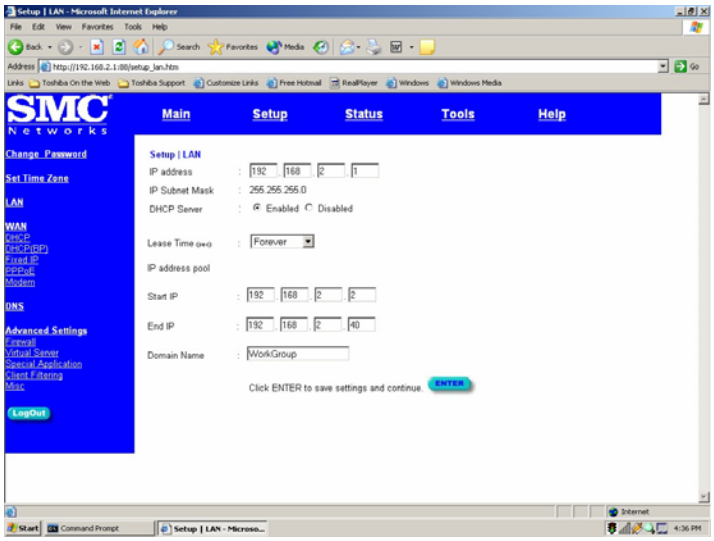
Ignore the warning and click **Enter**.
The first Advanced setting screen allows you to leave on or turn off the firewall.
Click the **no** button disabling the firewall and then **enter**.
The Virtual Server screen appears which you disregard.
On the left side of the screen click on **Misc** and the following screen appears.



Both the Remote Management and the virtual DMZ host need to be enabled. The DMZ address is set to 10.253.0.1.
Place a **1** in the input box setting up the IP Address of the Virtual DMZ host
Click the **Enable** checkboxes next to the remote Management and the IP Address of Virtual DMZ Host and then click **Enter**.

Setting up the LAN side of the box

Next, on the left hand side, select LAN and the following screen appears.



On this screen change the IP address.
If this NAT box is connected to the Server Management LAN on the WAN side, change the IP address
from 192.168.2.1
to 10.253.0.2

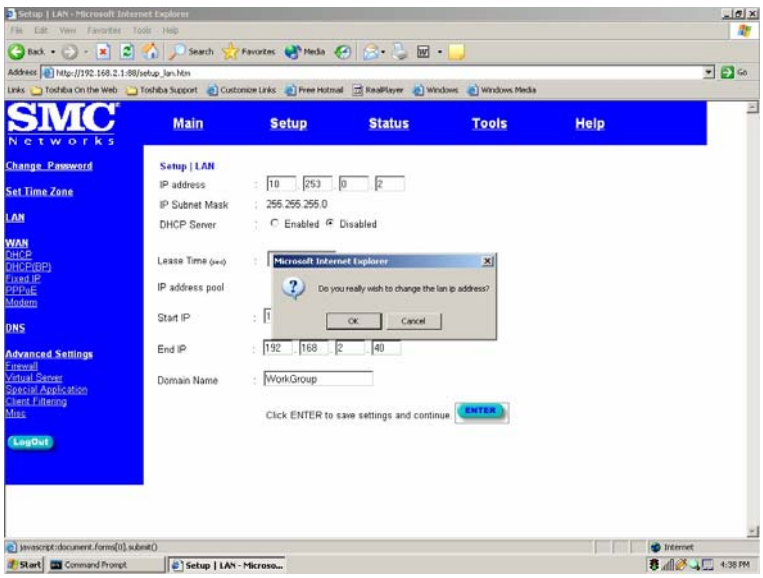
If this NAT box is the second NAT box that is daisy-chained, leave 192.168.2.1 as the IP address.

If this NAT box is the third NAT box, change the IP address to 192.168.2.**2**

If this NAT box is the nth NAT box, change the IP address to 192.168.2.**(n-1)**

Leave the subnet mask as is and disable the NAT box's DHCP Server. (When you disable the DHCP server, the IP address pool addresses are ignored.)

Once the IP address is entered and Disable DHCP is selected, press Enter.



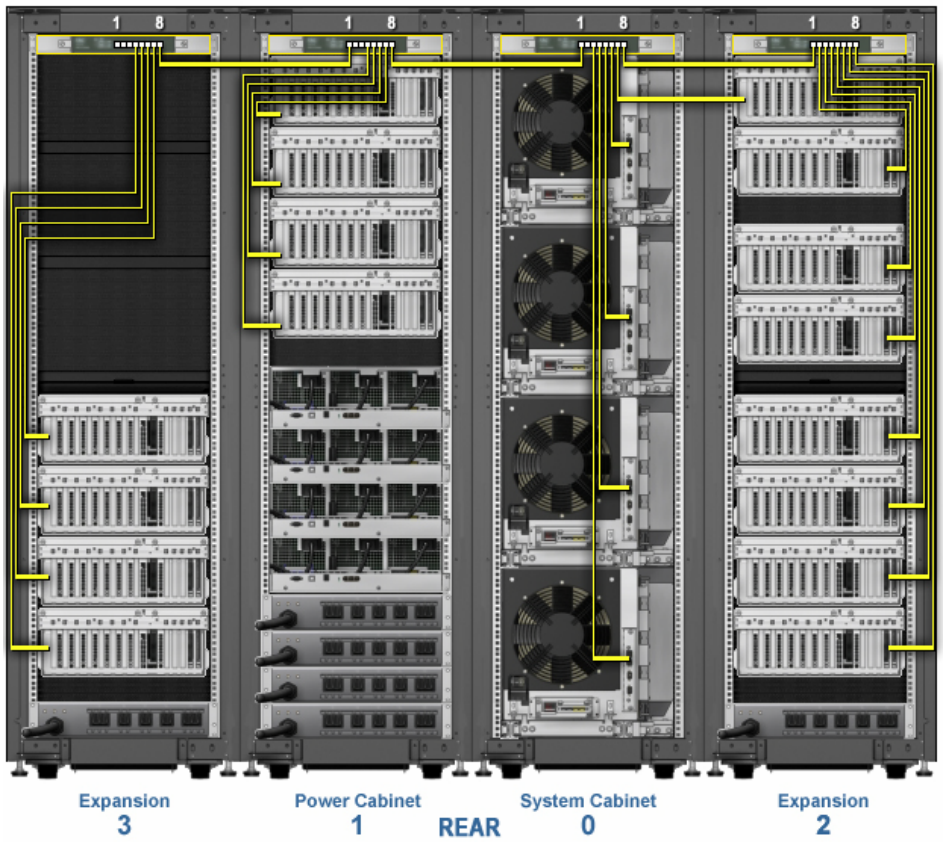
Continue on the next screen. The NAT box immediately changes its address to 10.253.0.2, its address on the internal LAN and the connection to your PC through Internet Explorer is broken.

To re-connect to the NAT box you must re-configure your PC to an internal LAN address on the system. (Suggested address - 10.253.0.3.)
Do that by following the procedure:
Click on **start**, **settings**, **network and dial-up connections**.
Select **local area connections**.
Click on **properties**.
Select **Internet protocol (TCP/IP)**
Change from **Obtain an IP address automatically** to **Use for following IP address**.
Enter the following in the Internet Properties (TCP/IP) Properties Box:

Field	Enter
IP address field	10.253.0.3 - the first available address on the internal LAN's address pool.
Subnet mask field	255.0.0.0
Default gateway	leave blank

You do not need to add information about a DSN server.
Back out of all the dialog boxes by clicking on close.

3.9 NAT Box Daisy-Chain



The internal LAN is physically created in part by connecting the micro-processors on the MBM and PBM modules. This is accomplished by connecting the MBM and PBM in each cabinet to the NAT box in each cabinet and then daisy-chaining the NAT boxes in each cabinet together.

1. Reseat both ends of all cables between the NAT box and any destination.
2. Using the 39 inch network cable (PN: 17-05097-01) make a single connection between the NAT boxes in adjacent cabinets.

If any of the NAT boxes has an up-link port, **one** NAT box's up-link port must be connected to a LAN port in another NAT box. The other NAT boxes would then be connected from LAN port to LAN port.

3.10 The Console Connection

With the advent of partitions and complex computer room environments, traditional single consoles for each system and partition are becoming obsolete. These systems use an internal LAN for server management operations like booting and configuring the system environment. There are several ways to connect consoles to the system. There are three LANs to consider: the internal LAN in the system, the multi-server LAN, and the corporate LAN. You should work with the customer to decide how the console(s) should be connected.

3.10.1 Connect a PC to the NAT Box

1. Using a BN25G-xx cable connect a PC/laptop to the WAN side of the NAT box.
2. When you set up the NAT box you establish a network address for the WAN side of the NAT box. If you followed the directions, the WAN side of the NAT box has an address of 90.0.100.1
3. Start a telnet session on your PC to address <nat box address>:23 (23 is the PMUs port address)
4. The MBM> prompt should appear on your PC.

Using this console you can manage the system using Telnet or the AlphaServer Management Utility (AMU). Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Utility (AMU) from a PC running Windows.

3.10.2 Connect a AlphaServer management Station

1. Set up the NAT box between the internal LAN and the multi-server LAN.
2. Use the second BX25G-xx cable to connect the NAT box's **WAN connection** to the HUB set up for the multi-server LAN.
3. Set up the AMS on the multi-server LAN.
4. Install the AMS software. Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Station (AMS) from an AlphaServer workstation running Tru64 UNIX.

3.10.3 Connect the corporate LAN to the AMS

1. Set up the NAT box between the internal LAN and the multi-server LAN.
2. Use the second BX25G-xx cable to connect the NAT box's **WAN connection** to the HUB set up for the multi-server LAN.
3. Set up the AMS on the multi-server LAN.
4. Set up the AMS on the corporate LAN.
5. Install the AMS software. Refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Station (AMS) from an AlphaServer workstation running Tru64 UNIX, VMS, or Linux. Refer to AMU online help for instructions on using AMU on a PC running Linux or Windows.

3.10.4 Connect from the corporate LAN to the internal LAN

1. Setup the NAT a box between the internal LAN and the corporate LAN.
2. Start a telnet session on your PC to address <nat box address>:23 (23 is the PMUs port address)
3. The MBM> prompt should appear on your PC connected to the corporate LAN.

If you wish to use AMU, refer to the AMS 1.1.0 CD for instructions on installing and using the AlphaServer Management Utility (AMU) from a PC running Linux or Windows.

The NAT box setup is now complete.
Use the second BX25G-xx cable to connect the NAT box's WAN connection to the HUB set up for the multi-server LAN, or to a drop on the corporate LAN.

3.11 Rules for Setting Cabinet IDs

Each cabinet has a unique ID defined by the setting of the push-wheel switch on the back of the door OCP. The following rules apply to cabinet IDs:

1. The left most system cabinet has an ID of 0.
2. All subsequent cabinet IDs are incremented as cabinets are added to the platform first to the right and then to the left of the first system cabinet. (Orientation is the front of the system.)

The result of these rules is that all cabinets to the right of cabinet 0 have odd ID numbers and all cabinets to the left of cabinet 0 have even ID numbers.

3.12 Rules for Setting Drawer IDs

For each cabinet no matter whether it is a system cabinet, power cabinet, or expander cabinet, follow rules that apply to components in the cabinet.

1. Platform component push-wheel numbering begins with 0.
2. CPU drawers are numbered first, power subracks or SDIs second, and I/O drawers third.
3. Components are numbered sequentially from bottom to top.

Component	Push-wheel ID	location in cabinet	Note
2P or 8P drawer	sequentially from 0 to n	Drawer closest to the floor is 0	Drawer above 0 is 1, drawer above 1 is 2...
Power subracks	sequentially from n+1 to m	Power subrack closest to the floor is n+1	n = highest numbered 2P or 8P drawer
I/O drawers	sequentially from m+1 to p	I/O drawer closest to the floor is m+1	m = highest numbered power subrack

Example 1: a system cabinet with two 8P drawers, two power subracks, and two I/O drawers would have the following IDs:

8P drawers	0 and 1
Power subracks or SDIs	2 and 3
I/O drawers	4 and 5

Example 2: a power cabinet with four power subracks, four I/O drawers, and four 30 Amp PDUs would have the following IDs:

Power subracks or SDIs	0 through 3
I/O drawers	4 through 7

Example 3: a power cabinet with two power subracks and two I/O drawers would have the following IDs:

Power subracks or SDIs	0 through 1
I/O drawers	2 through 3

3.13 LAN Addressing

The thirty two bit private LAN address is defined as follows:

nnnnnnnn. mmmmmmmm . pppppppp . eeeeeeee

The value of mmmmmmmm determines the meaning of the values of pppppppp and eeeeeeee.

3.13.1.1.1 LAN Address

The LAN address = nnnnnnnn = 10

3.13.1.1.2 Cabinet ID

Cabinet IDs are unique and are determined by the setting of the OCP push-wheel on each cabinet door. Each cabinet must have a unique number. Cabinet IDs are represented in network addresses in two ways depending upon whether you are addressing components in system space or components in IO space:

1. When addressing system space components like MBMs, CMMs, and CPUs, the upper 4 bits of mmmmmmmm are the cabinet ID number.
2. When addressing IO space components like the PBM, mmmmmmmm = 254 and eeeeeeee = the cabinet ID.

The valid range for the cabinet ID set by the push-wheel on the cabinet door is 0 to 7.

3.13.1.1.3 MBM ID

The MBM ID is set by the push-wheel on the 2P or 8P drawer. This ID corresponds to the address of the backplane in the drawer and is fundamental in determining other physical addresses for both the system and the server management LAN. The lower four bits of mmmmmmmm are the MBM ID number. Thus mmmmmmmm = a specific MBM in a specific cabinet. With this unique number, firmware determines addresses for memory, CPUs, and the port locations for north, south, east, and west IP ports.

The valid range for the MBM ID set by the push-wheel on both the 2P and 8P drawers are 0 to 3.

3.13.1.1.4 PBM ID

The PBM ID is set by the push-wheel on the IO drawer. When mmmmmmmm = 254, pppppppp = the PMB ID set by the push-wheel on the OCP of the IO drawer.

Network ID Table

	If mmmmmmmm = Cabinet ID + MBM push- wheel	If mmmmmmmm = PBM flag (254 decimal)	If mmmmmmmm = special (253 decimal)
nnnnnnnn	network number (10 decimal)	network number (10 decimal)	network number (10 decimal)
mmmmmmmm	MBM in cab0, 1-4 MBM in cab1, 11-14	254	See special addresses
pppppppp	0 for MBM, 1-4 for CMM	PBM push-wheel	See special addresses
eeeeeeee	0 for CMM itself, 1-2 for EV7 ID, when MBM specified, default = 1	Cabinet ID push-wheel	See special addresses

Some examples

Device		Comment
MBM	10.1.0.1	MBM cabinet ID 0, drawer ID 1 (eeeeeeee default = 1)
PBM	10.254.1.0	PBM cabinet ID 0, drawer ID 1
CMM	10.2.1.0	CMM #1 connected to MBM 2
EV7	10.2.1.2	second EV7 connected to CMM 1 connected MBM 2

Special Addresses

	Address	Comment
PMU server	10.253.0.1	Address used to get to the PMU
Route for NXMs	10.253.0.2	default address for addresses not in the proper range of addresses
Telnet server	10.253.0.3	Dedicated address for a telnet session
DHCP addresses	10.253.0.4-253	DHCP address pool
Dedicated PMU address	10.253.0.254	For VMS use

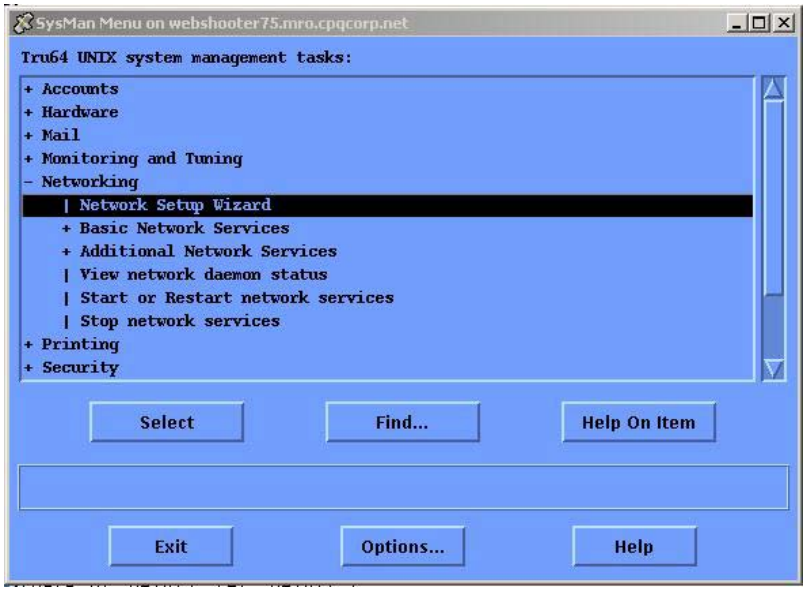
3.14 Set up the AMS on the Corporate LAN

You will need a fixed address for the AMS on the corporate LAN which you'll have to get from the customer. You'll also need to know what mask is used on the network and get a name for the AMS if the customer wants one.

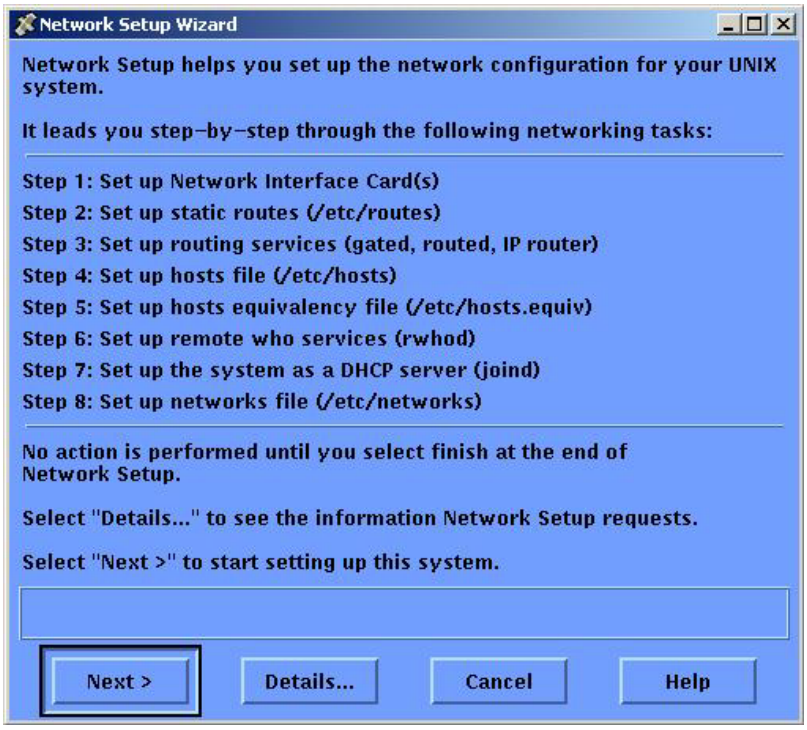
This example uses a DS10 as the AlphaServer Management Station.

3.14.1.1 Setup the AMS

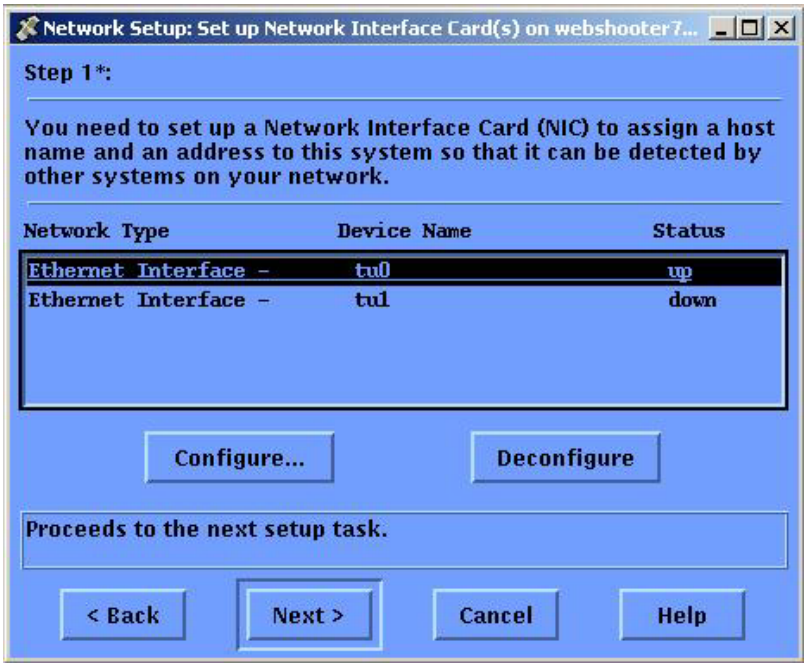
1. Login to an account with Administration privileges on the AlphaServer Management Station.
2. At the # prompt type **sysman**
3. The following screen appears:



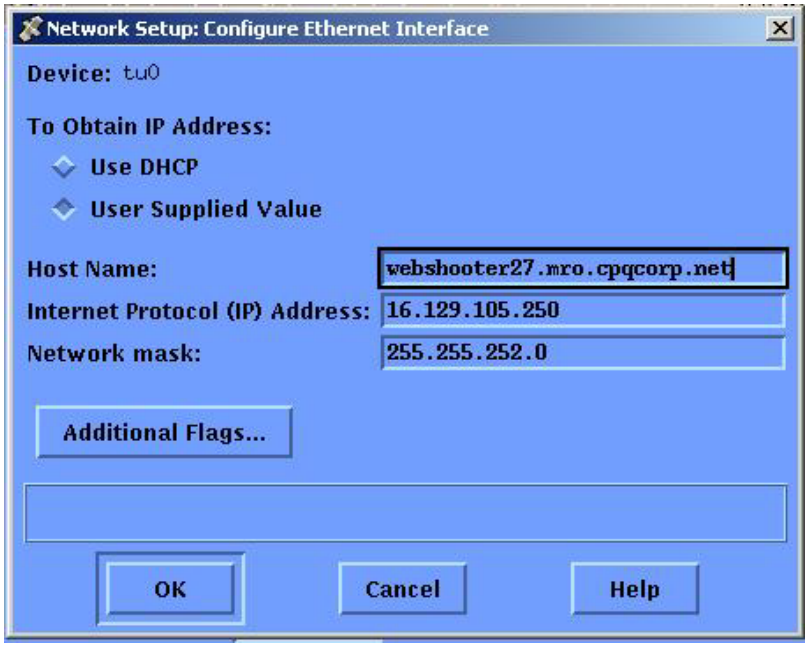
4. Select "Network Setup Wizard" and click on the Select button.
   The following screen appears:



5. Click on the Next> button
   The following screen appears:



6. Click on the Configure button.
   The following screen appears:



7. Click the User Supplied button.
   Enter the Host Name - a name created by the customer for the AMS on the corporate LAN.
   Enter the address of the AMS on the corporate LAN (Address supplied by the customer)
   Enter the network mask: in this case 255.255.252.0 - supplied by the customer
   Click the OK button.
8. Use a BN25G-xx (RJ45) cable to connect tu0 to the corporate LAN HUB.

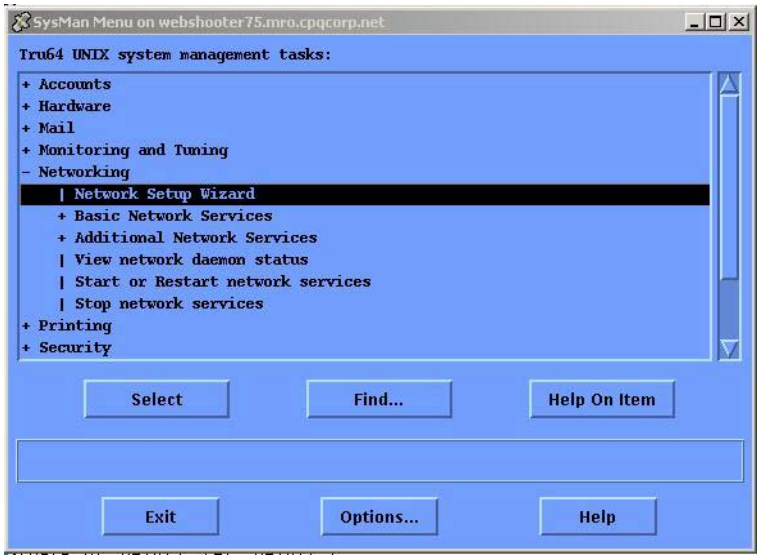
3.15 Setup the AMS on the Multi-Server LAN

Since the multi-server LAN is a network owned and operated by the customer, we recommend that you use a TCP/IP address of the form 90.0.100.x for systems and a fixed address 90.0.0.102 for the AMS on that network. The example used here reflect that addressing scheme. If the customer uses or wants some other addressing scheme, you will need addresses he/she specifies.

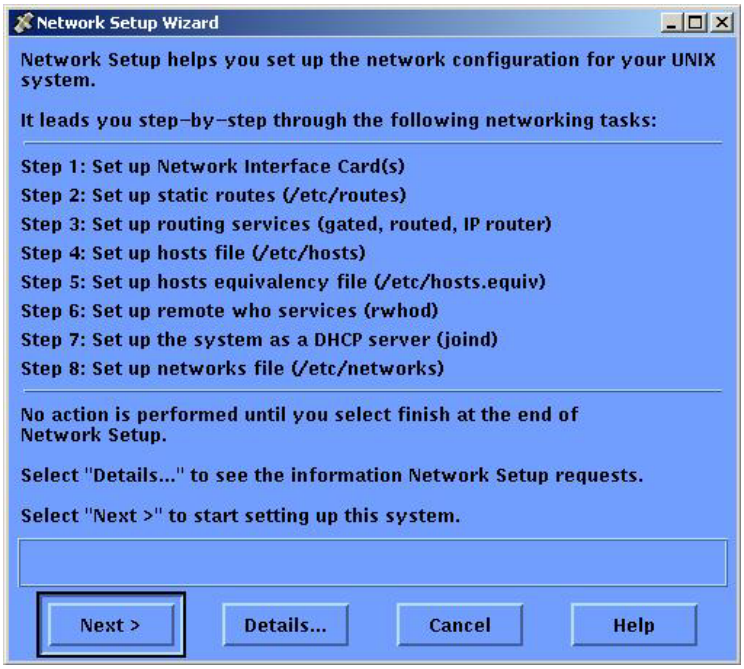
This example uses a DS10 as the AlphaServer Management Station.

3.15.1.1 Setup the AMS

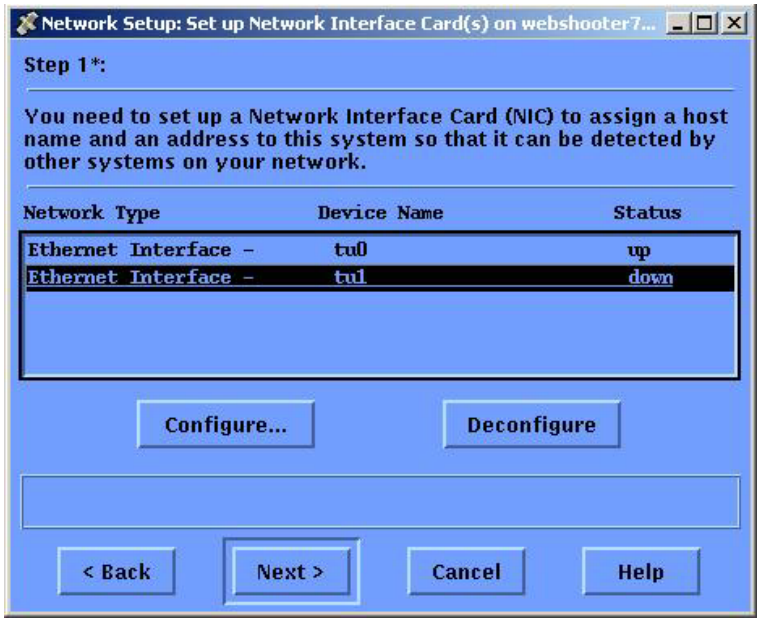
1. Login to an account with Administration privileges on the AlphaServer Management Station.
2. At the # prompt type **sysman**
3. The following screen appears:



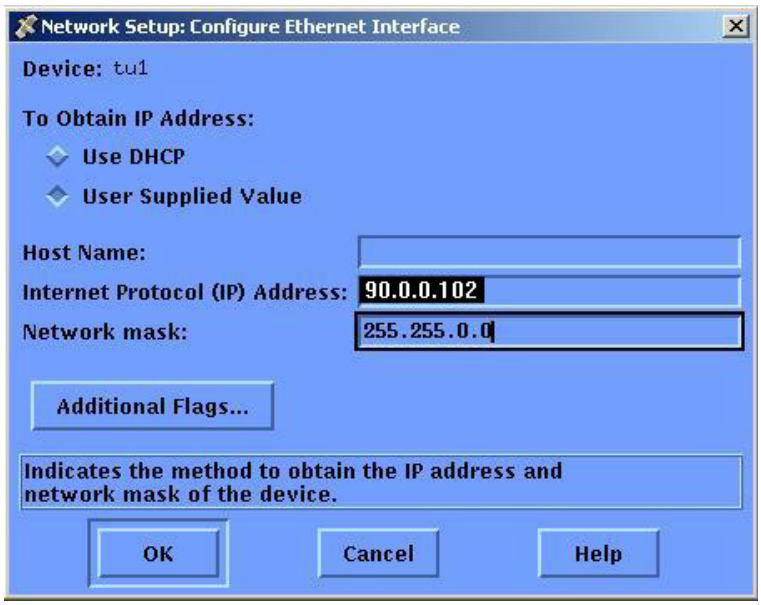
4. Select "Network Setup Wizard" and click on the Select button.
   The following screen appears:



5. Click on the Next> button
   The following screen appears:



6. Click on the Configure button.
   The following screen appears:



7. Click the user Supplied button.
   Enter the address of the AMS on the multi-server LAN (90.0.0.102)
   Enter the network mask (255.255.0.0)
   Click the OK button.
8. Use a BN25G-xx (RJ45) cable to connect tu1 to the multi-server LAN HUB.

Chapter 4 Powering Up the System

In general when the system is plugged in and the circuit breakers on the power distribution unit(s) are in the on position, the display on the console will be the MBM> prompt.

When the key switch on the cabinet door or tower OCP is put into the on position power up will begin and its progress traced on the console screen and on the OCP display.

Basically what happens is that the microprocessors on the internal LAN go through a process of self discovery, form a group, and select a leader or primary MBM that controls testing and the power-up sequence. Once the server management micros on the LAN form their group, are stable, and the power to the system is on, SROM tests are run on the CPUs.

There are two SROM tests, one that gets the results of the CPUs power on self test (POST) which tests the internal caches of the EV7 chip, and one that tests the chip's internal Bcache.

With the results of the SROM tests, the server management firmware is able to build a map of the system.

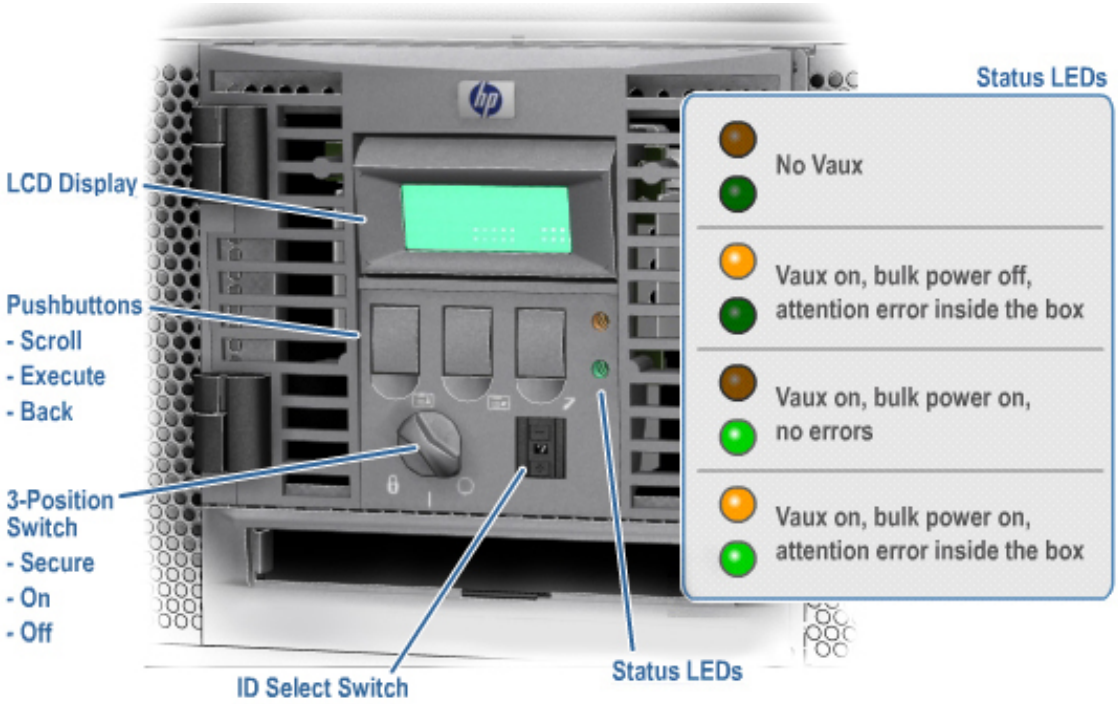
Once that is done, XSROM tests are run.

XSROM tests are grouped as follows:

- memory (8)
- I/O (8)
- Router (6)
- Interrupts (7)

If tests fail, a new grid is formed that conforms to routing rules and the system is re-tested. Once the tests complete, pass, and the environment variable autoconnect is set, the SRM Console gets loaded. The SRM continues to test and probe until it has a complete view of the system's configuration and condition. Once that is accomplished, either the system will boot the operating system or remain running the console as is the case in the example.

4.1 OCP ES47 Tower



The system can be controlled by the OCP. The MBM listens to the OCP switch and pushbuttons. When the state of the switch changes from off to on, the machine responds by executing its power-up routines, traces of which you'll see on the OCP display and on the console, if you are using an AMS or PC as a console.

If you are using a graphics terminal, you will not see evidence of power-up on it until the SRM console boots. The first time the system boots you will not see the console prompt, P00>>> until you hit carriage return a couple of times. Once at the prompt you'll want to execute the **set console graphics** SRM console command.

The following table shows the switch positions and their function:

Keyswitch Position	Function
Off	System is powered off and cannot be powered on remotely.
On	System is powered on and can be powered on or off remotely.
Secure	System is powered on and cannot be powered on or off remotely.

The OCP ID push-wheel is on the front of the OCP panel establishes memory addresses.

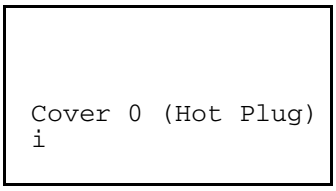
See OCP Pushbuttons for a description of there use.

4.2 OCP Pushbutton Operation

Button	Name	Function
Left	Scroll down	point to selected item
Middle	Execute	Execute selected item or go to selected menu
Right	Back	go back to previous screen

4.2.1 OCP default view

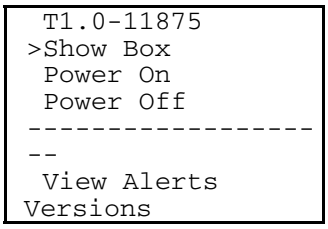
The OCP normally displays the Alert View. Alerts are messages from the server manager software.



Left – no action
Middle – no action
Right – Back to main menu

4.2.2 OCP Main Menu

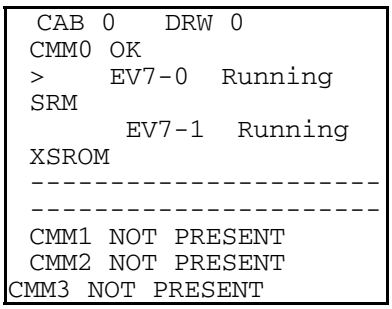
You can access all menus from the main menu. Hitting the right button at the alert display brings you to this window. The left button scrolls down to show information beyond the initial display.



Left – scrolls down to show or select information beyond the initial display.
Middle – Execute selection
Right – Back to top of main menu

4.2.3 OCP Show Drawer

The Show Drawer displays the Ev7s in the 8P or 2P and the state that they are in. The left button scrolls down to show information beyond the initial display.



Left – scrolls down to show information beyond the initial display.

Middle – No action
Right – Back to top of main menu

4.2.4 OCP Power ON/OFF Partition

The left button scrolls down to show information beyond the initial display.

```
 PARTITIONS
 >All Partitions
 Default_HP
```

Left – scrolls down to show or select information beyond the initial display.
Middle – Execute selection
Right – Back to top of main menu

4.2.5 OCP View Alerts

Alerts are meaningful server management messages. These messages are similar to those you see in an MBM> session.

```
Cover 0 (Hot Plug) i
```

Left – scrolls down to show
Middle – No action
Right – Back to top of main menu

4.2.6 OCP Show Version

Displays the firmware versions of the MBM in that 8P or 2P drawers and the version of the CMM(s) in that 8P or 2P drawers. The display is similar to what would be seen from a **show version** command at the MBM> prompt.

```
 FW VERSIONS
>MBM
    X1.0-11750
     CMM0
    X0.0-1555
```

Left – scrolls down to show information beyond the initial display.
Middle – No action
Right – Back to top of main menu

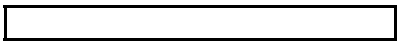
4.2.7 Example: Powering on a Partition

When you walk up to the system, the default display shows the last 4 alert messages.

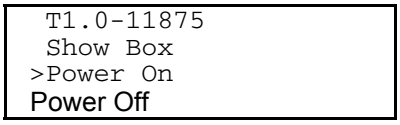
```
Cover 0 (Hot Plug) I
```

Hitting the RIGHT button get you to the main menu:

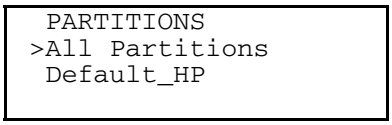
```
  T1.0-11875
 >Show Box
  Power On
  Power Off
```



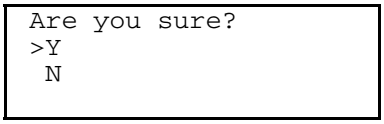
Hit the LEFT button to scroll the “>” to select Power On:



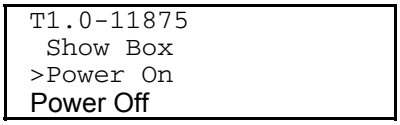
Hit the MIDDLE button to execute the Power On selection which brings you to another display:



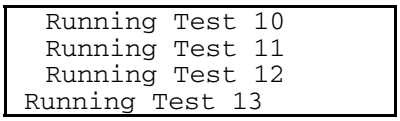
Hit the MIDDLE button to execute the selection, with brings you to the Are You Sure screen:



Hit the MIDDLE button to confirm that you want to power on all partitions. The screen returns to the main menu:



If none of the buttons are pressed for a few seconds, the display automatically returns to the default screen where alerts are displayed. You should see the Power On activity there:



4.2.8 Other Possible Menu Commands are:

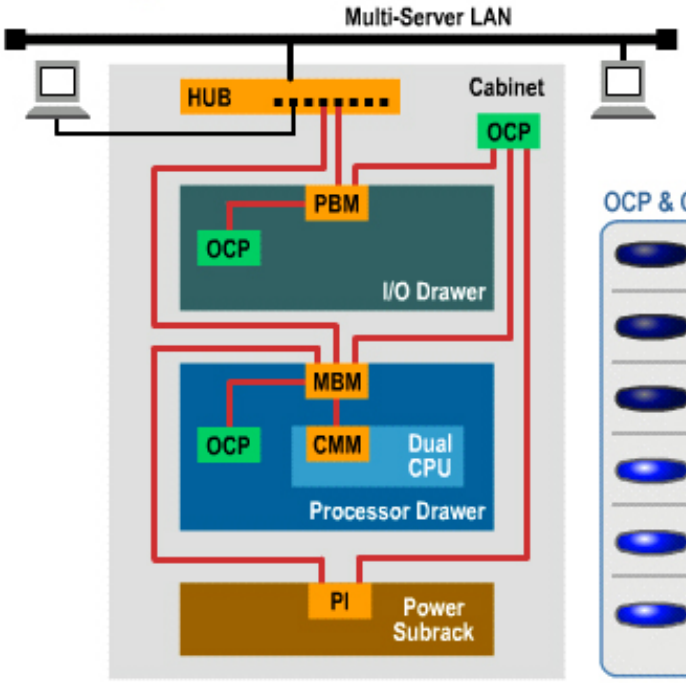
Reset
Halt in
Halt out

4.3 Door Operator Control Panel

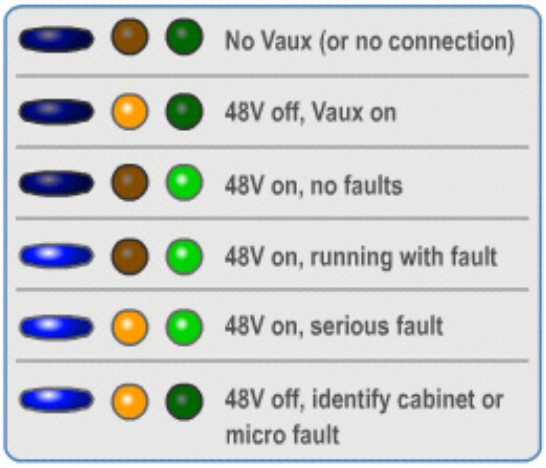
Outside

Inside

Block Diagram



OCP & Cabinet Status LEDs



The system can be controlled by the OCP on system cabinet 0. All MBMs and PBMs in a given cabinet listen to the OCP switch. When the state of the switch changes from off to on, the machine responds by executing its power-up routines.

The following table shows the switch positions and their function

Keyswitch Position	**Function**
Off	System is powered off and cannot be powered on remotely.
On	System is powered on and **can** be powered on remotely.
Secure	System is powered on and **cannot** be powered on remotely.

The OCP ID push-wheel in on the back of the OCP panel along with the network cables which establish the internal LAN.

Though there are no pushbuttons on the door OCP, there are on both the 2P and 8P drawer OCPs. See OCP Pushbuttons for a description of their use.

Refer to the AlphaServer ES47/ES80/GS1280 Service CD for a functional description of all OCP functions.

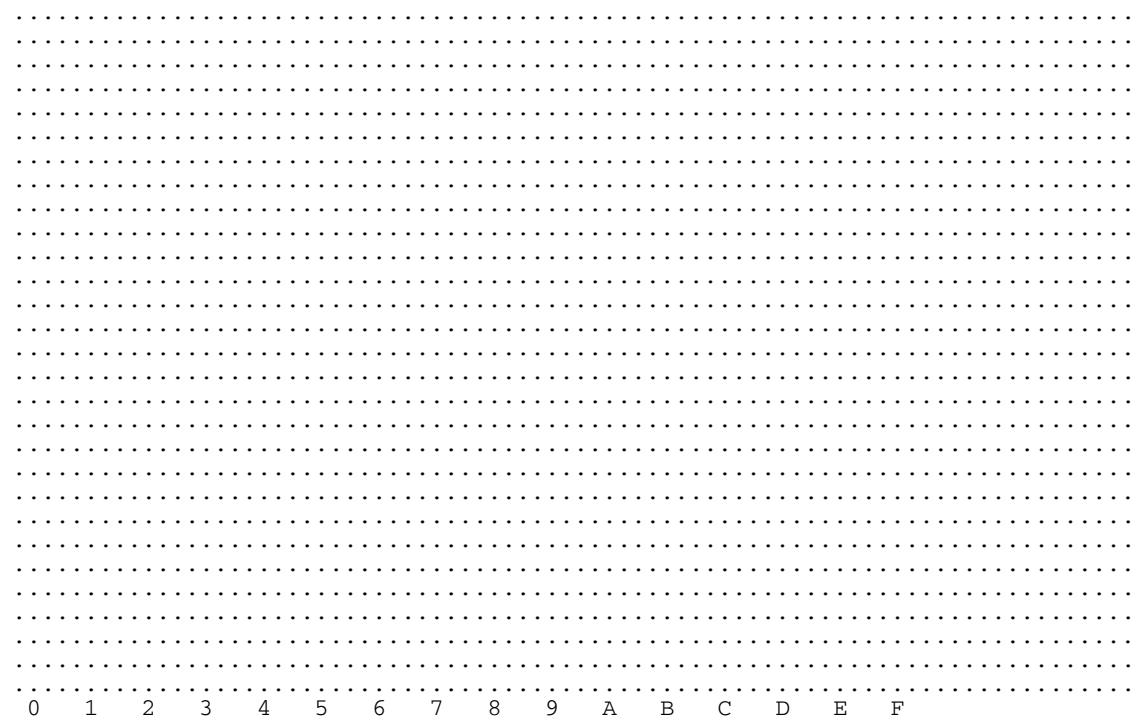
Power-up display

VxWorks System Boot **This is the operating system running on the micros**

```
Copyright 1984-1998  Wind River Systems, Inc.
CPU: AMD SC520 CDP
Version: 5.4.2
BSP version: 1.2/0
Creation date: Nov  5 2001, 11:17:39
Press any key to stop auto-boot...
 7
 6
 5
 4
 3
 2
 1
 0 auto-booting...
boot device               : flash
unit number               : 0
processor number     : 0
host name                 : host
file name                   : vxWorks
inet on ethernet (e)    : 10.250.250.250
host inet (h)               : 10.253.0.254
user (u)                     : target
flags (f)                      : 0xa0
other (o)                    : fei
Starting at 0x8400330...
06 07 08 09
Attaching interface lo0...done
Network interface fei0 not found. DHCP server not started.
Adding 5161 symbols for standalone.
                 VxWorks
Copyright 1984-1998  Wind River Systems, Inc.
            CPU: AMD SC520 CDP
        VxWorks: 5.4.2
    BSP version: 1.2/0
  Creation date: Mar 18 2002
            WDB: Ready.
Server Management  X1.0-10480 Starting up     Server management firmware
starting
Image built on Mar 19 2002 at 16:56:25
-> Running POST ...
0A 0B OC 0D 0E
Cabinet number: 0
Drawer number: 0
Micro type: 0
Node IP address: 10.0.0.1
probeQ: 2aaf94  grpTask[i].RcvQ:2aaf94
probeQ: 2aaf94  grpTask[i].RcvQ:2aaf98
probeQ: 2aaf94  grpTask[i].RcvQ:2aaf9c
probeQ: 2aaf94  grpTask[i].RcvQ:2aafa0
Join - Micro:0100000a
g GROUPID: origadr:100000a incarnation:1
m SETOFMICROS: cnt:1 {100000a }
Predecessor GROUPID: origadr:0 incarnation:0
Forming groupWaiting for newGroupCreation to be posted
Warning: Required storage hook not installed.
Lease records will not be saved.
Warning: No DHCP server address cache! Later entries will not be saved.
0x1d60178 (mbm_dhcp): dhcps: read 1 entries from addr-pool database.
DHCP server started.
..grp_Monitor_task - Message Received 101
```

```
[0100000a] NEWGROUP - from 1fe0a
newid GROUPID: origadr:1fe0a incarnation:a
NewP SETOFMICROS: cnt:3 {100000a 1fe0a 2fe0a }
[0100000a] SendAccept - to 0001fe0a
SendAccept newid GROUPID: origadr:1fe0a incarnation:a
SendAccept prevGID GROUPID: origadr:100000a incarnation:1
SendAccept - newid GROUPID: origadr:1fe0a incarnation:a
SendAccept - MicroSet SETOFMICROS: cnt:3 {100000a 1fe0a 2fe0a }
m->cnt = 3
grp_Monitor_task - Message Received 104
[0100000a] JOIN - from 1fe0a
newid GROUPID: origadr:1fe0a incarnation:a
Predecessor GROUPID: origadr:100000a incarnation:8
memb SETOFMICROS: cnt:3 {100000a 1fe0a 2fe0a }
m->cnt = 3
Join - Micro:0100000a
g GROUPID: origadr:1fe0a incarnation:a
m SETOFMICROS: cnt:3 {100000a 1fe0a 2fe0a }
Predecessor GROUPID: origadr:100000a incarnation:8
........interrupt: GROUP IS STABLE
Welcome - GS1280 Server Manager - X1.0-10480
pco_task started as pco_00
pco_task started as pco_01
pco_task started as pco_02
pco_task started as pco_03
pco_task started as pco_04
Attaching network interface ppp0...
ppp0: ppp 2.1.2 started by 10.0.0.1 ppp0: Connect: ppp0 <--> /tyCo/2
ppp0: sent [LCP ConfReq id=0x3 <mru 2560> <asyncmap 0x0>]
~DBS-W-(tRootTask) Using the free pool to save environment variables for
HP: 1, SP: 255
~DBS-W-(tRootTask) Using the free pool to save environment variables for
HP: 1, SP: 0 done.
PPP Connects to the CMMs
ppp0: rcvd [LCP ConfAck id=0x3 <mru 2560> <asyncmap 0x0>]
ppp0: rcvd [LCP ConfReq id=0x0 <mru 2560> <asyncmap 0x0>]
ppp0: sent [LCP ConfAck id=0x0 <mru 2560> <asyncmap 0x0>]
ppp0: sent [IPCP ConfReq id=0x9c <addr 10.0.0.1> <compress VJ 0f 01>]
ppp0: rcvd [IPCP ConfRej id=0x9c <compress VJ 0f 01>]
ppp0: sent [IPCP ConfReq id=0x9d <addr 10.0.0.1>]
ppp0: rcvd [IPCP ConfAck id=0x9d <addr 10.0.0.1>]
ppp0: rcvd [IPCP ConfReq id=0x0 <addr 10.0.1.0>]
ppp0: sent [IPCP ConfAck id=0x0 <addr 10.0.1.0>]
ppp0: local  IP address 10.0.0.1
ppp0: remote IP address 10.0.1.0
ppp0: Setting interface mask to 255.0.0.0
ppp0: found interface fei0 for proxy arp
Attaching network interface ppp1...
ppp1: ppp 2.1.2 started by 10.0.0.1
ppp1: Connect: ppp1 <--> /tyCo/3
ppp1: sent [LCP ConfReq id=0xf7 <mru 2560> <asyncmap 0x0>]
MBM Init finished at: SAT MAR 26 16:27:30 2050

done.
ppp1: rcvd [LCP ConfAck id=0xf7 <mru 2560> <asyncmap 0x0>]
ppp1: rcvd [LCP ConfReq id=0x0 <mru 2560> <asyncmap 0x0>]
ppp1: sent [LCP ConfAck id=0x0 <mru 2560> <asyncmap 0x0>]
ppp1: sent [IPCP ConfReq id=0xfa <addr 10.0.0.1> <compress VJ 0f 01>]
ppp1: rcvd [IPCP ConfRej id=0xfa <compress VJ 0f 01>]
ppp1: sent [IPCP ConfReq id=0xfb <addr 10.0.0.1>]
ppp1: rcvd [IPCP ConfAck id=0xfb <addr 10.0.0.1>]
ppp1: rcvd [IPCP ConfReq id=0x0 <addr 10.0.2.0>]
ppp1: sent [IPCP ConfAck id=0x0 <addr 10.0.2.0>]
ppp1: local  IP address 10.0.0.1 ppp1: remote IP address 10.0.2.0
```

```
ppp1: Setting interface mask to 255.0.0.0
ppp1: found interface fei0 for proxy arp
Attaching network interface ppp2...
ppp2: ppp 2.1.2 started by 10.0.0.1
ppp2: Connect: ppp2 <--> /tyCo/4
ppp2: sent [LCP ConfReq id=0xd5 <mru 2560> <asyncmap 0x0>]

~ENV-W-(envmon) box cover 0 is open done.

ppp2: rcvd [LCP ConfAck id=0xd5 <mru 2560> <asyncmap 0x0>]
ppp2: rcvd [LCP ConfReq id=0x0 <mru 2560> <asyncmap 0x0>]
ppp2: sent [LCP ConfAck id=0x0 <mru 2560> <asyncmap 0x0>]
ppp2: sent [IPCP ConfReq id=0x2f <addr 10.0.0.1> <compress VJ 0f 01>]
ppp2: rcvd [IPCP ConfRej id=0x2f <compress VJ 0f 01>]
ppp2: sent [IPCP ConfReq id=0x30 <addr 10.0.0.1>]
ppp2: rcvd [IPCP ConfAck id=0x30 <addr 10.0.0.1>]
ppp2: rcvd [IPCP ConfReq id=0x0 <addr 10.0.3.0>]
ppp2: sent [IPCP ConfAck id=0x0 <addr 10.0.3.0>]
ppp2: local  IP address 10.0.0.1
ppp2: remote IP address 10.0.3.0
ppp2: Setting interface mask to 255.0.0.0
ppp2: found interface fei0 for proxy arp
Attaching network interface ppp3...
ppp3: ppp 2.1.2 started by 10.0.0.1
ppp3: Connect: ppp3 <--> /tyCo/5
ppp3: sent [LCP ConfReq id=0x36 <mru 2560> <asyncmap 0x0>]
done.
ppp3: rcvd [LCP ConfAck id=0x36 <mru 2560> <asyncmap 0x0>]
ppp3: rcvd [LCP ConfReq id=0x0 <mru 2560> <asyncmap 0x0>]
ppp3: sent [LCP ConfAck id=0x0 <mru 2560> <asyncmap 0x0>]
ppp3: sent [IPCP ConfReq id=0x8d <addr 10.0.0.1> <compress VJ 0f 01>]
ppp3: rcvd [IPCP ConfRej id=0x8d <compress VJ 0f 01>]
ppp3: sent [IPCP ConfReq id=0x8e <addr 10.0.0.1>]
ppp3: rcvd [IPCP ConfAck id=0x8e <addr 10.0.0.1>]
ppp3: rcvd [IPCP ConfReq id=0x0 <addr 10.0.4.0>]
ppp3: sent [IPCP ConfAck id=0x0 <addr 10.0.4.0>]
ppp3: local  IP address 10.0.0.1
ppp3: remote IP address 10.0.4.0
ppp3: Setting interface mask to 255.0.0.0
ppp3: found interface fei0 for proxy arp
MBM>
MBM> power on
Begin Power On
numActive after Reconstruction: 8

       0   1   2   3   4   5   6   7   8   9   A   B   C   D   E   F      CPU grid
0      w   w   w   w.....................................................
      wP   P   P   Pw.....................................................
       |...|...|...|.....................................................
       |...|...|...|.....................................................
1     wP   P   P   Pw.....................................................
       w   w   w   w.....................................................
   .....................................................................
2  .....................................................................
   .....................................................................
   .....................................................................
3  .....................................................................
   .....................................................................
   .....................................................................
4  .....................................................................
   .....................................................................
   .....................................................................
5  .....................................................................
   .....................................................................
   .....................................................................
6  .....................................................................
```




```
Running test 10, Initialize RAMBUS ... on 8 EV7s
Diagnostic Tests
Running test 11, Initialize Memory ... on 8 EV7s
Running test 12, Data Pattern March read/write ... on 8 EV7s
Running test 13, RAID channel Test ... on 0 EV7s
Running test 14, Single Bit Error ... on 8 EV7s
Running test 15, Double Bit Error ... on 8 EV7s
Running test 20, Init IO7 and Start Clocks ... on 2 EV7s
Running test 21, IO7 Data Path (Scratch CSR) ... on 2 EV7s
Running test 22, IO Single Bit Error checkers ... on 2 EV7s
Running test 23, IO Double Bit Error checkers ... on 2 EV7s
Running test 24, IO Timer Expirations ... on 2 EV7s
Running test 25, IO up-hose SBE checkers ... on 2 EV7s
Running test 26, IO up-hose DBE checkers ... on 2 EV7s
Running test 30, Configure RBOX Routes ... on 8 EV7s
Running test 31, Clear Errors / Enable Routes ... on 8 EV7s
Running test 32, Route Test: N S E W ... on 8 EV7s (North)
Running test 32, Route Test: N S E W ... on 8 EV7s (South)
Running test 32, Route Test: N S E W ... on 8 EV7s (East )
Running test 32, Route Test: N S E W ... on 8 EV7s (West )
Running test 33, Inverse Route Setup ... on 8 EV7s
Running test 32, Route Test: N S E W ... on 8 EV7s (North)
Running test 32, Route Test: N S E W ... on 8 EV7s (South)
Running test 32, Route Test: N S E W ... on 8 EV7s (East )
Running test 32, Route Test: N S E W ... on 8 EV7s (West )
Running test 33, Inverse Route Setup ... on 8 EV7s
Running test 34, Single Bit Error checker ... on 8 EV7s
Running test 35, Double Bit Error checker ... on 8 EV7s
Running test 31, Clear Errors / Enable Routes ... on 8 EV7s
Running test 16, IP Memory Access ... on 8 EV7s
Running test 40, Local I/O Device Interrupts ... on 8 EV7s
Running test 41, Local Interval Timer Interrupts ... on 8 EV7s
Running test 42, Local Interprocess Interrupts ... on 8 EV7s
Running test 43, Software Alerts ... on 1 EV7s
Running test 46, Other Local Interrupt Bits ... on 8 EV7s
HP:1  SP:0 PRIMARY: ns:0  ew:0  10.0.1.1
```

```
Running test 50, Loop on Secondary Routine ... on 7 EV7s
Error code 0: done
Console Loads Here
TFTP server:  could not send client file "srmfw"
Powered On HP:1 SP:255 Free_Pool_1
Powered On HP:1 SP:0 Default_SP
Connecting to partition. Use the sequence ^[^[MBM to return.
Autoconnect
starting console on CPU 0
First SRM Output
initialized idle PCB
initializing semaphores
initializing heap
initial heap 500c0
memory low limit = 354000 heap = 500c0, 3ffc0
initializing driver structures
initializing idle process PID
initializing file system
initializing timer data structures
lowering IPL
CPU 0 speed is 800 MHz
create dead_eater
create poll
create timer
create powerup
00000001 exit status for from_init
entering idle loop
access NVRAM
Get Partition DB
hpcount = 1, spcount = 2, ev7_count = 8, io7_count = 2
hard_partition = 1
IO7-100 (Pass 2) at PID 0
Hose 0 - 33 MHz PCI
Hose 1 - 33 MHz PCI
Hose 2 - 133 MHz PCI-X
Hose 3 - 2X AGP
IO7-100 (Pass 2) at PID 1
Hose 4 - 33 MHz PCI
Hose 5 - 33 MHz PCI
Hose 6 - 66 MHz PCI
Hose 7 - 2X AGP
0 sub-partition 0:   start:00000000 00000000   size:00000000 40000000
PID 0 console memory base: 0, 1 GB
1 sub-partition 0:   start:00000004 00000000   size:00000000 40000000
PID 1 memory: 400000000, 1 GB
2 sub-partition 0:   start:00000008 00000000   size:00000000 40000000
PID 2 memory: 800000000, 1 GB
3 sub-partition 0:   start:0000000c 00000000   size:00000000 40000000
PID 3 memory: c00000000, 1 GB
4 sub-partition 0:   start:00000020 00000000   size:00000000 40000000
PID 4 memory: 2000000000, 1 GB
5 sub-partition 0:   start:00000024 00000000   size:00000000 40000000
PID 5 memory: 2400000000, 1 GB
6 sub-partition 0:   start:00000028 00000000   size:00000000 40000000
PID 6 memory: 2800000000, 1 GB
7 sub-partition 0:   start:0000002c 00000000   size:00000000 40000000
PID 7 memory: 2c00000000, 1 GB
total memory, 8 GB
probe I/O subsystem
probing hose 0, PCI
probing PCI-to-PCI bridge, bus 2
do not use secondary IDE channel on CMD controller
probing PCI-to-PCI bridge, bus 3
bus 2, slot 1 -- dqa -- CMD 649 PCI-IDE
```

```
bus 2, slot 2 -- pka -- Adaptec AIC-7892
bus 3, slot 4 -- eia -- DE602-AA
bus 3, slot 5 -- eib -- DE602-AA
probing hose 1, PCI
probing hose 2, PCI
probing hose 3, PCI
bus 0, slot 5 -- vga -- 3D Labs OXYGEN VX1 AGP
probing hose 4, PCI
probing PCI-to-PCI bridge, bus 2
do not use secondary IDE channel on CMD controller
probing PCI-to-PCI bridge, bus 3
bus 2, slot 1 -- dqb -- CMD 649 PCI-IDE
bus 2, slot 2 -- pkb -- Adaptec AIC-7892
probing hose 5, PCI
probing PCI-to-PCI bridge, bus 2
bus 2, slot 4 -- eic -- DE602-AA
bus 2, slot 5 -- eid -- DE602-AA
probing hose 6, PCI
bus 0, slot 1, function 0 -- pkc -- Adaptec AIC-7899
bus 0, slot 1, function 1 -- pkd -- Adaptec AIC-7899
probing hose 7, PCI
starting drivers
initializing keyboard
*** keyboard wake up error...
initializing keyboard
Starting secondary CPU 1 at address 400030000
Starting secondary CPU 2 at address 800030000
Starting secondary CPU 3 at address c00030000
Starting secondary CPU 4 at address 2000030000
Starting secondary CPU 5 at address 2400030000
Starting secondary CPU 6 at address 2800030000
Starting secondary CPU 7 at address 2c00030000
*** system serial number not set. use set sys_serial_num command.
CPU 0: Server Management Interface failed to respond to command 0901
initializing GCT/FRU at 354000
Initializing dqa dqb eia eib eic eid pka pkb pkc pkd
AlphaServer Console X6.3-2381, built on Mar 26 2002 at 00:24:17
P00>>>
```

Console prompt

Chapter 5 Verification Procedure

Q-Vet is used to verify the installation. The following topics are covered here:

- Q-Vet Installation Verification
- Installing Q-Vet
- Running Q-Vet
- Reviewing the results of Q-Vet
- Removing Q-Vet
- Q-Vet Resources

5.1.1 Q-Vet Installation Verification

CAUTION: Misuse of Q-Vet may result in loss of customer data. Customers are not authorized to access, download, or use Q-Vet. Q-Vet is used for system installation verification and during system development by HP engineers.

Q-Vet is a Qualification Verifier Exerciser Tool used to exercise systems under development. Run the latest released version of Q-Vet to verify that hardware is installed correctly and is operational. Q-Vet does not verify operating system or layered product configurations. The latest Q-Vet release, information, Release Notes, and documentation are located at http://chump2.mro.cpqcorp.net/qvet/.
If the system is partitioned, Q-Vet must be installed and run separately on each partition. Since Compaq Analyze is used to view Q-Vet errors, it is useful to install it prior to running Q-Vet.

CAUTION: Do NOT install the Digital System Verification Software (DECVET) on the system; use Q-Vet instead.
IVP *Run ONLY IVP scripts on systems that contain customer data or any other devices that must not be* ***over*** *written . See the Q-Vet Disk Testing Policy Notice on the Q-Vet Web site for details. All Q-Vet IVP scripts use Read Only and/or File I/O to test hard drives. Floppy and tape drives are always write tested and should have scratch media installed installed*
Non-IVP *Q-Vet scripts verify disk operation for some drives with "write enabled" techniques. These are intended for engineering and manufacturing test only.*
Q-Vet ***must*** *be de-installed upon completion of system verification.*

Swap or Pagefile Space

The system must have adequate swap space (on *Tru64 UNIX*) or pagefile space (on *OpenVMS*) for proper Q-Vet operation. You can set this up either before or after Q-Vet installation.
If during initialization Q-Vet determines that the system does not have enough swap/pagefile space, it will display a message indicating the minimum amount needed.
If you wish to address the swap/pagefile size before running Q-Vet, see the swap/pagefile estimates on the Q-Vet web site.

5.1.2 Installing Q-Vet

Install and run Q-Vet from the SYSTEM account on VMS or the root account on UNIX. Remember to install Q-Vet in each partition.

Tru64 UNIX

1. Make sure that there are no old Q-Vet or DECVET kits on the system by using the following command:
   `setld -i | grep VET`
   Note the names of any listed kits, such as OTKBASExxx etc., and remove the kits using **qvet_uninstall** if possible. Otherwise use the command
   `setld -d kit1_name kit2_name kit3_name`
2. Copy the kit tar file (*QVET_Vxxx.tar*) to your system.
3. Be sure that there is no directory named output. If there is, move to another directory or remove the output directory.
   `rm -r output`
4. Untar the kit with the command
   `tar xvf QVET_Vxxx.tar`
   Note: The case of the file name may be different depending upon how it was stored on the system. Also, you may need to enclose the file name in quotation marks if a semi-colon is used.
5. Install the kit with the command
   `setld -l output`
6. During the install, if you intend to use the GUI you must select the optional GUI subset (QVETXOSFxxx).
7. The Q-Vet installation will size your system for devices and memory. It also runs **qvet_tune**. You should answer '**`y`**' to the questions that are asked about setting parameters. If you do not, Q-Vet will not install and the Q-Vet kit will be deleted.
8. After the installation completes, you should delete the output directory with **`rm -r output.`** You can also delete the kit tar file, **QVET_Vxxx.tar**.
9. You *must* reboot the system before starting Q-Vet.
10. On reboot you can start Q-Vet GUI via **`vet&`** or you can run non GUI (command line) via **`vet -nw.`**

OpenVMS

1. Delete any *QVETAXPxxx.A* or *QVETAXPxxx.EXE* file from the current directory.
2. Copy the self-extracting kit image file (*QVETAXPxxx.EXE*) to the current directory.
3. We recommend but do not required, that you purge the system disk before installing Q-Vet. This will free up space that may be needed for pagefile expansion during the AUTOGEN phase.
   $purge sys$sysdevice:[*…]*.*
4. E**xtract the kit saveset with the command: `$run` QVETAXPxxx.`EXE`** and verify that the kit saveset was extracted by checking for the "Successful decompression" message.
5. Use **`@sys$update:vmsinstal`** for the Q-Vet installation. The installation will size the system for CPUs, IO devices and memory. **If you** *do not* **intend to use the GUI, you can answer `no`** to the question "Do you want to install Q-Vet with the DECwindows Motif interface?" Otherwise choose all the default answers during the Q-Vet installation. Q-Vet installation **will verify**, tune the system, and reboot.
6. After the installation completes you should delete the *QVETAXP0xx.A* file and the *QVETAXPxxx.EXE* file.
7. On reboot you can start Q-Vet GUI via **`$`**vet **or the command interface via $vet/int=char**.

5.1.3 Running Q-Vet

Run Q-Vet on each partition in the system.

We recommend that you review the Special Notices and the Testing Notes section of the Release Notes located at http://chump2.mro.cpqcorp.net/qvet/ before running Q-Vet.
Follow the instructions listed for your operating system to run Q-Vet in each partition.

5.1.3.1 Tru64 UNIX

Graphical Interface

1. From the Main Menu, select **`IVP`**, **Load Script** and sele
   Long IVP (the IVP tests will then load into the Q-Vet pr
   window).

Click the **Start All** button to begin IVP testing.

Command-Line Interface

```
> vet -nw
 Q-Vet_setup> execute .Ivp.scp
 Q-Vet_setup> start
```

Note that there is a "**.**" in front of the script name, and that comn
are case sensitive.

5.1.3.2

5.1.3.3 OpenVMS

Graphical Interface

5. From the Main Menu, select **IVP**, **Load Script** and select **IVP** (the IVP tests will then load into the Q-Vet process wi

Click the **Start All** button to begin IVP testing.

Command-Line Interface

```
$ vet /int=char
 Q-Vet_setup> execute ivp.vms
 Q-Vet_setup> start
```

Note that commands are case sensitive.

NOTE: **A short IVP script is provided for a simple verification of device setup. To run the short script, select the appropriate file, .Ivp_short.scp or ivp_short.vms** from the GUI IVP menu. This script will run for 15 minutes and then terminate with a summary log. The short script may be run as a preliminary to but not in place of the long IVP script, which is the full IVP test.

The long IVP will run a "cycle of testing", i.e. until the slowest device has completed one pass of all tests (typically 4 or 5 hours).

Optionally, you can increase the IVP long run time by increasing the **cyclecount** (3 passes are recommended). Two of the ways to do this are described. If you wish to know more about Q-Vet features like this, see the training course at http://learning1.americas.cpqcorp.net/wbt/cs127a-ewb/welcome.htm.

- After executing (loading) the IVP long script, issue the Q-Vet command **set cyclecount** x, where x is the number of cycles desired.
- If you have the GUI, simply of to the menu item Options >Cyclecount and change the setting.

5.1.4 Reviewing Results of the Q-Vet Run

After running Q-Vet, check the results by reviewing the summary log.

Q-Vet will run all exercisers until the slowest device has completed one full pass. Depending on the size of the system, this will typically take 2 to 12 hours. Q-Vet will then terminate testing and produce a summary log. The termination message will tell you the name and location of this file.

All exerciser processes can also be manually terminated with the Suspend and Terminate buttons (**stop** and **terminate** commands).

After all exercisers report “Idle,” the summary log is produced containing Q-Vet specific results and statuses.

A. If there are no Q-Vet errors, no system error events, and testing ran to specified completion, the following message will be displayed:

```
Q-Vet Tests Complete: Passed
```

B. Otherwise, a message will indicate:

```
Q-Vet Tests Complete: Fail
```

Run Compaq Analyze to review test results. The IVP scripts do not translate events unless they are Q-Vet detected errors. The testing times (for use with Compaq Analyze) are printed to the Q-Vet run window and are available in the summary log.

5.1.5 De-Installing Q-Vet

De-installation of Q-Vet differ between operating systems. And you must de-install Q-Vet from each partition in the system. Failure to do so may result in the loss of customer data at a later date if Q-Vet is misused.

Follow the instructions listed under your operating system to de-install Q-Vet from a partition. The **qvet_uninstall** programs will remove the Q-Vet supplied tools and restore the original system tuning/configuration settings.

5.1.5.1 Tru64 UNIX

2. Command Q-Vet to **Stop, Terminate, and Exit.**
3. Execute the command **`qvet_uninstall`** which will remove Q-Vet and restore the system configuration/tuning file **`sysconfigtab`**.
4. Note: log files are retained in **`/usr/field/tool_logs`**
5. Reboot the system. (You must reboot, even if you decide to reinstall Q-Vet. If you do not reboot tuning configurations may not be set properly.)

5.1.5.2 OpenVMS

1. Command Q-Vet to **Stop, Terminate, and Exit.**
2. Execute the command **@sys$manager:qvet_uninstall.** This will remove Q-Vet and restore system tuning (**modparams.dat**) and the original **UAF** settings.
3. Note: log files are retained in **sys$specific:[sysmgr.tool_logs]**
4. Reboot the system. (You must reboot even if you decide to reinstall Q-Vet. If you do not reboot tuning configurations may not be set properly.)

5.1.6 Q-Vet Resources

- Release notes and kits are available from the Q-Vet web page:
  http://chump2.mro.cpqcorp.net/qvet/
- Training may be found at:
  http://learning1.americas.cpqcorp.net/wbt/cs127a-ewb/welcome.htm
- A description of the IVP may be found at:
  http://chump2.mro.cpqcorp.net/qvet/IVP_description.html