

# NovaScale 5xx5

## Cabling Guide

NOVASCALÉ



REFERENCE  
86 A1 92ER 03



# NOVASCALE

## NovaScale 5xx5

### Cabling Guide

#### **Hardware**

September 2007

BULL CEDOC

357 AVENUE PATTON

B.P.20845

49008 ANGERS CEDEX 01

FRANCE

#### **REFERENCE**

86 A1 92ER 03

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# Preface

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## Table of Contents

|                                                               |            |
|---------------------------------------------------------------|------------|
| Intended Readers .....                                        | vii        |
| Highlighting .....                                            | vii        |
| Related Publications .....                                    | viii       |
| <br><b>Chapter 1. Cabling Diagrams</b> .....                  | <b>1-1</b> |
| PAP Unit Data Cabling Diagram .....                           | 1-2        |
| Hub Data Cabling Diagram .....                                | 1-3        |
| KVM Switch and KVM Extender Data Cabling Diagrams .....       | 1-4        |
| KVM Switch .....                                              | 1-4        |
| KVM Extender .....                                            | 1-5        |
| Fibre Channel Disk and FC Adapter Data Cabling Diagrams ..... | 1-6        |
| FDA 1x00 FC Direct Connection .....                           | 1-6        |
| FDA 2x00 FC Direct Connection .....                           | 1-7        |
| FDA 2x00 FC Connection via an FC Switch .....                 | 1-8        |
| Extension Disk Rack (FDA 1x00 FC - FDA 1x00 FC) .....         | 1-9        |
| Extension Disk Rack (FDA 2x00 FC - FDA 1x00 FC) .....         | 1-9        |
| FC Switch and FC Adapter Data Cabling Diagram .....           | 1-10       |
| Nport Server Data Cabling Diagrams .....                      | 1-11       |
| Nport Server Front connection .....                           | 1-11       |
| Nport Server Rear Connection .....                            | 1-11       |
| XSP Cables .....                                              | 1-12       |
| Side Band Cables .....                                        | 1-14       |
| Power Cabling Diagrams .....                                  | 1-15       |
| Mono-Module Power Cabling Diagram .....                       | 1-15       |
| Bi-Module Power Cabling Diagram .....                         | 1-16       |
| Tri-Module Power Cabling Diagram .....                        | 1-17       |
| Quadri-Module Power Cabling Diagram .....                     | 1-19       |
| <br><b>Index</b> .....                                        | <b>X-1</b> |



---

## List of Figures

|            |                                                                                     |      |
|------------|-------------------------------------------------------------------------------------|------|
| Figure 1.  | Pap Unit data cabling diagram .....                                                 | 1-2  |
| Figure 2.  | Hub data cabling diagram .....                                                      | 1-3  |
| Figure 3.  | KVM Switch data cabling diagram (tri-module example) .....                          | 1-4  |
| Figure 4.  | KVM extender data cabling diagram .....                                             | 1-5  |
| Figure 5.  | FDA 1x00 FC disk rack data cabling diagram (mono-module example) .....              | 1-6  |
| Figure 6.  | FDA 2x00 FC disk rack data cabling diagram (bi-module example) .....                | 1-7  |
| Figure 7.  | FDA 2x00 FC disk rack data cabling diagram via an FC Switch .....                   | 1-8  |
| Figure 8.  | FDA 1x00 FC - FDA 1x00 FC extension disk rack data cabling diagram .....            | 1-9  |
| Figure 9.  | FDA 2x00 FC - FDA 1x00 FC extension disk rack data cabling diagram .....            | 1-9  |
| Figure 10. | FC Switch data cabling diagram (quadri-module example) .....                        | 1-10 |
| Figure 11. | Nport server data cabling diagram (front view) .....                                | 1-11 |
| Figure 12. | Nport server data cabling diagram (rear view) .....                                 | 1-11 |
| Figure 13. | XSP data cabling diagram (bi-module interconnection) .....                          | 1-12 |
| Figure 14. | XSP data cabling diagram (tri / quadri module interconnection) .....                | 1-13 |
| Figure 15. | Side Band data cabling diagram .....                                                | 1-14 |
| Figure 16. | NovaScale 5085 Server / NovaScale 5085 Partitioned Server power cabling diagram     | 1-15 |
| Figure 17. | NovaScale 5165 SMP Server / NovaScale 5165 Partitioned Server power cabling diagram | 1-16 |
| Figure 18. | NovaScale 5245 SMP Server / NovaScale 5245 Partitioned Server power cabling diagram | 1-18 |
| Figure 19. | NovaScale 5325 SMP Server / NovaScale 5325 Partitioned Server power cabling diagram | 1-20 |



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## Intended Readers

This guide is intended for use by qualified personnel in charge of installing, maintaining, servicing, and upgrading Bull NovaScale Servers.

NovaScale 5xx5 Server Cabling Diagrams:

Data cables, on page 1-2

Power cables, on page 1-15

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## Highlighting

The following highlighting conventions are used in this guide:

|                |                                                                                                       |
|----------------|-------------------------------------------------------------------------------------------------------|
| <b>Bold</b>    | Identifies predefined commands, subroutines, keywords, files, structures, buttons, labels, and icons. |
| <i>Italics</i> | Identifies referenced publications, chapters, sections, figures, and tables.                          |
| <      >       | Identifies parameters to be supplied by the user.                                                     |

Abbreviations, acronyms and concepts are documented in the *Glossary*.

---

## Related Publications

### NovaScale 5xx0/6xx0 Servers /NovaScale 5xx5 Servers

*Site Preparation Guide*, 86 A1 87EF

explains how to prepare a Data Processing Center for Bull NovaScale Servers, in compliance with the standards in force. This guide is intended for use by all personnel and trade representatives involved in the site preparation process.

*Bull 1300H/L & 1100H/L Cabinets*, 86 A1 91EM

explains how to install and fit out rack cabinets for Bull NovaScale Servers and peripheral devices.

*PAM Help Message Guide*, 86 A7 32ER

provides the complete collection of PAM Help Messages containing valuable troubleshooting information.

*Troubleshooting Guide*, 86 A7 91EF

explains how to diagnose and solve any problems occurring during Bull NovaScale Server operation. This guide is intended for use by qualified support personnel.

*Praxidiag Diagnostics Guide*, 86 A7 33ER

provides the complete collection solutions to known problems extracted from the Praxidiag database.

*Bull NovaScale Series Documentation Overview*, 86 A2 27EM

describes the hardware, software and online documentation available for Bull NovaScale Servers, related Operating Systems, and licensed programs.

### NovaScale 5xx0/6xx0 Servers

*Installation Guide*, 86 A1 93EM

explains how to set up and start NovaScale 5xx0/6xx0 Servers for the first time. This guide is intended for use by qualified support personnel.

*User's Guide*, 86 A1 94EM

explains how to use the NovaScale 5xx0/6xx0 Servers servers. This guide is intended for use by Customer Administrators and Operators.

*Maintenance and Service Guide*, 86 A7 95EM

explains how to maintain, service, and upgrade NovaScale 5xx0/6xx0 Servers. This guide is intended for use by qualified support personnel.

### NovaScale 5xx5 Servers

*Installation Guide*, 86 A1 40EM

explains how to set up and start NovaScale 5xx5 Servers for the first time. This guide is intended for use by qualified support personnel.

*User's Guide*, 86 A1 41EM

explains how to use the NovaScale 5xx5 Servers. This guide is intended for use by Customer Administrators and Operators.

*Maintenance and Service Guide*, 86 A7 42EM

explains how to maintain, service, and upgrade NovaScale 5xx5 Servers. This guide is intended for use by qualified support personnel.

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## Chapter 1. Cabling Diagrams

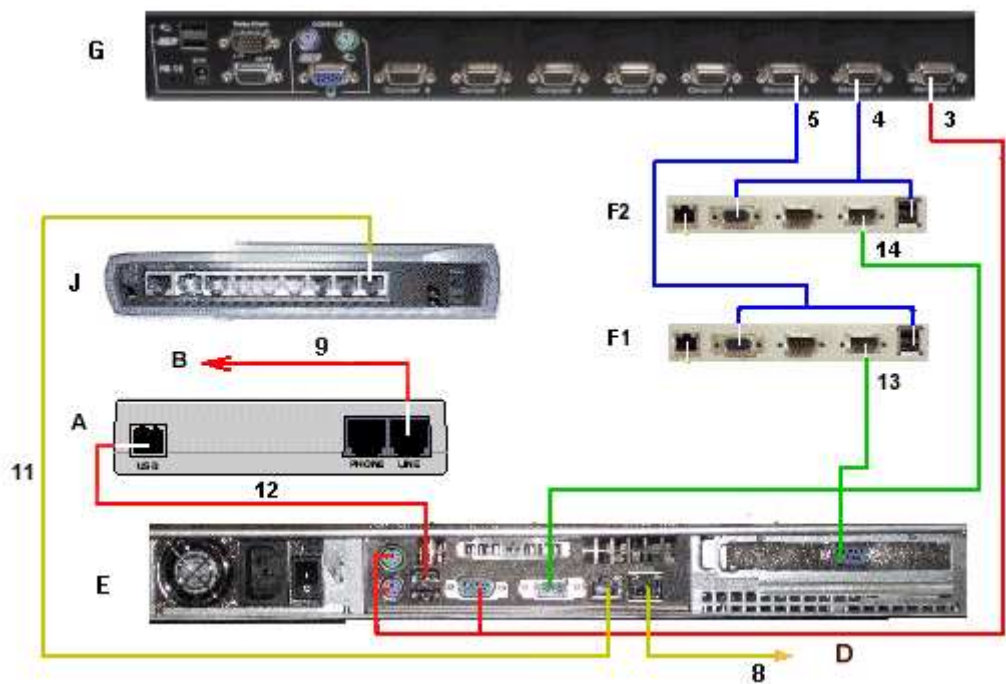
### Data Cables

- ▶ PAP unit, on page 1-2
- ▶ Hub, on page 1-3
- ▶ KVM switch and KVM extender, on page 1-4
  - ▶ KVM switch, on page 1-4
  - ▶ KVM extender, on page 1-5
- ▶ Fibre Channel Disk and FC adapter, on page 1-6
  - ▶ FDA 1x00 FC direct Connection, on page 1-6
  - ▶ FDA 2x00 FC direct connection, on page 1-7
  - ▶ FDA 2x00 FC connection via an FC switch, on page 1-8
  - ▶ FDA 1x00 FC - FDA 1x00 FC extension disk rack, on page 1-9
  - ▶ FDA 2x00 FC - FDA 1x00 FC extension disk rack, on page 1-9
- ▶ FC switch and FC adapter, on page 1-10
- ▶ Nport server, on page 1-11
- ▶ Module interconnection (XSP cables), on page 1-12
- ▶ Module interconnection (Side Band cables), on page 1-14

### Power Cables

- ▶ Mono-module power cables, on page 1-15
- ▶ bi-module power cables, on page 1-16
- ▶ Tri-module power cables, on page 1-17
- ▶ Quadri-module power cables, on page 1-19

# PAP Unit Data Cabling Diagram

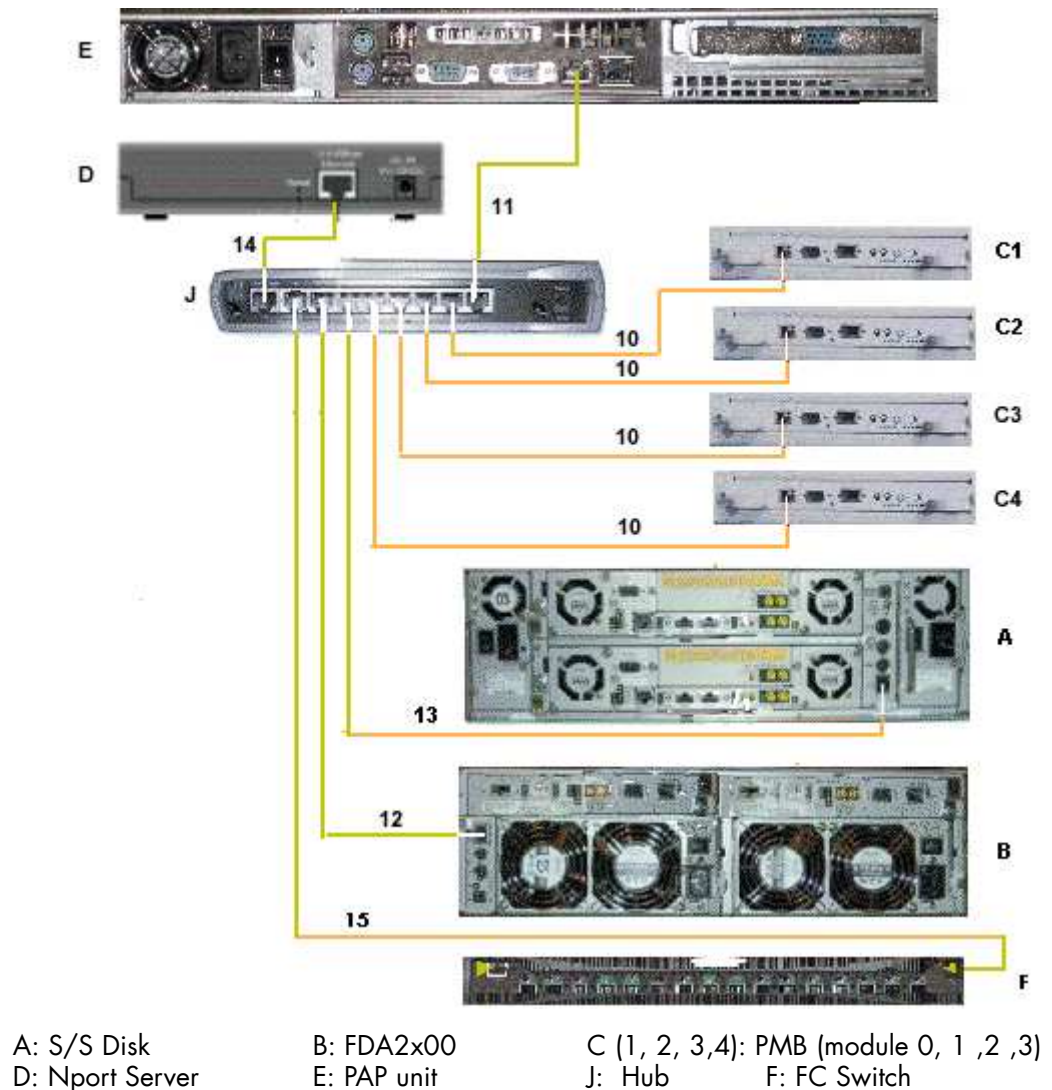


A: Modem USB  
E: PAP unit  
J: Hub  
B: Telephone network socket  
F (1, 2): IOL (IOC 0, 1)  
D: Enterprise LAN  
G: KVM Switch

| Mark | Cable Type             | From         | To                 |
|------|------------------------|--------------|--------------------|
| 3    | Combined PS2/VGA cable | G (Port 1)   | E (VGA/PS2)        |
| 4    | Combined USB/VGA cable | G (Port 2)   | F1 (Video/USB)     |
| 5    | Combined USB/VGA cable | G (Port 3)   | F2 (Video/USB)     |
| 8    | RJ45 - RJ45 Ethernet   | E (Ethernet) | D (Enterprise LAN) |
| 9    | RJ11 - RJ11 cable      | A (Line)     | B                  |
| 11   | RJ45 - RJ45 Ethernet   | E (Ethernet) | J                  |
| 12   | USB cable              | A (USB)      | E (USB)            |
| 13   | DB9 to DB9 cross cable | E (COM 2)    | F1 (COM2)          |
| 14   | DB9 to DB9 cross cable | E (COM 1)    | F2 (COM2)          |

Figure 1. Pap Unit data cabling diagram

## Hub Data Cabling Diagram



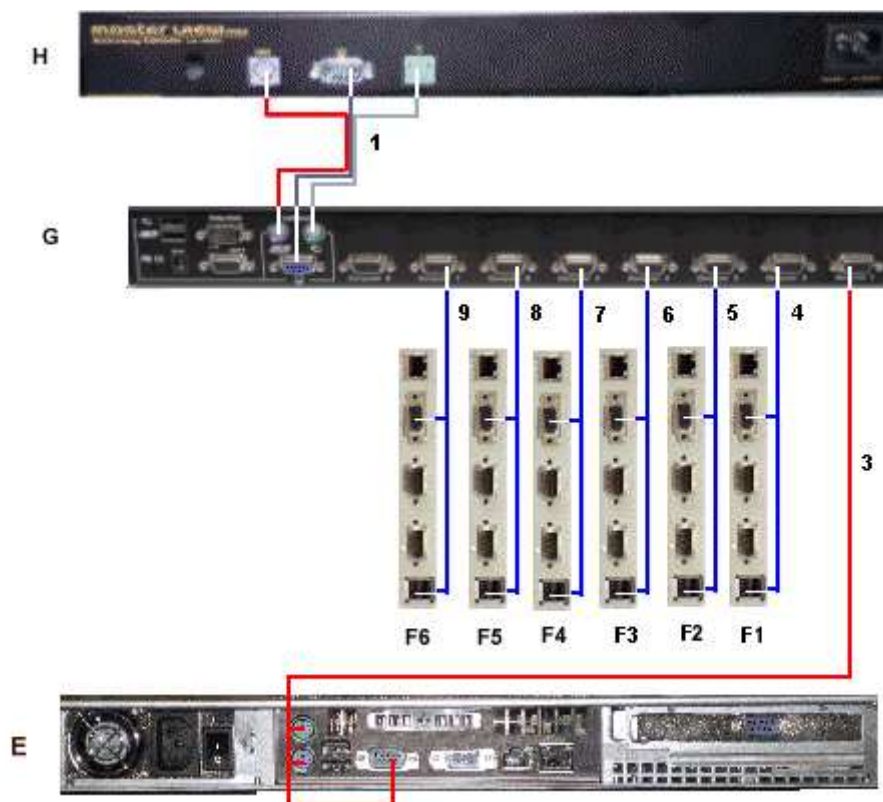
| Mark | Cable Type           | From                                                                                        | To |
|------|----------------------|---------------------------------------------------------------------------------------------|----|
| 10   | RJ45 - RJ45 Ethernet | C1                                                                                          | J  |
|      | RJ45 - RJ45 Ethernet | C2                                                                                          | J  |
|      | RJ45 - RJ45 Ethernet | C3                                                                                          | J  |
|      | RJ45 - RJ45 Ethernet | C4                                                                                          | J  |
| 11   | RJ45 - RJ45 Ethernet | E                                                                                           | J  |
| 12   | RJ45 - RJ45 Ethernet | FDA 1x00 FC (optional external FC disk)                                                     | J  |
| 13   | RJ45 - RJ45 Ethernet | FDA 2x00 FC (optional external FC disk)                                                     | J  |
| 14   | RJ45 - RJ45 Ethernet | Nport server<br>Note: a second Nport server is needed for more than 6 domains configuration | J  |
| 15   | RJ45 - RJ45 Ethernet | F                                                                                           | J  |

Figure 2. Hub data cabling diagram

## KVM Switch and KVM Extender Data Cabling Diagrams

- ▶ KVM switch, on page 1-4
- ▶ KVM extender, on page 1-5

## KVM Switch



E: PAP unit  
F (3, 4): IOL (IOC 0, 1) Module 1  
G: KVM Switch

F (1, 2): IOL (IOC 0, 1) Module 0  
F (5, 6): IOL (IOC 0, 1) Module 2  
H KVM Drawer

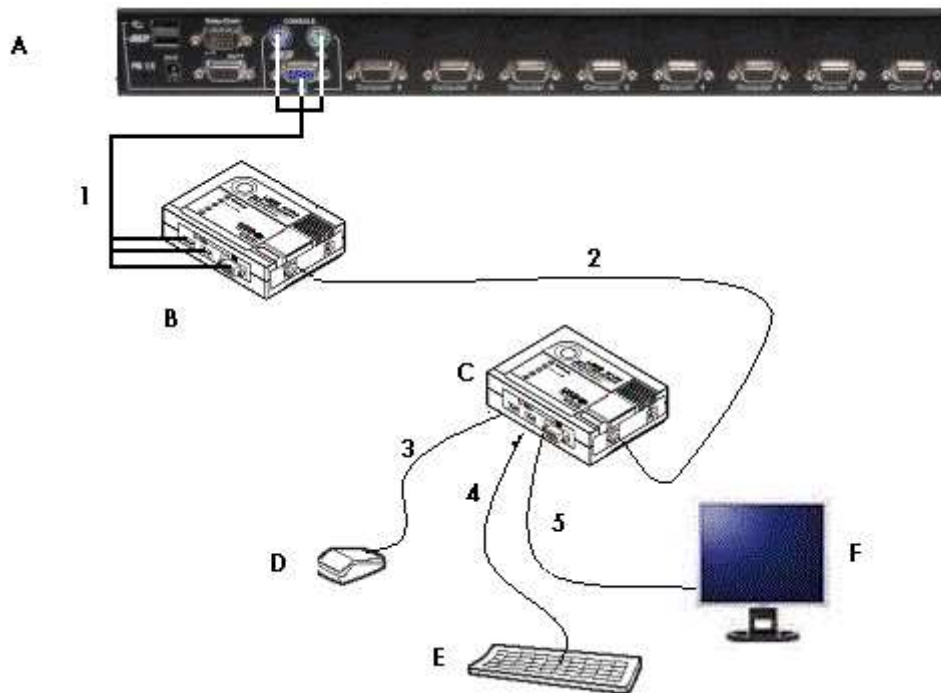
 **Note:**

If the KVM is not in the rack, the KVM switch is connected to the KVM via a KVM extender as shown in figure 4.

| Mark | Cable Type             | From       | To             |
|------|------------------------|------------|----------------|
| 1    | VGA/PS2/PS2 cable      | G          | H              |
| 3    | Combined PS2/VGA cable | G (Port 1) | E (VGA/PS2)    |
| 4    | Combined USB/VGA cable | G (Port 2) | F1 (Video/USB) |
| 5    | Combined USB/VGA cable | G (Port 3) | F2 (Video/USB) |
| 6    | Combined USB/VGA cable | G (Port 4) | F3 (Video/USB) |
| 7    | Combined USB/VGA cable | G (Port 5) | F4 (Video/USB) |
| 8    | Combined USB/VGA cable | G (Port 6) | F5 (Video/USB) |
| 9    | Combined USB/VGA cable | G (Port 7) | F6 (Video/USB) |

Figure 3. KVM Switch data cabling diagram (tri-module example)

## KVM Extender



A: KVM Switch  
 B: KVM extender (local unit)  
 C: KVM extender (remote unit)  
 D: USB or PS2 mouse  
 E: USB or PS2 keyboard  
 F: Monitor

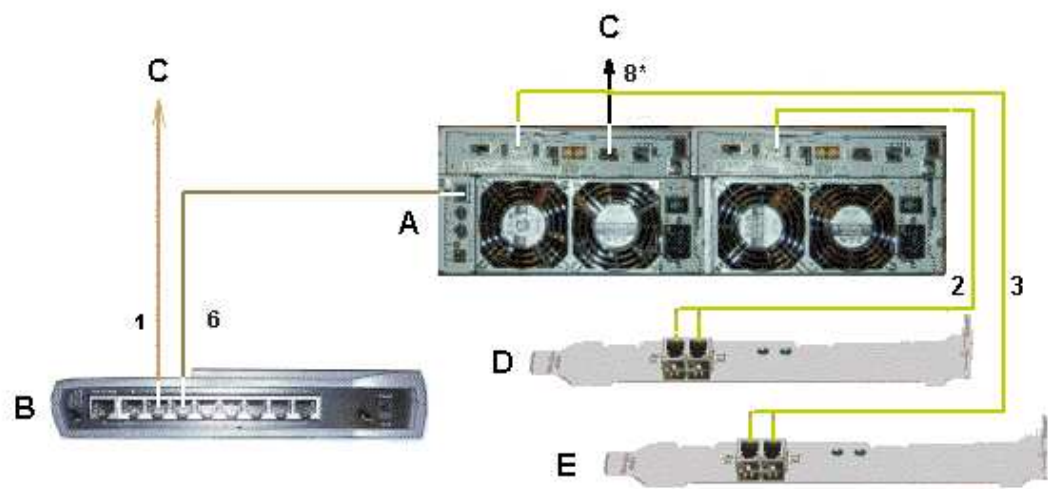
| Mark | Cable Type                | From | To |
|------|---------------------------|------|----|
| 1    | Combined PS2/VGA cable    | A    | B  |
| 2    | RJ45 - RJ45 cable         | B    | C  |
| 3    | USB or PS2 mouse cable    | D    | C  |
| 4    | USB or PS2 keyboard cable | E    | C  |
| 5    | VGA cable                 | F    | C  |

Figure 4. KVM extender data cabling diagram

# Fibre Channel Disk and FC Adapter Data Cabling Diagrams

- ▶ FDA 1x00 FC direct Connection, on page 1-6
- ▶ FDA 2x00 FC direct connection, on page 1-7
- ▶ FDA 2x00 FC connection via an FC switch, on page 1-8
- ▶ FDA 1x00 FC - FDA 1x00 FC extension disk rack, on page 1-9
- ▶ FDA 2x00 FC - FDA 1x00 FC extension disk rack, on page 1-9

## FDA 1x00 FC Direct Connection



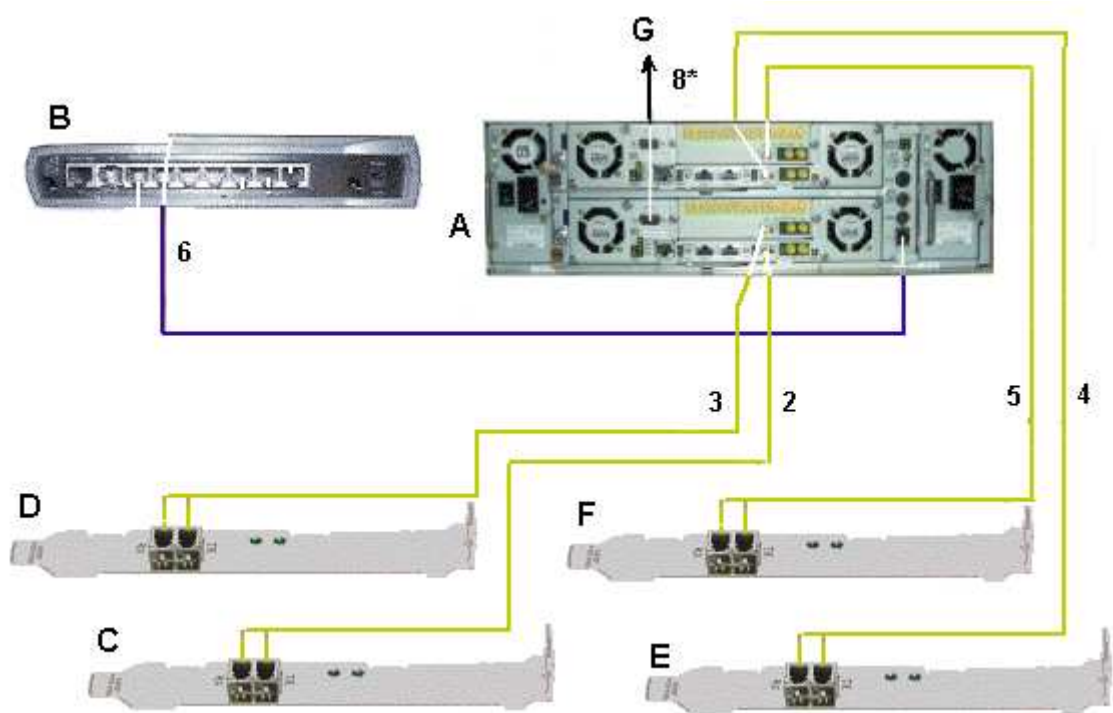
A: S/S Disk      B: Hub      C: PAP unit      D, E: FC Adapters

| Mark | Cable Type                 | From       | To         |
|------|----------------------------|------------|------------|
| 1    | RJ45 - RJ45 Ethernet cable | B (port 7) | C          |
| 2    | LC-LC cable                | A (CTL 0)  | D (IOC 0)  |
| 3    | LC-LC cable                | A (CTL 1)  | E (IOC 1)  |
| 6    | RJ45 - RJ45 Ethernet cable | A          | B (port 6) |
| 8*   | DB9 to DB9 serial cable *  | C (COM 1)  | A (RS232)  |

\* optional cable used to configure the S/S disk.

Figure 5. FDA 1x00 FC disk rack data cabling diagram (mono-module example)

## FDA 2x00 FC Direct Connection



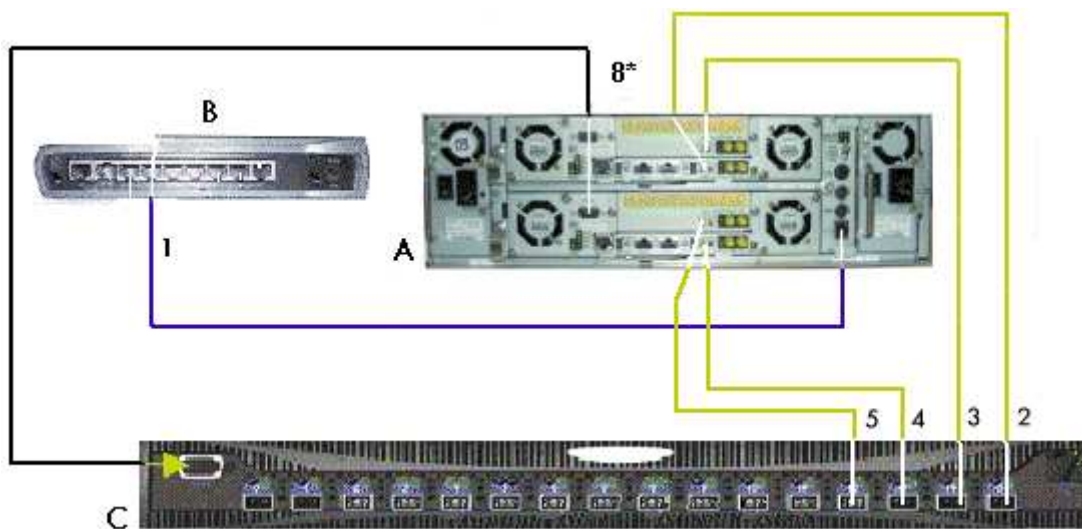
A: S/S Disk  
 B: Hub  
 C, D, E, F: FC Adapter  
 G: PAP unit

| Mark | Cable Type                 | From         | To                 |
|------|----------------------------|--------------|--------------------|
| 2    | LC-LC cable                | A (CTL0-HF0) | C (IOC 0 Module 0) |
| 3    | LC-LC cable                | A (CTL0-HF1) | D (IOC 1 Module 0) |
| 4    | LC-LC cable                | A (CTL1-HF0) | E (IOC 0 Module 1) |
| 5    | LC-LC cable                | A (CTL1-HF1) | F (IOC 1 Module 1) |
| 6    | RJ45 - RJ45 Ethernet cable | A            | B (port 6)         |
| 8 *  | DB9 to DB9 serial cable    | A (RS232)    | G (COM 1)          |

\* optional cable used to configure the S/S disk.

Figure 6. FDA 2x00 FC disk rack data cabling diagram (bi-module example)

## FDA 2x00 FC Connection via an FC Switch



A: S/S Disk

B: Hub

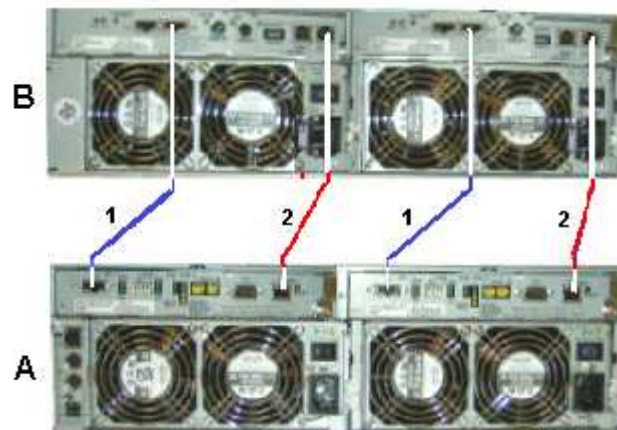
C: FC Switch

| Mark | Cable Type                 | From         | To          |
|------|----------------------------|--------------|-------------|
| 1    | RJ45 - RJ45 Ethernet cable | A            | B (port 6)  |
| 2    | LC-LC cable                | A (CTL0-HF0) | C (Port 16) |
| 3    | LC-LC cable                | A (CTL0-HF1) | C (Port 15) |
| 4    | LC-LC cable                | A (CTL1-HF0) | C (Port 14) |
| 5    | LC-LC cable                | A (CTL1-HF1) | C (Port 13) |
| 8 *  | DB9 to DB9 serial cable    | A (RS232)    | G (COM 1)   |

\* optional cable used to configure the S/S disk.

Figure 7. FDA 2x00 FC disk rack data cabling diagram via an FC Switch

## Extension Disk Rack (FDA 1x00 FC - FDA 1x00 FC)



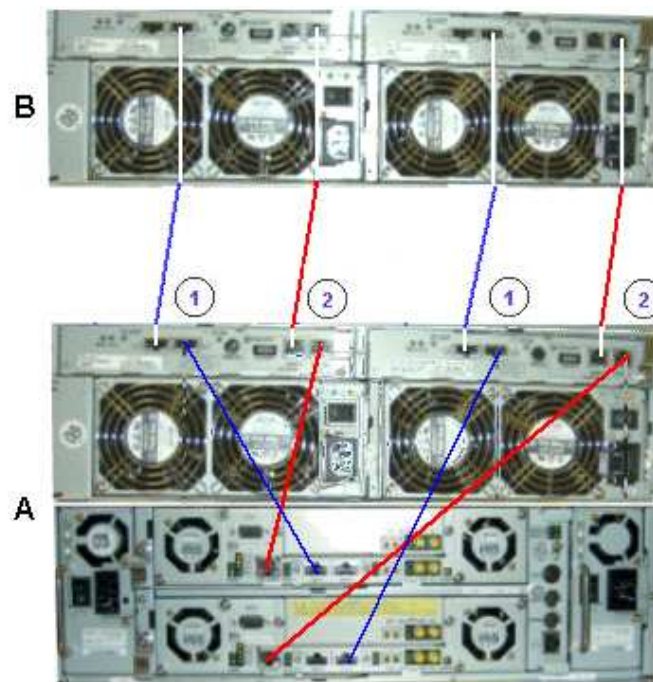
A: S/S Disk

B: S/S Disk Extension

| Mark | Cable Type         | From | To |
|------|--------------------|------|----|
| 1    | HSSDC-HSSDC cable  | A    | B  |
| 2    | DE diagnosis cable | A    | B  |

Figure 8. FDA 1x00 FC - FDA 1x00 FC extension disk rack data cabling diagram

## Extension Disk Rack (FDA 2x00 FC - FDA 1x00 FC)



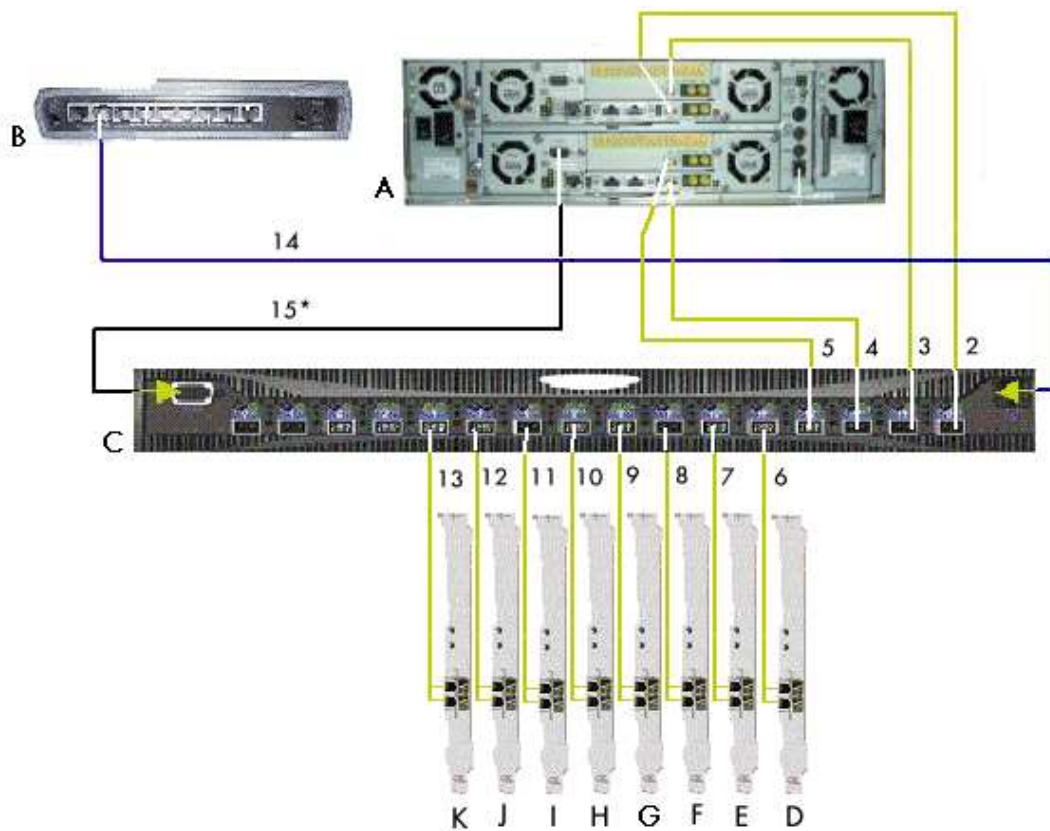
A: S/S Disk FDA 2x00 FC

B: S/S Disk FDA 1x00 FC (extension)

| Mark | Cable Type         | From | To |
|------|--------------------|------|----|
| 1    | HSSDC-HSSDC cable  | A    | B  |
| 2    | DE diagnosis cable | A    | B  |

Figure 9. FDA 2x00 FC - FDA 1x00 FC extension disk rack data cabling diagram

## FC Switch and FC Adapter Data Cabling Diagram



A: S/S Disk

B: Hub

C: FC Switch

D, E, F, G, H, I, J, K: FC Adapter

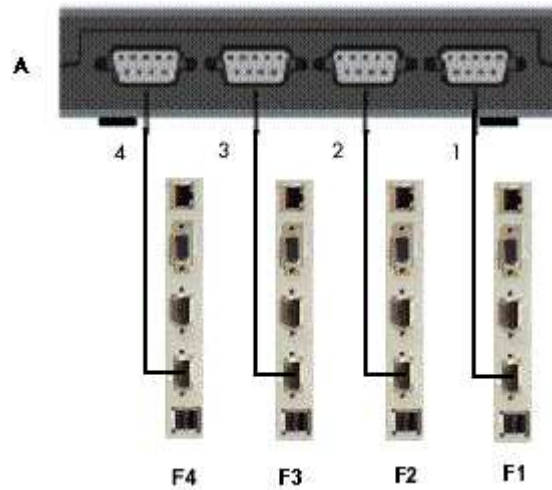
| Mark | Cable Type                 | From               | To          |
|------|----------------------------|--------------------|-------------|
| 2    | LC-LC cable                | A (CTL0-HF0)       | C (Port 16) |
| 3    | LC-LC cable                | A (CTL0-HF1)       | C (Port 15) |
| 4    | LC-LC cable                | A (CTL1-HF0)       | C (Port 14) |
| 5    | LC-LC cable                | A (CTL1-HF1)       | C (Port 13) |
| 6    | LC-LC cable                | D (IOC 0 Module 0) | C (Port 12) |
| 7    | LC-LC cable                | D (IOC 1 Module 0) | C (Port 11) |
| 8    | LC-LC cable                | D (IOC 0 Module 1) | C (Port 10) |
| 9    | LC-LC cable                | D (IOC 1 Module 1) | C (Port 9)  |
| 10   | LC-LC cable                | D (IOC 0 Module 2) | C (Port 8)  |
| 11   | LC-LC cable                | D (IOC 1 Module 2) | C (Port 7)  |
| 12   | LC-LC cable                | D (IOC 0 Module 3) | C (Port 6)  |
| 13   | LC-LC cable                | D (IOC 1 Module 3) | C (Port 5)  |
| 14   | RJ45 - RJ45 Ethernet cable | C                  | B (port 7)  |
| 15 * | DB9 to DB9 serial cable    | A (RS232)          | C (COM 1)   |

\* optional cable used to configure the S/S disk.

Figure 10. FC Switch data cabling diagram (quadri-module example)

## Nport Server Data Cabling Diagrams

### Nport Server Front connection

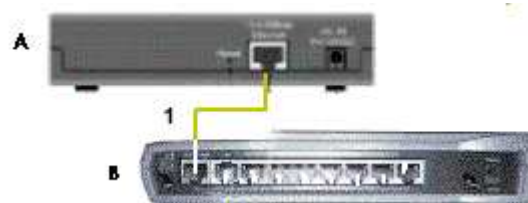


A: Nport server (front view) F1, F2, F3, F4: IOL

| Mark       | Cable Type             | From                                                                             | To                    |
|------------|------------------------|----------------------------------------------------------------------------------|-----------------------|
| 1, 2, 3, 4 | DB9 to DB9 cross cable | A<br>Note: a second Nport server is needed for more than 6 domains configuration | F1, F2, F3, F4 (COM2) |

Figure 11. Nport server data cabling diagram (front view)

### Nport Server Rear Connection



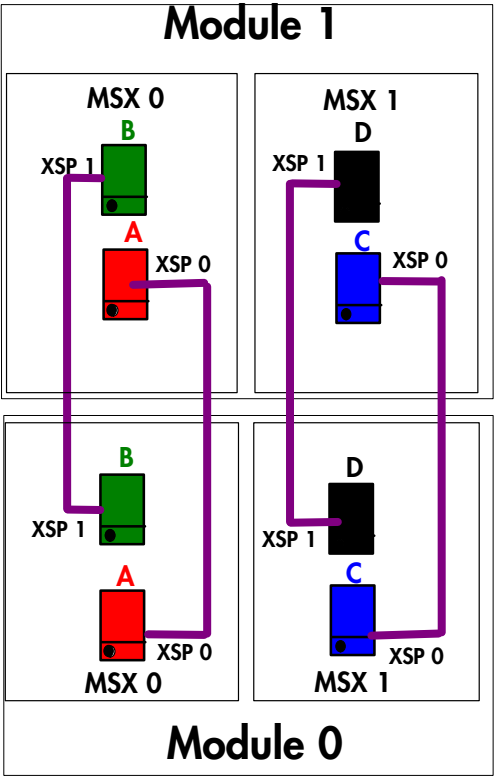
A: Nport server (rear view) B: Hub

| Mark | Cable Type                 | From | To         |
|------|----------------------------|------|------------|
| 1    | RJ45 - RJ45 Ethernet cable | A    | B (port 7) |

Figure 12. Nport server data cabling diagram (rear view)

# XSP Cables

## Bi-module Configuration



| Mark | Cable Type | From                   | To                     |
|------|------------|------------------------|------------------------|
| A    | XSP cable  | Module 0 (MSX 0 XSP 0) | Module 1 (MSX 0 XSP 0) |
| B    | XSP cable  | Module 0 (MSX 0 XSP 1) | Module 1 (MSX 0 XSP 1) |
| C    | XSP cable  | Module 0 (MSX 1 XSP 0) | Module 1 (MSX 1 XSP 0) |
| D    | XSP cable  | Module 0 (MSX 1 XSP 1) | Module 1 (MSX 1 XSP 1) |

Figure 13. XSP data cabling diagram (bi-module interconnection)

## Tri/Quadri-module Configuration

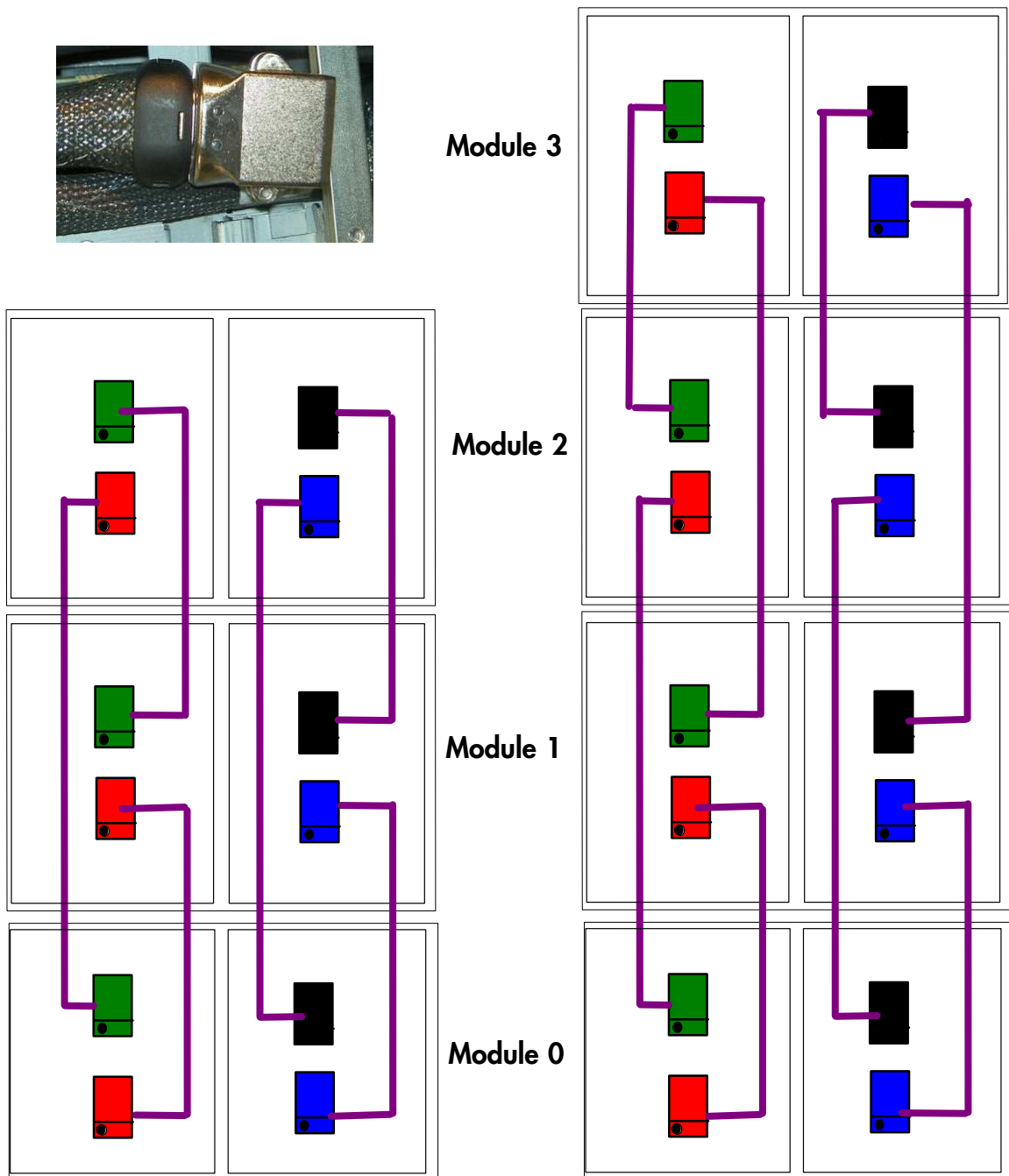


Figure 14. XSP data cabling diagram (tri / quadri module interconnection)

# Side Band Cables

Error and reset signal cables connected to MIOR.

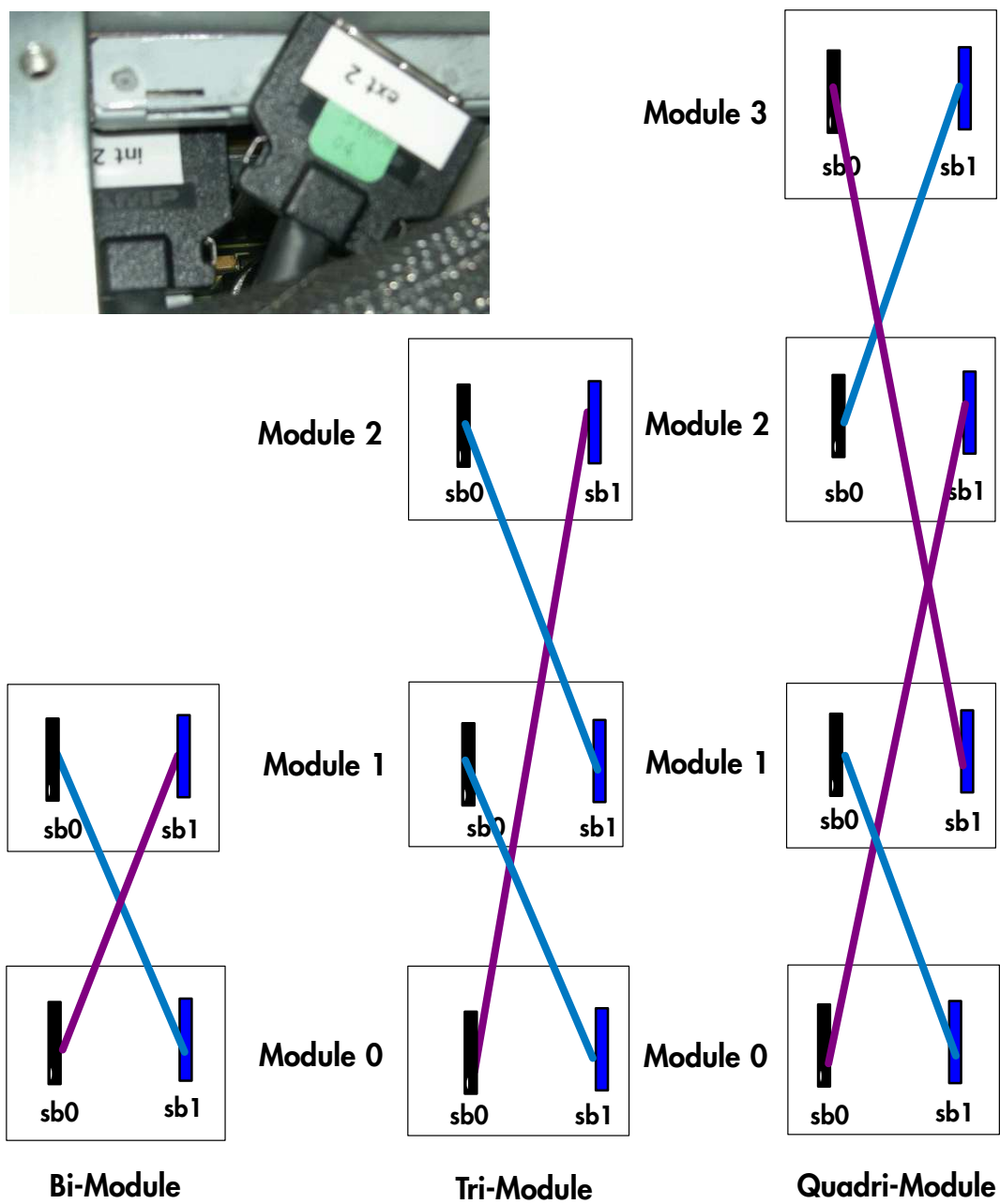


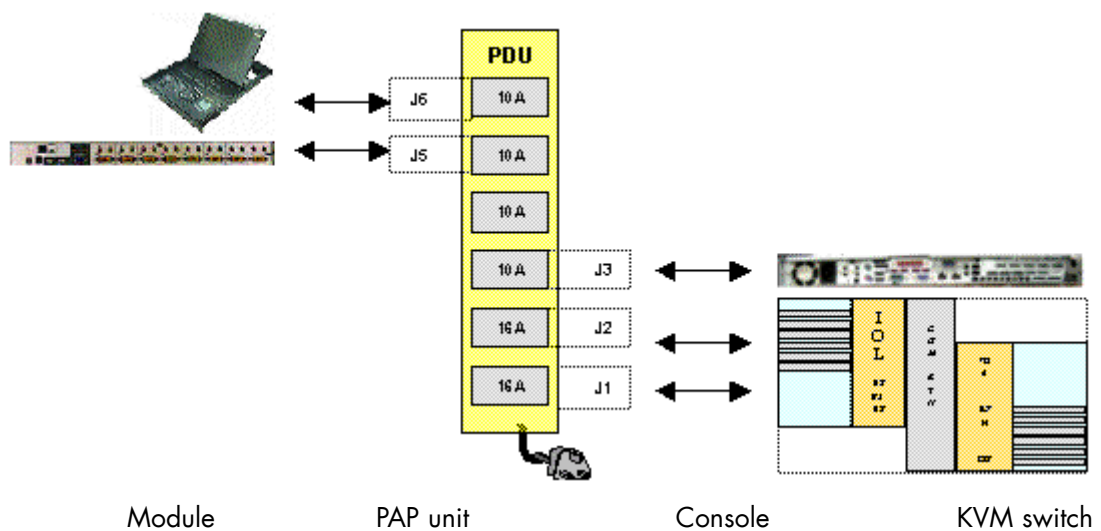
Figure 15. Side Band data cabling diagram

## Power Cabling Diagrams

### Mono-Module Power Cabling Diagram

All power supply cables are connected to the internal PDU(s), as shown below:

#### Internal Disk configuration



#### External FC Disk configuration

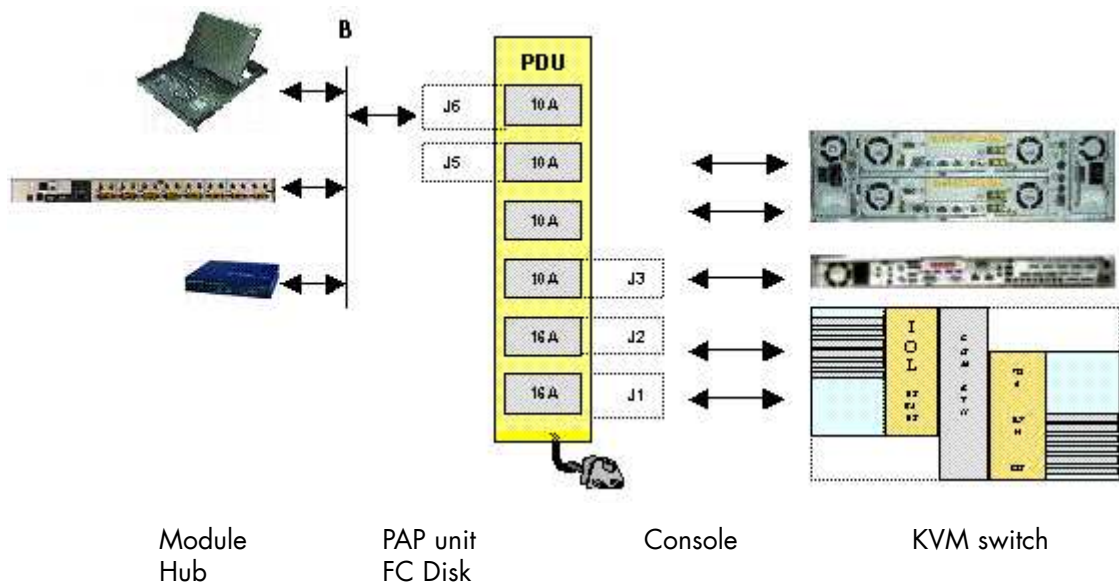
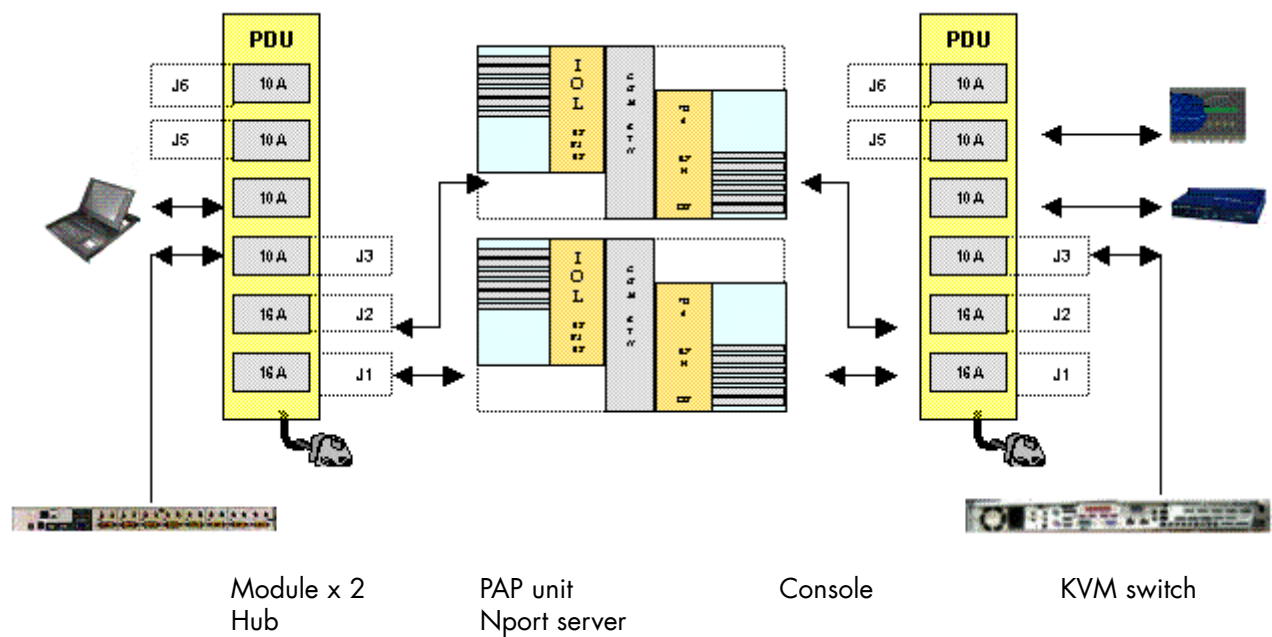


Figure 16. NovaScale 5085 Server / NovaScale 5085 Partitioned Server power cabling diagram

# Bi-Module Power Cabling Diagram

## Internal Disk configuration



## External Disk configuration

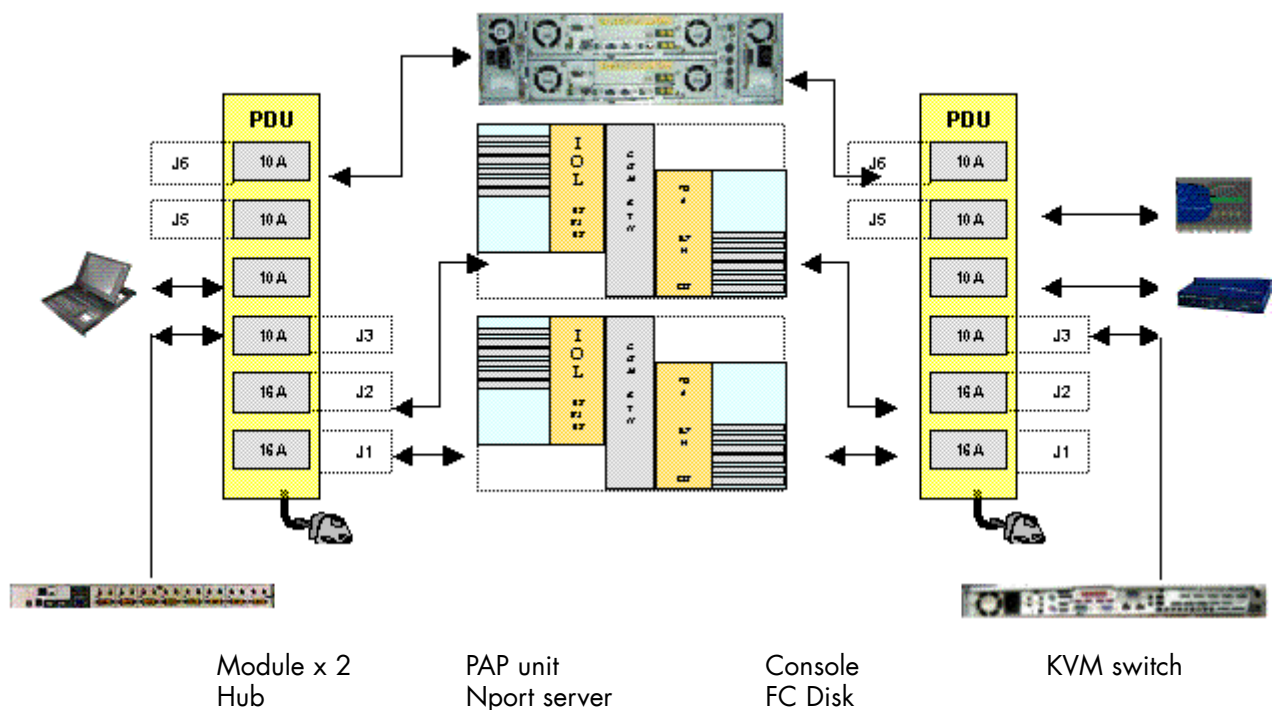
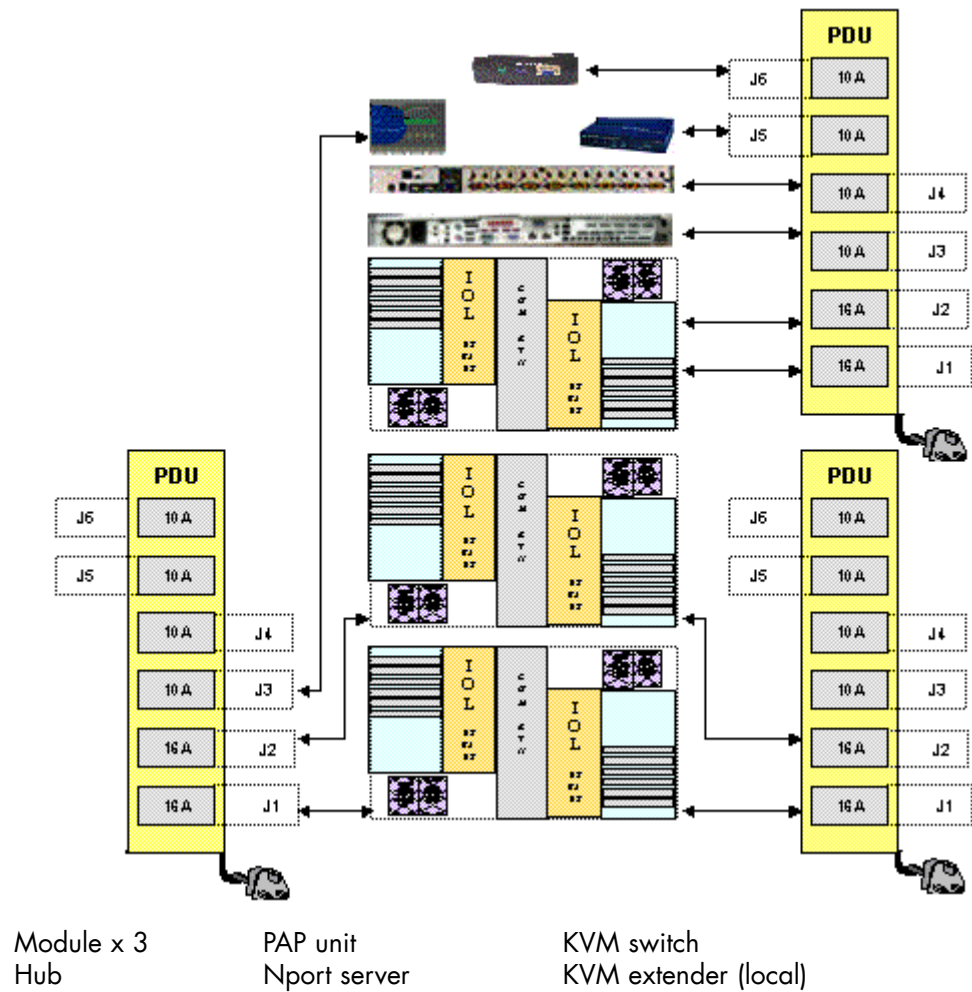


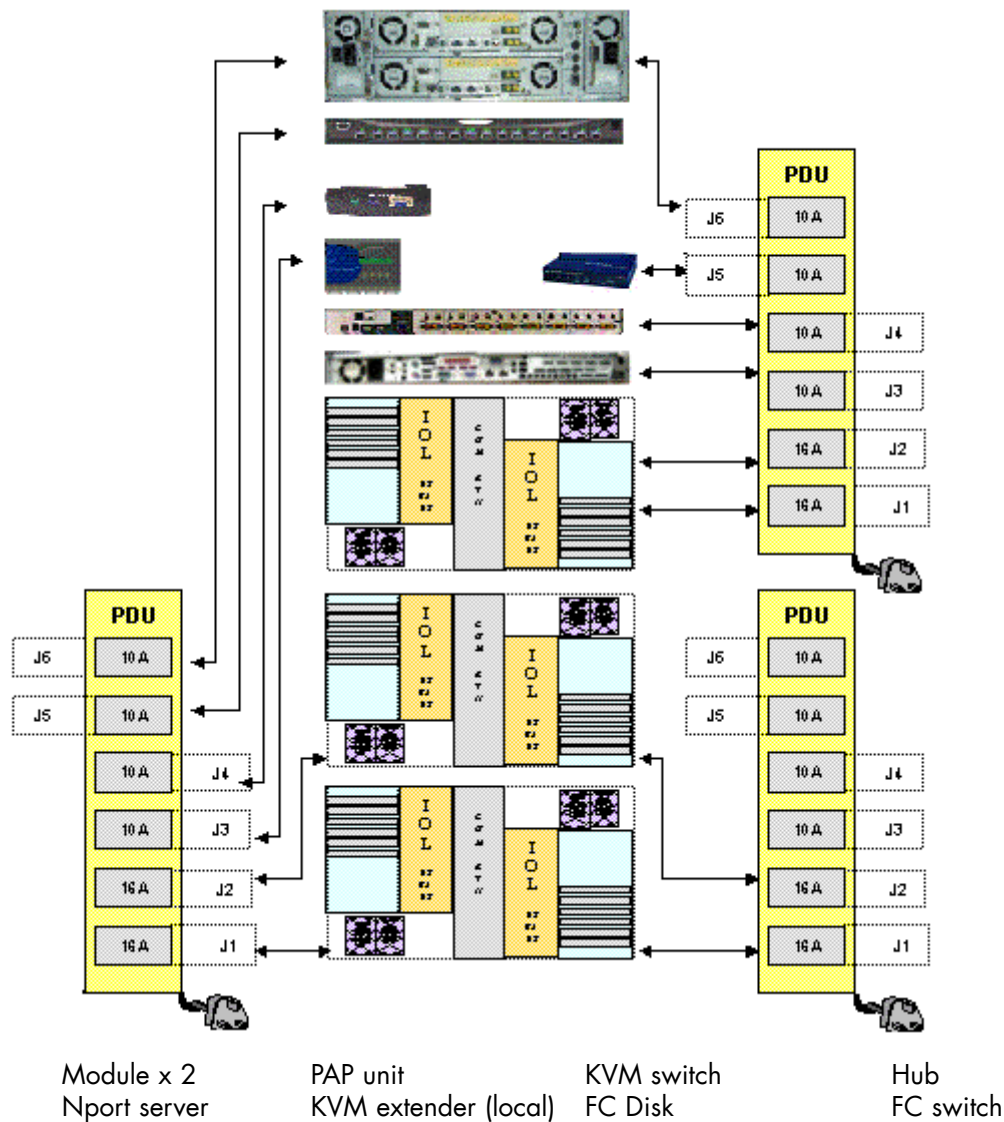
Figure 17. NovaScale 5165 SMP Server / NovaScale 5165 Partitioned Server power cabling diagram

# Tri-Module Power Cabling Diagram

Internal Disk configuration (Main Cabinet)



### External Disk configuration (Main Cabinet)



### Internal or External Disk configuration (I/O Cabinet)

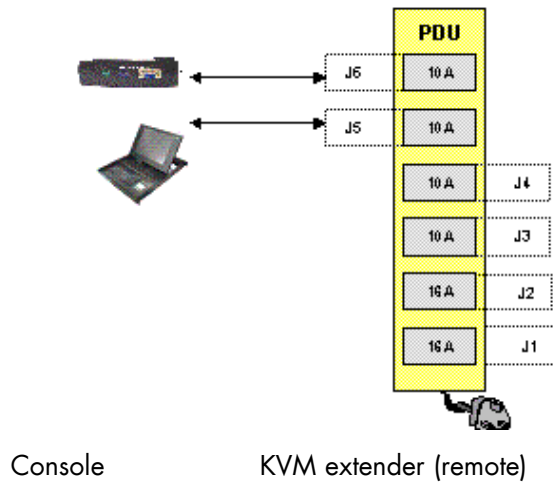
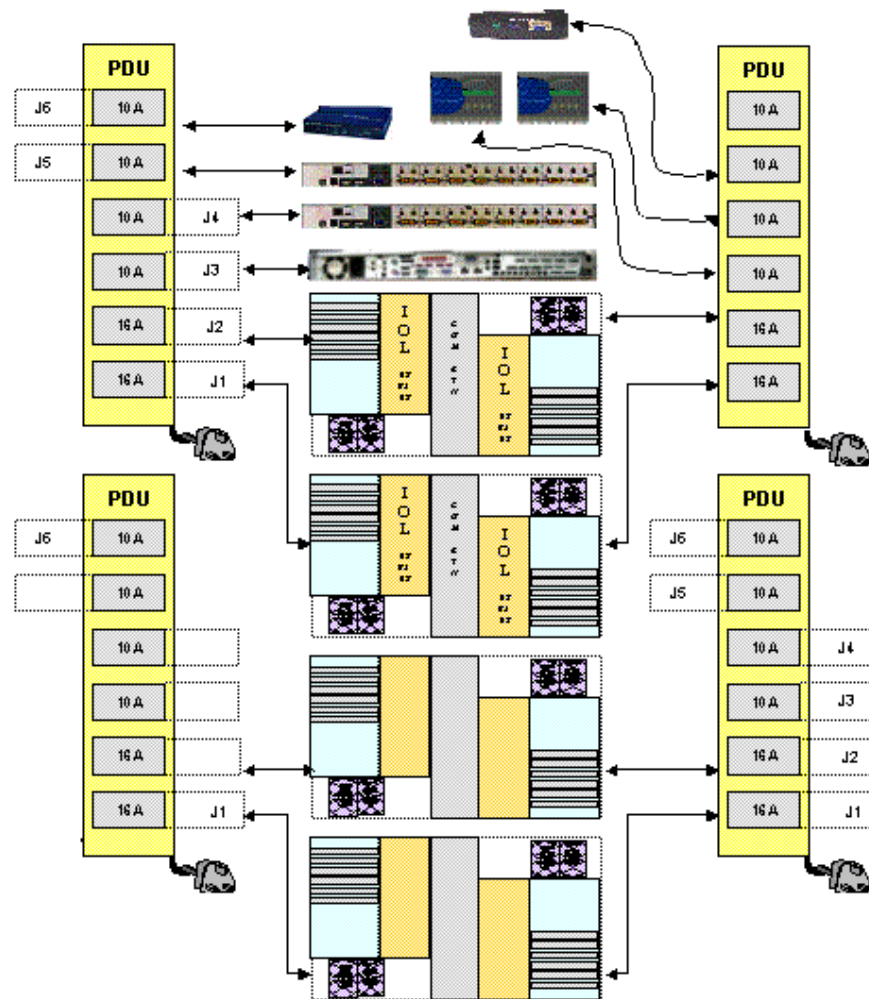


Figure 18. NovaScale 5245 SMP Server / NovaScale 5245 Partitioned Server power cabling diagram

## Quadri-Module Power Cabling Diagram

### Internal Disk configuration (Main Cabinet)

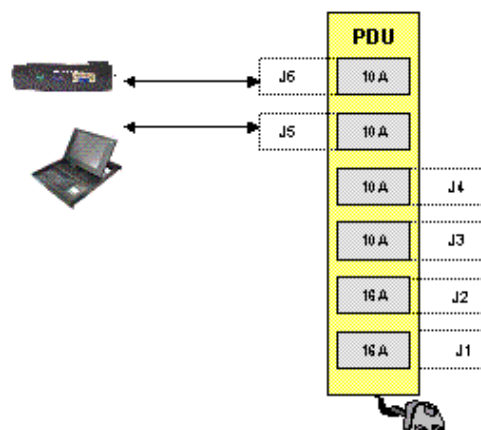


Module x 4  
Hub

PAP unit  
Nport server x 2

KVM switch x 2  
KVM extender (local)

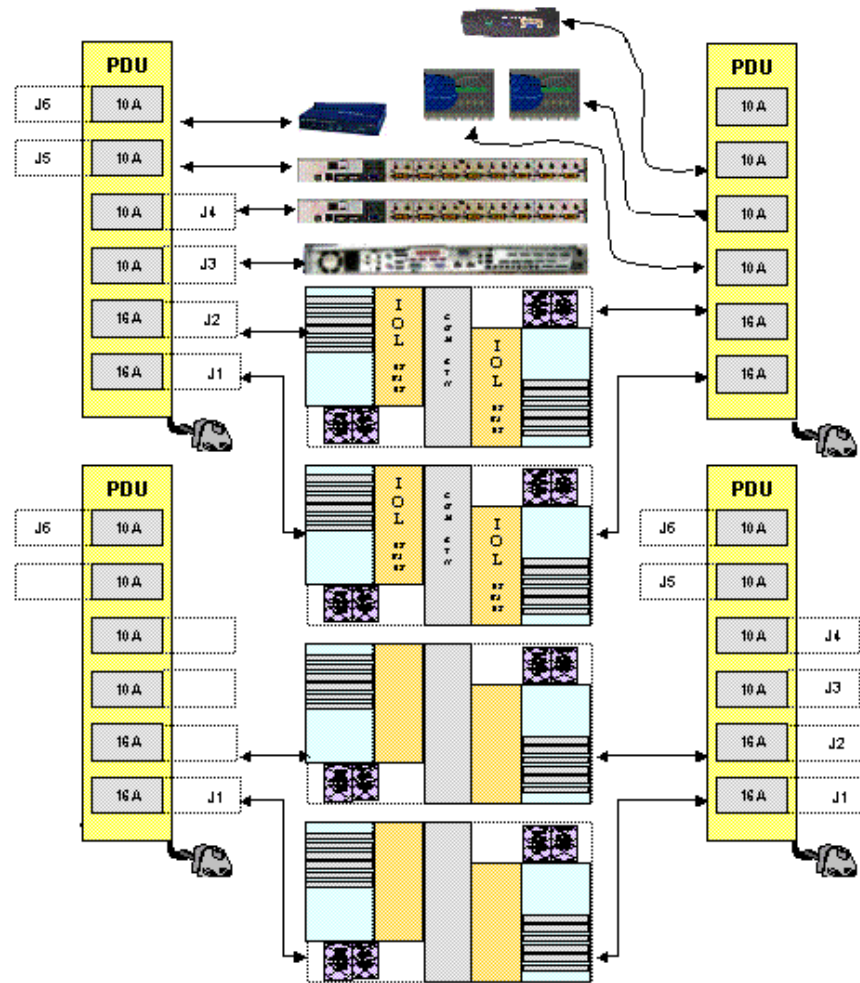
### Internal Disk configuration (I/O Cabinet)



Console

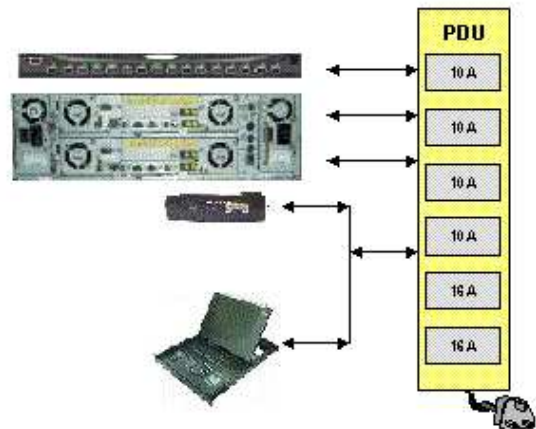
KVM extender (remote)

### External Disk configuration (Main Cabinet)



Module x 4      PAP unit      KVM switch x 2      Hub  
Nport server x 2      KVM extender (local)

### External Disk configuration (I/O Cabinet)



Console      KVM extender (remote)      FC Disk      FC switch

Figure 19. NovaScale 5325 SMP Server / NovaScale 5325 Partitioned Server power cabling diagram

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## Index

### B

Bi-Module Server, power supply cables, 1-16

### C

#### Cable

- FDA 2x00 FC disk rack, 1-8
- side band, 1-14
- XSP, 1-12

#### Cables

- FC (fibre channel), 1-6
- FC switch, 1-10
- FDA 1x00 FC disk rack, 1-6
- FDA 1x00 FC extension disk rack, 1-9
- FDA 2x00 FC disk rack, 1-7
- FDA 2x00 FC extension disk rack, 1-9
- Hub, 1-3
- KVM extender, 1-5
- KVM switch, 1-4
- Nport server, 1-11
- PAP unit, 1-2

### D

Documentation, preface, i

### F

- FC Switch, cabling, 1-10
- FDA 1x00 FC Disk rack, data cables, 1-6
- FDA 1x00 FC extension Disk rack, data cables, 1-9
- FDA 2x00 FC Disk rack
  - cabling, 1-8
  - data cables, 1-7
- FDA 2x00 FC extension Disk rack, data cables, 1-9
- Fibre Channel Disk rack, data cables, 1-6

### H

Hub, Data cables, 1-3

### K

- KVM Extender, data cables, 1-5
- KVM Switch, data cables, 1-4

### M

Mono-Module Server, power supply cables, 1-15

### N

Nport Server, cabling, 1-11

### O

Overview, documentation, i

### P

- PAP Unit, data cables, 1-2
- Power supply cables
  - bi-module server, 1-16
  - mono-module server, 1-15
  - quadri-module server, 1-19
  - server, 1-15
  - tri-module server, 1-17

### Q

Quadri-Module Server, power supply cables, 1-19

### S

Side Band, Data cables, 1-14

### T

Tri-Module Server, power supply cables, 1-17

### X

XSP, Data cables, 1-12



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