4.11 Backplanes and Board Slots

It's important to know which slots in the machines are available for add-in VME, GIO, EISA, PCI or XIO boards. The purpose of this section is to show the slot layout and nomenclature for each system so that they are familiar.

4.11.1 9U VME Backplanes

The table below shows the various configurations of 9U VME backplanes in SGI systems. Areas of the backplane reserved for CPU, Memory and I/O cards are shown shaded in light grey. Areas of the backplane reserved for Graphics boards are shown shaded in a darker grey. Notations in the table are the names of the SGI boards normally located in that slot.

4.11.1.1 Twin Tower Backplanes

Table 4-79 Twin Tower Backplanes

Slot	12 Slot		15 Slot			
	B, G	GT	B, G	GT	GTX	VGX
1	CPU	CPU			VME	VME
2	Ethernet	Ethernet			VME	VME
3	ESDI Disk Controller	ESDI Disk Controller			VME	VME
4	VME	VME			VME	VME
5	VME	VME			IO2	IO2
6	VME	VME			CPU or MC2	CPU or MC2
7	VME	VME			CPU or MC2 (opt.)	CPU or MC2 (opt.)
8	VME	GE			CPU or MC2 (opt.)	CPU or MC2 (opt.)
9	DE	GM			CPU or MC2 (opt.)	CPU or MC2 (opt.)
10	GF	RM			GM	GM
11	TB	RV		GE	GE	GE
12	ZB[1]	RM	DE	GM	RM	RM
13			GF	RM	RV	RM
14			TB	RV	RM	DG
15			ZB[1]	RM	Video Option	Video Option

1.The ZB board was only included in the "G" versions of the graphics set.

Server versions of the 12 and 15 slot chassis were available. For those systems the graphics slots were left empty.

4.11.1.2 Diehard, Diehard2 and Eveready Backplanes

Table 4-80   Diehard, Diehard2 and Eveready Backplanes

Slot	GT, GTB	GTX, GTXB	Server	VGX, VGXT	RE	VTX	RE²
1	CPU	VME	VME	VME	VME	CPU	CPU
2	Ethernet	VME	VME	VME	VME	IMB	IMB
3	VME	VME	VME	VME	VME	PC2	PC2
4	VME	VME	VME	VME	VME	VME64	VME64
5	VME	IO2 or IO3	IO2 or IO3	IO3	IO3	VME64	VME64
6	VME	CPU	CPU	CPU	CPU	VME64	VME64
7	VME	CPU	CPU	CPU	CPU	GE	GE
8	VME	Memory	Memory	Memory	Memory	DG	DG
9	GE	GM	Not Used	GM	GE	RM	RM
10	RM	GE	Not Used	GE	DG		RM (opt.)
11	RM	RM	Not Used	RM	RM		RM (opt.)
12	RV	RV	Not Used	DG	Not Used		RM (opt.)
13	VIdeo Option	RM	Not Used	RM	RM		
14		Video Option	Not Used	Video Option	Not Used		

4.11.1.3 Predator Backplanes

Table 4-81 Predator Backplanes

Slot	Power Center	Power Series			SkyWriter	
	Server	GTX, GTXB	VGX, VGXT	RE	VGX, VGXT	RE
1	VME A	VME	VME	VME	VME	VME
2	VME A	VME	VME	VME	VME	VME
3	VME A	VME	VME	VME	VME	VME
4	VME A	VME	VME	VME	VME	VME
5	VME A	VME	VME	VME	DG	Not Used
6	VME A	VME	VME	VME	RM	RM
7	IO3A	IO2 or IO3	IO2 or IO3	IO2 or IO3	RM	Not Used
8	CPU	CPU	CPU	CPU	Video Option	RM
9	CPU	CPU	CPU	CPU	GE	DG
10	CPU	CPU	CPU	CPU	GM	GE
11	CPU	CPU	CPU	CPU	IO2 or IO3	IO3
12	Memory	Memory	Memory	Memory	CPU	CPU
13	Memory	Memory	Memory	Memory	CPU	CPU
14	IO3B	GM	GM	GE	Memory	Memory
15	VME B	GE	GE	DG	GM	GE
16	VME B	RM	RM	RM	GE	DG
17	VME B	RV	RM	RM	Video Option	RM
18	VME B	RM	DG	RM	RM	RM
19	VME B	Video Option	Video Option	RM	RM	RM
20					DG	RM

4.11.1.4 Eveready (Deskside) Backplanes

Table 4-82 Eveready (Deskside) Backplanes

| Slot | Challenge L | Onyx | |
	Server	VTX	RE^2
1	MC3 (memory)	MC3	MC3
2	CPU or MC3 or IO4	CPU	CPU
3	CPU or MC3 or IO4	IO4	IO4
4	CPU or MC3 or IO4	VCAM or GCAM	VCAM or GCAM
5	IO4 (main)	VME64	VME64
6	VCAM or GCAM	VME64 or Extreme Graphics	VME64 or Extreme Graphics
7	VME64	VME64 or Extreme Graphics	VME64 or Extreme Graphics
8	VME64	GE or Extreme Graphics	GE or Extreme Graphics
9	VME64 or Extreme Graphics	DG	DG
10	VME64 or Extreme Graphics	RM	RM
11	VME64 or Extreme Graphics		RM (opt.)
12	Does not exist		RM (opt.)
13	Does not exist		RM (opt.)

4.11.1.5 Terminator (Rack) Backplanes

Table 4-83 Terminator (Rack) Backplanes

Slot	Challenge XL Server	Onyx VTX	Onyx RE^2
1	CPU or IMB or PC2	CPU or IMB or PC2	CPU or IMB or PC2
2	CPU or IMB	CPU or IMB	CPU or IMB
3	CPU or IMB or PC2	CPU or IMB or PC2	CPU or IMB or PC2
4	CPU or IMB	CPU or IMB	CPU or IMB
5	CPU or IMB or PC2	CPU or IMB or PC2	CPU or IMB or PC2
6	CPU or IMB	CPU or IMB	CPU or IMB
7	CPU or IMB or PC2	CPU or IMB or PC2	CPU or IMB or PC2
8	CPU or IMB	CPU or IMB	CPU or IMB
9	CPU or IMB or PC2	CPU or IMB or PC2	CPU or IMB or PC2
10	CPU or IMB	CPU or IMB	CPU or IMB
11	CPU or IMB or PC2	PC2	PC2
12	CPU or IMB	VME64	VME64
13	CPU or IMB or PC2	VME64	VME64
14	CPU or IMB	VME64	VME64
15	PC2	GE	GE
16	VME64	DG	DG
17	VME64	RM	RM
18	VME64		RM
19	VME64		RM
20	VME64		RM

4.11.2 GIO32/32-bis Board Slots

As shown in the drawing below, in both the Indigo and Indy the GIO32/32-bis slots are side-by-side. This allows installation of a "double wide" GIO board.

4.11.2.1 Board Location Drawings
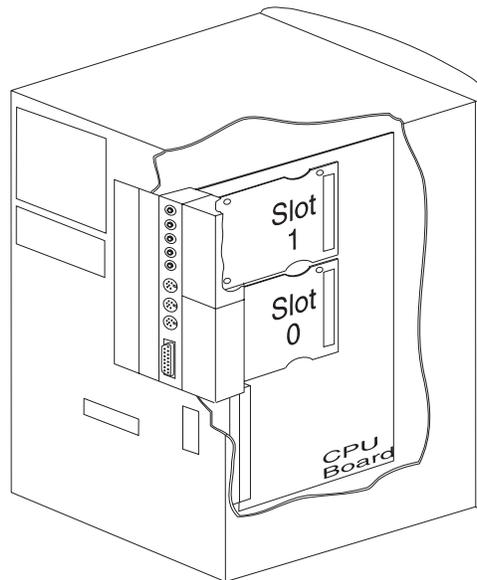
Figure 4-66 Indigo GIO Board Slots
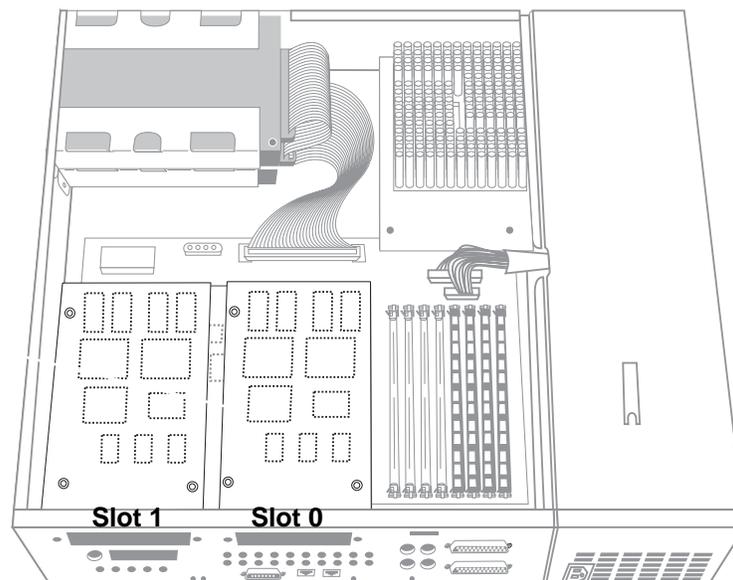
Figure 4-67 Indy GIO Board Slots

4.11.3 EISA/GIO64 Backplane

There are four physical slots in the Indigo2. The backplane is designed such that for some of the slots either an EISA board or a GIO64 board may be installed.

There are two different configurations of backplanes for the Indigo2. The systems with the Extreme, XZ and XL graphics card(s) shipped with one backplane configuration - called the "Extreme" backplane in this document. The systems with the IMPACT graphics cards shipped with the "IMPACT" backplane. Past a particular point in time all systems were shipped with the "IMPACT" style backplane regardless of what graphics option was installed. You will not be able to determine the backplane used without actually looking at the system.

Unlike the GIO32 and GIO32-bis slots in the Indigo and Indy, the GIO64 slots in the Indigo2 are used for the graphics boards for the system. Some of these boards take up more that one physical slot even though their connection to the GIO64 bus is through only one connector. This results in some of the physical slots being used by the graphics and, therefore, not available for either an additional GIO board or additional EISA board. The sections below show the connector locations and configuration options for the two types of backplanes.

4.11.3.1 "Extreme" Backplane Layout

Note that while there are three GIO64 connectors, two of them are wired identically. This makes it possible to only install two different GIO64 boards.
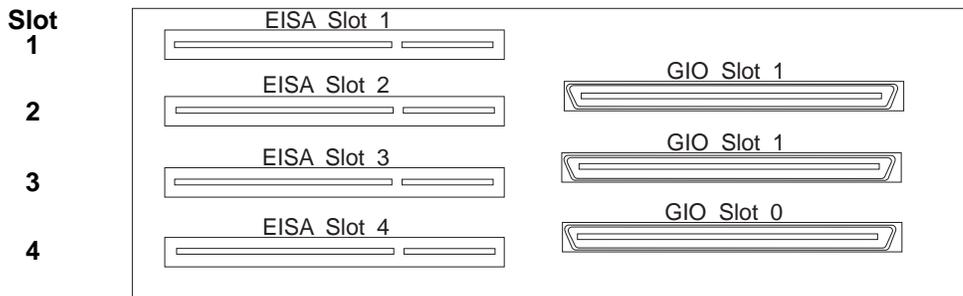

Figure 4-68 "Extreme" EISA/GIO Backplane

4.11.3.2 "Extreme" Backplane Board Combinations

The table below shows the various combinations of graphics boards, video boards and available option slots.

Table 4-84 EISA∕GIO64 Backplane Board Combinations

Slot	Extreme		XZ			XL		
1	EISA	Extreme	EISA	EISA	XZ	EISA	EISA	EISA
2	Extreme		EISA/GIO	XZ		EISA/GIO[1]	EISA	XL
3			XZ		EISA	EISA/GIO[1]	XL	EISA
4		EISA/GIO		EISA/GIO	EISA/GIO	XL	EISA/GIO	EISA/GIO

1. In this case, only one GIO64 board could be installed between the two slots. The other remaining slot of the two could be used for an EISA board.

4.11.3.3 "IMPACT" Backplane Layout

The main difference between this backplane and the "Extreme" backplane is that there are now 4 GIO connectors and only 3 EISA connections. The number of physical GIO connectors has increased, but the number of logical (or electrical) GIO slots is still two. GIO slots 1A & 1B are wired identically, as are slots 0A and 0B.

The addition of circuitry required on the backplane board necessitated the removal of the fourth EISA connector. The 3.3V connectors required for the IMPACT graphics card(s) had the effect of changing the GIO64 board outline slightly. Care should be taken when installing an "old" GIO64 card into a system with an "IMPACT" backplane. If components are placed in the area of the 3.3V connectors, problems will be created with possible damage to the card, the system, or both.
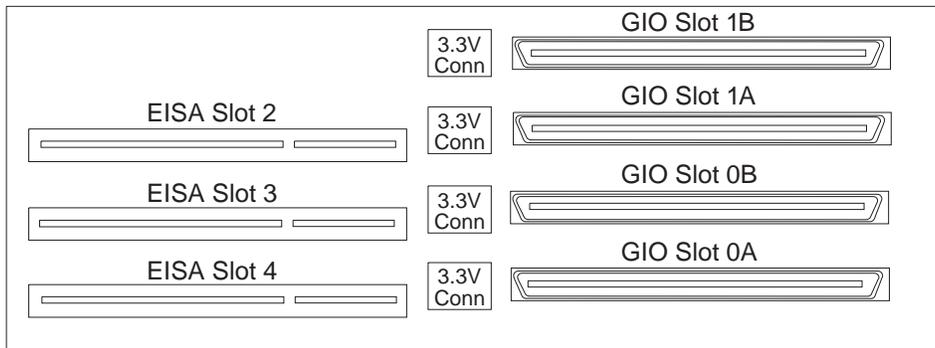

Figure 4-69 "IMPACT" EISA∕GIO Backplane

4.11.4 O2 PCI Card Slot

The O2 has one half-size card slot. The PCI slot is part of the CPU Motherboard assembly. The location of the PCI slot is slightly different between the R5000 based O2 and the R10000 based O2 due to the additional module width of the R1000 processor board assembly. Both the R5000 and R10000 versions are shown in Figure 4-70.


R5000 O2   R10000 O2
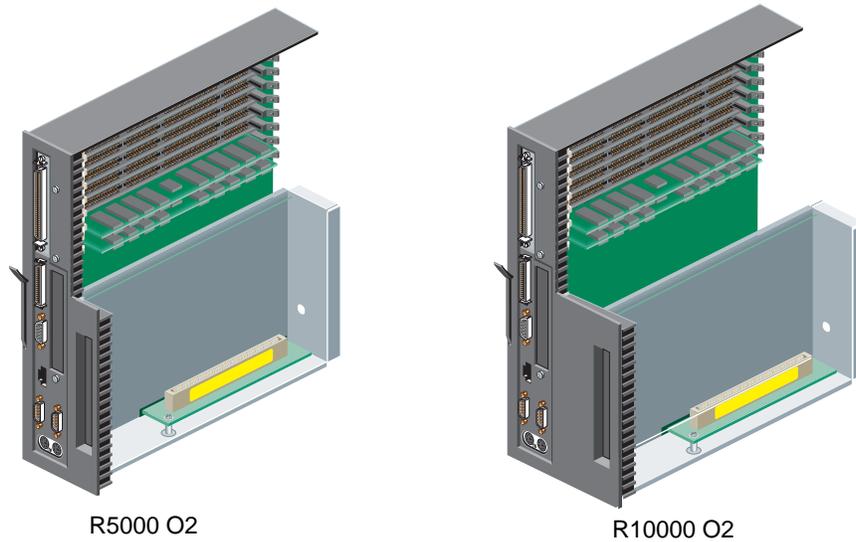
Figure 4-70   O2 PCI Slot

4.11.5 OCTANE PCI Slot Location

The OCTANE has an optional PCI Card Cage that can be inserted into the rear of the machine. The card cage can hold one half-size PCI card and two full size PCI cards. Figure 4-71 shows the card cage and the ID numbers of the slots. The half-size slot is the bottom slot.

PCI ID #0
PCI ID #1
PCI ID #2
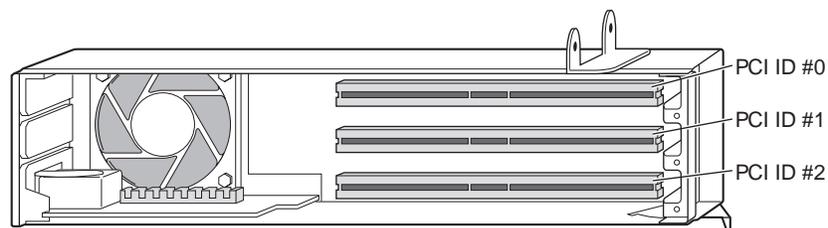
Figure 4-71   OCTANE PCI Card Cage and Slots

4.11.6 Origin200 PCI Slot Location

The Origin200 has three PCI slots located inside the chassis. All three slots can accept full size PCI cards. Figure 4-72 shows the location and orientation of these slots.
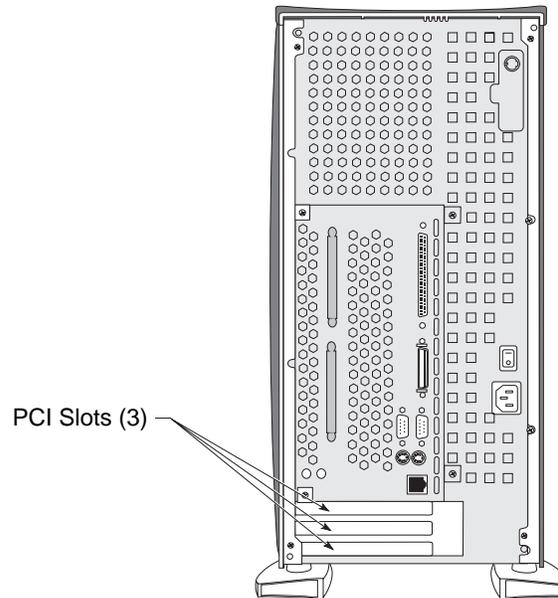
PCI Slots (3)

Figure 4-72   Origin200 PCI Slots

4.11.7 Origin2000 and Onyx2 PCI Slots

The Origin2000 and Onyx2 systems have an optional PCI Card Cage that can be installed in the system. The card cage holds one half-size PCI card and two full size PCI cards. Figure 4-73 shows the location and orientation of the PCI slots.
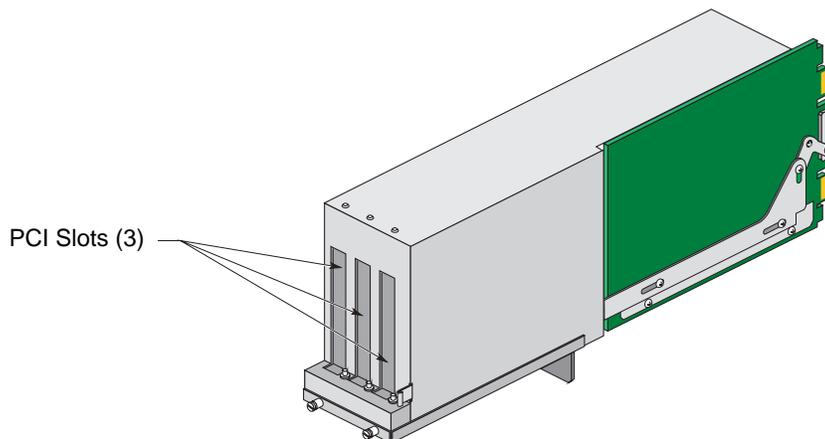
PCI Slots (3)

Figure 4-73   Origin2000 and Onyx2 PCI Slots

4.11.8 OCTANE XIO Slots

The OCTANE has four XIO slots. Depending on the graphics subsystem installed, either one or two slots are used for graphics leaving the other two slots available for additional XIO modules.

OCTANE XIO modules are not compatible with Origin2000 and Onyx2 XIO modules. They have different latching mechanisms.
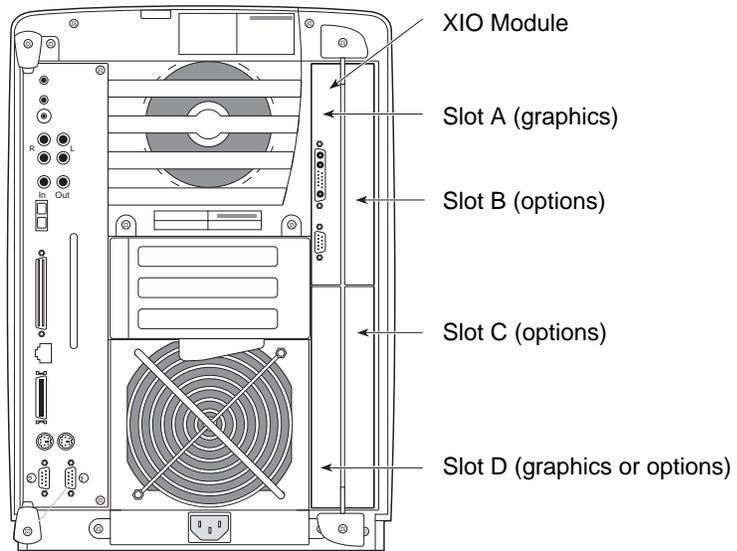

Figure 4-74 OCTANE XIO Module Locations

4.11.9 Origin2000 XIO Slots

The Origin2000 has 12 XIO slots. Figure 4-75 shows the slot allocation when viewed from the back of the system. Slot 1 is typically used for the Base IO module. The circles and triangles represent which nodes support which XIO slots.
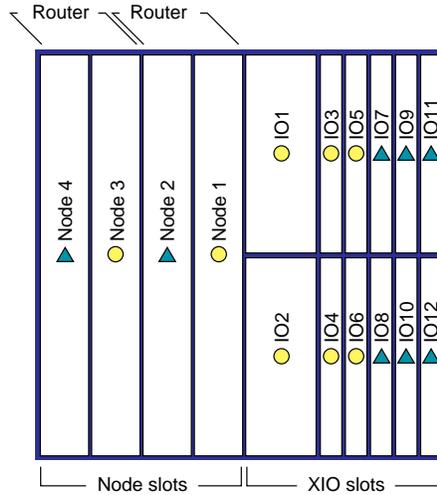
Figure 4-75   Origin2000 XIO Module Locations

4.11.10 Onyx2 XIO Slots

The Onyx2 has 6 XIO slots in the deskside configuration. Figure 4-76 shows the slot allocation when viewed from the back of the system. When the Onyx2 is in a rack configuration, there are two modules - one is a processor module that has the layout as shown in Figure 4-75 above, the other module is graphics only and has no XIO slots.
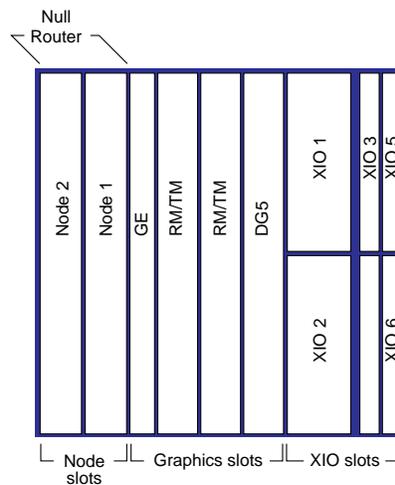
Figure 4-76   Onyx2 XIO Module Locations