

The IRIX Operating System

The operating system Silicon Graphics systems use, IRIX, has undergone major changes during its lifetime. Changes to the operating system have ranged from the subtle changes in appearance of the desktop display and changes to some underlying kernel interfaces to changes in windowing systems and major kernels capabilities. Knowing which version of IRIX a system is using, or which versions of IRIX support particular platforms is an important piece of information. The purpose of this chapter is to provide some information in this regard.

6.1 What Causes The Release of a New Operating System?

While this seems like a question with an obvious answer, it makes sense to lump these reasons into a small number of categories then look at each category individually. Trying to understand the whole landscape of IRIX releases without subdividing it in some way is a truly daunting task. Hopefully this approach will make understanding the IRIX releases easier.

A new version of the operating system is released when the following occurs:

- **New System** - a new system (chassis) has been introduced. This usually drives creation of a new processor board and, possibly, new features in the system's architecture.
- **New CPU** - a new processor (here meaning the microprocessor chip) has been introduced
- **New Graphics** - a new graphics subsystem has been introduced
- **New Capabilities** - some significant new software feature has been introduced. Examples would be new windowing system, kernel base, or filesystem support.

In the history of IRIX, the introduction of new features or systems has tended to create a version of the operating system that works on a specific new platform or is different from what is used on other, usually older, systems. The final category of operating system changes addresses this issue.

- **A Merge Release** - a release where the differences created by the situations above are merged into a common base operating system release. This is often also a release where bugs or patches are incorporated into the release. As often happens, new features are added to a release that creates a new base operating system release. This makes it rare to have an operating system version that is purely a merge type of release.

The remainder of this chapter will look at each category and point out the major milestones for each of these.

6.2 New Systems

Each new system chassis that is introduced needs a version of the operating system that is customized to its unique features - CPU type, memory architecture, graphics subsystem and I/O subsystem to name the obvious ones. It is important to know which version of IRIX was the first to support a particular platform. It is also important to know which version of IRIX did not include support for a particular platform. Table 6-1 shows these major milestones.)

Table 6-1 IRIX New System Milestones

System/Chassis	First Version of IRIX that supported this	First Version of IRIX that DIDN'T support this
4D/60	IRIX 3.0	IRIX 5.2
4D/100 Series	IRIX 3.1	IRIX 6.2
4D/200 Series	IRIX 3.2	
4D/300 Series	IRIX 3.3	
4D/400 Series	IRIX 3.3.2 + 3.3.3L	
Personal IRIS (R2000)	IRIX 3.1	
Personal IRIS (R3000)	IRIX 3.3.2 + 1.0 4D/35	
Crimson	IRIX 4.0.3	Still supported
Indigo (R3000)	IRIX 4.0	IRIX 6.2
Indigo (R4000)	IRIX 4.0.5E	Still supported
Onyx/Challenge	IRIX 5.0	
Indigo2	IRIX 4.0.5H	
Challenge M	IRIX 4.0.5H a360	
Indy	IRIX 5.1 (Indy)	
Challenge S	IRIX 5.2 for Indy R4600 PC & Challenge S	
O2	IRIX 6.3MR	
Origin200, Origin2000, Onyx2	IRIX 6.4 for Origin200, Origin2000, Onyx2	
OCTANE	IRIX 6.4 for Origin, Onyx2 & OCTANE	

6.3 New CPU

A new microprocessor type typically requires changes to the kernel to accommodate the new features of the processor and its register and memory layout. Table 6-2 shows these milestones.

Table 6-2 IRIX New CPU Milestones

CPU Type	On:	First Version of IRIX that supported it	First IRIX release that didn't support it:
R2300	4D/60	IRIX 3.0	IRIX 5.3
R2000	4D/100,200	IRIX 3.0	IRIX 6.2
	Personal IRIS	IRIX 3.1	
R3000	4D/300	IRIX 3.3	
	Personal IRIS	IRIX 3.3.2 + 1.0 4D/35	
	Indigo	IRIX 4.0	
R4000	Crimson	IRIX 4.0.3	Still supported
	Indigo	IRIX 4.0.5E	
	Indigo2	IRIX 4.0.5H	
R4000PC	Indy	IRIX 5.1 (Indy)	
R4000SC	Indy	IRIX 5.1 (Indy)	
R4400	Onyx/Challenge	IRIX 5.0	
	Indigo2	IRIX 4.0.5H	
	Indy	IRIX 5.1 (Indy)	
R4600PC	Indy	IRIX 5.2 for Indy R4600 PC & Challenge S	
R4600SC	Indy	IRIX 5.2 for Indy R4600SC/XZ & Presenter	
	Challenge S	IRIX 5.2 for Indy R4600/XZ & Presenter	
	Indigo2	IRIX 5.2	
R5000	Indy	IRIX 5.3 Indy R5000	
	O2	IRIX 6.3MR	
R8000	Onyx/Challenge	IRIX 6.0	
	Indigo2	IRIX 6.0.1	
R10000	Onyx/Challenge	IRIX 6.2	
	Indigo2	IRIX 6.2 for Indigo2 IMPACT 10000	
	O2	IRIX 6.3 for O2 including R10000	
	Onyx2/Origin200/ Origin2000	IRIX 6.4 for Origin200, Origin2000, Onyx2	
	OCTANE	IRIX 6.4 for Origin, Onyx2 & OCTANE	

6.4 New Graphics

A new graphics subsystem also tends to require changes to the kernel and basic parts of the operating system due to different memory, access and capability constraints. The first release of IRIX that supported each graphics type (specific to a particular chassis) is shown in Table 6-3. This table also shows the first version of IRIX that *did not* support this graphics type.

Table 6-3 IRIX New Graphics Milestones

Graphics Subsystem	On:	First Version of IRIX that supported this	First Version of IRIX that Did Not support this:
4D B, G	4D/60, 70	IRIX 3.0	IRIX 6.2
GT	4D/70, 80, 85, 100, 200	IRIX 3.1	IRIX 6.2
GTX	4D/60, 70, 80, 85, 100, 200	IRIX 3.3.2 + 1.0 4D/35	IRIX 6.2 (Crimson GTX only)
SkyWriter	4D/200, 300	IRIX 4.0	IRIX 6.2
G	Personal IRIS	IRIX 3.1	
Turbo	Personal IRIS	IRIX 3.2	
VGX	4D/100, 200, 300	IRIX 3.3	
VGXT	4D/100, 200, 300	IRIX 4.0	
VTX	Onyx	IRIX 5.0	Still supported
Entry	Indigo	IRIX 4.0	
XS, XS24, Elan	Personal IRIS & Indigo	IRIX 4.0.2	
XS, XZ, Extreme	Indigo2	IRIX 4.0.5H	
Extreme	Crimson	IRIX 4.0.5H	
Extreme	Onyx	IRIX 5.2 for Onyx Extreme	
XL	Indigo2	IRIX 5.1 (non-Indy)	
XL	Indy	IRIX 5.1 (Indy)	
XZ	Indy	IRIX 5.2 for Indy R4600SC/XZ & Presenter	
Reality Engine	Crimson	IRIX 4.0.5D	
Reality EngineII	Onyx	IRIX 5.0	
Infinite Reality	Onyx	IRIX 6.2	
High IMPACT	Indigo2	IRIX 5.3 Indigo2 IMPACT	
	OCTANE	IRIX 6.4 for Origin, Onyx2 & OCTANE	

Table 6-3 IRIX New Graphics Milestones

Graphics Subsystem	On:	First Version of IRIX that supported this	First Version of IRIX that Did Not support this:
Solid IMPACT	Indigo2	IRIX 5.3 Indigo2 All IMPACT	Still supported
	OCTANE	IRIX 6.4 for Origin, Onyx2 & OCTANE	
Maximum IMPACT	Indigo2	IRIX 5.3 Indigo2 All IMPACT	
	OCTANE	IRIX 6.4 for Origin, Onyx2 & OCTANE	
O2 Graphics	O2	IRIX 6.3MR	

6.5 New Capabilities

Major changes in an operating systems lifetime occur when some significant part of the operating system is replaced or changed. In the case of IRIX, there have been changes to the fundamental windowing system used, the filesystem supported, and the inherent bit size of the operating system. Table 6-4 shows these major milestones.

Table 6-4 IRIX New Capabilities Milestones

New Capability	First Version of IRIX that supported this
NeWS Windowing System	IRIX 3.1
X-Windows	IRIX 4.0
EFS	Prior to IRIX 3.0
XFS (32 bit OS)	IRIX 5.3 XFS
XFS (64 bit OS)	IRIX 6.0.1 XFS
64-bit Operating System	IRIX 6.0
Trusted IRIX	IRIX 4.0.1T
4D/30,35 Audio	IRIX 3.3.2 + 1.1 4D/35

6.6 Merge Releases

The merge releases pull together features and capabilities of releases created to fill a specific need - a new CPU, system, etc. These releases are often the releases where bugs in the operating system are fixed. These releases are typically those that are “pushed” out to all users under support to create a single release that supports most, if not all, the currently available systems.

Table 6-5 IRIX Merge Releases

Release	
IRIX 4.0.1	Replaced the IRIX 3.3 and IRIX 4.0 releases. Incorporated support for all the early 4D systems, the Personal IRIS and the R3000 Indigo
IRIX 5.2	Replaced the following releases for specific platforms - 4.0.1, 4.0.5A, 4.0.5C, 4.0.5F, 4.0.5G, 4.0.5H a360, 4.0.5IOP and 4.0.5J. Merged the support of all the early 4D systems, Personal IRIS, R3K & R4K Indigo, Indigo2, Indy, Onyx and Challenge systems.
IRIX 5.3	Incorporated support for all the above systems and made significant performance enhancements across the board.
IRIX 6.2	Incorporated support for all platforms with R3000 CPU's with the exception of Crimson GTX. This included the R8000 based Power Onyx, Power Challenge, Power Indigo2 and the R10000 based Onyx, Challenge and Indigo2.