Features

- 16 switched, full duplex 10/100Mbps Fast Ethernet ports
- 1 Gigabit uplink port interface
- Crossbar technology delivers true non-blocking bandwidth of 2.5 Gigabits
- Store-and-forward, Cut-Through, and Runt-free switching modes
- Address caching architecture supports a total of 65536 MAC addresses
- Management features including SNMP, MIB II, RMON, 802.1d (Spanning Tree), and VLAN
- Small compact form factor with low power requirement

Description

The Raptor reference design is a complete managed, 16 port, full duplex, 10/100Mbps, Fast Ethernet switch utilizing I-Cube’s LS Fast Ethernet SwitchSet™. The LS architecture provides dedicated signal paths for each port in order to deliver true non-blocking full duplex performance at 100 Mbps; there are no shared buses in the signal path. With support for up to a total of 65536 MAC addresses and a Gigabit uplink port interface, the switch handles networks of virtually any size. Store-and-forward, Cut-through, and Runt-free switching modes are supported on a per-port basis. The Raptor supports full SNMP management, including RMON, MIB II, and Spanning Tree (802.1d). The Raptor will also support Virtual LAN (VLAN) to help simplify network management.

The Raptor switch is a complete reference design, including assembled PCB, Software, and everything needed to evaluate the performance of I-Cube’s new LS Fast Ethernet SwitchSet™. A complete design data base and manufacturing kit, including schematics, Gerber files, BIOS source code, and application notes, is included in order to facilitate manufacture and customization of the Raptor reference design.

Figure 1: The Raptor Reference design

October 29, 1997
**Hardware**

The LS SwitchSet™ (see figure 2) is composed of a non-blocking switching fabric (LS101), four LS100 Quad-Port Ethernet Switch Interfaces, each of which controls four 100Mbps ports, and an optional management controller (LS106) which provides the CPU subsystem with access to 100Mbps of Ethernet packet traffic. The optional LS105 secondary address translation cache controller increases the number of cacheable MAC addresses from 256 to up to 65536 for backbone applications.

The Raptor also supports three IEEE P1386 Common Mezzanine Card (PMC) slots; one for a CPU card, one for the optional LS105 Secondary Address Translation Cache (SATC), and one for a high speed uplink module. There are four MII interface connectors for physical layer daughter cards. As shipped, the Raptor comes loaded with the Fulcrum Lite CPU card, and four Quad 100BASE-TX physical layer daughter cards. Only 10 CPU MIPs are required to implement a complete system including the bottom four groups of RMON.

The Fulcrum Lite card uses an IDT79R4640-133MS RISC CPU, 2 Mbytes of ROM and 8 Mbytes of RAM. The CPU subsystem stores up to 64K MAC addresses and hosts the Raptor system software suite as described below. Local management access is provided through an on-board RS-232 port with DB-9 connector. With access to 100Mbps packet traffic through the LS106, A CPU card can also be used to implement a one-armed router.

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*Figure 2: The Raptor reference design utilizing the LS Fast Ethernet SwitchSet™*
Software

The Raptor reference design includes a complete software suite supporting the switch hardware. This software is composed of the Accelerated Technology Nucleus operating system, and separate modules provided by XACT and I-Cube, (see Figure 2), all of which reside in the CPU subsystem ROM.

The evaluation software provided with the Raptor, including licensable blocks from XACT and Accelerated Technology forms a complete, ready to ship software package including SNMP, MIB II, RMON, 802.1d, and VLAN support.

For those customers who possess their own management software implementations, the I-Cube switch BIOS and Address Manager, (available in source from I-Cube) are available to facilitate quick and easy management software ports.

Figure 3: Raptor system software
**Electrical Specifications**

Supply Voltage: 90-250VAC  
Power Dissipation
- Base board: 23.5W (Abs. Max.)
- Quad 100BaseTX daughter card: 5.6W (Abs. Max.)
- Fulcrum CPU daughter card: 5.5W (Abs. Max.)
- Total: 34.6W (Abs. Max.)

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>IDB-Raptor-100</td>
<td>Raptor Base board, 4 quad 100BaseTX daughter cards, Fulcrum CPU card w/software, 60 Watt power supply, Manufacturing kit</td>
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