GENERAL DATACOMM

Xedge Switch Fabric

High Performance Crosspoint Matrix Switch

XH2

Highlights

- 16 x 16 crosspoint matrix switch fabric
- Supports up to 16 slot controllers
- 6.4 Gbps switching capacity
- Low latency
- Non-blocking design
- Redundant operation
- Hardware multicast

Introduction

The heart of the Xedge switch is the Switch Fabric module, a high-performance, single-stage, buffered, crosspoint matrix switch that supports switching operations up to 6.4 Gbps.

In the higher density Xedge switches (Xedge 6640, 6645, 6280 or 6160), the Xedge XH2 Switch Fabric module plugs into one or two dedicated slots at the front of the chassis: SF Main and SF Standby slots.

Intended Use

Table 1 shows the capacity of the XH2 Switch Fabric module when deployed in the various Xedge chassis. In these switches, the switch fabric is responsible for transporting cells simultaneously to the resident slot controllers at 400 Mbit/s throughput in each direction.

Theory of Operation

Each slot controller in an Xedge system has a dedicated, full duplex, 400 Mbps cell path connecting it to the switching fabric. The PCX2, PCX, and PCE controllers each occupy two I/O slots and thereby can use 800 (2 * 400) Mbps of traffic.

Cell routing through the fabric is accomplished by internally prepending a 3-byte tag to the ATM cell, and using a bit mask within the tag to determine the route through the matrix. This bit mask is calculated at each of the I/O Controllers and stored in the VCI/VPI routing table on each controller. In this way, each cell may be unicast to a single destination, or multicast/broadcast to multiple or all destinations in the fabric. Hardware multicast performed in this fashion is an extremely efficient method of multicasting ATM cells within the switch.

Table 1: XH2 Switching Fabric in Xedge Chassis Systems

Chassis Type	No. of I/O Slots	Switch Capacity	Redundancy
Xedge 6645	16	up to 6.4 Gbps	YES
Xedge 6640	16	up to 6.4 Gbps	YES
Xedge 6280	7	up to 2.8 Gbps	YES

NOTE: For the 2-slot Xedge 6002 chassis, a P-series slot controller in slot-0 provides the necessary switch fabric. In those applications, switch capacity is up to 5 Gbps.

XH2 Switch Fabric

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