

OpenIB

Gateway Session

Ross Schibler - Cisco

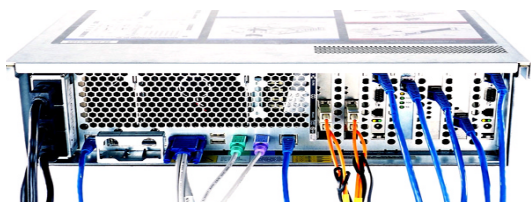
Duane J. McCrory – SilverStorm Technologies

Yaron Haviv – Voltaire

August 22, 2005

Rational for Gateways

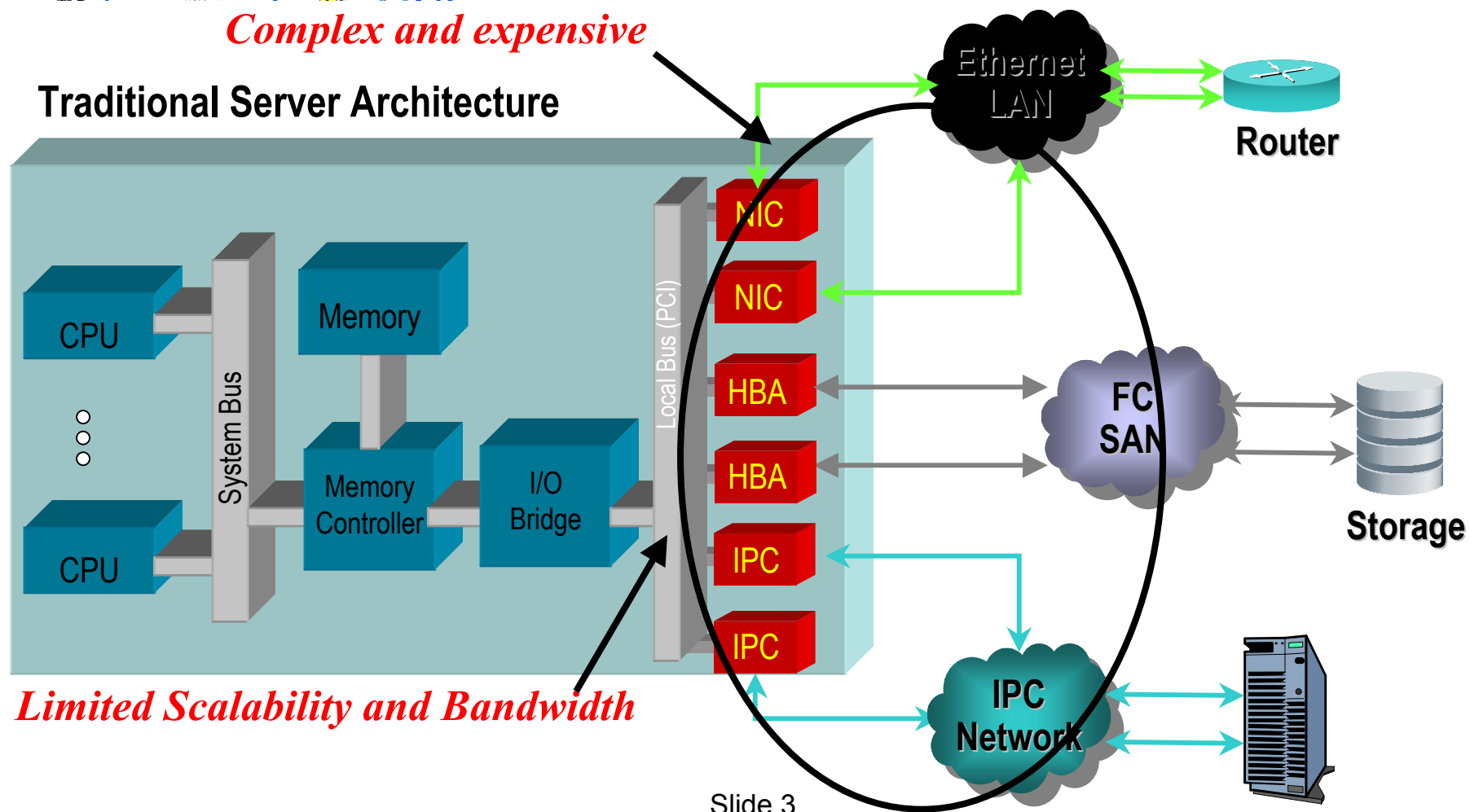
Traditional Servers



- Many IO infrastructure connections
- 4.2Gb/s Bus Bandwidth

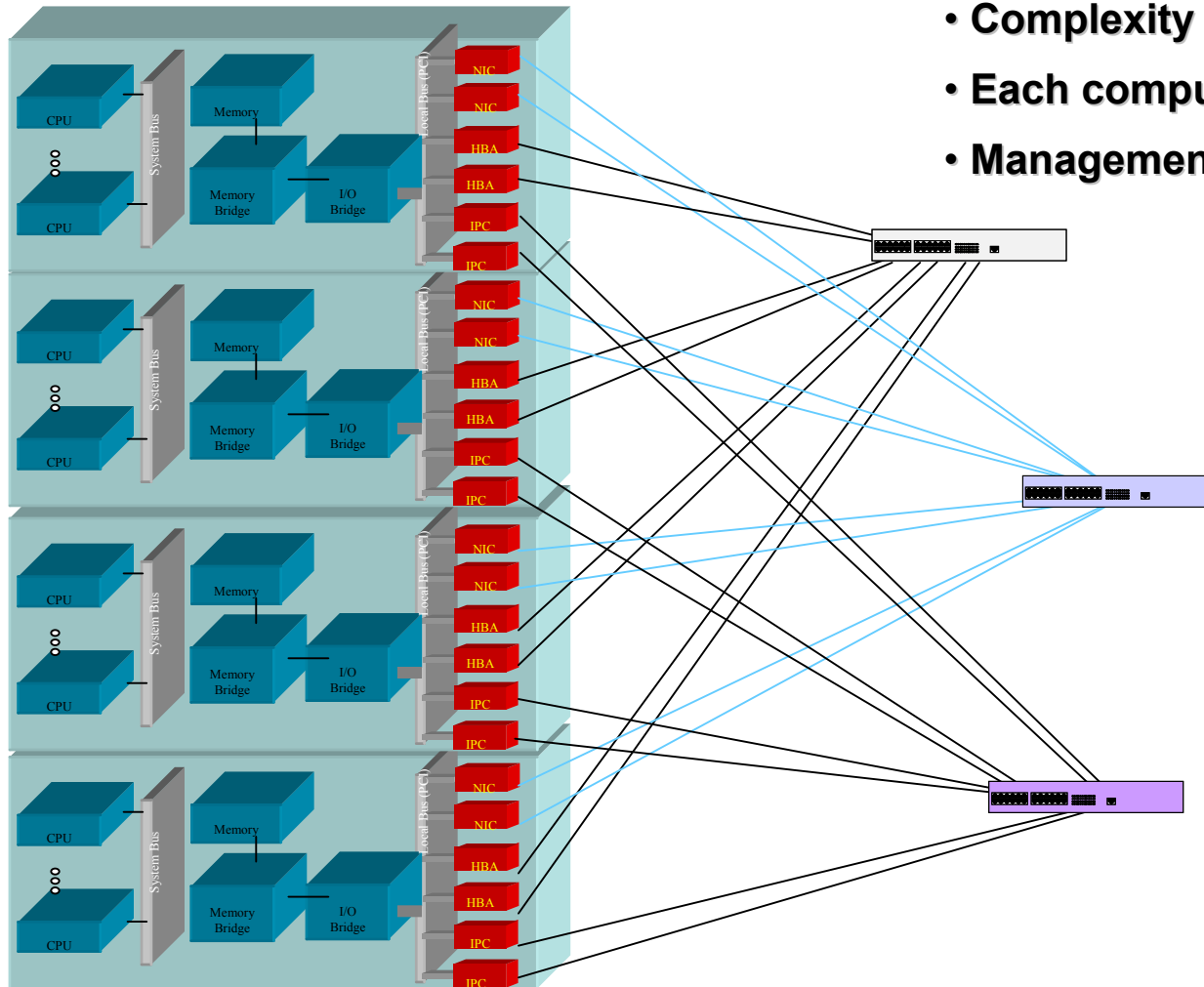
Complex and expensive

Traditional Server Architecture

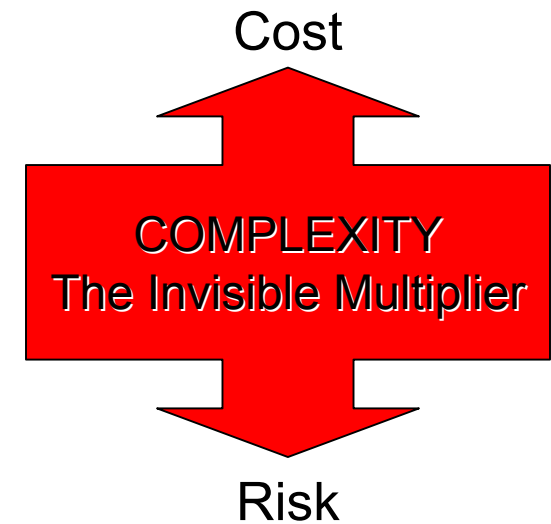


Rational for Gateways

Traditional Data Center

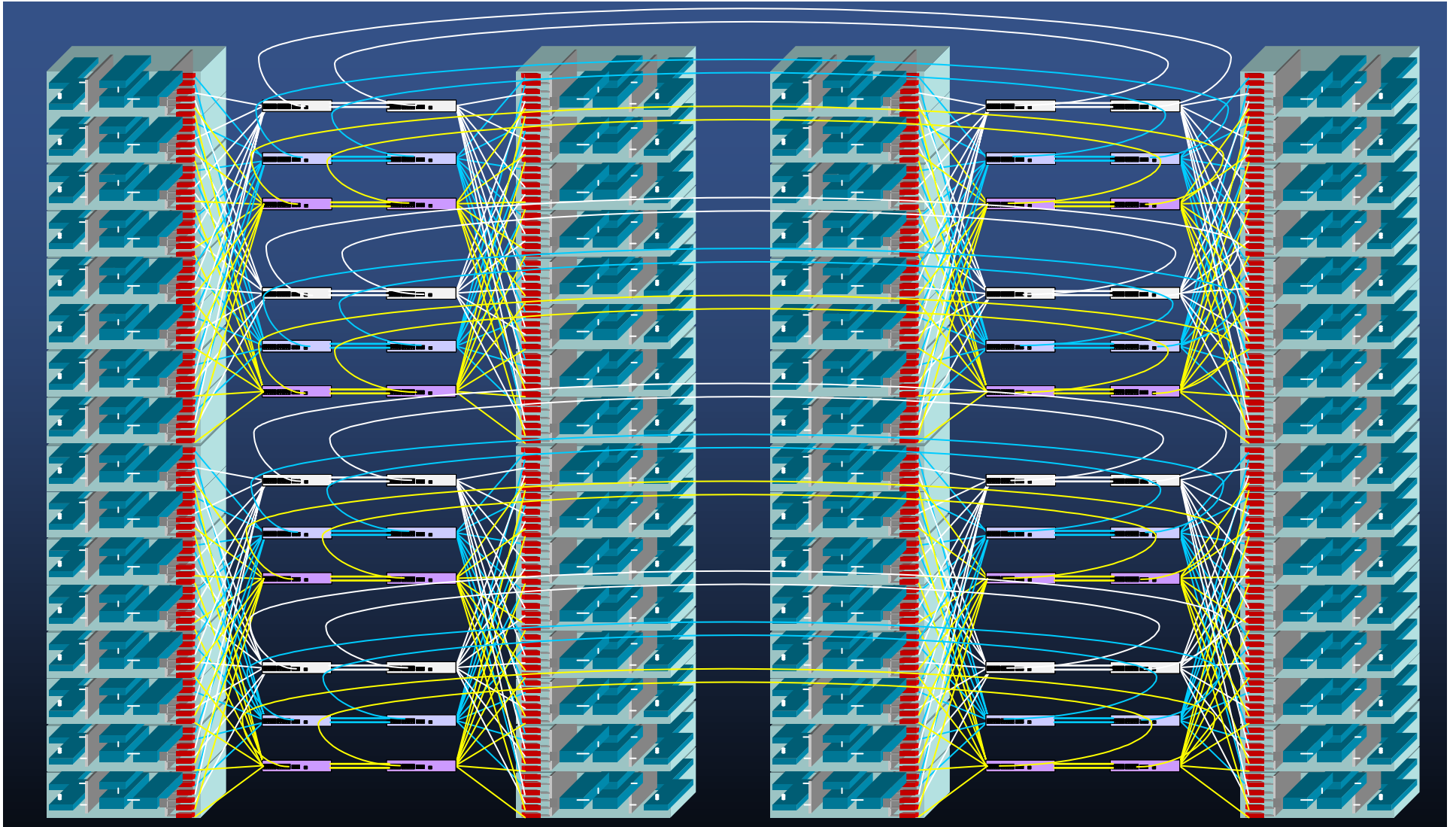


- Complexity increases exponentially
- Each compute node is still a bottleneck
- Management costs escalate linearly



Rational for Gateways

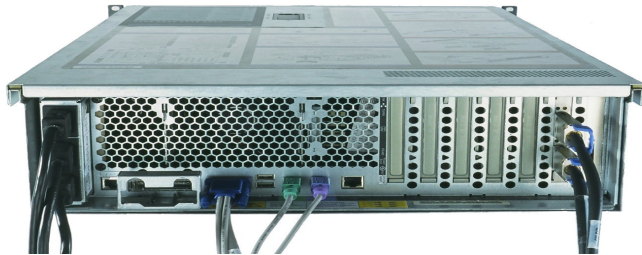
Complexity spirals out of control...



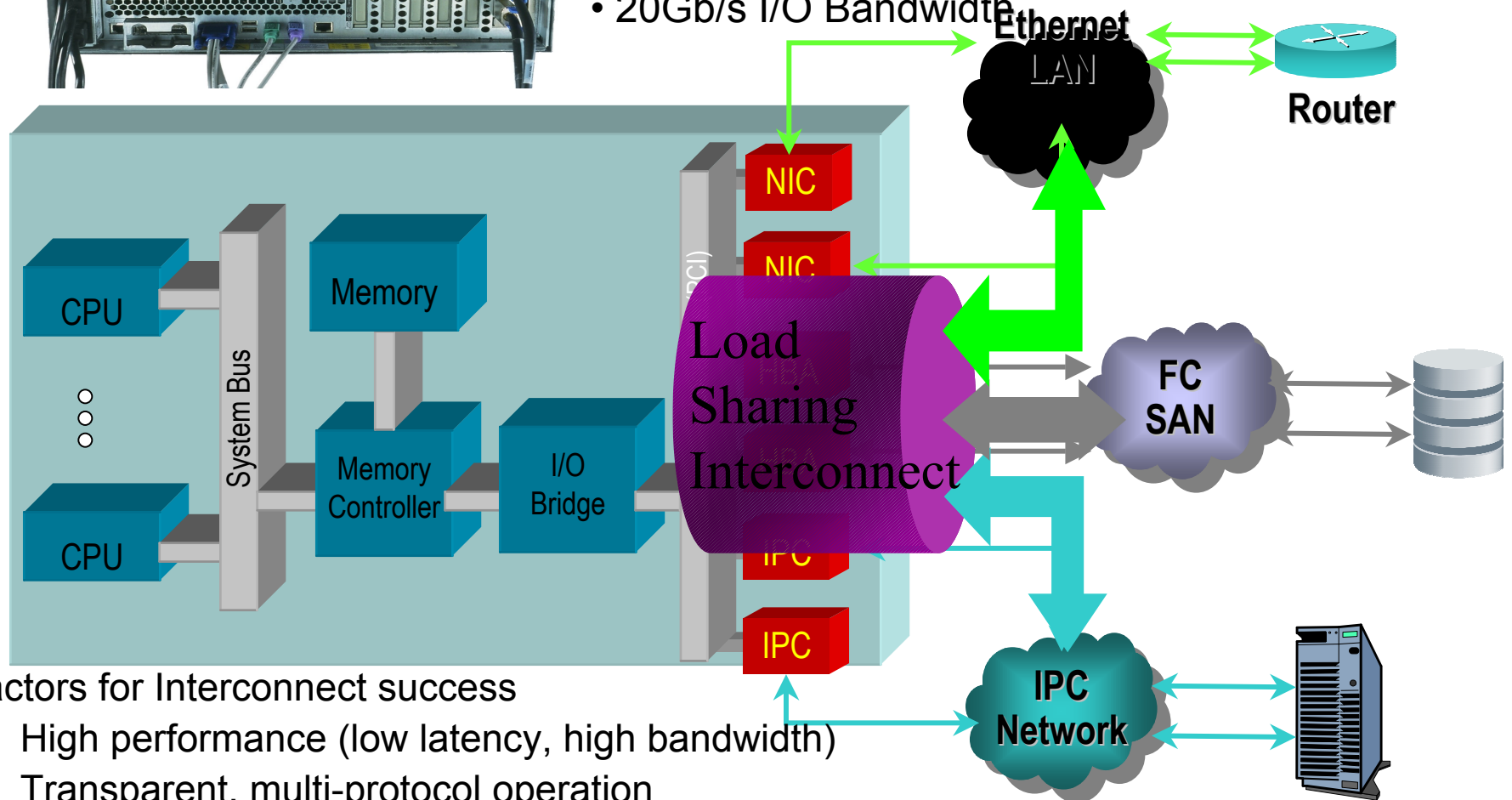
Rational for Gateways

InfiniBand Enabled Server

The Changing Face of Server Connectivity – “One Wire” Data Center



- 1 or 2 IO infrastructure connections
- 8.5Gb/s Bus Bandwidth
- 20Gb/s I/O Bandwidth



Factors for Interconnect success

- High performance (low latency, high bandwidth)
- Transparent, multi-protocol operation
- High availability, redundancy

Rational for Gateways

Gateway Benefits

- IO port sharing
 - Servers can share gateways and physical IO interfaces simultaneously.
- Scalable connectivity
 - Share a virtually unlimited number of gateways and IO ports.
- High Availability
 - Multiple gateways can be deployed to provide redundant connections in case of gateway or IO interface failures.
- Hot Swap
 - Gateways can be physically removed at any time, and replacement cards can be dynamically reinserted and brought in use without application or operating system intervention.
- Plug'N Play
 - Gateways can be dynamically added as needed with minimal impact to operating systems and applications.

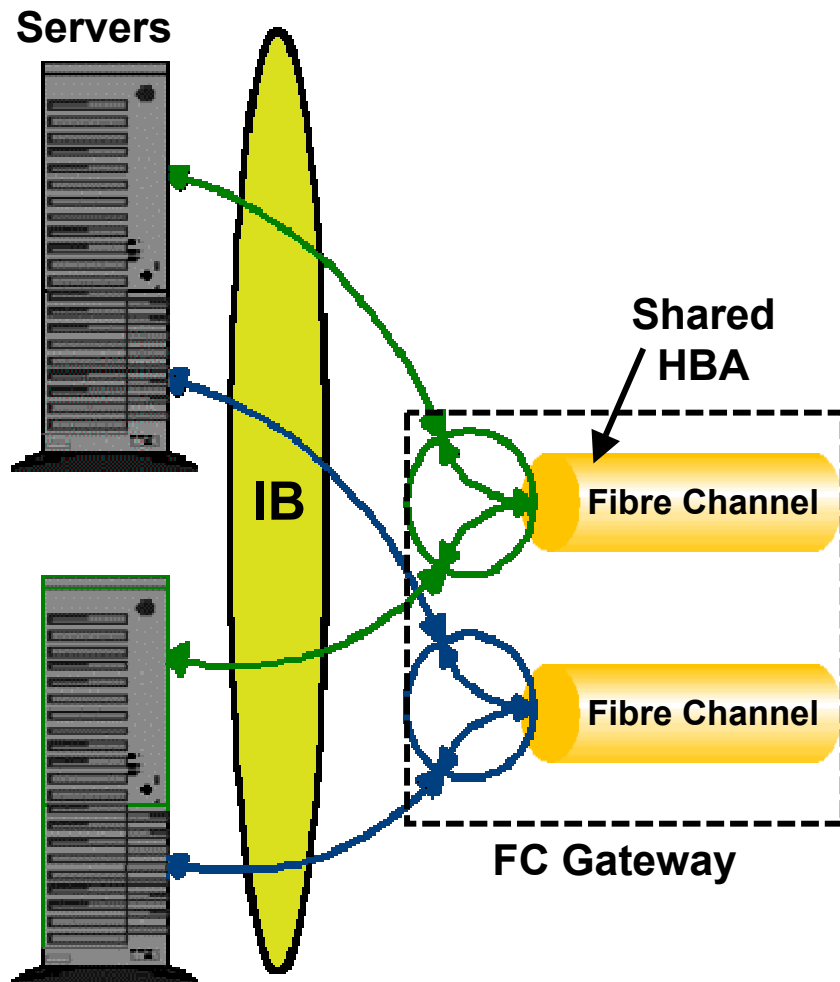
Rational for Gateways

Gateway Benefits (cont)

- Virtualized IO
 - A server can be dynamically assigned different IO profiles (e.g. to assume the identity of a server that has failed).
- High Performance IO
 - High performance rates are characterized by packets/IOs per second, bandwidth, and latency.
- Heterogeneous CPU and OS support
 - Multiple servers running on different CPU architectures (32 bit/64 bit, little/big-endian) and on different operating systems can share gateways and the physical IO interfaces simultaneously.

Gateway Examples

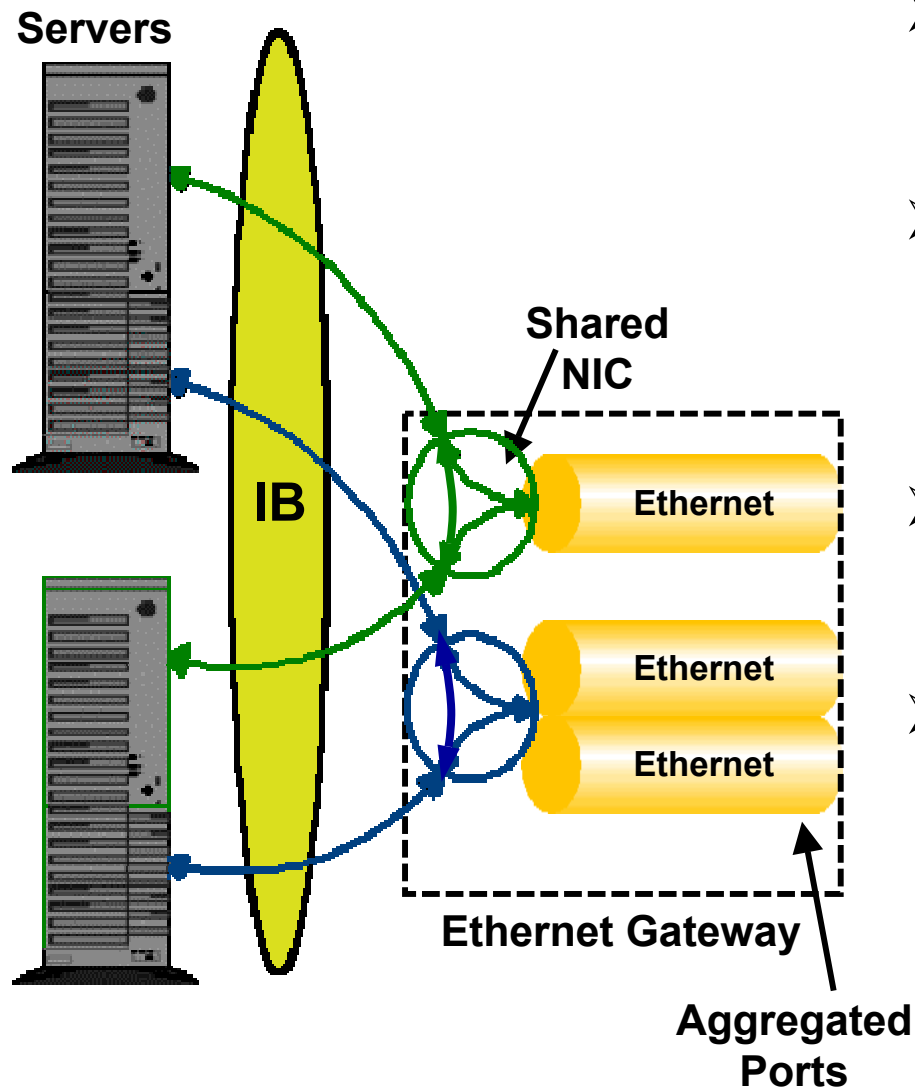
Fibre Channel Gateway



- Deployment options
 - SRP-Based Software
 - iSER
- Provides Fibre Channel Port Sharing Capability
 - Lower cost
 - Easier deployment
- Heterogeneous Host OS Support
 - NO changes required to applications
- Virtualization Features
 - LUN Mapping/Masking
 - Multiple WWN(s)

Gateway Examples

Ethernet Gateway



- NIC Implementation
 - Transparent to all Ethernet network topologies
- Provides Ethernet Port Sharing Capability
 - Lower cost
 - Easier deployment
- Heterogeneous Host OS Support
 - NO changes required to applications
- Advanced Ethernet features
 - Ethernet Link Aggregation
 - Copy/Monitor Port Support