

Ethernet in the ATCA Environment

High Density Networking in a Standardized Blade Server Environment

What is ATCA?

- The Advanced Telecom Computing Architecture is a tightly standardized, environmentally-resilient interoperable blade server architecture, of from 2 to 16 blades
- Each blade is equivalent to 1U rack server with a minimum of 6 Ethernet interfaces
 - Usually at least 2 interfaces running at 10 Gb
- The ATCA chassis contains 2 switch blades, each consisting of 2 switches
- The components **are** interoperable

ATCA Uses

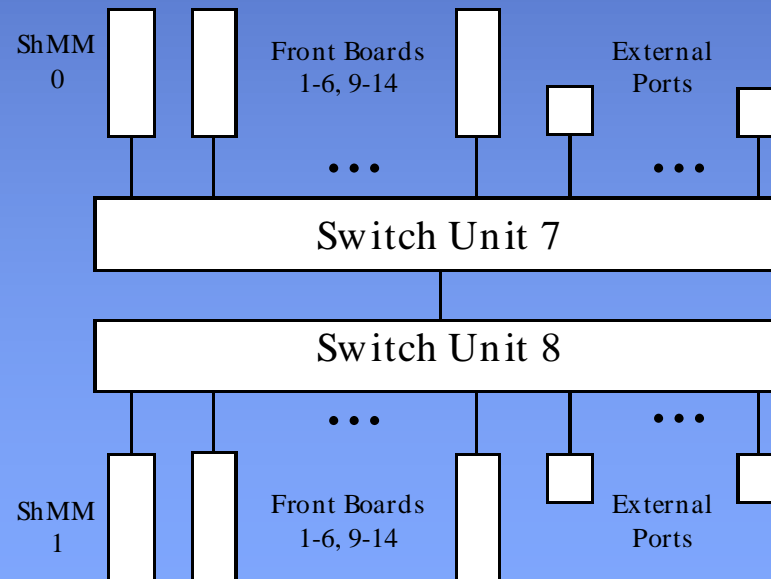
- An original concept was a Telco central office blade server, with separate carrier and data plane networks
- Full compliance requires NEBS certification
- Now in use in Telco networks, especially for bandwidth-heavy media transport applications
- Military beginning use, due to resilience, compactness, ease of upgrade, component variety, interoperability, and flexibility

ATCA Networks

- Each blade has 2 ports for each network type
 - Base network (1 Gb required)
 - Fabric network (now usually 10 Gb)
 - Management network (usually 1 Gb, external)
- Base and fabric ports are each connected to a different switch, so four switches
 - These connections are across the midplane
 - Chassis midplane is transport-neutral
 - 10 to 100 GhZ capable differential channels
 - Upgrade speeds by updating/replacing boards

ATCA Switches

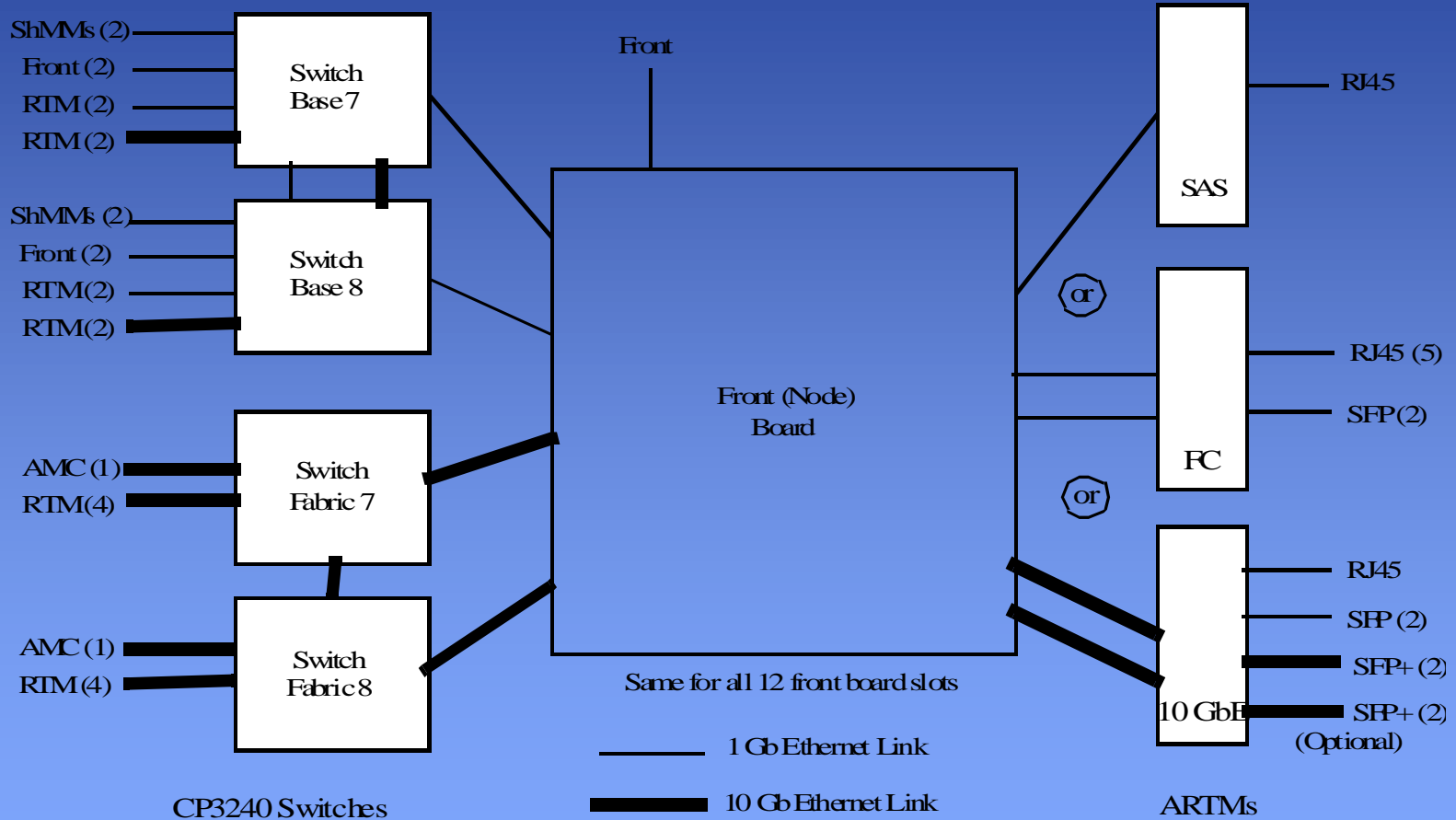
- Each switch blade has two independent high-functionality, non-oversubscribed switches
 - One each for base network (1 Gb), fabric (10 Gb)
- Uses a dual dual-star topology



2 switch units shown
One from each switch

ATCA Board Connectivity

Only Ethernet connections are shown!



ATCA Blade and Components



AMC Card



Front Board (Blade)



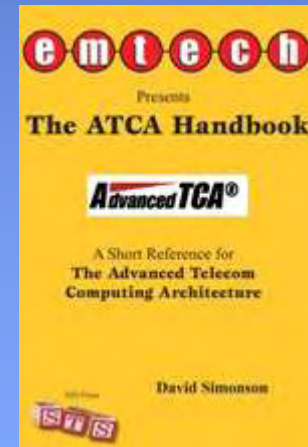
ARTM

Additional Ports and Capabilities

- Front boards (blades) can connect to AMC (Advanced Mezzanine Card) (PCIe cards) and ARTMs (Advanced RTM) (like big AMC)
- Within form factor and power constraints, add more ports, disks, Fibre Channel, DSPs, ...
 - AMCs are available for about any network use:
 - SS7; ATM AAL1, 2, 5/OC-3/OC-12; DS1/DS3; E1/E3; T1; J1; 1 and 10 Gigabit Ethernet; Gigabit Ethernet in-line cryptography; Open Base Station Architecture Initiative (OBSAI) interfaces; Protocol bridging; ...
 - Can add many more ports if PCIe bandwidth OK

There's Lots More

- This is just the top of the tip of the iceberg
- ACTA specifications are developed by the PICMG (PCI Industrial Computer Manufacturers Group)
 - Full specs only available to members
 - www.picmg.org
- Not lots of introductory material
 - I recommend the “ATCA Handbook”
 - But then, I wrote it



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- Thanks!