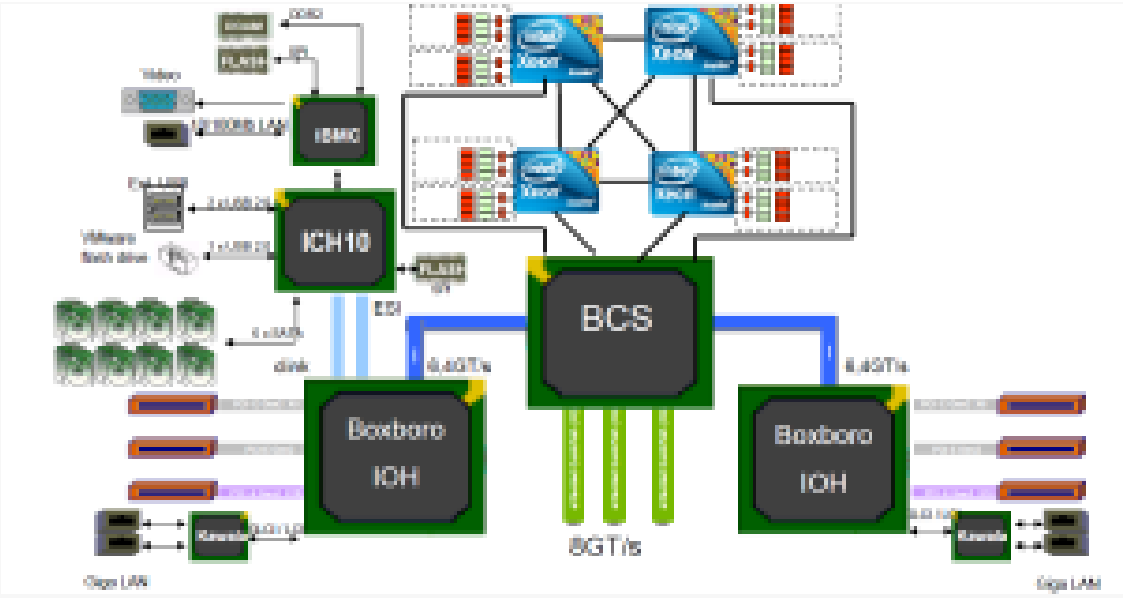
BCS Architecture

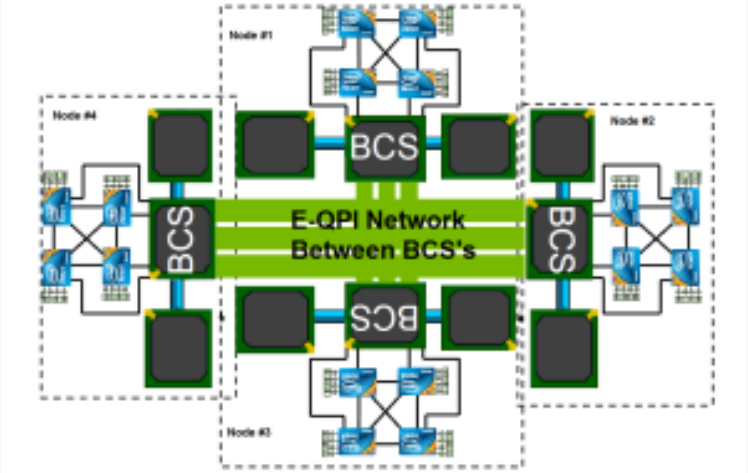
The BCS enables two key functionalities: **CPU caching** and the **resilient eXternal Node-Controller fabric**. These features server to reduce communication and coordination overhead and provide availability features consistent with Intel Xeon E7-4800 series processor.

BCS meets the most demanding requirements of today's business-critical and mission-critical applications.



Detailed 4 Sockets Xeon E7 Novascale bullion Architecture – Courtesy of Bull

As shown in the above figure, a BCS chip sits on a SIB board that is plugged in the main board. When running in a single node mode, a DSIB (Dummy SIB) board is required.



BCS Architecture – 4 Nodes – 16 Sockets

As shown in the above figure, BCS Architecture scales to 16 processors supporting up to 160 processor cores and up to 320 logical processors (Intel HT). Memory wise, BCS Architecture supports up to 256x DDR3 DIMM slots for a maximum of 4TB of memory using 16GB DIMMs. IO wise, there are up to 24 IO slots available.

BCS key technical characteristics:

- ASIC chip of 18x18mm with 9 metal layers
- 90nm technology
- 321 millions transistors
- 1837 (~43×43) ball connectors
- 6 QPI (~fibers) and 3×2 XQPI links
- High speed serial interfaces up to 8GT/s
- power-concsious design with selective power-down capabilities
- Aggregated data transfer rate of 230GB/s that is 9 ports x 25.6 GB/s
- Up to 300Gb/s bandwidth

BCS Chip Design – Courtesy of Bull

Each BCS module groups the processor sockets into a single “QPI island” of four directly connected CPU sockets. This direct connection provides the lowest latencies. Each node controller stores information about all data located in the processors caches. This key functionality is called “**CPU caching**“. This is just awesome!

Source : http://deinoscloud.wordpress.com/page/2/