

Atos ARM solutions for HPC

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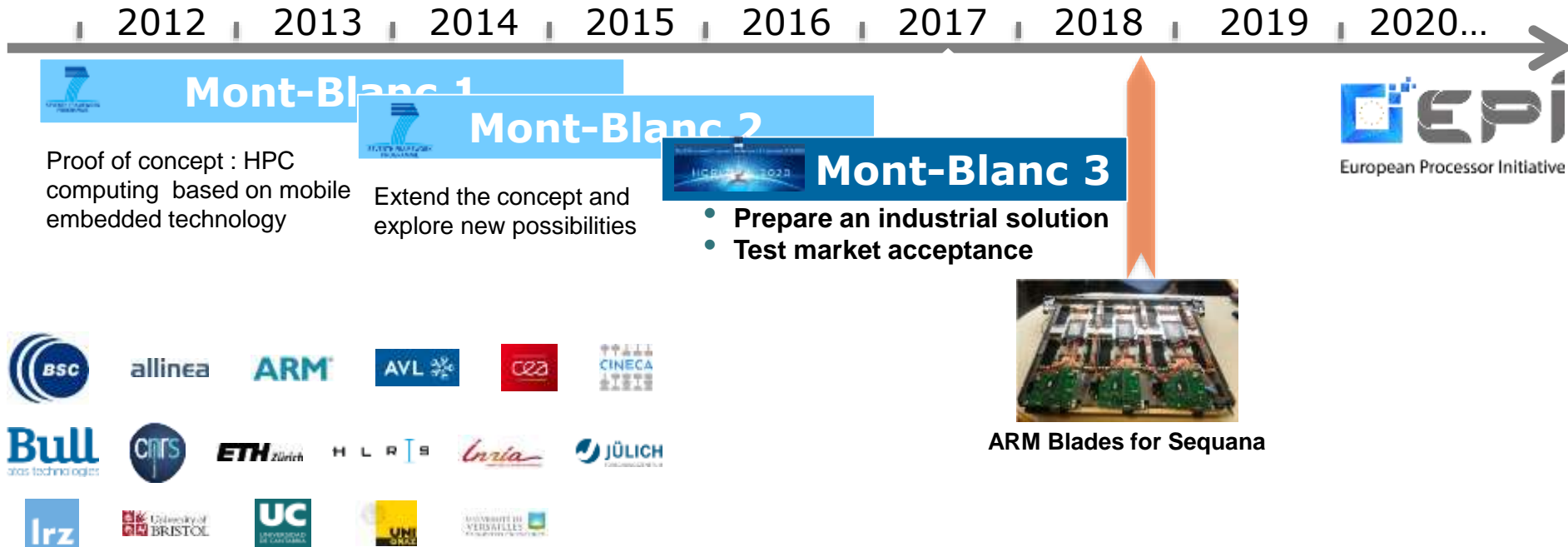
Tuesday, March 7th, HPC User Forum, TERATEC

Trusted partner for your Digital Journey



Atos HPC and ARM

A long time engagement



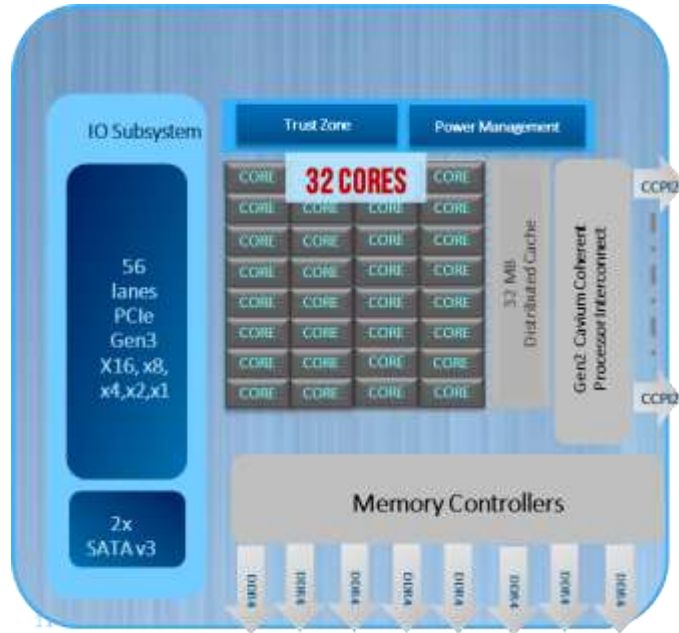
Current processors technology snapshot

Different suitespots for different workloads

	Intel®	AMD®	ARM®
Model considered	Gold Skylake	Epyc Naples	Marvell ThX2
Processing elements	Up to 28 cores	Up to 32 cores	
Frequency	2.0 – 2.7 GHz		
Max ISA supported	AVX-512	AVX2	Neon
DP FLOP/cycle	2 FMA @ 512-bits	(2 ADD + 2 MUL) @ 128-bits	2 FMA @ 128-bits
	32 FLOP/cycle	8 FLOP/cycle	
Core DP FLOP/s	64 GFLOP/s @ 2.0GHz	16 GFLOP/s @ 2.0GHz	
Socket DP FLOP/s	1,792 GFLOP/s @ 2.0GHz	512 GFLOP/s @ 2.0GHz	
Memory Interface	6 DDR4 channel @2667 MT/s	8 DDR4 channel @2667 MT/s	
Memory Bandwidth	128 GByte/s/socket	170 GByte/s/socket	
Bytes:FLOP (1/AI)	0.072	0.332	



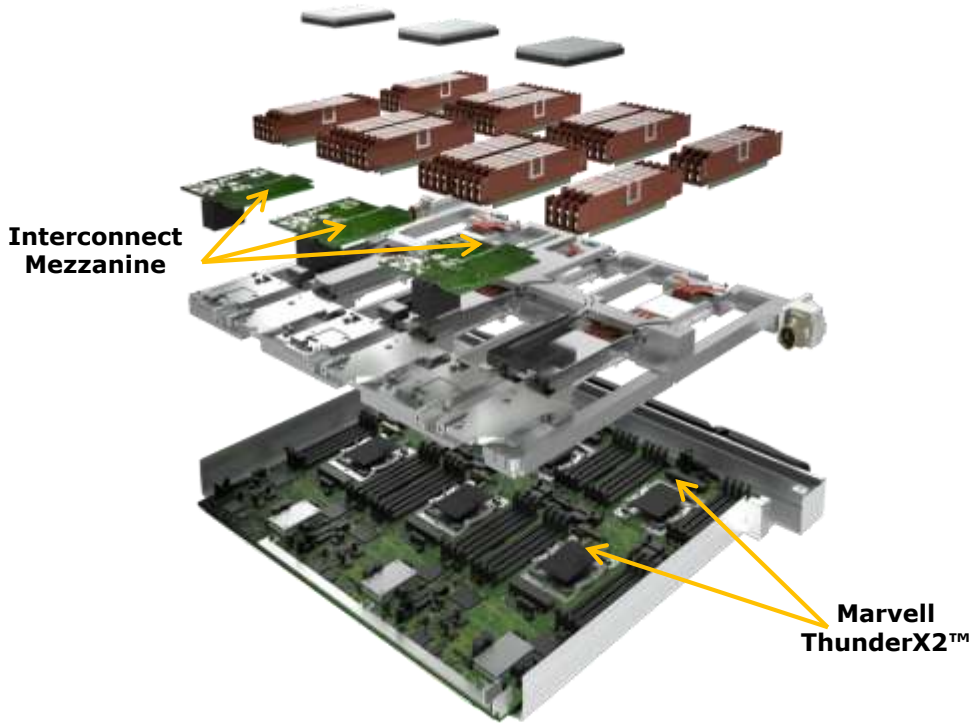
CN99xx: 1st member of THUNDERX2 family



- ▶ Up to 32 custom ARMv8 cores, up to 2.5GHz
- ▶ Quad issue fully out of order, 4 threads per core
 - 32KB L1 I/D Cache; 256KB L2 per core
 - 32 MB distributed L3 cache (1MB per core)
 - 600 Gbps Gen 2 Coherent Processor Interconnect (CCPI2) (24 lanes @ 25Gbps)
 - 6 Tbps of on-die fabric for data (512 bits bidirectional running up to 3 GHz)
- ▶ Dual socket configuration support
- ▶ Up to 8 channels of DDR4, up to 2667MHz
- ▶ Up to 56 lanes of PCIe Gen3
- ▶ Integrated SATAv3, USB 3.0, GPIOs
- ▶ Server class virtualization
- ▶ Server class RAS
- ▶ Extensive Power Management
- ▶ Socketed LGA for most flexibility

Bull sequana compute blade: X1310

Marvell ThunderX2™ CN99xx – ARMv8 processor



- ▶ **1U form factor**
- ▶ **Direct liquid cooling**
- ▶ **3 compute nodes per blade with:**
 - 2 Marvell ThunderX2 processors with
 - Up to 32 custom ARMv8 cores per CPU, 4 threads per core, up to 2.5GHz
 - 16 DDR4 @266MT/s DIMM slots up to 1TB RAM
 - 1 Interconnect mezzanine board (EDR/HDR)
 - disks
 - 1 x 2.5" 7 mm SATA SSD
 - Or 1x 2.5" PCIe flash SSD

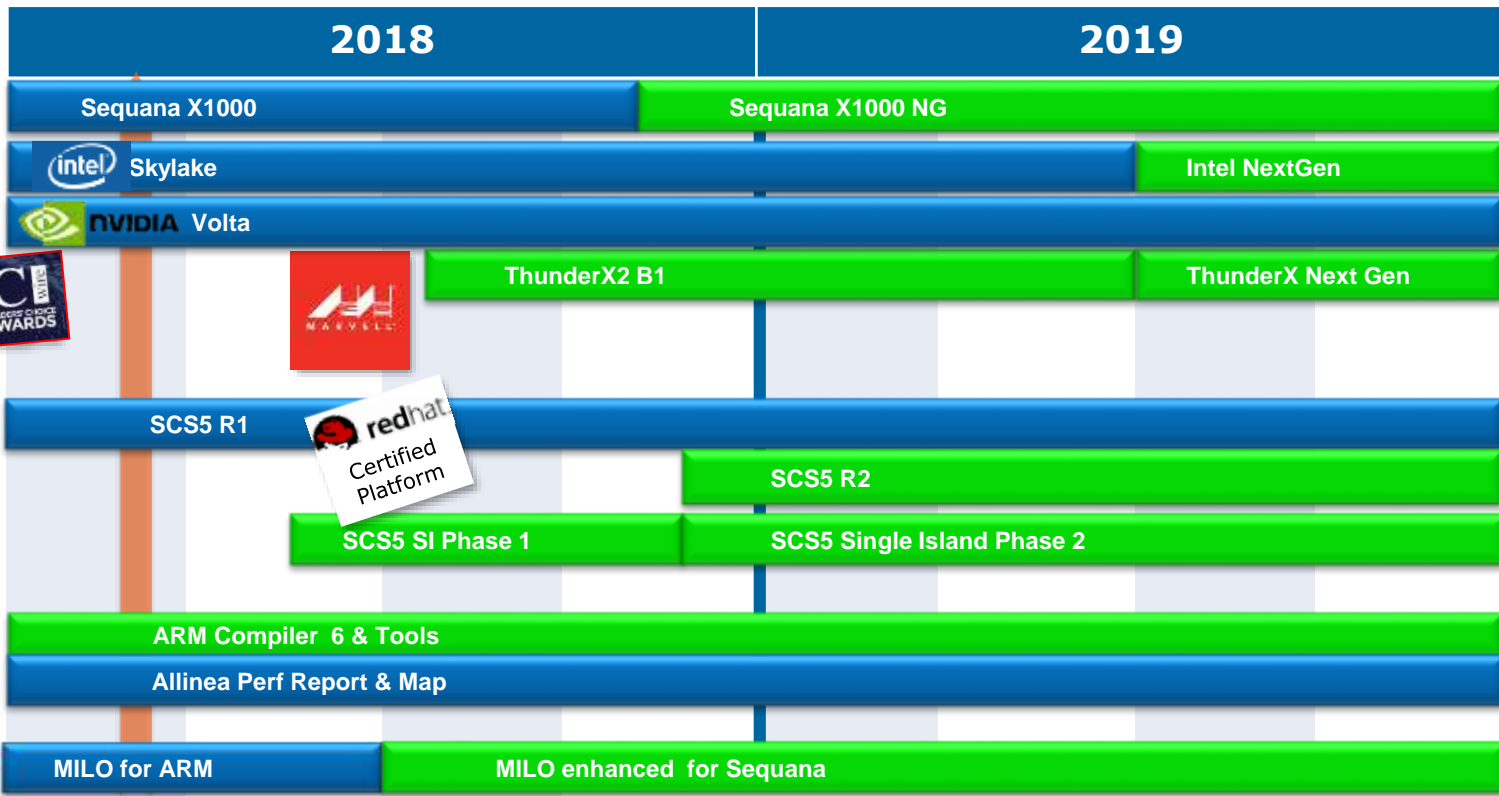
Atos Sequana Solutions Roadmap & ARM



X1000



X1000 NG



Software Platform



ARM incubator labs

Current

New



Integrate new usage models & new technologies

Matching emerging technologies and applications



ARM Incubator labs



Define a suitable & efficient **ARM ecosystem** for **key customers** workflows



Bring a clear **strategy** and directions to our **future developments**



Provide access to ARM resources and expertise



A full Solution to kickstart HPC projects on ARM

Be Efficient with Atos full spectrum solution

BullSequana X
Family



X1000 &
X1000 NG

First
Direct Liquid Cooled
ARM HPC solution



Enhanced support
and porting lab
expertise



ARM Incubator labs

ARM®



Atos

Thank you

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