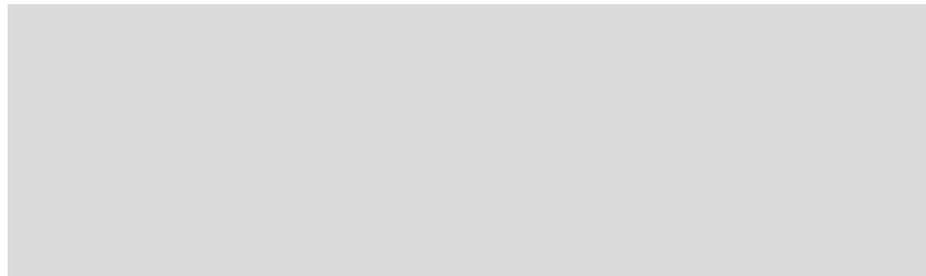


Growing your business with intelligent innovation



Escala Linux POWER9 servers: L3-900 and L3-OP90

POWER9 technology is uniquely designed for data intensive workloads. With its market unique coherent interconnect between CPUs, GPUs, FPGA adapters and main memory, POWER9 offers unprecedented capabilities for intelligent innovation in Machine Learning and high-speed data processing.

Escala also reduces TCO through leading performance, highest level reliability, superior security isolation, and virtualization efficiency.

Big Data and Analytic workloads

POWER9 offers massive ingestion capabilities for very large deep learning applications thanks to the accelerated compute devices, networking and storage.

Escala L3-900: Exceptional data handling

Escala L3-900 is particularly well adapted as a backend for data intense workloads such as database and analytics. Thanks to its innovative I/O subsystem capabilities and its large DDR4 memory footprint of 4TB, L3-900 excels in memory scaling as well as the core to memory ratio needed for data-centric and in-memory workloads.

L3-900 is built on POWER9 big cores (SMT8) which provide significant performance per core, making it the most economical system for core based licenses (DB2, Websphere, ..). The Advanced Mellanox ConnectX-5 InfiniBand Fabric, with industry-leading PCIe Gen4 interfaces, high speed 25 Gb/s ports interconnect, PCI Gen4 adapters with CAPI

accelerators, all contribute to providing the speed needed for massive data handling, ingestion, and high-performance analytics. Add to that the optional CAPI-attached NVMe storage for exceptionally fast storage I/O and burst buffer data staging.

OpenSource Databases

L3-900 is ideally suited for open database implementations, such as:

- Oracle to PostGre SQL migration with Splendid Data
- PostGre XL scale-out data base
- NoSQL Databases
- Hortonworks Big Data server
- OpenStack DBaaS

Thanks to the ability to run LE Linux, these servers are seamlessly integrated into existing server environments, allowing integration of Postgres POWER9 servers into an x86 environment and fail-over between x86 and POWER9 environments, for example.

ATOS OpenPOWER Member

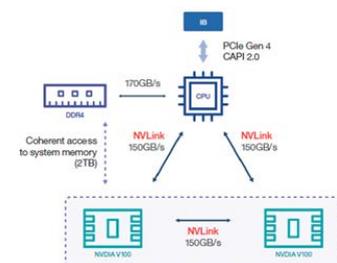
The OpenPOWER Foundation is an open industry consortium, with 300+ members (including Google, Mellanox, IBM, Redhat, and ATOS) for developing and promoting the Power Architecture. Member companies provide innovations such as custom systems for large or warehouse scale data centers, workload acceleration through GPU, FPGA or advanced I/O, platform optimization for SW appliances, or advanced hardware technology exploitation. POWER9 is a key component of the OpenPOWER landscape.

Escala L3-OP90: Artificial Intelligence and Machine Learning

Artificial Intelligence (AI) is being considered for implementation by many companies to expand their perspectives. Escala POWER9 servers can be used to develop and provide the models required to enable AI.

Acceleration platform for ML

Escala L3-OP90 is based on 2x POWER9 small cores (SMT4) with NVLink 2.0 CPUs and provides up to 2 TB of memory. It's the



differentiated platform for GPU acceleration thanks to the POWER9 with NVLink 2.0 technologies and its amazing CPU to GPU and GPU to GPU communication, which greatly improve performance and data flow. Escala L3-OP90 servers are ideal for (Distributed Deep Learning) DDL.

PowerAI: Machine Learning SW stack

Escala differentiates from competitors by delivering a complete SW stack, PowerAI, making Machine Learning accessible to a larger public. PowerAI offers an innovative, easy to use ML stack, including prepackaged and pre-optimized ML tools, with leading frameworks and libraries. This drastically reduces implementation complexity, offering ease of use, as well as revolutionary semi-automatic data-labeling.

Our Offers	Escala L3-900	Escala L3-OP90
SW Licensing	Small	Small
System package	2U, 19" rack	2U, 19" rack
Microprocessors Cores/socket	1 or 2 POWER9 Scale-Out SMT8 processor 12-core, 10-core, 8-core	2x POWER9 with NVLink CPUs 16-cores, 20 cores
L2 cache	512 K	512 K
L3 cache	10 MB	10 MB
# of processor sockets/server	1 or 2 sockets	2 sockets
POWER9 Processor	POWER9 SMT8 (big core) 8-cores - 3.4 GHz to 3.9 GHz 16-cores - 3.4 GHz to 3.9 GHz 10-cores - 2.9 GHz to 3.8 GHz 20-cores - 2.9 GHz to 3.8 GHz 24-cores - 2.7 GHz to 3.8 GHz	POWER9 SMT4 (small core) 16-core - 2.7 GHz (3.3 GHz "turbo") 20-core - 2.4 GHz (3.0 GHz "turbo")
RAM (memory) Min - max. memory All memory is active	1-socket: 32 - 2048 GB 2-socket: 32 - 4096 GB	32 GB to 2048 GB, from 16 DDR4 RDIMM Sockets
Processor-to-memory bandwidth		170 GB/s per socket, 340 GB/s per system
Internal disk storage System unit disk/SSD bays with standard or split	8x SFF (2.5") SAS bay option	2x SFF (2.5") drive bays, optional NVMe SSD support in PCIe slots
Adapter slots		4 SXM 2.0 sockets, for NVIDIA Tesla V100 GPU Accelerators with NVLink.
Maximum PCIe PCIe Gen3/Gen4 slots ¹ , 2 (with two procs)	9 PCIe Gen3/Gen4 slots Five PCIeGen4 slots (4 CAPI enabled) Four PCIeGen3 slots (1 reserved for Ethernet adapter)	PCIe Gen4 slots - Two PCIe x16 G4 LP slot, CAPI enabled - One PCIe x8 G4 LP slot, CAPI enabled - One PCIe x4 G4 LP slot
Max PCIe Gen3 slots with expansion drawer(s)	12 additional Gen3 slots	
System unit disk/SSD bays with expanded function backplane	2 NVMe, 8 SFF-3	
Max EXP24S OR EXP24SX storage drawers	28 maximum	
Max total SAS bays (system unit plus EXP24S OR EXP24SX drawers)	672	
Max total TB storage (system unit plus EXP24S OR EXP24SX disk)	1209,6 TB	Two 2.5-inch SATA drives for a maximum of 4 TB hard disk drive (HDD) or 7.68
I/O ports	4x USB 3.0 ports, 1 system port with RJ45	2x USB 3.0, 2x 1 GB Eth, VGA
Max partitions (with PowerVM) (max 20 per core)	480	NA
Linux support	Red Hat Enterprise Linux Ubuntu Linux	
Virtualization	PowerVM technology integrated	Bare Metal
Firmware	v9.1	OpenBMC

Atos and IBM: a perfect fit

For more than 25 years, Atos and IBM have built a unique relationship, based on an OEM partnership and a close, highly productive technological cooperation. This solid R&D collaboration has fundamentally strengthened the AIX® ecosystem, by regularly generating innovative functionality, in areas such as scalability, RAS, virtualization and cloud enablement.

Why Atos?

Atos is a global leader in digital transformation with approximately 100,000 employees in 72 countries and annual revenue of around €12 billion. The European number one in Big Data, Cybersecurity, High performance Computing and Digital Workplace. Atos is also the number one European provider (Number 3 worldwide) of managed infrastructure services.

We have early insight on new technologies, enabling us to develop new and innovative technical solutions, and to support the digital transformation of all our customers. Our strong global footprint, and industry heritage gives us the understanding and the flexibility to easily adapt to our clients' culture whatever industry they work in and wherever they are in the world.

To learn more on how you can benefit from Escala solutions, please visit atos.net/escala

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