COMPUTING

MaxCore™ HA Platform

High Availability Compute & Media Platform

Preliminary Data Sheet

MaxCore™ HA is a highly available platform with scalable CPU performance in combination with off-the-shelf PCI Express cards including redundant 100G networking

- Redundant intelligent 100G and more network I/O enables flexible, programmable packet forwarding
- Supports Intel® FlexRAN technology
- Microserver and switch cards with up to 352 Intel® Xeon® processor D cores per system
- Full SDN/NFV packet forwarding and virtualization support enables seamless scaling
- Hot pluggable PCI Express cards for compute and I/O
- Redundant AC and DC power options
- Telecom Clocking infrastructure
- Designed for 19" racks in NEBS/ETSI environments
- PCI ExpressFabric built-in infrastructure
- Multiple system configurations: up to six "standard server plus PCI Express I/O card" combinations or a mix of microservers and I/O cards with PCI Express shared I/O technology

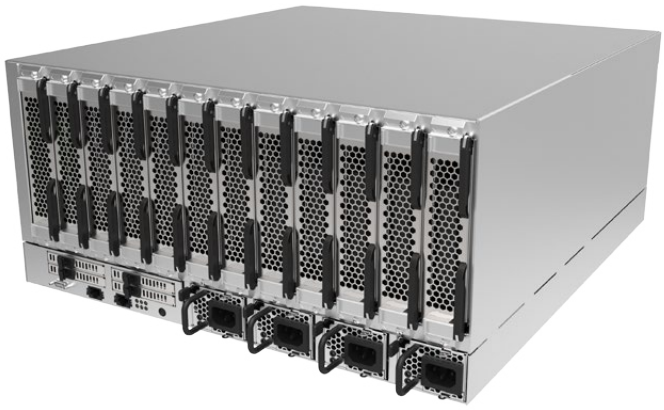
Today's networks demand higher bandwidth and lower latency that ever before, with more capability needed at the edge of the network, including the upcoming 5G mobile network. As an example, new network components like the cloud/virtualized radio access network (c/vRAN) become critical to enable more versatile, less expensive network components while maintaining the requirements of communications infrastructure such as reliability and high availability.

The Artesyn MaxCore™ High Availability (HA) platform – built around the Intel® Xeon® D processor family and paired with the Artesyn Silver Lining™ SDN & NFV software platform – creates an unprecedented level of both density and versatility when building virtualized high-availability applications.

The MaxCore HA platform has up to 352 processor cores per system and up to 400G ingress/egress support. As an example of its design for highly available mobile infrastructures, the MaxCore HA system can support 32 cells per RAN, in a compressed footprint and with a fraction of the power and cooling costs compared with a traditional rack mount server (RMS) approach. These virtualization techniques, paired with the latest I/O capabilities, enable short update cycles and remove potential bottlenecks in the hardware space that could hamper the success of these platform upgrades.

Benefits:

- Standard PCI Express card integration through hot swappable card carrier
- Hot swap and redundancy maximizes system uptime
- Small footprint (just 450 mm depth) ensures global equipment practice compatibility
- High density minimizes both CapEx and OpEx costs



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Architecture

The versatile MaxCore™ HA platform is designed based on a redundant PCI ExpressFabric architecture. The chassis features 12 slots, which can host hot swappable modules that redundantly connect into the internal PCI Express infrastructure. Modules can randomly host server-type processing modules or traditional PCI Express I/O equipment. This enables classical compute server applications with a single host processing module and a number of I/O modules as well as a variety of new and more sophisticated architectures to optimally fit to the target applications. Typical configuration options are:

- Redundant 100/200G platform I/O paired with up to 20 Intel® Xeon® D processors for DPI
- Up to six independent server modules, each having its own dedicated PCI Express I/O module
- Two independent hot swappable servers, each with up to five PCI Express I/O modules

A variety of other platform configurations can be architected to best fit application and redundancy requirements.

The system includes redundant AC and DC power supplies and front-to-rear cooling. The MaxCore HA chassis provides four drive bays to offer mass storage inside the platform, all front accessible and hot swappable. With the local server-type BMC microcontroller, the MaxCore HA platform can be remotely managed similar to any datacenter equipment.

The MaxCore HA platform specifically provides features dedicated to telecommunications applications, in detail:

- Platform is designed to be NEBS certified
- Internal clocking infrastructure and optional redundant clock modules
- -48/60 VDC power entry option
- Alarm LEDs and alarm management interface

Chassis Features

- 12 hot swappable card slots, front accessible
- Redundant PCI ExpressFabric backbone
- Server BMC for integration into management frameworks
- Four (4) redundant hot swappable power supplies, AC or DC, front feed and front accessible
- Telecommunications alarm interface, front accessible
- Alarm LEDs
- Option to integrate redundant clocking modules, available on demand
  - Synchronous Ethernet, IEEE1588
  - GPS, Time-of-Day (ToD) and 1pps I/O connectivity on front
- 4x 1000BASE-T connections, front accessible
  - Allows for platform management stacking of up to five MaxCore HA platforms
- Four (4) 2.5”/9 mm SATA drive bays, front accessible
- Designed for NEBS/ETSI certification
- Fault tolerant cooling subsystem, hot swappable fans, rear accessible
- Front-to-rear cooling
- Optional bezel with air filter
- Dimensions: Designed for 19” cabinets, width 448 mm, height 5U, depth 450 mm

SharpServer™ HA Card Features

- Hot swappable
- Two Intel® Xeon® D-15xx processors
  - Up to 64GB DDR4 per processor
  - Up to 4x PCI Express Gen3 x4 into the platform
  - Local Flash mass storage per processor
  - MaxCore™ HA system host capability
- 1x USB 3.0 per processor
- 1x Reset per processor
- COM port access (serial console) per processor
  - USB connection to simplify onsite operator access
- Software
  - Linux KVM
  - Intel® DPDK support
  - Multi-host PCI Express I/O virtualization support
  - Silver Lining™ SDN/NFV software platform

SharpSwitch™ HA Card Features

- Hot swappable
- Intel® FM10840 Red Rock Canyon Ethernet controller
  - ~100GE aggregated bandwidth (PCIe Gen3 x16)
  - Built-in switch for cut-through traffic and traffic through CPUs
  - Open vSwitch, OpenFlow, and stateful load balancer via ECMP
- Intel® Xeon® D processor
  - MaxCore HA system host capability
  - Up to 64G DDR4
  - PCI Express Gen3 x8 connection to local Intel FM10840
  - Platform internal connectivity: SATA, USB, COM
- Face plate I/O
  - COM port access (serial console) per processor, USB connection to simplify onsite operator access
  - USB 3.0
  - 1G RJ-45 interface to processor
  - Intel FM10840: 2x QSFP28 configurable as 2x100G, 2x40G, or 8x10G (may require cables)

MaxCore™ HA Carrier Card Features

- Hot swappable
- Accepts PCI-SIG compliant single width, full height, and full length PCI Express card with auxiliary power connector
- PCI Express Gen3 x8 connectivity

Default Configurations

MaxCore™ HA platform provides several different configuration options, either user customizable or preconfigured on demand from Artesyn. Two default off-the-shelf base configurations are available. One configuration combines the MaxCore HA chassis with two SharpServer™ HA cards as a basis for any redundant server configuration. The second configuration includes the MaxCore HA chassis and combines it with two SharpSwitch™ HA cards. These cards provide redundant 100G platform I/O and offer redundant system host functionality. This platform can be extended with up to 10 SharpServer HA cards for scalable DPI applications, or 10 SharpStreamer™ cards for video applications.

Software

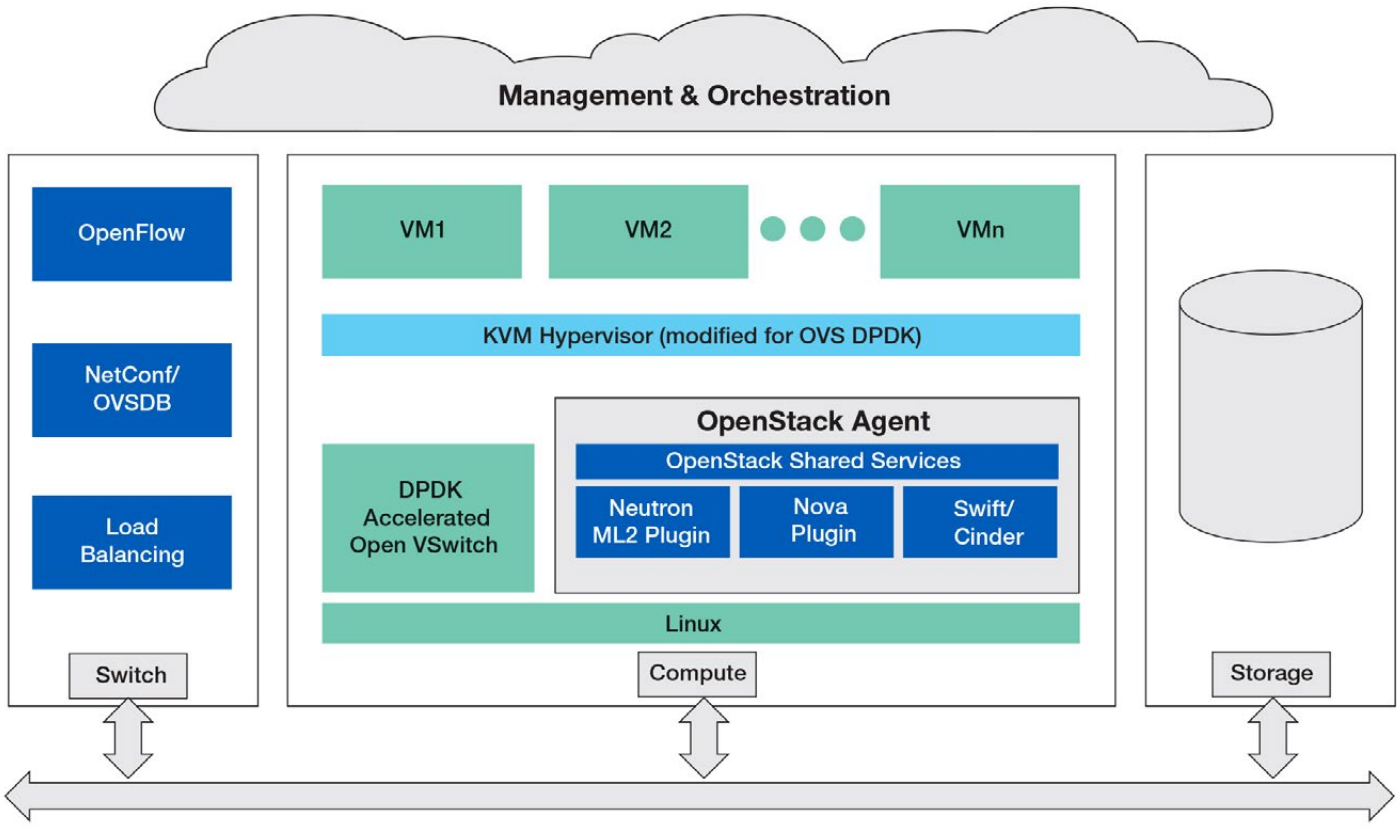
Platform Management

The MaxCore™ HA platform provides Lights Out Management (LOM) through its onboard management controller and management software based on industry standards like IPMI 2.0, Restful APIs, Serial-over-LAN (SoL) and virtual media device support all easily accessible via an integrated web server.

Once the chassis host (main CPU) is operating, the Artesyn System Services Framework increases remote management access using XML and HTTP. This software allows full system monitoring, platform configuration, and full system firmware updating of all Artesyn MaxCore HA cards.

Silver Lining Software

Artesyn's Silver Lining™ NFV software is a virtualization framework for next generation networks, based on common open source projects such as OpenStack, OpenFlow, Open Virtual Switch (OVS) and Intel® Data Plane Development Kit (DPDK). Silver Lining software makes use of a KVM hypervisor to enable customers to run multiple virtualized applications across common compute and media processing hardware such as the MaxCore™ HA platform and cards. OpenStack Kilo release services supported within Silver Lining include Nova, Neutron, Ironic, Glance, Cinder, Keystone, and Horizon. These services can be deployed on top of compute, network and controller nodes running on the MaxCore HA server and switch cards running Centos 7.1. The software is bundled with standard Basic Blade Services package coupled with Artesyn's MaxCore HA cards and includes automated installation and configuration scripts for ease of deployment.



Ordering Information

Product Family	*Part Number*	*Description*
MaxCore™ Platform	MC4000-S3-DC	MaxCore™ HA platform core, 1x SharpSwitch™ card (4-core, 16GB DDR4), 4x MC4000-DC-PSU, 4x MC4000-FAN-L, 0x MC4000-SLT-FLR, no HDD/SSD drives, without clock module
	MC4000-S3-AC	MaxCore HA platform core, 1x SharpSwitch card (4-core, 16GB DDR4), 4x MC4000-AC-PSU, 4x MC4000-FAN-L, 0x MC4000-SLT-FLR, no HDD/SSD drives, without clock module
	MC4000-SLT-FLR	MaxCore HA slot filler
	MC4000-FAN-S	SPARE PART - MaxCore HA fan module, one unit, short version (two fans)
	MC4000-FAN-L	SPARE PART - MaxCore HA fan module, one unit, long version (four fans)
	MC3000-SSD-1TB-SATA	1TB MLC 2.5 INCH SSD
	MC3000-SSD-512G-SATA	512GB MLC 2.5 INCH SSD
SharpServer™ Card	PCIE-7410H-xx	Microserver card with Intel® Xeon® Processor D
SharpSwitch™ Card	PCIE-9205H-xx	SharpSwitch Intelligent NIC with Intel® Xeon® Processor D
SharpCarrier™ Card	Available in customized system bundles only	
SharpStreamer™ Card	PCIE-7207-4	PCIE card with 4xs dual-core Intel® Core™ i7-5650U Processors 2.2 GHz
	PCIE-7210-2	PCIE card with 2x quad core Intel® Xeon® E3-15xx v5 Processors

SOLUTION SERVICES

Artesyn Embedded Technologies provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

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