

# Prodrive Embedded Computing Systems

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Distribution:

# Embedded Computing Systems – Program

## 1 Long Lifecycle

- Committing to lifecycles of 10+ years
- Embedded computing is key market

## 2 Reliable

- Reliability is key for our customer's application

## 3 Certified

- CE, FCC, KC, CCC, PSE, BSMI
- SEMI F47, SEMI S2, SEMI S8

## 4 Customized

- Off-the-shelf platforms can be tailored to customer requirements





# Embedded Computing Systems – Products



Hermes Motherboard Series



Apollo Add-in Card Series



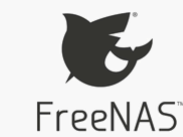
Poseidon Industrial PC Series



Graphical Processing Units



Zeus Storage Server Series



Zeus Server Series



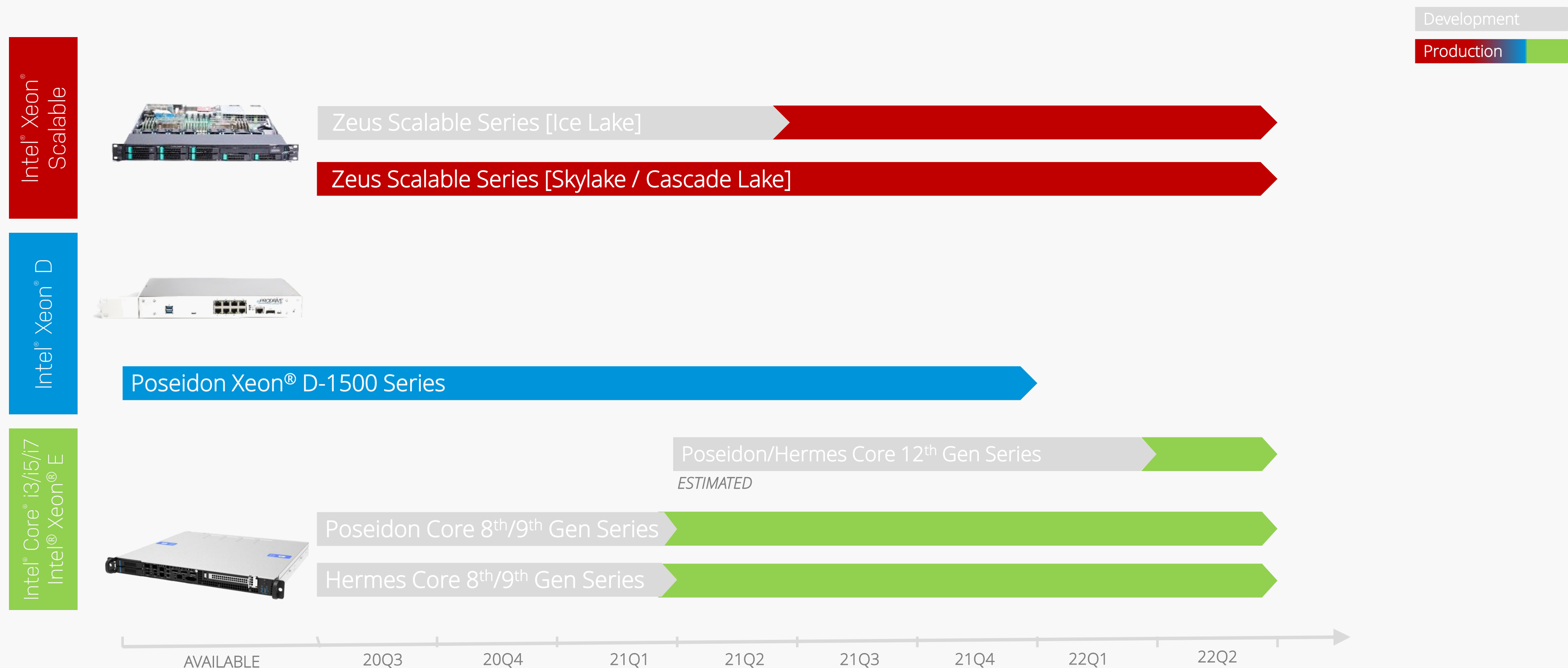
Zeus High Performance Cabinet

PCs & Boards

Rack Servers

Integrated Cabinet

# Embedded Computing Systems – Roadmap



Note: Roadmap may be subject to change

# Prodrive Apollo Roadmap

Intel® FPGA



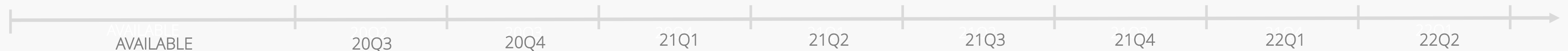
Apollo Arria® 10

Xilinx® FPGA

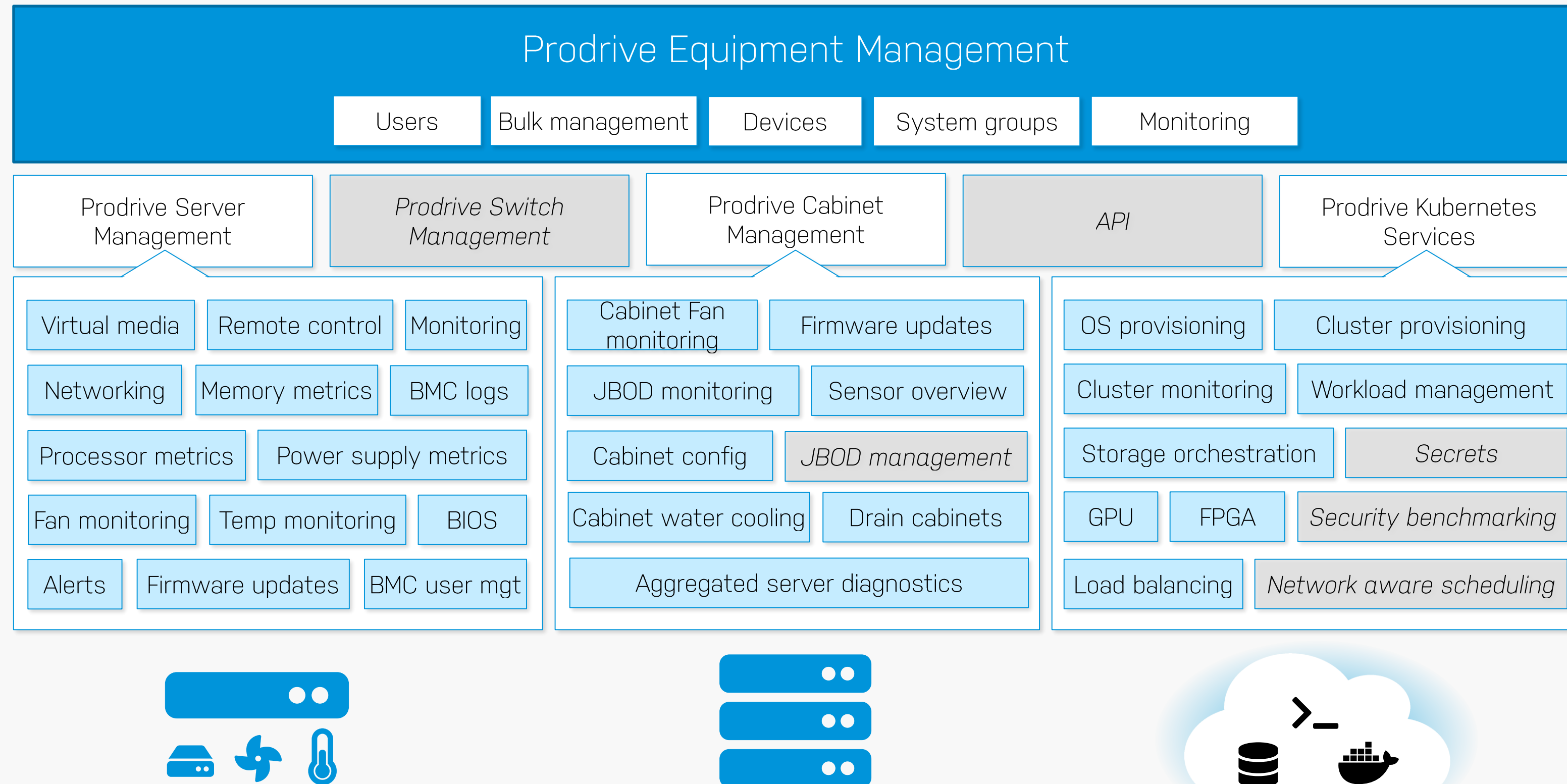


Apollo Zynq UltraScale+

Apollo Versal



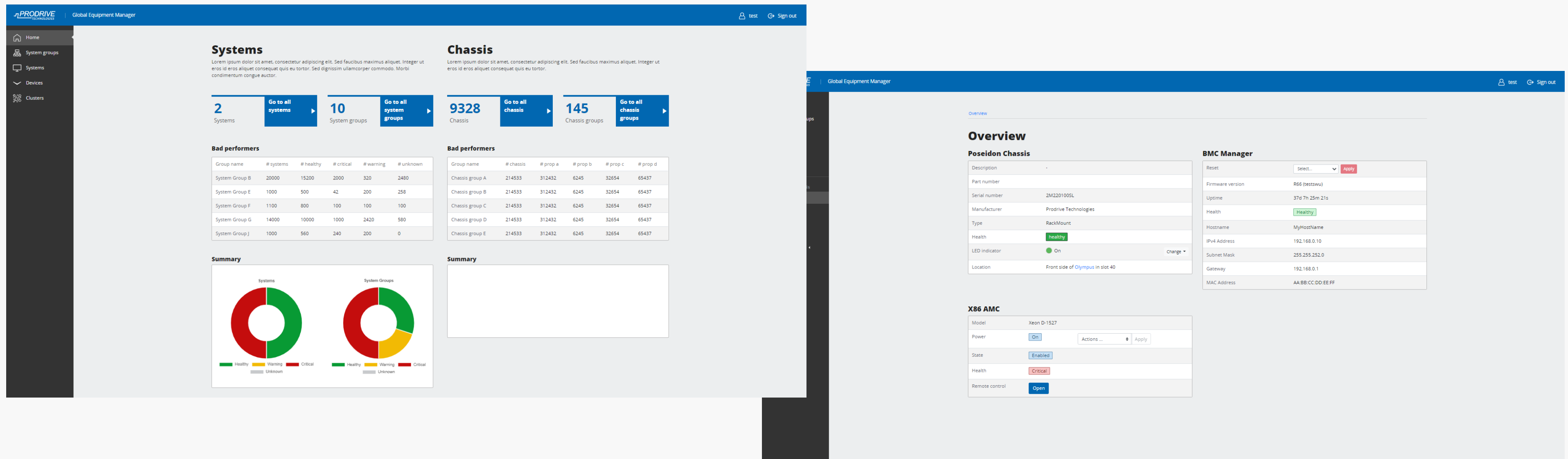
# Prodrive Equipment Management





# Prodrive Equipment Management

Unified Management Platform for all Prodrive computing equipment (Zeus / Poseidon / ZHPC)



The screenshot displays the Prodrive Global Equipment Manager interface, which is a unified management platform for all Prodrive computing equipment (Zeus / Poseidon / ZHPC). The interface is divided into two main sections: Systems and Chassis.

**Systems Section:**

- Summary:** Shows 2 Systems and 10 System groups. It includes a "Go to all systems" button and a "Go to all system groups" button.
- Bad performers:** A table listing system groups with their respective counts for healthy, critical, warning, and unknown states.
- Summary:** A donut chart showing the distribution of system health status (Healthy, Warning, Critical, Unknown).

**Chassis Section:**

- Summary:** Shows 9328 Chassis and 145 Chassis groups. It includes a "Go to all chassis" button and a "Go to all chassis groups" button.
- Bad performers:** A table listing chassis groups with their respective counts for healthy, critical, warning, and unknown states.
- Summary:** A donut chart showing the distribution of chassis health status (Healthy, Warning, Critical, Unknown).

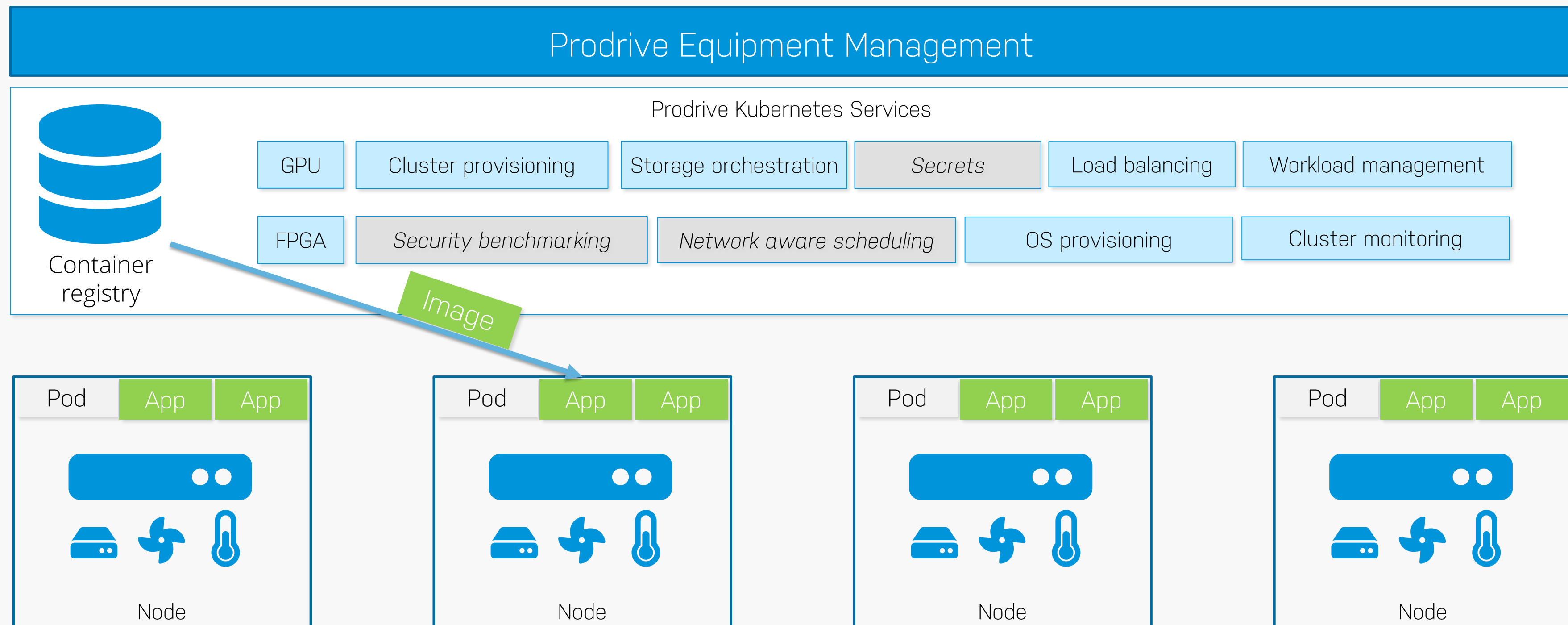
**Overview Section (Poseidon Chassis):**

- Overview:** A summary of the Poseidon Chassis, including its description, part number, serial number, manufacturer, type, health status, LED indicator, and location.
- BMC Manager:** A section for managing the Baseboard Management Controller (BMC), including fields for reset, firmware version, uptime, health, hostname, IP address, subnet mask, gateway, and MAC address.
- X86 AMC:** A section for managing the X86 Advanced Management Controller (AMC), including fields for model, power, state, health, and remote control.

- Single platform to manage all Prodrive equipment
  - Systems / System Groups
  - Chassis / Chassis Groups
- Various out-of-band interfaces
  - Redfish / IPMI / Web interface
- KVM functionality
- Alerts
  - E-mail / SMTP / Redfish events
- Monitoring
  - CPU & Memory
  - Fans
  - Temperatures
  - Voltages
- Management
  - BIOS
  - Power
  - Networking
  - Virtual Media
- Administration
  - User Management
  - Firmware Updates

# Prodrive Kubernetes Services

With Prodrive Kubernetes Services (PKS), customers can manage multiple nodes as a single platform, enabling users to deploy containers in which apps run. These containers can be scaled up and down quickly and automatically.





# Prodrive Kubernetes Services

Prodrive Kubernetes Services (PKS) is a platform that offers management of multiple nodes as a single platform, enabling users to deploy containers in which apps run. These containers can be scaled up and down quickly and automatically.



## 1 Scalable

Save up to **20%** on HW cost  
compared to bare-metal environments

## 2 Available

Reduce downtime by **>25%**  
compared to non-virtualized environments

## 3 Managed

Save **>\$100k** on development & maintenance  
compared to in-house development & maintenance



### Plus:

- + Build & Transfer Service
  - Updates & Upgrades
  - Maintenance & Stability
  - Support
- + Single pane of glass diagnostics
  - Manage sensors to containers
- + Application portability
- + Compatible with air-gapped environments
- + Security from BIOS to workload

# Prodrive Zeus Scalable Server

Motherboard	
<b>Motherboard</b>	Prodrive Zeus Intel Xeon Scalable
<b>Chipset</b>	Intel C622
Processor/Cache	
<b>CPU</b>	Dual Intel® Xeon® Scalable Processor
<b>Socket</b>	Up to 2x LGA3647
<b>Cores</b>	Up to 28 cores per CPU
<b>Cache</b>	Up to 38.5 MB per CPU
<b>System bus</b>	UPI up to 10.4 GT/s
System Memory	
<b>Type</b>	Up to 2666 MT/s ECC DDR4 (L)RDIMM <sup>2)</sup>
<b>Size</b>	Up to 768 GB (12 slots) per CPU
On-Board Devices	
<b>SAS/SATA</b>	Up to 8x SATA3.0 compatible ports Optional SAS3.0 via PCIe add-in card
<b>RAID</b>	RAID 0/1/5/10 via iRST Optional HW RAID via PCIe add-in card
<b>Network</b>	Quad 1G Ethernet Controller (Intel I350) Dual 10G Ethernet Controller (PCH)
<b>BMC</b>	ASPEED AST2500

I/O	
<b>Ethernet</b>	4x RJ45 GbE ports (LAN) 1x RJ45 GbE port (BMC/CPU) 2x SFP+ 10GbE (LAN)
<b>USB</b>	6x USB3.0 (2x front, 4x rear)
<b>RS-232</b>	1x RS-232 (rear)
<b>Video</b>	1x DisplayPort 1.1A
<b>OLED</b>	1x OLED screen for diagnostics
Power Supply	
<b>PSU</b>	Up to 2x 1600W CRPS hot-swappable
<b>AC input</b>	100-127 V <sub>AC</sub> / 200-240 V <sub>AC</sub> / 100-240 V <sub>AC</sub>
Conditions & Standards	
<b>Ambient</b>	0-35 °C
<b>SEMI</b>	SEMI F47 <sup>2)</sup>
<b>Safety/EMC</b>	EN62368-1, CISPR24, CISPR32
<b>Substances</b>	RoHS, REACH
<b>Marks</b>	CE, FCC, KC
OS Support	
<b>Windows</b>	All modern x86 32/64 bit OS supported.
<b>Linux</b>	Specific OS support at request



# Prodrive Zeus Scalable Server

	1U	2U
<b>Dimensions</b>	W: 425 mm (19") H: 43.65 mm (1U) D: 681 mm	W: 425 mm (19") H: 88.10 mm (2U) D: 681 mm
<b>Storage/Media</b>	8x 2.5" hot-swappable drive bays 1x DVD slim drive	8x 2.5" hot-swappable drive bays 1x DVD slim drive
<b>PCIe slots</b>	2x PCIe x16 Full Height / Half Length	2x PCIe x16 Full Height / Full Length 4x PCIe x8 Full Height / Full Length 2x PCIe x8 Full Height / Half Length



# Prodrive Zeus Third Gen Scalable Server [PREVIEW]

Motherboard	
<b>Motherboard</b>	Prodrive Zeus MB-ICX-A
<b>Chipset</b>	Intel C621A
Processor/Cache	
<b>CPU</b>	Dual Intel® Xeon® Scalable Ice Lake Processor
<b>Socket</b>	Up to 2x LGA4189-4
<b>Cores</b>	Up to 38 cores per CPU
<b>Cache</b>	TBD
<b>System bus</b>	3x UPI up to 11.2 GT/s
System Memory	
<b>Type</b>	Up to 3200 MT/s ECC DDR4 (L)RDIMM
<b>Size</b>	Up to 2048 GB (8 slots) per CPU
On-Board Devices	
<b>SAS/SATA</b>	Up to 4x SATA3.0 / NVMe compatible ports Optional SAS3.0 via PCIe add-in card
<b>RAID</b>	RAID 0/1/5/10 via iRST or VROC Optional SATA HW RAID via PCIe add-in card
<b>BMC</b>	ASPEED AST2500

I/O	
<b>Ethernet</b>	1x RJ45 GbE ports (CPU) 1x RJ45 GbE port (BMC)
<b>USB</b>	4x USB3.0
<b>RS-232</b>	1x RS-232
<b>Video</b>	1x VGA 1920x1280 32bpp
<b>OLED</b>	1x OLED screen for diagnostics
Power Supply	
<b>PSU</b>	Up to 2x 2000W redundant CRPS hot-swappable
<b>AC input</b>	100-127 V <sub>AC</sub> / 200-240 V <sub>AC</sub>
Conditions & Standards	
<b>Ambient</b>	0-35 °C
<b>SEMI</b>	SEMI F47 <sup>1)</sup>
<b>Safety/EMC</b>	IEC/ENCSA UL 62368-1:2018, CISPR32:2015, CISPR35
<b>Substances</b>	RoHS, REACH, WEEE
<b>Marks</b>	CE, FCC, KC, BSMI, PSE, CCC
OS Support	
<b>Windows</b>	All modern x86 32/64 bit OS supported. Specific OS support at request
<b>Linux</b>	



Samples available 21Q2

<sup>1)</sup> The product will be tested for compliance with SEMI F47 during qualification (no formal certification)  
NB: Specifications may be subject to change



# Prodrive Zeus Third Gen Scalable Server [PREVIEW]

	1U	2U
Dimensions	W: 425 mm (19") H: 43.65 mm (1U) D: 780 mm	W: 425 mm (19") H: 88.10 mm (2U) D: 780 mm
Storage/Media	4x 2.5" hot-swappable drive bays (SATA3.0 / NVMe)	4x 2.5" hot-swappable drive bays (SATA3.0 / NVMe)
PCIe slots	3x PCIe Gen4 x16 Full Height / Full Length / Double Width 1x PCIe Gen3 x4 Full Height / Half Length / Single Width	6x PCIe Gen4 x16 Full Height / Full Length / Double Width 1x PCIe Gen3 x4 Full Height / Half Length / Single Width



Samples available 21Q2

# Prodrive Poseidon Industrial PC

Motherboard	
Motherboard	Prodrive Hermes 9 <sup>th</sup> Gen Xeon E-2200
Chipset	Intel C246
Processor/Cache	
CPU	Intel® Xeon® E-2200 9 <sup>th</sup> Gen
Socket	LGA1151
Cores	Up to 6 cores
Cache	Up to 12 MB
System Memory	
Type	Up to 4x 2666 MT/s ECC DDR4 UDIMM
Size	Up to 128 GB
Board Management Controller	
BMC	ASPEED AST2500
Power Supply	
PSU	1x 800W PSU (redundancy optional)
AC input	100-240 VAC

I/O Cert	
Ethernet	4x RJ45 GbE ports (LAN) 1x RJ45 GbE port (BMC)
USB	4x USB3.2 gen 2
RS-232	1x RS-232
Video	2x DisplayPort 1.2 (piggyback)
Conditions & Standards	
Ambient	0-50 °C
SEMI	SEMI F47
Safety/EMC	EN62368-1, CISPR24, CISPR32
Substances	RoHS, REACH
Certification	CSA/UL/IEC 62386-1 CISPR32, CISPR35, FCC CFR 47 part 15b
OS Support	
Windows	All modern x86 32/64 bit OS supported.
Linux	Specific OS support at request



1U		3U	
Dimensions	W: 425 mm (19") H: 43.65 mm (1U) D: 410 mm	W: 425 mm (19") H: 128.5 mm (3U) D: 450mm	
Storage/Media	2x 2.5" hot-swappable drive bays	2x 2.5" hot-swappable drive bays	
PCIe slots	CPU: 1x PCIe x16 (Electrical: x8) Full Height / Half Length <sup>2)</sup>	CPU: 2x PCIe 3.0 x16 (Electrical: x8) OR 1x PCIe 3.0 x16 (Electrical: x8) + 2x PCIe 3.0 x16 (Electrical: x4) PCH: 1x PCIe 3.0 x16 (Electrical: x4) AND 1x PCIe 3.0 x4 (Electrical: x4)	
M.2	1x M.2 (2280/Key M) 1x M.2 (2230/Key E)	1x M.2 (2280/Key M) 1x M.2 (2230/Key E)	

# Prodrive Zeus High Performance Cabinet

User Equipment Space	
<b>Dimensions</b>	H: 41 U W: 19" D: 780 mm
<b>Cable Ducts</b>	4x front-to-rear
Cabinet	
<b>Dimensions</b>	H: 2000 mm W: 800 mm D: 1200 mm
<b>Mass</b>	600 kg (packed) 370 kg (unpacked)
<b>Load Capacity</b>	1500 kg (static) 900 kg (dynamic)
<b>Ingress</b>	IPX2
Cooling	
<b>Type</b>	Closed-loop Air Cooling (integrated air/liquid heat exchange)
<b>Capacity</b>	20 kW <sup>1)</sup>
<b>Coolant Use</b>	<4.8 m³/hr
<b>Cooling Medium</b>	Water, Water/Glycol
<b>Fans</b>	6x (n+1 redundant)
<b>Max Airflow</b>	Up to 7320 m³/hr

Integrated Power Distribution	
<b>Mains</b>	200V/208V 50/60 Hz or 400V phase-phase 50/60 Hz
<b>Mains cable</b>	Entry from top
<b>PDU</b>	48x C13 outlets fused @10A
<b>Available Power</b>	20kW
Safety	
<b>EMO</b>	Front & back
<b>Leakage</b>	Leakage detection connected to EMO
<b>Coolant</b>	LOTO valve for coolant shutoff Automated valve with fail-safe actuator
<b>Smoke</b>	Smoke detector
<b>Overttemperature</b>	Overttemperature protencion





# Prodrive Zeus High Performance Cabinet

Management & Diagnostics	
<b>Cabinet Manager</b>	Remotely accessible over IPMI
<b>LAN</b>	5x 1GbE RJ45
<b>Sensors</b>	Smoke detection Leakage detection Internal ambient temperature Relative humidity Front door (open/closed) Rear door (open/closed) Fan speed Coolant flow and temperature Differential air pressure
Standards & Certifications	
<b>SEMI</b>	SEMI S2 SEMI S8
<b>Safety/EMC</b>	UL/IEC-61010-1 IEC-61000-6-2 2 <sup>nd</sup> edition EN-55011:2009/A1 CISPR 11 FC 47 CFR 15 NFPA79
<b>Marks</b>	CE, FCC (on request)





# Prodrive Apollo Arria 10

Processing	
<b>FPGA</b>	Intel® Arria® 10 Series up to GX1150
<b>CPU</b>	Dual-Core ARM Cortex A9
Memory	
<b>Logic</b>	Up to 2x 4GB DDR3 64-bits @1866 MT/s
<b>Shared</b>	Up to 1x 1GB DDR3 32-bits @ 1866 MT/s
I/O	
<b>Host</b>	PCIe Gen3 x8
<b>LAN</b>	Up to 4x SFP+ 10GbE
Dimensions	
<b>Form Factor</b>	Three-quarter length PCIe card
<b>Dimensions</b>	W: 98.40 mm L: 252.80 mm H: 18.65 mm

Conditions & Standards	
<b>Ambient</b>	5-55 °C
<b>Safety/EMC</b>	IEC60601/IEC60950, CL/CSA
<b>Substances</b>	RoHS, REACH
<b>Marks</b>	CE
Application Development	
<b>HDL</b>	Supported
<b>OpenCL</b>	Supported



# Prodrive Apollo Zynq Ultrascale+

Processing	
<b>FPGA</b>	Xilinx Zynq Ultrascale+ ZU11EG
<b>CPU</b>	Dual-Core ARM Cortex A53 Dual-Core ARM Cortex R5
Memory	
<b>Programming Logic</b>	2x 8GB DDR4 ECC SODIMM @2133 MT/s
<b>Processing System</b>	1x 8GB DDR4 ECC SODIMM @2133 MT/s
I/O	
<b>Host</b>	PCIe Gen3 x16
<b>Optical</b>	2x CXP cage @12.52Gbps
<b>Ethernet</b>	10/100/1000 base-T (RJ45)
Dimensions	
<b>Form Factor</b>	Full Height / Half Length PCIe Card

Thermal	
<b>Cooling</b>	Passive
<b>TDP</b>	TBD
Management & Diagnostics	
<b>BMC</b>	On-board / Implemented in FPGA
<b>Monitoring</b>	+12V input voltage +12V input current Local supply voltages Board temperature
Conditions & Standards	
<b>Ambient</b>	0-50 °C
<b>Safety/EMC</b>	IEC/EN 62368-1:2018 / CISPR 35:2016, CISPR 32:2015
<b>Marks</b>	CE





## Contact

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