





Innovating in computing

HIGH PERFORMANCE SOLUTIONS MANUFACTURER

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OUR DNA







CONSULTING

SERVICE



About Us

2CRSI: High Performance Solutions Manufacturer

2CRSI is a France based Public Limited Company. We provide products suitable for industries which require robust solutions and also for datacenters looking for high-performance systems combined with energy efficiency.

We provide storage systems, high-performance computing (HPC) solutions, and customized IT appliances. Our servers are designed and manufactured in France and assembled in both France . Helping our customers and users to be most efficient, effective, and successful with their IT is our motivation.

2CRSI customers include BLADE (ShadowPC), CGG, OVH, Free, Dassault Group, Dubai Tourism, Sharjah Museum, Abu Dhabi Midfield Terminal and many independent software vendors, data centers, distributors, and other businesses with a need for high-quality, efficient, reliable storage and computing.





OUR USERS IN MIDDLE EAST



ABU DHABI POLICE

PCrsi

OUR BUSINESS INVESTMENTS

And GEOGRAPHICAL PRESENCE



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Industrial



Data Center



Cloud Gaming



Manufacturing



R&D



Custom



Energy Efficiency















IT infrastructures Manufacturer

- Advanced Computing (HPC,AI,DL,ML)
- Datacenter
- Immerse Cooling
- Servers
- Custom appliances
- Storage**

Portable and Rugged Industrial Products

- Slim PC
- Fanless PC
- NUC
- Embedded Systems
- Micro Cluster
- Custom Appliances



Product Range

Portable Datacenter

Rugged Servers

MCC Micro Cluster





RFS Rugged Fanless Server



Rugged Computers

MMD Mini Multi Display

RN Rugged NUC





MRC Mini Rugged Computer

USN Ultra Slim NUC







What is IP rating

Totally protected against dust ingress

- = Ingress Protection (IP) rating (Example-IP-66
- > System indicating the **protection level** of products against both **solids and liquids** in electrical enclosures.
- two-digit number published by the International Electrotechnical Commission (IEC) / equivalent European standard EN 60529.

IP First number - Protection against solid objects IP Second number - Protection against liquids No special protection No special protection 0 0 Protected against vertically falling drops of water or condensation Protected against solid objects over 50mm e.g. hands, large tools 1 Protected against falling drops of water, if the case is disposed up to 15 from vertical Protected against solid objects over 12.5mm e.g. hands, large tools 2 2 Protected against sprays of water from any direction, even if the case is disposed up to 60 from vertical Protected against solid objects over 2.5mm e.g. wire, small tools 3 3 Protected against splash water from any direction Protected against solid objects over 1.0mm e.g. wires 4 4 Limited protection against dust ingress (no harmful deposit) Protected against low pressure water jets from any direction. Limited ingress permitted 5

6 Protected against high pressure water jets from any direction. Limited ingress permitted



Mini Multi Display PC









Rugged Mini PC

Rugged computers Professional & Industrial Purpose											
IP66/IP50 rating with extended temperature range	Support 4K display	Gigabit LAN/Wifi/4G	Maintenance free								







Ultra Slim NUC



Our Smallest Ruggedized Fanless PC with self cooling system

Ultra compact	Remote Access with 2HDMI ports	Fanless	Only 26MM and 1.1 Kg
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Rugged Fanless Server





Dual Gigabit or 20 Half-rack Fanless 10Gbps Ethernet Connectivity Maintenance Free



Verticals for Rugged Systems



Industrial



Transportation







Edge computing

Police



INTERNET OF THING



Banks



Entertainment



Defense



Micro Cluster or Mini Datacenter







2CRSI HCI Solution



HCI READY MICRO CLUSTER



STORAGE

Unified Storage Auto Tiering Containerisation Erasure Coding Data Placement Composable Quotas

SECURITY

Resilient Volumes Disaster Recovery Validated Registry No SPOF Rolling Upgrades Zero Downtime Multi-Layer Authentication

MGMT. PORTAL

Self Service Real Time Analytics Intuitive

VIRTUALISATION

Custom KVM Hypervisor Preemptive Log Analysis Rapid Deployment Enterprise Grade Our Hyper-converged cloud appliance includes everything you need to connect to your network. Designed using class leading technologies,

10GbE interconnects and all SSD storage delivering superior performance with our optimized stack.

APPLIANCE (PER NODE)

MODEL	Hyper Converged Micro Cluster
CPU	-Intel® Xeon® Processor D-2166NT, 12C / 24 T
STORAGE CAPACITY	-Intel® Xeon® Processor D-1541 , 8C / 16T
MEMORY	1xM.2 NVMe SSD + 4 x 2.5'' SATA SSD
WEWORT	upto 128GB
NETWORK	2x 1 GbE, 1x 1GbE RJ45 (IPMI)
CONNECTIONS	Dual-Port 10 GbE (Interconnection)
GPU(Optional)	NVIDIA GeForce GT 1030 - 384 CUDA Cores, 2GB GDDR5 NVIDIA Tesla P4 - 2560 CUDA Cores, 8GB GDDR5

APPLIANCE SPECIFICATIONS

Nodes Switch Dimensions	4 Nodes
Power Supply	Internal 16 port 10GbE Layer3 switch 452mm(W) X 186mm(H) X 274mm(D) 750W Redundant power supply
Operating Temperature Acoustics	5°C-25°C
Acoustics	up to 25dBA
Warranty	3 vears



HCI READY MICRO CLUSTER

Deploy your HCI or on premise private cloud in minutes, add cloud-based services or applications, and scale to public or hybrid cloud environments on-demand - all under a single management portal

Redundant internal inter-connectivity

2 ethernet gigabit connections /node managed by a smart Layer3 switch.

• External scalability

2 external gigabit ethernet connections allow external units to join the cluster environment and/or enable the creation of a daisy-chain configuration.

Easy and intuitive serviceability and management

- Multiple I/O options available /node (behind service panel)
- Modular structure

• Storage All solid state provided via 2 interfaces: M.2, SATA

Each node can have up to 5 storage drives (one /interface) of the following capacity:

	128GB	250GB	500GB	1TB	2 T B	4 T B	
M.2 NVMe	•	•	•	•	•		
SATA 2.5"#1	•	•	•	٠	•	•	
SA T A 2.5"#2	•	•	•	•	•	•	
SA T A 2.5"#3	•	•	•	•	٠	•	
SATA 2.5"#4	•	•	•	•	•	•	

 I/O Front: Power LED / Storage Activity LED / LAN #1 activity LED / LAN #2 activity LED / Power/Read Switch Rear: 2xR145 10GBe Ports / 2xR145 1GBe Ports / 1xR145 1GBe port with IPMI management 2xL958 20 / 1xVGA / 1x USB 2.0 / 1x1 2V DC IN



1 management node or Redundant PSU



Smart Layer3 switch 16 ports 2x external 10GbE RJ45 ports Wireless Access Point

Up to 4 Intel Xeon compute nodes 4x2.5" storage drives/node





Workstation





Monster Workstation

- New generation of fan-less cases for compact, powerful and silent computers.
- Equipped with a dual and integrated air-cooling solution.
- Optimized for high power electronics, it is the best fan-less air cooling technology of the market.







FANLESS CONFIGURATIONS

Assembled PC s	Low	Medium	High	Pro
Processor	Intel Core i 5-9600K	Intel Core i5-9600K	Intel Core i 9-9900K	Intel Core i 9-9900K
	(3.7 GHZ)	(3.7 GHZ)	(3.7 GHZ)	(3.7 GHZ)
Motherboard	Asus ROG STRIX	Asus ROG STRIX	ASRock Z390 Phantom	ASRock Z390 Phantom
	H370-i Gaming	H370-i Gaming	Gaming-ITX/AC	Gaming-ITX/AC
RAM	Kingston HyperX Fury	Kingston HyperX Fury	Kingston HyperX Fury	Kingston HyperX Fury
	1x8GO DDR4 2666 MHz CL16	2x8GO DDR4 3200 MHz CL18	2x8GO DDR4 3200 MHz CL18	2x8GO DDR4 3200 MHz CL18
Graphic Card	ZOTAC GAMING GeForce	ZOTAC GAMING GeForce	ZOTAC GAMING GeForce	NVIDIA PNY Quadro P6000
	GTX 1060 AMP Edition	RTX 2060 AMP Edition	RTX 2070 Blower Edition	24 Go Quad Display Port
SSD	Kingston A400 SSD 480Gb 2.5" SATA- SSD	Kingston A400 SSD 960Gb 2.5" SATA- SSD	Samsung 970 EVO NVMe SSD, PCIe 3.0 M.2 Typ 2280-1 TB	Samsung 970 EVO NVMe SSD, PCIe 3.0 M.2 Typ 2280-1 TB
Power Supply	Seasonic Focus SGX-650 80	Seasonic Focus SGX-650 80	Seasonic Focus SGX-650 80	Seasonic Focus SGX-650 80
	Plus Gold	Plus Gold	Plus Gold	Plus Gold
Connectors	4x USB 3.0, 1x HDMI, 1x	4x USB 3.0, 1x HDMI, 1x	4x USB 3.0, 1x HDMI, 1x	4x USB 3.0, 1x HDMI, 1x
	RJ45	RJ45	RJ45	RJ45
Operating temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Casing	Colour : Black	Colour : Black	Colour : Black / White	Colour : Custom





Full rack solution



OCtoPus 21" Compute Solutions by 2CRSi

OCP - What about it ?

□Air Cooling

- Server comparison
- Data centers designs and Infrastructure

- Technical adaptation of servers
- Partners : Submer, GRC

□ Server range classification

Use Cases



OCP – What about it?



The **O**pen **C**ompute **P**roject (**OCP**) is a collaborative community focused on redesigning hardware technology to efficiently support the growing demands on compute infrastructure.

The OCP was born from this desire impulsed by Facebook and launched in 2011

<u>Keywords</u>:

- Redesigning hardware and software making it more efficient, flexible, and scalable
- Design sharing





IT Environment with 2CRSI solutions

Need innovative data center OCP **OCtoPus**

Innovative data center

- → IEC60364-8-1 + IEC30134-1 rules on Energy Efficiency
- ➔ Optimization of CAPEX and OPEX
- → PUE Power Usage Effectiveness

Open Compute Project (OCP)
→ Scalability. More efficient, flexible hardware
→ Performance of Data Centers
→ Share design with the community





OCtoPus range by 2CRSi

- → Best <u>advantages of OCP</u> architectures
- → <u>R&D innovation</u> for customized design
- → New technologies from <u>strategic partners</u>



Quick Connect Power Distribution Board



Smart Power Distribution Unit



Servers

Comparison dimensions

Key features :

Increases airflow and thermal dissipation Optimize the component management

Serviceability from the front

Modular design of the chassis

Cable-less power distribution system by 12VDC busbars



	1	.9"	21″				
	sta	ndard	OCtoPus				
	Inch	mm	Inch	mm			
Type of U / OU	1U	to 7U	0,50U to 100U				
Width (total)	19"	482	21"	537			
Width for components	17,5"	444,5	21"	537			
Height (1U or OU)	1,75"	44,45	1,89"	45,5 (48 pitch)			
Depth - nominal	30"	760	31,5"	800			
Ground surface (m ²)	-	0,34	-	0,43			
Volume (dm3)	-	15	-	20			

Unique server designs



All 21" Servers are designed and produced at 2CRSi factory

Unique mechanics and electronics innovations allow the best integration of the latest technologies

Server range :

Servers with multi graphic cards



1 system-node with 2 to 8 GPUs Servers with dual-CPU with 2-slot GPU



2 system-nodes with 2 to 4 GPUs Servers with multiple single CPU nodes



3 to 8 system- nodes



Octopus

Highly flexible infrastucture



OCtoPus

Power Performant Easy 21" **Cloud Gaming** efficiency Servers maintenance Rack · 8x OCtoPus 1.4B server 1x Delta Stineray Power Shelf **Shared Shared** cooling energy TCO BlockChain 3x OCtoPus 1.135 server Ix Artesyn Power Shelf Up to 24 compute servers per rack



High Performance Computing 4x OCtoPus 1.4E server

Top of rack switch Management switch

(GPU computing) 2x OCtoPus 4W server (CPU computing) 2x OCtoPus 4SP server (CPU computing) 1x Schneider Power Shelf

OCP Rack



24OpenUservers-3 independant Pods-TOR & management Switches

600mm (W) x 1067mm (D) x 2100mm (H)

OpenU reserved for TOR switch and management switch

Complete range of 21"

Highest performance

Perfect large scale deployment ideal for

simulation, AI, deep

learning, VDI, Cloud

LOWER TOTAL

Green IT

COST OF OWNERSHIP

gaming, rendering or

Best profitability High

solution

flexibility

in rack

CAD.



2x redundant monitored power distribution units

from Power supply

units for powering

pods









Immersion Cooling Technology







What is a Immersion Cooling?

Also known as liquid submersion cooling, it is the practice of submerging computer components or full servers in a thermally, but not electrically, conductive liquid (dielectric coolant).

This method is slowly becoming popular with innovative datacenters in the world.

IT Hardware or servers cooled in this manner don't require fans and the heat exchange between the warm coolant and cool water circuit usually occurs through a heat exchanger (i.e. heater core or radiator).



Single-Phase coolant never changes state, it never boils or freezes and always remains in a liquid form. The coolant gets pumped to a heatexchanger where heat is transferred to a cooler water-circuit.

This technique uses "open baths", as there's little (or no) risk of the coolant evaporating:

Highly Efficient

- Great heating dissipation with **reduction up to 95% of cooling OPEX**
- PUE <1.03
- Simple and safe to handle
- Lower TCO
- Lower complexity



Ultra Dense

- 85-97% Less space compare to regular air–cooled racks
- Rapid Deployment (outer space, white space, Raw space)







Reliability

- High Life-time for the IT components (no fluctuation of T°)
- Improve MTBF (no fans = less failures)
- Server continue to operate in case of breakdown up to 4 hours

Liquid temperature in case of power shutdown





Temperature homogenitiy gradual and slow increase of temperature in the tank



Sustainable

45%	Carbon	Carbon emissions from computing								
Reduction	6%	4%	20%							
in Carbon Emissions	Current Electricity Consumption	CO2 Emissions	Electricity Consumptior by 2025							





Immersion Servers : How we make our Servers ready for Immersion

19" server



✓ Ensure component compatibility

- ✓ Remove or disable all fans
- ✓ Remove the thermal paste
- ✓ Do not block the heat flow

21" server \rightarrow OCP Format



- ightarrow Ex : No classic HDD, no optic fiber, no Skylake for the moment, etc.
- \rightarrow Cables compatibility in dielectric liquid ; Power or Network. Peel of warranty labels
- → change the firmware if necessary or remove power supply
 OCtoPus is ready* see list. Std OCP servers needs rework to make it suitable
- ightarrow Put an indium foil for the CPU and a thermal grease for the GPUs
- \rightarrow Configuring components in the server (heatsink fins parallel to liquid flow)





2CRSI's Immersion Cooling Technology Partners













2CRSI's Server Product Profile for Air Cooled and Immersion Cooled Datacenters





Product range classification

Octopus	1	.4	В
Range name			
	Number of system-node	Number of GPU	Type of CPU
	1	empty = no GPU	SP = Skylake SP
	2	up to 2	Е = Ерус
	3	up to 4	B = Broadwell
	4	up to 8	W = Xeon W
	5		X = Intel core X
	8		$H = Y_{000} E_{-}^{2} x y y$



OCtoPus 1.4B

En particulier, l'Octopus « 3 » a besoin d'être intégré dans tes présentations. Il est à noter les noms suivants :

- Xeon E-22xx => Octopus 3H
- Xeon W-22xx => Octopus 3W
- Xeon W-32xx => Octopus 3SW
- Xeon Scalable Dual Socket => Octopus 3SP
- Xeon D-21xx => Octopus 3DS
- Xeon D-16xx => Octopus 3DH
- AMD EPYC ROME Single => Octopus 3E
- AMD EPYC ROME Dual Socket => Octopus 3EE
- AMD EPYC Embedded 32xx => Octopus 3Z
- AMD Ryzen 3xxx => Octopus 3R



Product range over view (multi graphic cards)

		A state			8	÷.		8		8	\bigcirc	***	8	1000)][/°
Multi graphic car	ds		Optim	ized for us	se case				fea	tures			Cooling option		
Servers	Node	Rendering	AI & Deep Learning	НРС	GPU Virtualizati on	Big Data	CPU (max)	internal fan	Open u	GPU (max)	HDD	SSD	Air Cooling	Immersion	
OCtoPus 1.2SP	1	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	-	
OCtoPus 1.2B	1	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	yes	
OCtoPus 1.2E	1	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	yes	
OCtoPus 1.4SP	1	yes	yes	yes	yes	-	up to 4	No	1	up to 4	-	-	yes	yes	
OCtoPus 1.4B	1	yes	yes	yes	yes	-	up to 4	No	1	up to 4	-	-	yes	yes	
OCtoPus 1.4E	1	yes	yes	yes	yes	-	up to 4	No	1	up to 4	-	-	yes	yes	
OCtoPus 1.8SP	1	yes	yes	yes	yes	-	up to 2	No	2	up to 8	-	-	yes	yes	
OCtoPus 1.8B	1	yes	yes	yes	yes	-	up to 2	No	2	up to 8	-	-	yes	yes	
OCtoPus 1.8E	1	yes	yes	yes	yes	-	up to 2	No	2	up to 8	-	-	yes	yes	
OCtoPus 2.2SP	2	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	-	
OCtoPus 2.2B	2	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	yes	
OCtoPus 2.2X	2	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	yes	
OCtoPus 2.2E	2	yes	yes	yes	yes	-	up to 2	No	1	up to 2	-	-	yes	yes	
OCtoPus 2.4SP	2	yes	yes	yes	yes	-	up to 4	No	1	up to 4	-	-	yes	-	
OCtoPus 2.4E	2	yes	yes	yes	yes	-	up to 4	No	1	up to 4	-	-	yes	yes	



Product range overview (multi system-nodes without GPU)

		A state			<mark>88</mark>	÷.		<u>~</u>		8 0	\bigcirc		8) No
Multi system-noo	des		Optim	ized for u	se case				fea	tures			Coolin	g option	
Servers	Node	Rendering	AI & Deep Learning	HPC	GPU Virtualizati on	Big Data	CPU (max)	internal fan	Open u	GPU (max)	HDD	SSD	Air Cooling	Immersion	n
OCtoPus 3B	3	-	-	yes	-	-	up to 6	No	1	-	-	-	yes	yes	
OCtoPus 3SP	3	-	-	yes	-	-	up to 6	No	1	-	-	-	yes	-	
OCtoPus 3E	3	-	-	yes	-	-	up to 6	No	1	-	-	-	yes	yes	
OCtoPus 3S.B	3	-	-	yes	-	yes	3 integrated	No No	1	-	up to 9	up to 9	yes	yes	
OCtoPus 3S.SP	3	-	-	yes	-	yes	3 integrated	No No	1	-	up to 9	up to 9	yes	-	
OCtoPus 3S.X	3	-	-	yes	-	yes	3 integrated	No	1	-	up to 9	up to 9	yes	yes	
OCtoPus 3S.W	3	-	-	yes	-	yes	3 integrated	No	1	-	up to 9	up to 9	yes	yes	
OCtoPus 3S.R	3	-	-	yes	-	yes	3 integrated	No	1	-	up to 9	up to 9	yes	yes	
OCtoPus 4B	4	-	-	yes	-	-	up to 4	No	1	-	-	-	yes	yes	
OCtoPus 4SP	4	-	-	yes	-	-	up to 4	No	1	-	-	-	yes	-	
OCtoPus 4X	4	-	-	yes	-	-	up to 4	No	1	-	-	-	yes	yes	
OCtoPus 4W	4	-	-	yes	-	-	up to 4	No	1	-	-	-	yes	yes	
OCtoPus 4R	4	-	-	yes	-	-	up to 4	No	1	-	-	-	yes	yes	
OCtoPus 5B	5	-	-	yes	-	-	5 integrated	No	1	-	-	-	yes	yes	
OCtoPus 5SP	5	-	-	yes	-	-	5 integrated	No	1	-	-	-	yes	-	
OCtoPus 5X	5	-	-	yes	-	-	5 integrated	No	1	-	-	-	yes	yes	
OCtoPus 5W	5	-	-	yes	-	-	5 integrated	No	1	-	-	-	yes	yes	
OCtoPus 5R	5	-	-	yes	-	-	5 integrated	No	1	-	-	-	yes	yes	
OCtoPus 8W	8	-	-	ves	-	-	8 integrated	No	1	-	-	-	-	-	



MARKETS AND KEY CLIENTS WORLDWIDE





Use case - OCtoPus for Cloud Computing



Their Need

- Implementation of ultra-powerful computers into the cloud
- Design a power efficient
 infrastructure



- Blade enables large audiences to access high-end virtualised PCs in the cloud. In order to implement this service, extremely effective server infrastructures deployable on a large-scale are needed.
- Provide a very large-scale solution

Key benefits

- 1st design of OCtoPus Rack 24, based on OCP standards
- Custom made server configurations adapted to cloud computing problematics
- Enables 23,2% of energy savings compared to standard systems
- Flexible and scalable solution with more than 5000 servers deployed







Their Need

 Renew and grow their IT infrastructure with high density HPC servers

Get the best profitability of their IT infrastructure

Provide a very large-scale solution

Key benefits



Leader in cutting-edge geoscience. They acquire data and images of the Earth's subsurface and provide state-of-the-art software and services for analyzing that data.

- Custom made servers adapted to CGG workloads
- Agile approach with project centric management that enables a fast and effective customer relation
- Scalable solution that easily follows the lifecycle of the datacenter with more than 2400 servers deployed





Use case – OCtoPus for Computing power rental



Their Needs

- Renew their IT infrastructure with high density HPC servers
- Get the best profitability of the IT infrastructure
- Provide a very large-scale solution

Key benefits

- GREEN COMPUTING
- Service provider dedicated to HPC environments, using green IT solutions to provide a competitive and powerful highend housing and Compute rental based on a Tiers3+ datacenter

- Panel of server configurations adapted to different service levels
- Maintenance simplified and fastened thanks to the OCP smart design





2CRSI Immersion Installation- Customers





CGG



Goonhilly Earth Station Ltd





2CRSI – Middle East

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