Open Source Hardware to drive the *Reinvention* of an efficient Data Center

Singapore – April 8th, 2020

Speakers

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Today's Agenda

Time	Topic
11.00am	Welcome Address
11.05am	Introduction of the open source hardware model and discussion with chair of OCP Incubation Committee
11.15am	Quick Peeks of OCP Projects & OCP Market: • Open source servers, storage & networking • Drivers of OCP adoption
11.30am	Energy and cost efficiencies through open source hardware in Telco's and CSPs Q&A with an OCP Solution Provider – CTC Japan
11.45am	Closing address and key interests in Session 2 and 3

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Creative Destruction - the process of breaking older conventions to accelerate movement to the future, without cutting off from the past.

Joseph Shumpeter (Economist)

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OEM

(Original Equipment Manufacturer)

Buys platform components from the manufacturer

Resells those components under their own brand name

Create products that can server the broadest possible market

Support and managed services

ODM/White Box

(Original Design Manufacturer or White Box)

Manufactures platform components

Provide full product development services

Can manufacture specialised solutions

Support centred on product

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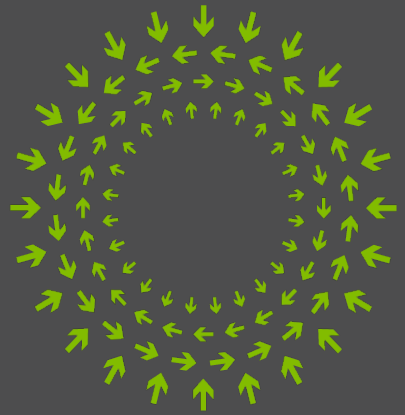
ODM/White Box + Open Source



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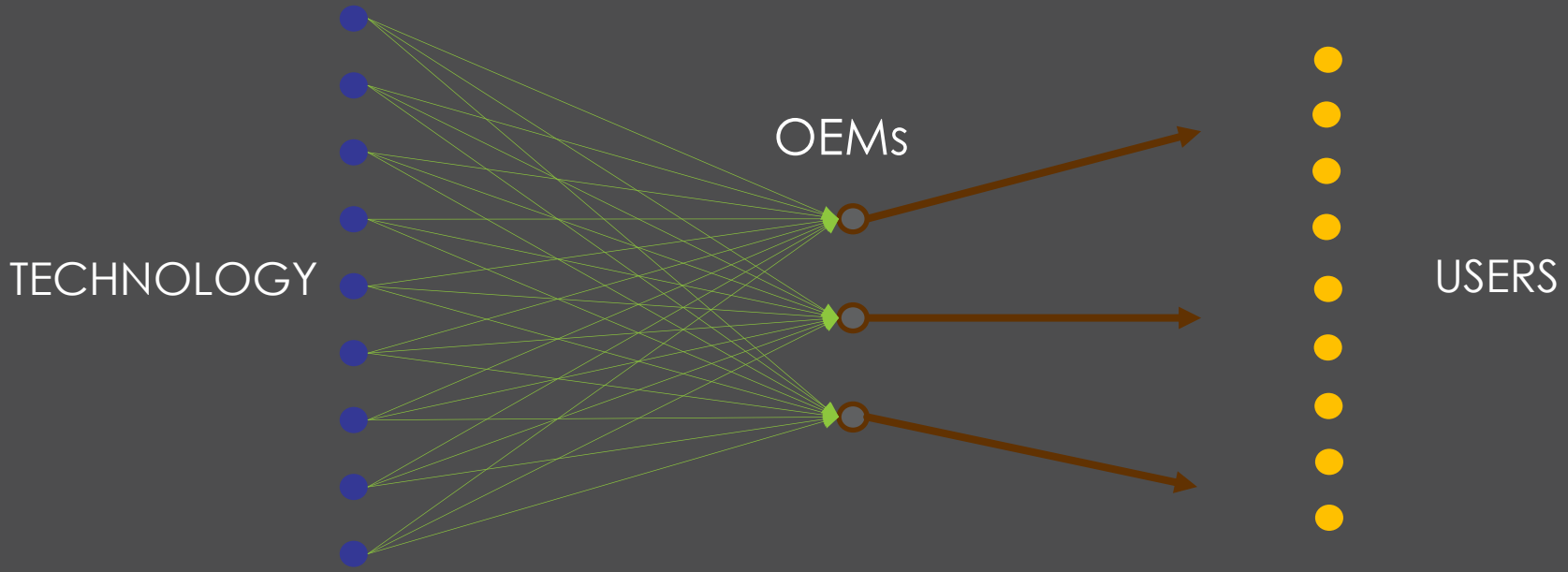
The old innovation pipeline



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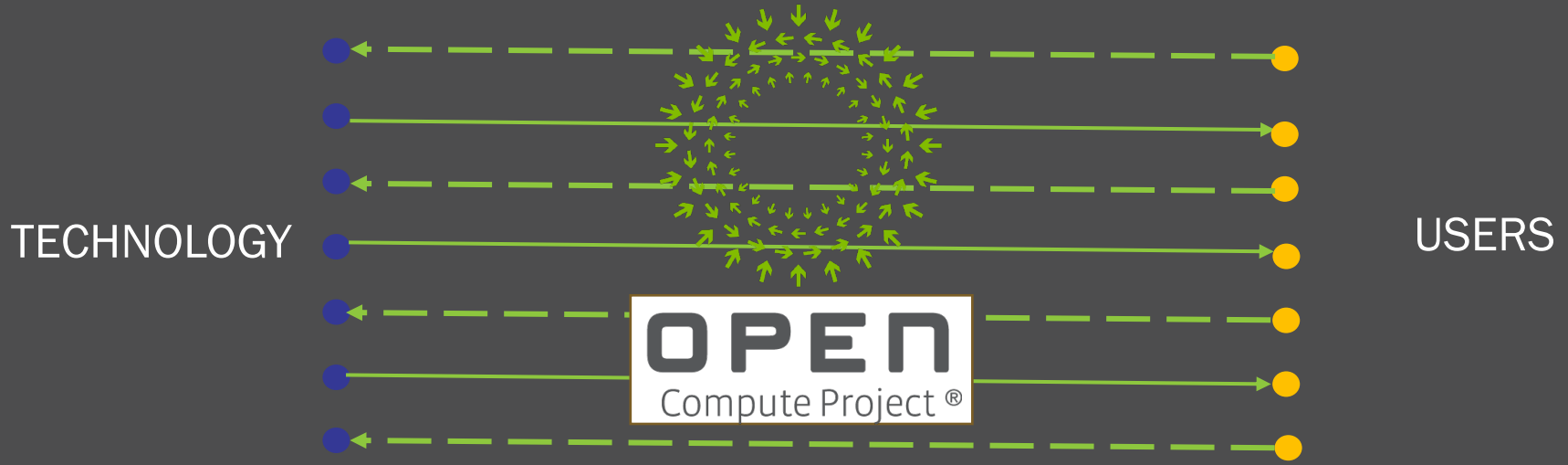
Reinvention…or “Creative Destruction”



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January 2010

COMPANIES > FACEBOOK

Facebook to Build Its Own Data Centers

Facebook has decided to begin building its own data centers, and may announce its first facility as soon as tomorrow. The fast-growing social network has previously leased server space from wholesale data center providers.

Rich Miller | Jan 20, 2010

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What can we remove from the system?

Can we raise operating temperatures and have the servers survive?

Can we increase relative humidity operational ranges to make the system much more efficient?

Do we need a centralized power supplies?

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Goldman Sachs
rackspace
intel
Open Compute Project
A collaborative community focused on redesigning hardware technology to efficiently support the growing demands on compute infrastructure.

200+ companies
189 contributions
6K engineers

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Our Projects

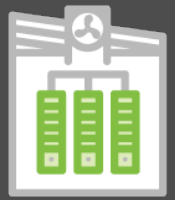
Networking

Server

Storage

Rack & Power

Advanced Cooling



Data Center

Telco

HW Mgmt

Open System Firmware

HPC

Security

Modular DC

openEDGE

https://www.opencompute.org/projects

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Thoughts on the direction and momentum of OCP

Dharmesh Jani
Facebook

Chairman OCP
Incubation Committee

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Efficiency

Scale

Impact

Openness

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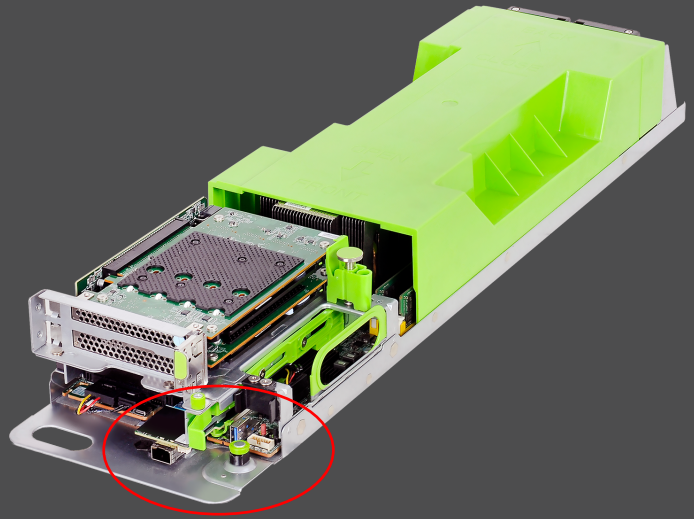
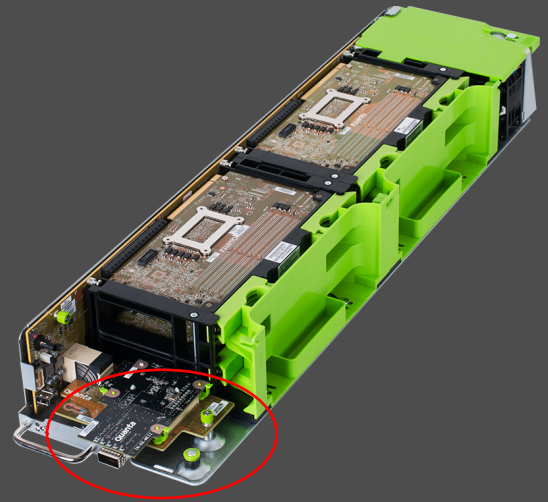
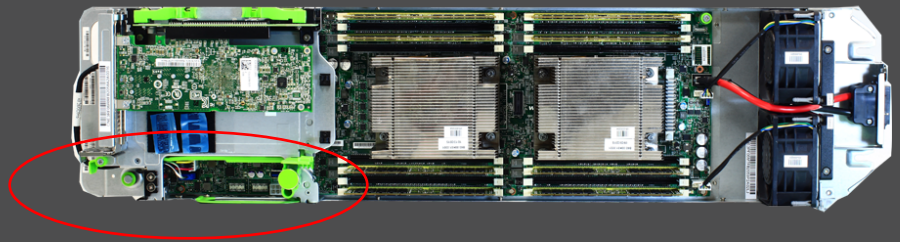
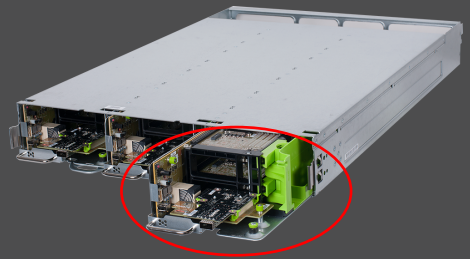
Server bezels….gratuitous differentiation

Tool less OCP vanity free open source cubby servers









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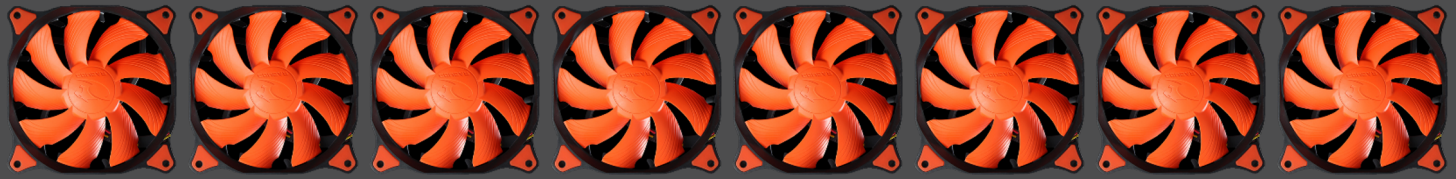
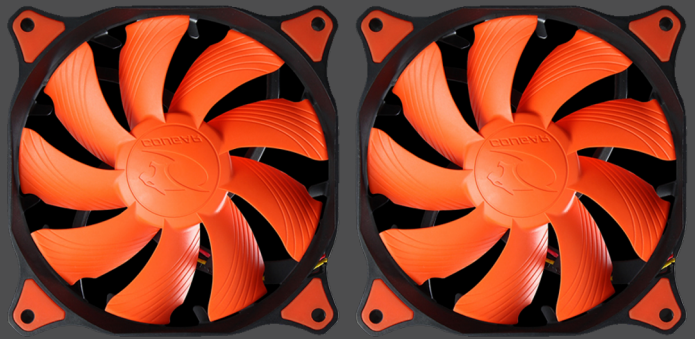
Open Rack Unit Innovations - Server Fans “Cube Law”

40 mm Fans



EIA “U”

80 mm Fans



OCP “OU”

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openEdge

Ultra small footprint

Fully front-operated (cabling, tool less serviceability)

High availability: redundant fans, hot swap storage

Full NEBS compliancy, seismic zone 4

https://www.opencompute.org/projects/openedge-sub-project

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Walmart takes on Amazon with edge computing and 5G

https://techwireasia.com/2020/01/walmart-takes-on-amazon-with-edge-computing-and-5g/

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Server Shipments and Market Share Q4 2019

Top 5 Companies, Worldwide Server Unit Shipments, Market Share, and Growth, Fourth Quarter of 2019

Company	4Q19 Unit Shipments	4Q19 Market Share	4Q18 Unit Shipments	4Q18 Market Share	4Q19/4Q18 Unit Growth
1. Dell Technologies	549,488	16.1%	580,579	19.4%	-5.4%
2. HPE/New H3C Group[a]	507,228	14.9%	484,668	16.2%	4.7%
3. Inspur/Inspur Power Systems[b]	270,567	8.0%	247,600	8.3%	9.3%
T4. Lenovo*	233,896	6.9%	190,721	6.4%	22.6%
T4. Huawei*	216,734	6.4%	211,618	7.1%	2.4%
ODM Direct	1,054,743	31.0%	689,394	23.1%	53.0%
Rest of Market	570,667	16.8%	582,070	19.5%	-2.0%
Total	**3,403,323**	**100%**	**2,986,651**	**100%**	**14.0%**

Source: IDC Worldwide Quarterly Server Tracker, March 12, 2020

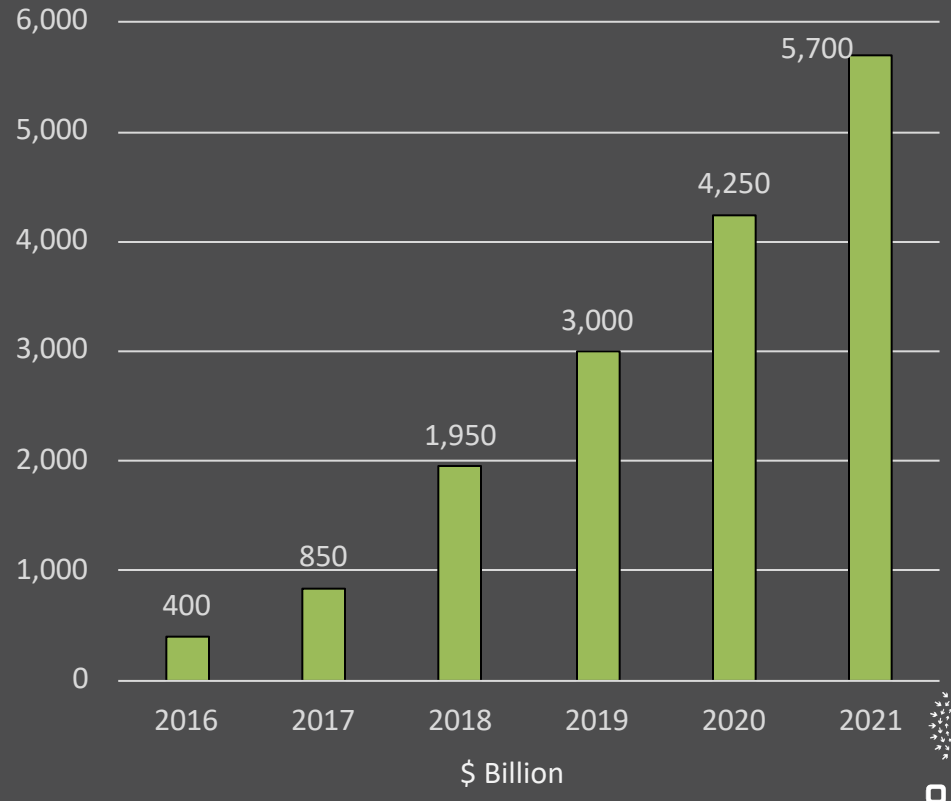
Growth of the OCP Market

Double Digit Growth through 2021

America's CAGR = 42%

APAC CAGR = 108%

EMEA CAGR = 59%



Source: IHS Markit
Not including Facebook or Microsoft deployments

https://www.youtube.com/watch?v=e9111zvjJ-c

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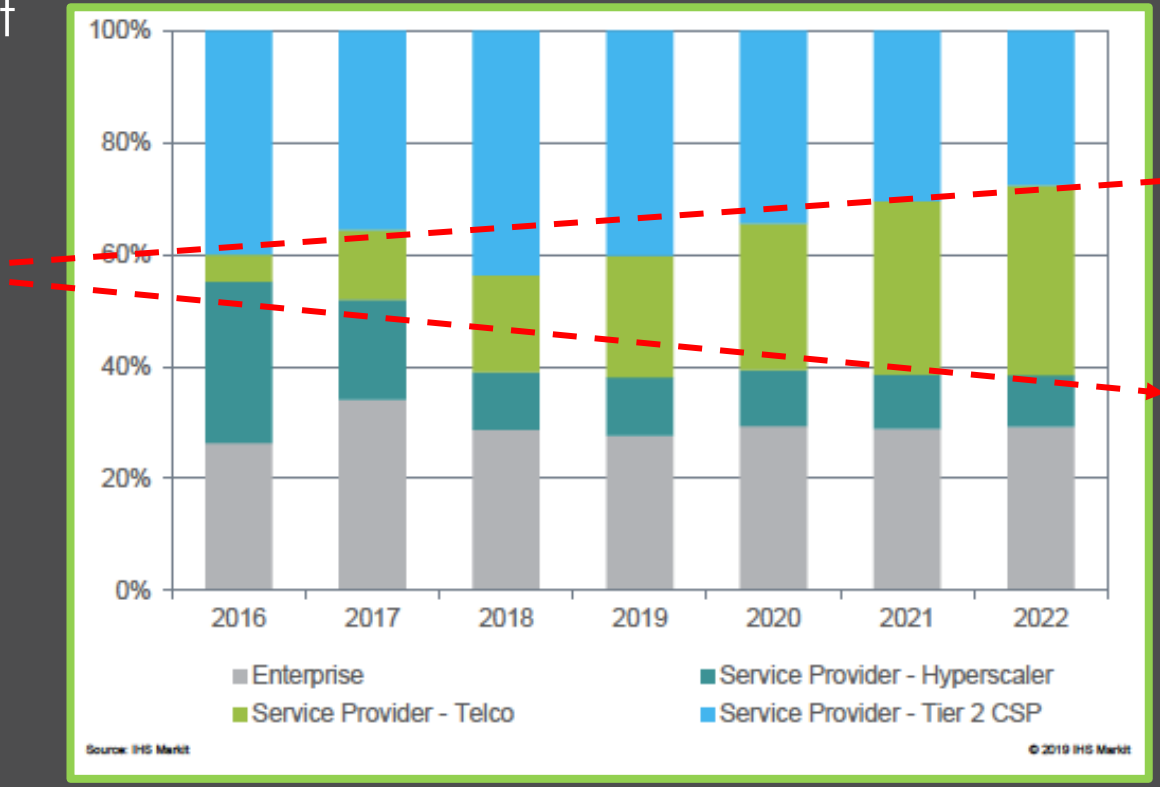
OCP by Industry Forecast

Market just forming for disaggregated cell tower equipment

Automotive and Manufacturing have highest 5YR GAGR

Healthcare in very early stages of adoption



https://www.youtube.com/watch?v=pdpPKAo-HUY

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Drivers of OCP Adoption

Cost Reduction

Standardisation

Energy Efficiency

Reliability

Source: IHS Markit

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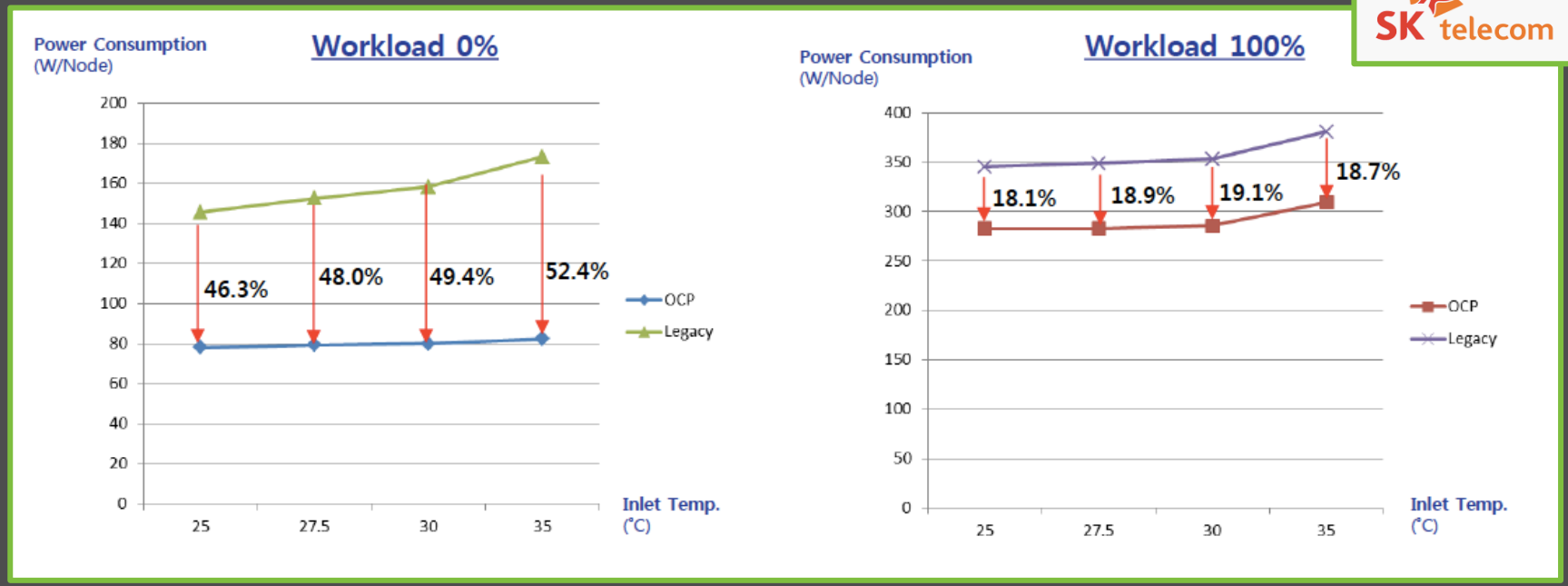
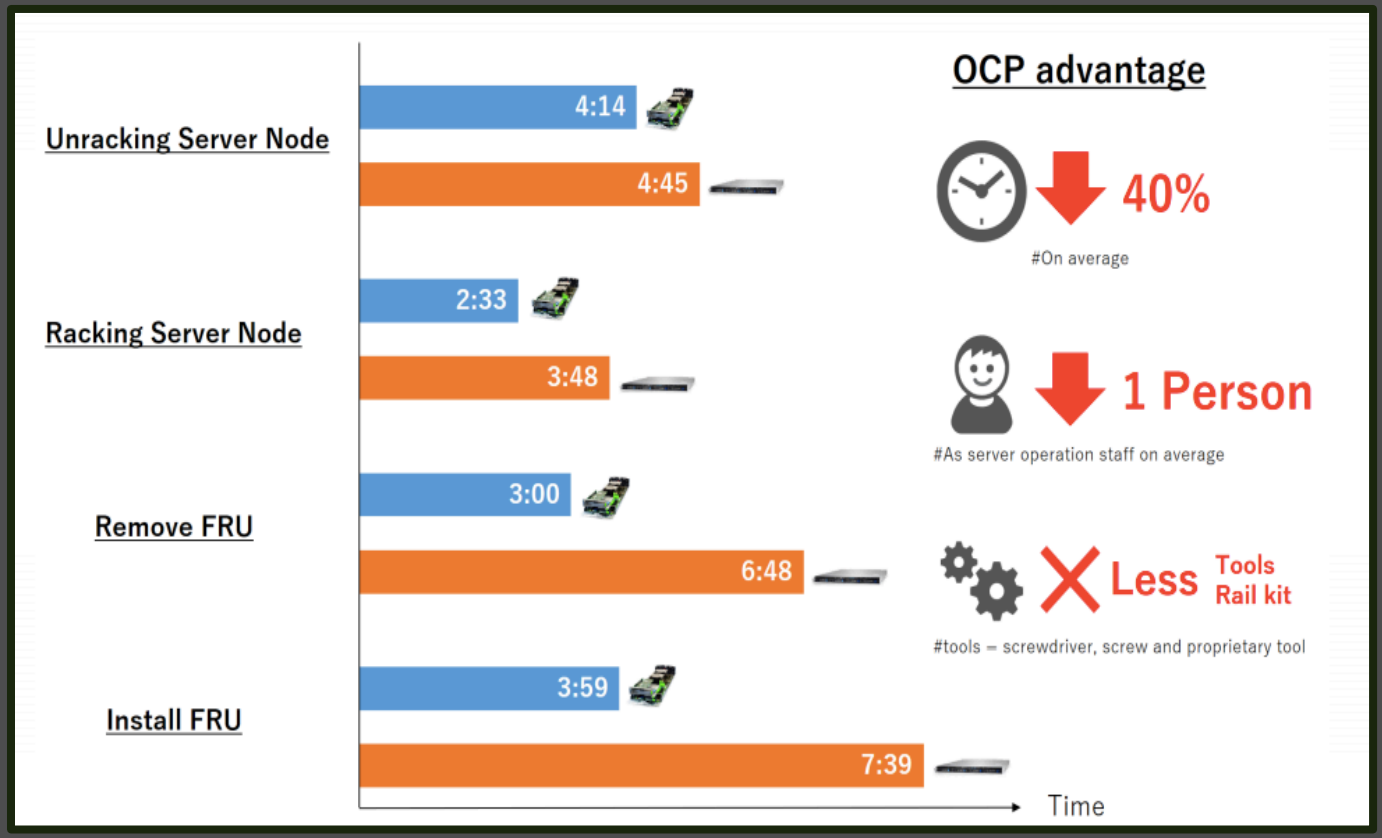
“Creative Destruction” of Server Efficiency



https://www.opencompute.org/events/past-summits



Traditional

OCP

https://www.opencompute.org/events/past-summits

YAHOO! JAPAN

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OCP Adoption around the World

New hardware layer 35% Reduction in TCO
30% Reduction in OPEX

Link to presentation

London Internet Exchange - First IXP in the world to adopt an open networking model

Link to presentation

Open Networking – Cumulus on OCP switches

Link to presentation

Marketing media company w/ 70+ locations worldwide implementing OCP for compute

Link to article

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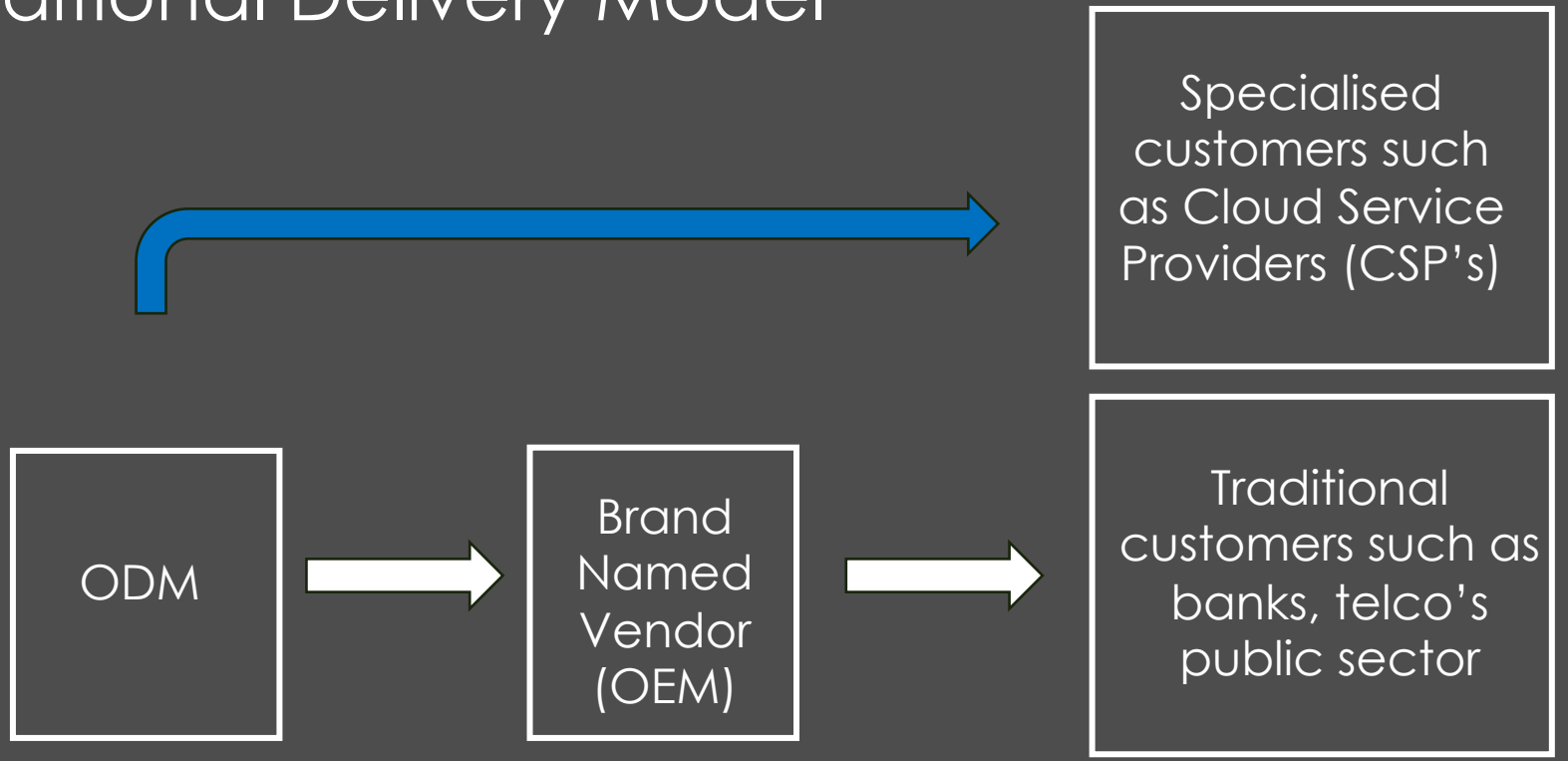
Traditional Delivery Model



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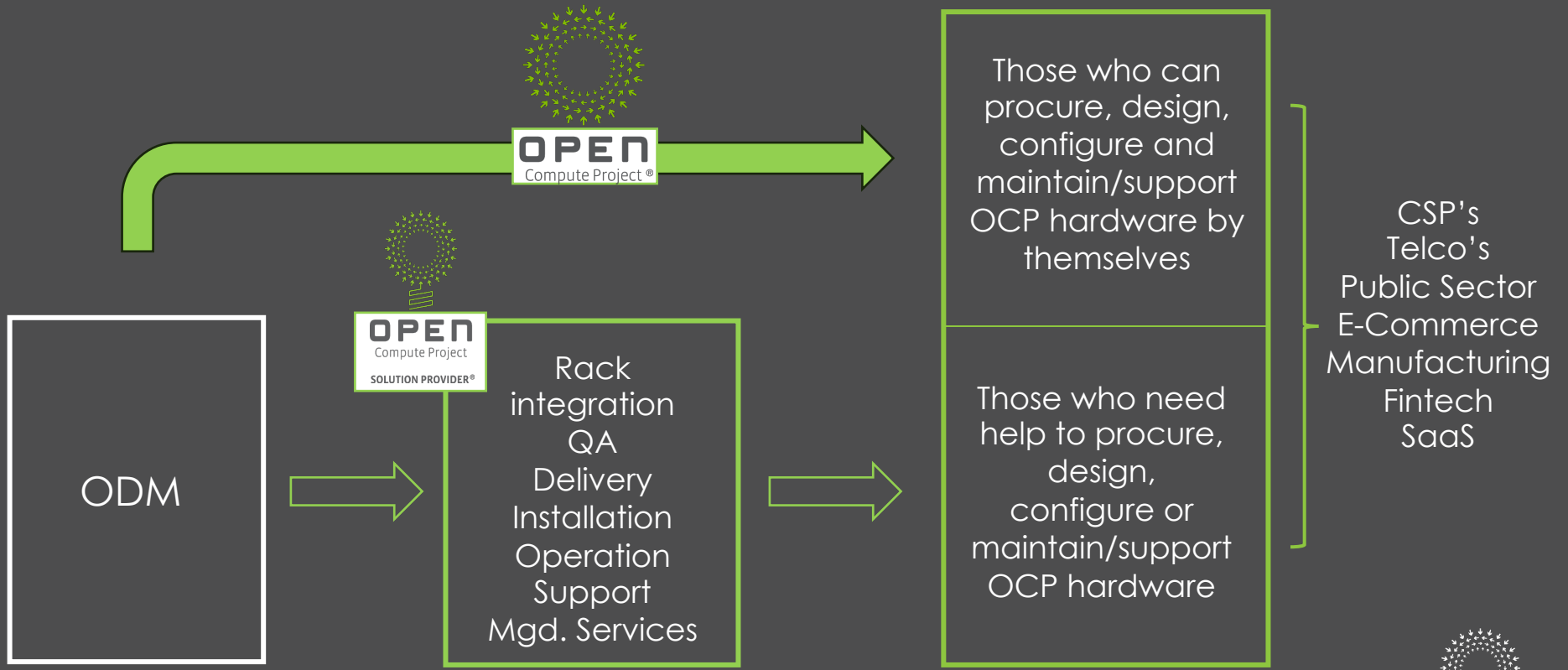
OCP Delivery Model



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CTC

Challenging Tomorrow's Changes

https://www.ctc-g.co.jp/en/

https://www.ctc-g.com.sg/

OPEN GOLD®

OPEN Compute Project SOLUTION PROVIDER®

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Ryosuke Ishihama – Business Development

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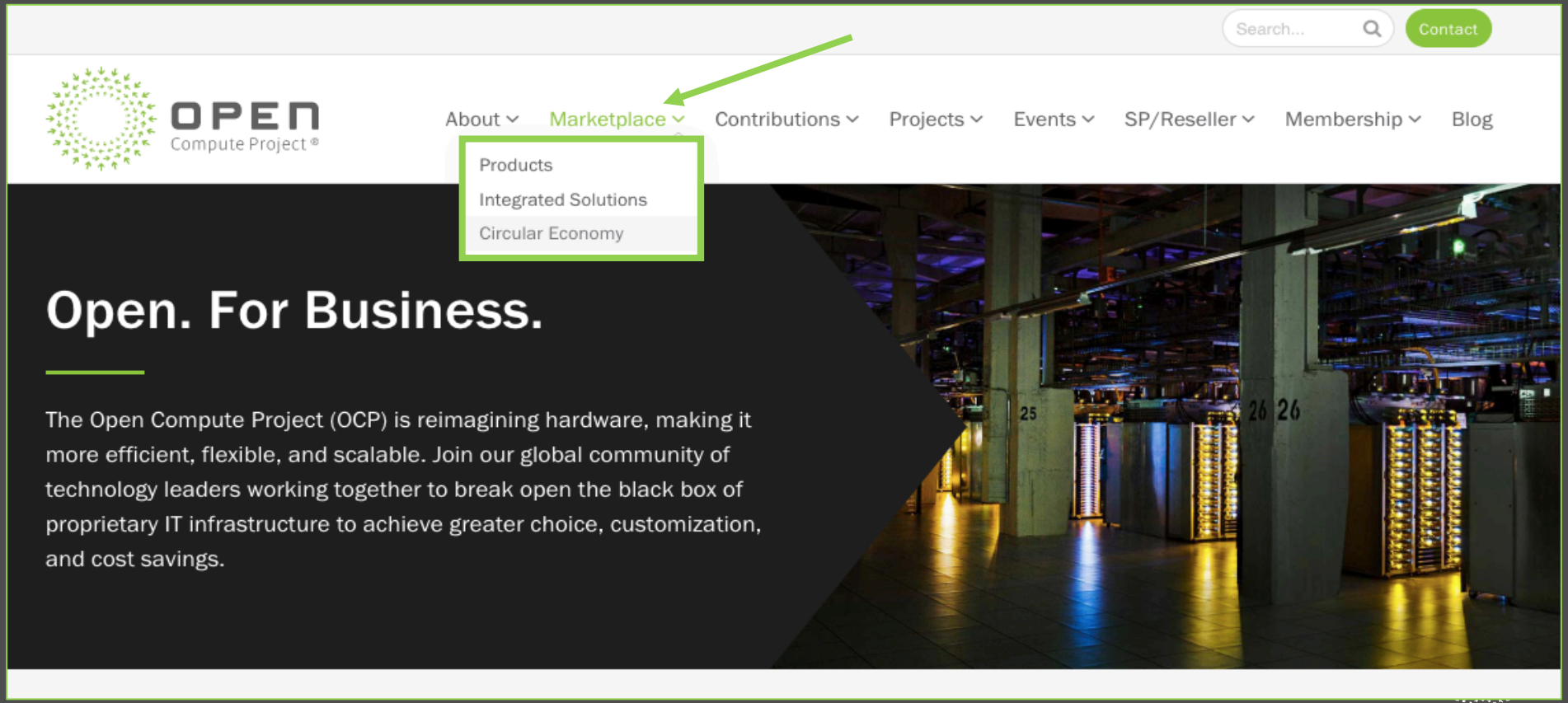

https://www.opencompute.org/solutions

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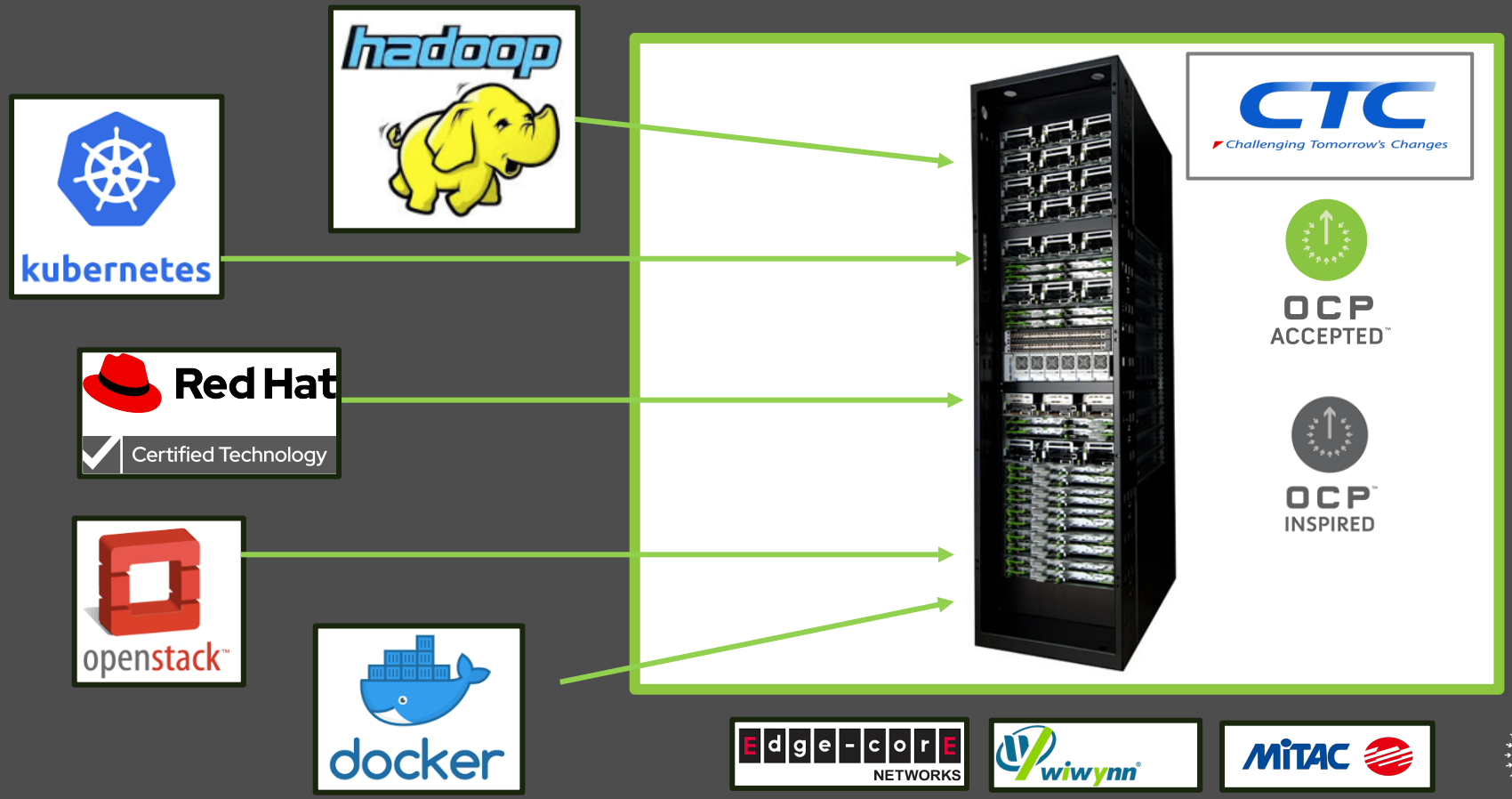


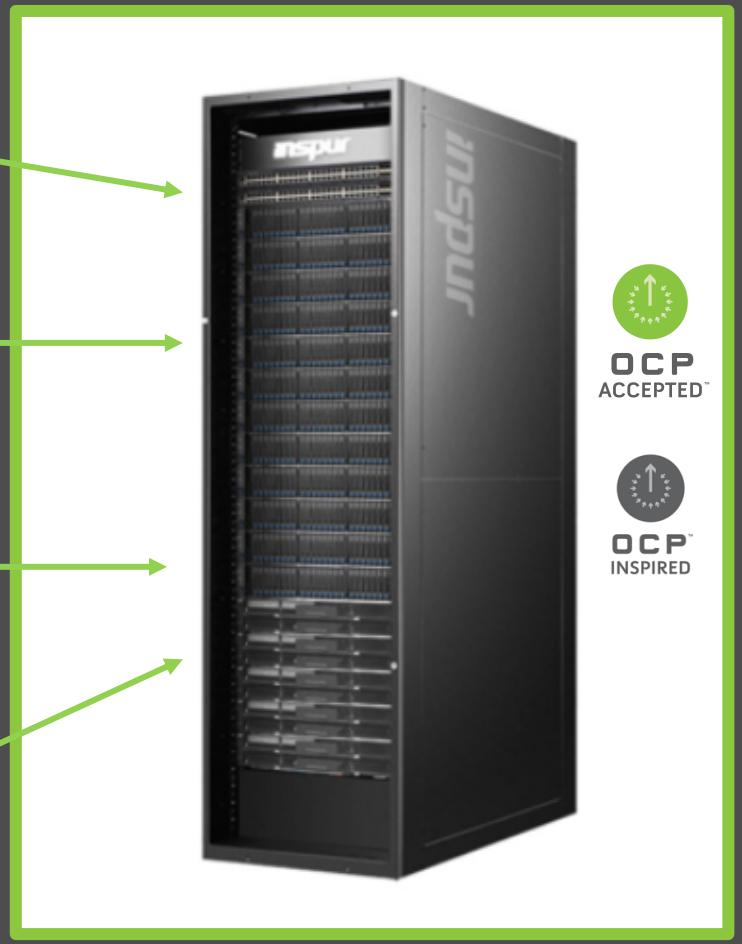
https://www.opencompute.org/solutions

SAP® Certified
Hardware for SAP HANA®

Windows Server™

vmware READY

CITRIX Ready



inspur

https://www.opencompute.org/solutions

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Fast Start

Designed to slip under your desk and plug into standard 110v/220v power so you can quickly test your software on production nodes

ITRENEW

https://www.opencompute.org/circular-economy/1/sesame-fast-start

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https://en.inspur.com/

OCP Virtual Global Summit

May 12th – 15th

https://www.opencompute.org/summit/global-summit

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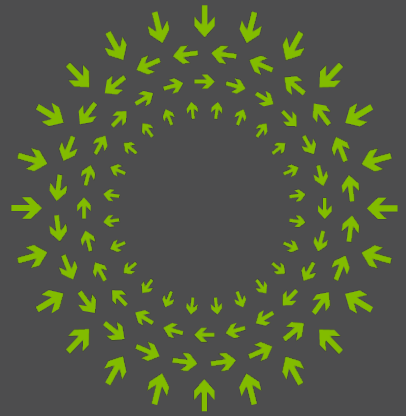

OCP Marketplace

https://www.opencompute.org/products

Past Events (recordings and slides)

https://www.opencompute.org/events/past-summits

https://www.opencompute.org/events/past-events

Social

https://www.youtube.com/user/OpenComputeProject

https://www.linkedin.com/groups/4152886/

@OpenComputePrj

https://www.facebook.com/groups/opencompute/

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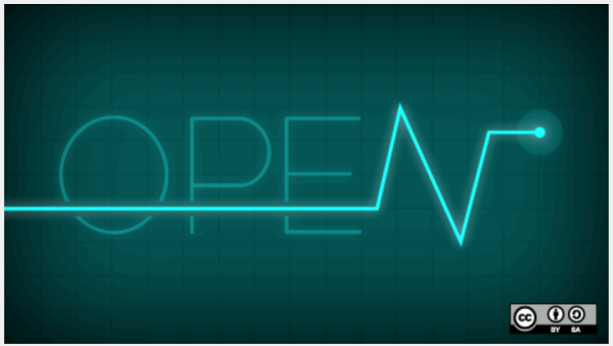
Final thought…whatever market open source enters it eventually dominates.

7 open hardware projects working to solve COVID-19

Open hardware solutions can prevent the spread and suffering of the novel coronavirus.

19 Mar 2020 | Harris Kenny | 38 | 4 comments



https://opensource.com/article/20/3/open-hardware-covid19

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Webinar - #2 in the OCP series

What is Open Networking?

May 21st, 2020

Consume. Collaborate. Contribute.

Thank You