



## Open Networking potential impact across Russia and CIS



Consume. Collaborate. Contribute.





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## Спикеры





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### Повестка встречи

- Вводный обзор Open Compute Project (OCP) и их целей
- Open Networking не только дезагрегация сетевых устройств
- Примеры перехода от традиционных сетевых к открытым
- Опыт Netris.ai в работе с концепцией Open Networking
- Вопросы



## Задавайте вопросы

При необходимости уточнить что-либо по ходу вебинара, пишите в чат.

Факультативные вопросы следует записывать в специальный раздел. (нажмите на "?" в меню справа и введите ваш вопрос)

Если хотите задать вопрос конкретному спикеру, укажите кому.









+

DATA ECONOMY . NEWS + ECONOMY + BUSINESS + MARKETS + LEADERSHIP + INDUSTRY + LIFE & ARTS

Moscow, Russia

Russia's data centre market value is set to grow by almost 27% yearon-year in 2019, reaching \$561m, according to market research agency iKS-Consulting.

EDITION: UK -

0

CXO HARDWARE MICROSOFT STORAGE INNOVATION APPLE SECURITY MORE

ID MUST READ: Remote working: How the biggest change to office life will happen in our homes

### Meet GAIA-X: This is Europe's bid to get cloud independence from US and China giants

France and Germany launch GAIA-X EU cloud independence project.



Top 20 regions outside the US by open source use (clones and forks)

After the United States, open source use picked up speed in China, India, and Germany this year. Developers in China forked and cloned 48% more projects than last vear.\*



## OEM

(Original Equipment Manufacturer)

ODM/White Box

(Original Design Manufacturer or "unbranded")

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

Manufactures platform components

Provide full product development services

Can manufacture specialised solutions

Support centred on product



# ODM/White Box - Open Source





## The old innovation pipeline





## **Open Hardware Innovation Model**







#### 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

Rich Miller | Jan 20, 2010

providers.

tomon own mender growing social network has previously leased server space from wholesale data center



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?





(intel) Google

Goldman Sachs

## **Open Compute Project**

A collaborative community focused on redesigning hardware technology to efficiently support the growing demands on compute infrastructure.



# 200+ companies 6K engineers 189 contributions



# Our Projects









Scale

Impact











### Tool less OCP vanity free open source cubby servers











### Open Rack Unit Innovations - Server Fans "Cube Law"

40 mm Fans



EIA "U"

80 mm Fans



OCP "OU"



## "Creative Destruction" of Server Efficiency



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

OPEN Compute Froiest





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

## OCP Adoption around the World

ING ಖ	New hardware layer 35% Reduction in TCO 30% Reduction in OPEX Link to presentation
RTBHOUSE =	Marketing media company w/ 70+ locations worldwide implementing OCP for compute <u>Link to article</u>
THALES	French aerospace, defense, transportation compar evaluating OCP Compute



French CSP with data centers across Europe and N. America



## Drivers of OCP Adoption



### Cost Reduction

## Energy Efficiency



Standardisation





Source: IHS Markit



# Disaggregate Networking





### **FierceTelecom**

AI TELECOM TECH PLATFORMS

#### Telecom

Open Compute Project switches rule the data center bare metal roost - report

by Mike Robuck I Oct 24, 2019 11:33am

"OCP-certified switches have moved past the trial and wait-and-see phases"

Devan Adams, principal analyst at Omdia Inc

roost-report

- 1. Data Center CAPEX reduction initiatives
- 1. Increase in SDN offerings
- 1. Rise in merchant-based silicon





https://www.fiercetelecom.com/telecom/open-compute-project-switches-rule-bare-metal-





### **DPEN** PLATINUM<sup>™</sup>

### OPEN Compute Project

SOLUTION PROVIDER®



### **Powen Tsai** Edgecore Networks

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## What is Open Networking?





Benefits:

- Disaggregation provides FREEDOM of choice and removes vendor lock-in
- Greater CONTROL over Network Infrastructure through open software platforms
- Rapid INNOVATION through a community & devOps approach

## Why Open Networking?



### Accton Technology

- The Leading Network ODM Servicing Tier-1 Customers
- Founded 1988, IPO Taiwan 1995 (TWSE: 2345)
- \$1.8B USD Revenue 2019, 5,145 Employees Worldwide
- 9 R&D Locations with more than 1,000 Engineers
- State-Of-The-Art High-Volume Manufacturing in Taiwan and China

### **Edgecore Networks**

- Brand launched in 2004, wholly owned subsidiary of Accton
- Go-to-market business to network operators DC, Telecom, and Enterprise
- Manages customer, partner and open community relationships
- Leading contributor of network designs to OCP, TIP participant, ONF Charter Partner
- More than 10M Ethernet Ports shipped in 2019!

## Cper Ne

## Accton Technology and Edgecore Networks







PROJECT

ONF & CORD in Context of **Open Source** Ecosystem Open Source ecosystem is creating a comprehensive stack that is poised to deliver robust solutions, from white box peripherals to end-to-end solutions

#### **Open Source Standards** End-to-End End-to-End Orchestration Orchestration ONAP / OSM MFC Edge APIs ONF & CORD Access & Edge Cloud OMEC SEBA Access & Edge NG-SDN Trellis ONOS VOLTHA Stratum ODTN O-RAN Kubernetes & Akraino Infrastructure Software O-RAN CNCF Architecture & Standardizatio TIP OCP OCP Telco Hardware for open RAN Specialized CSR & PON **Peripherals** Telecom Devices Devices Devices

a de de de la desta de de la desta de	1G Mgt Sw	itch				Next C	Gen	
5 10 12 12 12 12 12 12 12 12 12 12 12 12 12	10G	Leaf 10	)G/25G Lec	If DCI	100G Leaf	Switch-Optical	Photonic	s
Compute Project	40G Spii	ne 100G S	Spine		400G Spine	Integration	٦	
Switching								Data Center
Cpen Networking Foundation	ELECOM INFRA PROJECT	Monitoring, Packet Broker	CORD & Access	Internet Exchange	Aggregation & Core	Cell Site Gateways <sub>F</sub> & Backhaul	Mobile ronthaul	$\widehat{\mathbf{A}}$
<b>OPI</b> Compute	E N Project	PoE & Aco Switche	cess es	Open Wi-Fi	Distribution Centers	Corporate Networks		
		MDU Servi	ices H	lotspot	Retail Stores	UCPE		Enterprise / Campus

Most Design Contributions to Open Source

Industry 1st: 10G to 400G DC switches, New Telco /MSO Use Cases



### COMMERCIAL SOFTWARE



### OPEN SOURCE SOFTWARE



### Strong Software Ecosystem



- Field-proven for Cloud IDC best practice design
- Scale-Out in easy and smaller increments – Pay-As-You-Grow
- Simpler Network Fewer Protocols to build larger network
- One-hop away predictable latency
- Multiple paths with ECMP for rich redundancy



CUMULUS 🖋

## Proven Cloud IDC CLOS/Leaf-Spine Design



puppet CFEngine

apstra.



Small-scale IDC with Spine-MLAG Design





SEBA (Software Enabled Broadband Access)





Introduce DCSG in Sub-Access or with new access fiber rings

Introduce DCSG in existing access or aggregation rings:

- . For service quality & capacity Enhancements
- 2. Upgrade of legacy equipment

5G Mobile Backhaul Network with Open Cell Site Router





### Smart Campus with SDN





## About SONiC

### SONiC Is Changing Networking Landscape

Consume. Collaborate. Contribute.

## **SONIC** Software for Open Networking in the Cloud





## **OCP ecosystem enriched by SONiC**









### Edgecore OCP Platform with SONiC



### Edgecore Global LAB (LAAS)





## Mobile Labs available across Europe & APAC

Leaf & Spine

Central Office - 10G PON

### Where can you try Open Networking ?





# NETRIS

The new automatic netops



## **LEADERSHIP TEAM**

We were building and operating networks like you



Alex Saroyan CEO / Product, co-founder



Tigran Martirosyan Development, co-founder





Arsen Arakelyan Customer success, co-founder

Armen Hovhannisyan, PhD Network Architecture





#### Silicon Valley, California

Business Product Marketing Sales

#### Yerevan, Armenia

Architecture Development Support



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## **STRATEGIC ADVISORS**



Mike Dvorkin

Inventor of Cisco ACI, thought leader in policydriven infrastructure automation



#### Carly Stoughton

Go-to-market executive and product marketing expert specializing in infrastructure and AI



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## **PUBLIC CLOUD**

Allows us to focus on delivering great applications, by abstracting away configuration details



- Public cloud is flexible but very expensive
- Especially at scale



## **PRIVATE/HYBRID CLOUD**

We need cloud user experience in our private infrastructures

#### 1. Cost

- 2. Unpredictability of budget
- 3. Data/Edge processing
- 4. Lock-in
- 5. Business continuity



#### Private Cloud CAGR: 30%, Local Cloud as-a-Service CAGR: 177% (src: idc)

infrastructure



## **TOOLS ARE AVAILABLE**

Provide the same user experience



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## **BUT NETWORK HAS A UX PROBLEM**

Shockingly hard for anyone who's used to the public cloud





#### \$200B lost due to Network outages [2019 in US]



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## **OPEN NETWORKING SWITCH?**

Can open-source approach to networking hardware help here?







## WHAT IS IT?



## **HOW DO I CONFIGURE IT?**

- 1) Find the mix you need
- 2) Configure manually using CLI & config files
- 3) Develop scripts that will configure CLI & config files





## **HOW DO I MONITOR & TROUBLESHOOT?**

- 1) Using open source tools
- 2) Using commercial tools
- 3) By Developing your own arsenal fine tuned for your specific use case





## **DEVOPS? APPLICATION PLATFORM?**

Will require continuous investment of time and money



#### The Glue == cloud UX

# Netris is an automatic NetOps software that operates your physical network providing you with cloud user experience





a safe automatic operations tool for modern open network architectures

 Automate your netops
Eliminate costly manual errors

3. Get Cloud-like UX

### Automatic network with better UX







## **APPLICABLE USE-CASES + WHY NOW?**

Everyone who experienced public cloud expects **cloud UX** 



Cloud repatriation

- 2. Budget unpredictability
- 3. Data/privacy



85% Of enterprises rank hybrid cloud as the ideal IT operating model



ML, Edge/Local processing 1. Model training cost

2. Latency

#### 3. Cost of moving data

"We have noticed that AI companies simply don't have the same economic construction as software business. At times they can even look more like traditional service companies." Martin

#### Cassado, A16z

40%

75% 77%

plan to move savings to train AI will be critical for on-prem models on-prem their organization



Local Kubernetes The fastest growing private infrastructure segment"

87% of orgs. on k8s

1.5B containers are running now

src: IDC cloud & AI adoption survey 2019

src: Cray: state of enterprise AI adoption 2019

src: Container adoption survey

# **INNOVA**







	Legacy Solution	Netris
Equipment	Cisco	Edge-core
Network OS	ACI	Cumulus Linux
Network CapEx	lx	0.1x ( <b>90%</b> savings)
Network OpEx	lx	0.2x ( <b>80%</b> savings)
Net change time	2-5 days	2-5 mins



# THANK YOU

Let's keep in touch <u>alex@netris.ai</u> <u>https://netris.ai</u> http://netris.ai slack.com





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

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

Social

in

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

@OpenComputePrj

f

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





### **Open. For Business.**

The Open Compute Project (OCP) is reimagining hardware, making it more efficient, flexible, and scalable. Join our global community of technology leaders working together to break open the black box of proprietary IT infrastructure to achieve greater choice, customization, and cost savings.



https://www.opencompute.org/solutions





## Questions?





# Thank You







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