Intel® network builders

- Ecosystem Overview
- Intel® Network Builders Areas of Engagement
- Network Builders University

Intel® network builders – Accelerating network transformation

An Intel led ecosystem of ISVs, CSVs, OEMs, ODMs, TEMs, SIs, and end users with a shared mission to accelerate network transformation on Intel architecture based servers

Cloud

Core Network

Access Network

Wireless Technology

Smart Devices

NFV

SDN

MM WAVE   LTE

NB-IOT   WIFI

Intel Architecture, FPGAs, Software, Security

End to end partnership with a robust ecosystem

Intel ® Network Builders Engagement Model

Intel Network Builders is an membership program that provides CommSP with insight on network transformation accelerated by broad industry engagement

Business transformation – what are the success models	Gain insight on commercially available solutions	Support on latest technologies	Get Industry Insight	Train your teams
✓ Deep dive on individual business models and match up with network transformation models	✓ Insight on a community of 300+ ecosystem ISV/OSV/OEM/ODM/SI	✓ Exposure to Intel Roadmaps and INB ecosystem solution readiness	✓ Attend NDA, CommSP led events, meet with Intel Execs for tailored approach	✓ A technical training program for Intel's end user customers, with individualized content

Lack of NFV Training deters Nfv adoption

Lack of skills

Talent Gap

IT meets Network

Lack of Knowledge/Skills was noted as one of the **TOP 3 PROBLEMS** or issues Service Providers face that hold back commercial deployment of NFV in their network

IHS Technology – Service Provider Survey June 2017

Operators and CSPs are finding that there are not enough people with the **relevant skills** and practical experience both in-house and entering the industry, resulting in a **GROWING TALENT GAP**.

Computer Business Review – Barrier to Progress- January 2018

HUMAN REVOLUTION as well," said Laurent Herr, the vice president of OSS for OBS, during a presentation at today's TM Forum Live! event in Nice, France. "We need new **HARD SKILLS** on the network and IT side -- the hardware guys need to understand what is happening on the OSS side and the IT people need to understand the network."

Iain Morris, News Editor, Light Reading, 5/10/2016

(intel)

Intel® Network Builders University programs

Creating Real Value for Communications Service Providers

Intel® Network Builders University

Intel® Network Academy

CommSP F2F Training

Ecosystem Deep Dive Training

Custom Pathways

Innovation summits

Intel ® Network Builders University

A technical training program for Intel's end user customers and Intel® Builders ecosystem partners aiming to accelerate the adoption and deployment of virtualized technologies through education.

Training courses are delivered in short video format

Quizzes are available after training to support understanding

Available whitepapers, product briefs, and other related materials.

Intel Network Builders End User Ecosystem Member Benefits:

CommSP Innovation Summits

Intel NDA Content

Early Access to Technical Training

Face to Face Training Opportunities

Reporting

Customized Curriculum Paths

Deep Dive Virtual Lab Technical Training

Intel® Network Builders University

Technical Education

Transforming The Network from Edge to Core

**180+ Training Courses across 18 Programs**

- Network Academy
- Basic Training Program
- Service Provider Program
- DPDK Program
- OvS Program
- Security Program

- MANO Program
- OpenStack Program
- vE-CPE Program
- Gi-LAN Program
- vEPC Program
- vIMS Program

- Intel Select Solutions
- AI/Machine Learning Program
- Cable Program
- Visual Cloud Program
- QAT Program
- Virtualized Network Operations

Multilingual

Public and NDA content

Suited for all level of expertise

Technical Programs Planned for Development

FlexRAN

Network Edge

5G
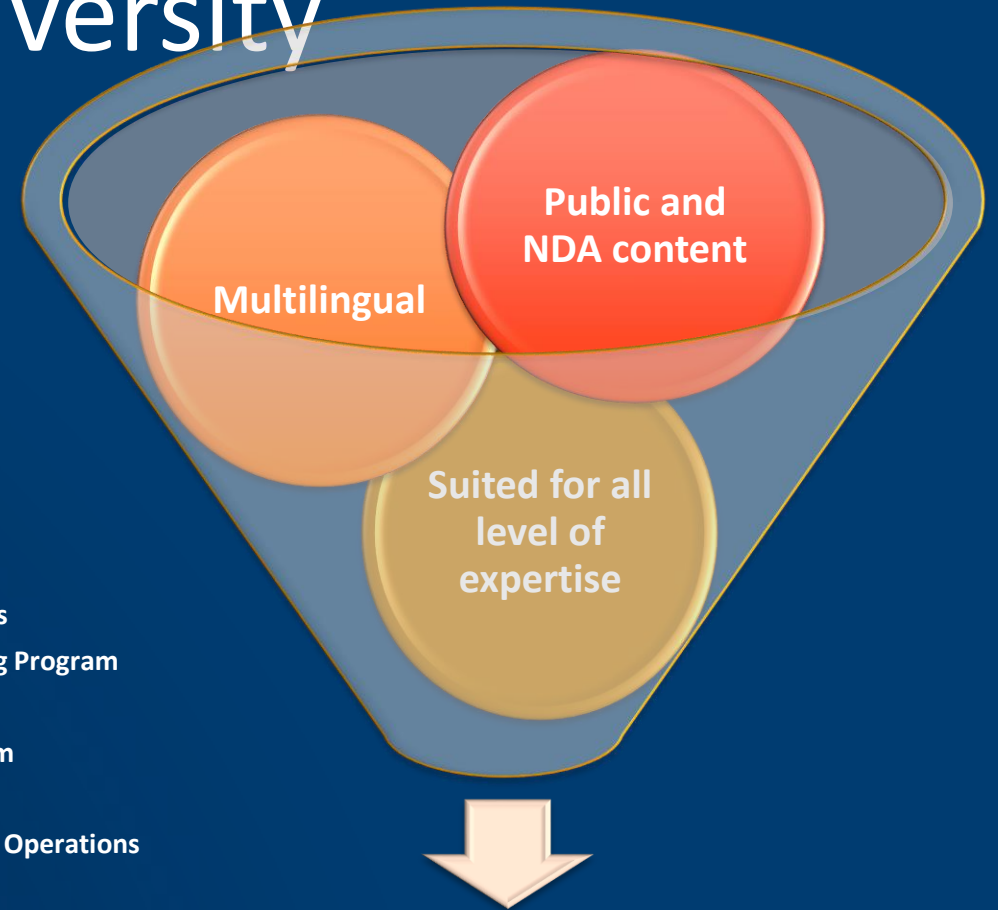
Intel® Network Academy

A formal training program on network technologies to accelerate Network Transformation for Communications Service Providers and the Ecosystem that supports them.

Pertinent and timely training addressing real adoption challenges

100 LEVEL

FOUNDATION LEVEL

Introductory Lessons and Fundamentals

Course 1 → Consumers and Providers of Service, Inside the Telco Cloud, Network Functions Virtualization, Software Define Networking

Course 2 → VNF Operations, VNF Development, Intel Hardware and Software Benefits, The Road Ahead

200 LEVEL

INTERMEDIATE LEVEL

+

300 LEVEL

ADVANCED LEVEL

being planned for 2019

Consumers of Services and their Supporting Technologies

Consumers of Service: IoT, Autonomous Vehicles, Smart Stadiums, Enterprise Digital Transformation

Provider Services

Telco Cloud

NFV

SDN

VNF Ops

VNF Dev

INTEL

Provider Services:
5G, SD-WAN, Visual Cloud

Telco Cloud:
vGi-LAN, vEPC, vIMS, FlexRAN, vCPE

NFV:
VNFs, Service Chaining & Orchestration

SDN:
Network Slicing, Transport Network Orchestration

VNF Development:
Cloud Native Architecture, Security, FD.IO, DPDK

VNF Operations:
Virtualization, Containers, Kubernetes, OpenStack

Intel Products:
FPGA, SR-IOV, Smart NICs, Hyperscan, TXT, Quick Assist

(intel) experience what's inside

Pathways & Reporting

Pathways

- The Pathways Program was created to address a number of usability requests from Partners.
- These include Active Courses, Saved Courses (Favorites), Recommendations, Pathways, and Custom Pathways

Reporting

- The Partner Reporting Project was created to allow Partners and Account teams the ability to track account level registration and consumption of content in Network Builders University

GOALS

- Enhance the learning process for users
- Allow for the integration of Network Builders University content into CommSP internal training programs
- Enable customizable curriculum Pathways based on individualized needs of key accounts.
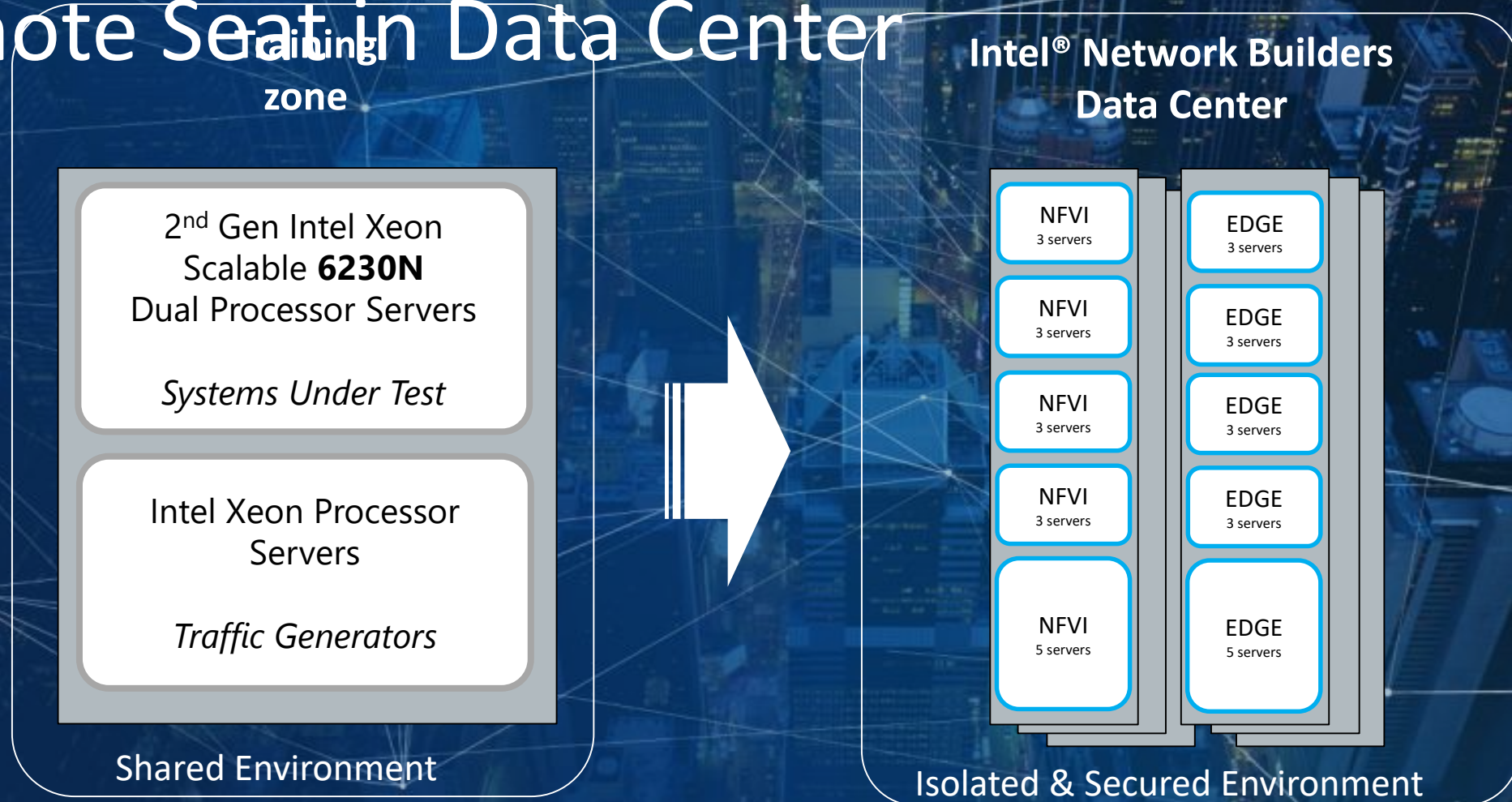- Provide a more customized and personalized learning experience.

STRATEGIES

- Enhance the learning process for users allowing them to return to courses that are in process of being completed and save chapters they find relevant to their jobs.
- Allow for Recommendations by Intel on the most relevant and valuable content
- Allow for the creation of Customized Pathways for specific accounts allowing them to select the courses most relevant for their employees

Data center lab overview

- Early access to latest Intel Select compliant HW config and validated SW stack [Complete NFVi stack - BIOS / FW / OS / drivers based on Intel NFV Best Known Config.] ready to land VNFs

- Full "seat" with test and back end systems including high bandwidth connectivity. Remote access enabled

- SLA support and clear escalation path for issue resolution and tracking, access to broad expertise at Intel

- Optimization support from Intel SMEs. Benchmarking help and support

- Direct path to collaborate with Intel and other ecosystem partners on VNF optimization, characterization, and co-marketing

intel

Training
→ PoC / Test /Optimize / Characterize on Remote Seat in Data Center

Training zone

Intel® Network Builders Data Center

2nd Gen Intel Xeon Scalable **6230N** Dual Processor Servers

Systems Under Test

Intel Xeon Processor Servers

Traffic Generators

NFVI 3 servers	EDGE 3 servers
NFVI 3 servers	EDGE 3 servers
NFVI 3 servers	EDGE 3 servers
NFVI 3 servers	EDGE 3 servers
NFVI 5 servers	EDGE 5 servers

Shared Environment

Isolated & Secured Environment

(intel)

Data center lab configuration "menu"

- Seats preinstalled with Intel BKC (Best Known Configuration)

  - CentOS* 7.6

  - Ubuntu* 18.04.2

  - Red Hat* Enterprise Linux 7.6 (RH Entitlements included)

- Option for tenants to install OS and tools as needed

- Seats may be combined to form a bigger cluster

  - RedHat OpenStack* Platform (RHOSP Compute node entitlements included)

- Tools such as Vtune™ etc are installed and available

*Other names and brands may be claimed as property of others.

Intel Network Builders Partners
Enter through your Intel Enabling Mgr Account

Primary intent: enable network ecosystem and scale partners (ISVs, SIs, OSVs, etc.)

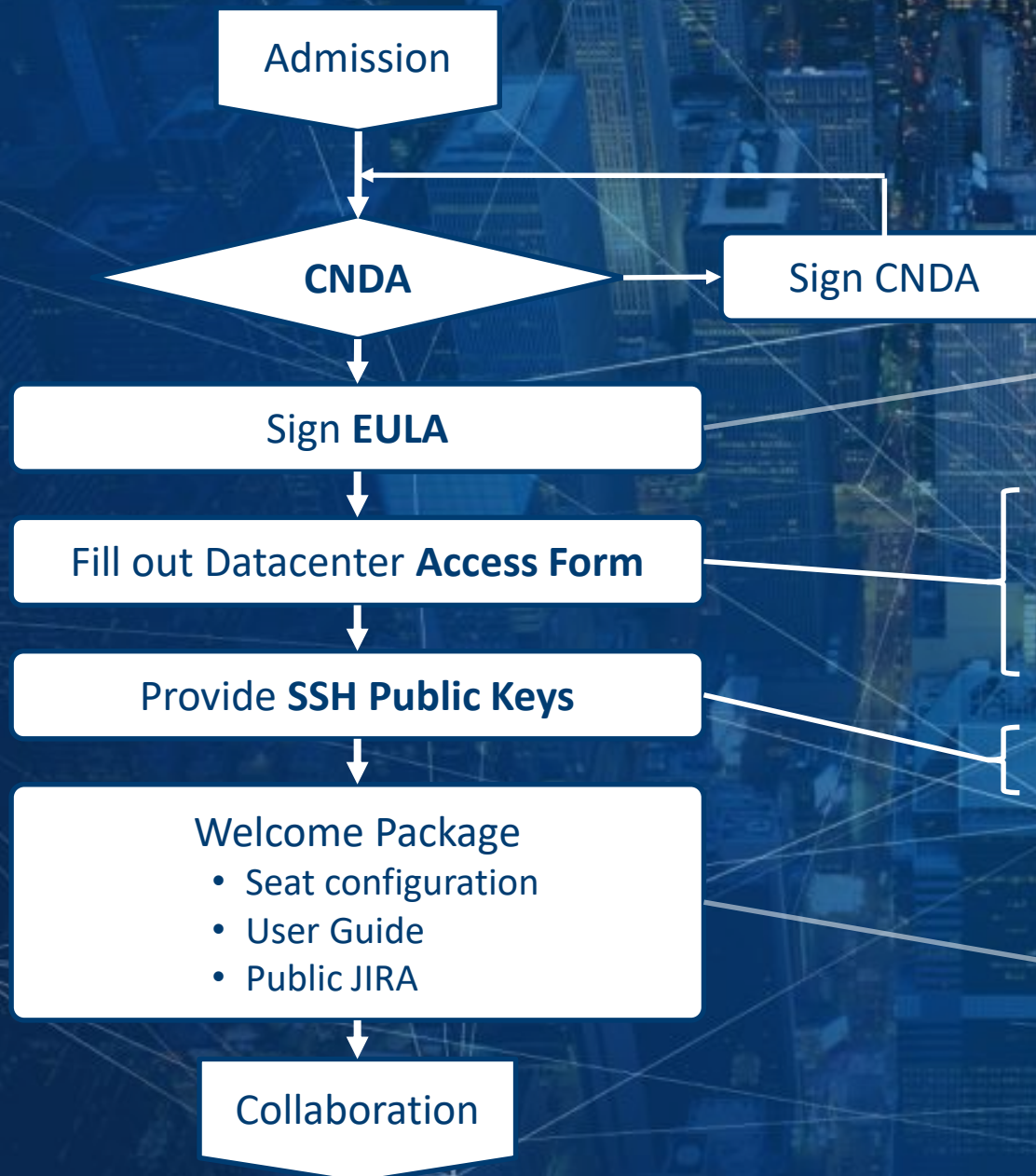## Business approval
Intel Network Builders Team

- What is the **goal** of this engagement?
- Identify expected **outcome** in terms of PoCs, whitepapers, technical papers, etc.
- Level of **activity** expected on the seat and for what **duration**?

Technical discussion
Intel Network Builders Tech. Team

- How is the seat planned to be used?
- What are the infrastructure requirements?
- Is there a need for traffic generator / analyzer?

Onboarding

Admission

CNDA → Sign CNDA

Sign **EULA**

Fill out Datacenter **Access Form**

- Company name and contacts
- Intel sponsor
- Gateway IP address(es)

Provide **SSH Public Keys**

ssh-rsa AAAAB3NzaC1yc2EAAQABAQDn0dTOx9zTS4YFr...

Welcome Package
- Seat configuration
- User Guide
- Public JIRA

Collaboration

Remote Access Service Terms and Conditions

Please read these terms and conditions carefully before using Intel Remote Access Service. Use of the Service constitutes acceptance of these terms and conditions.

Definitions
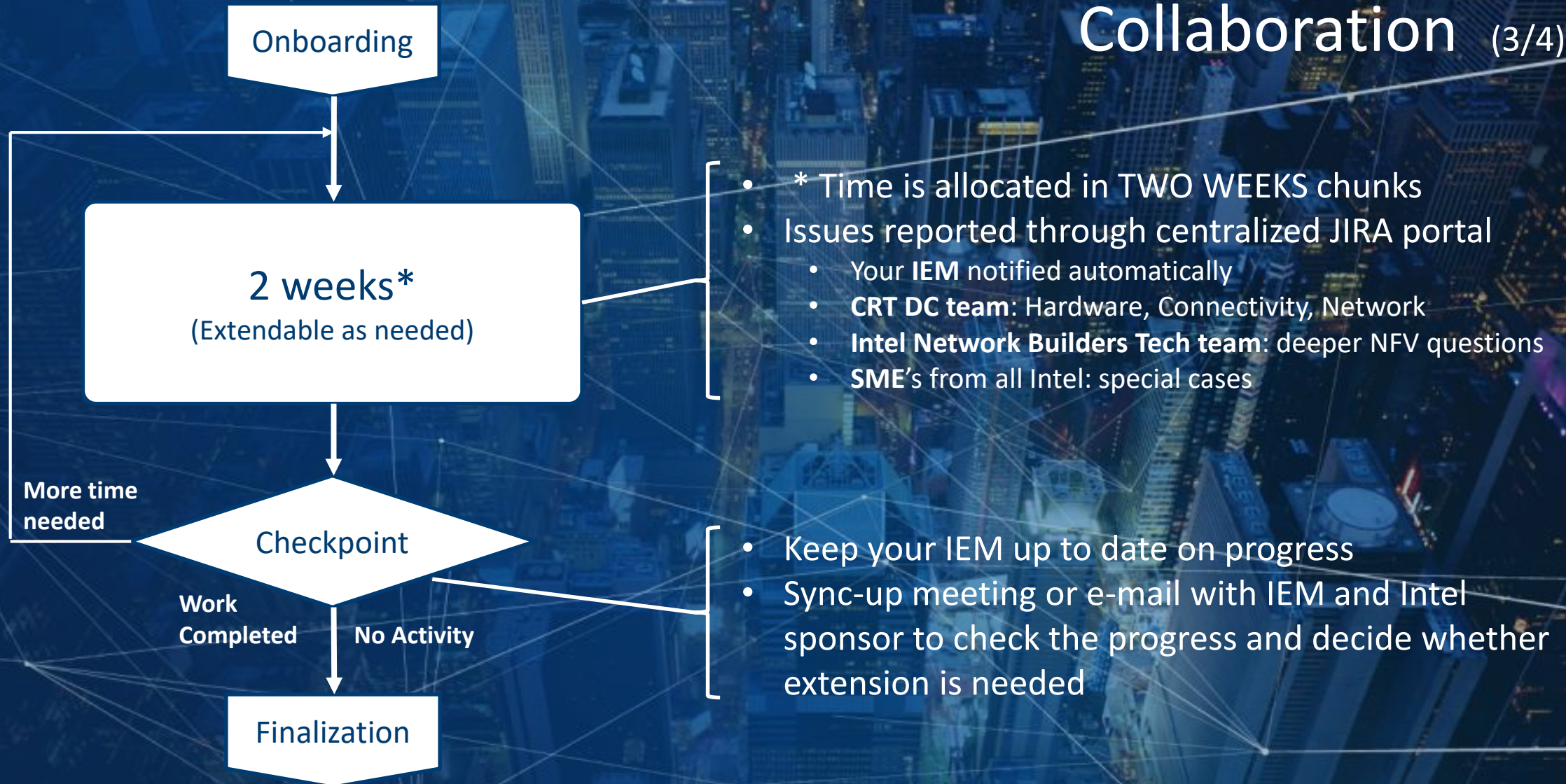"Agreement" means these terms and conditions of Service.
"Company" means the company, university, or other entity whose employee, contractor, or representativ (each a "User") agrees to this Agreement or uses the Service.

public 207.108.8.89

jump host VM: zvln15

mgmt 172.27.228.1

mgmt 172.27.228.5
PCI 66:00.0 = I350, 1G RJ45
PCI 66:00.1 = I350, 1G RJ45
PCI 66:00.2 = I350, 1G RJ45

PCI 65:00.0 = XXV710, 25G SFP28, 3c:fd:fe:c2:04:50
PCI 65:00.1 = XXV710, 25G SFP28, 3c:fd:fe:c2:04:51
PCI b7:00.0 = X722, 10G RJ45, ac:1f:6b:76:81:e4

Arista 100G switch VLAN 428

Ethernet3/1
Ethernet3/2

lab credentials

legend
public | data plane
mgmt | QuickAssist
 | unused

Onboarding

2 weeks*
(Extendable as needed)

- * Time is allocated in TWO WEEKS chunks
- Issues reported through centralized JIRA portal
  - Your **IEM** notified automatically
  - **CRT DC team**: Hardware, Connectivity, Network
  - **Intel Network Builders Tech team**: deeper NFV questions
  - **SME**'s from all Intel: special cases

More time needed

Checkpoint

Work Completed

No Activity

- Keep your IEM up to date on progress
- Sync-up meeting or e-mail with IEM and Intel sponsor to check the progress and decide whether extension is needed

Finalization

* Duration can be extended depending on the progress, demand and expected outcome

Collaboration

Publishing results / collateral

Access revoked

All systems securely wiped

- Publish PoCs, whitepapers, technical papers, etc. agreed during business approval
- Intel Network Builders Partners are encouraged to work with the Intel Network Builders team on publishing the results
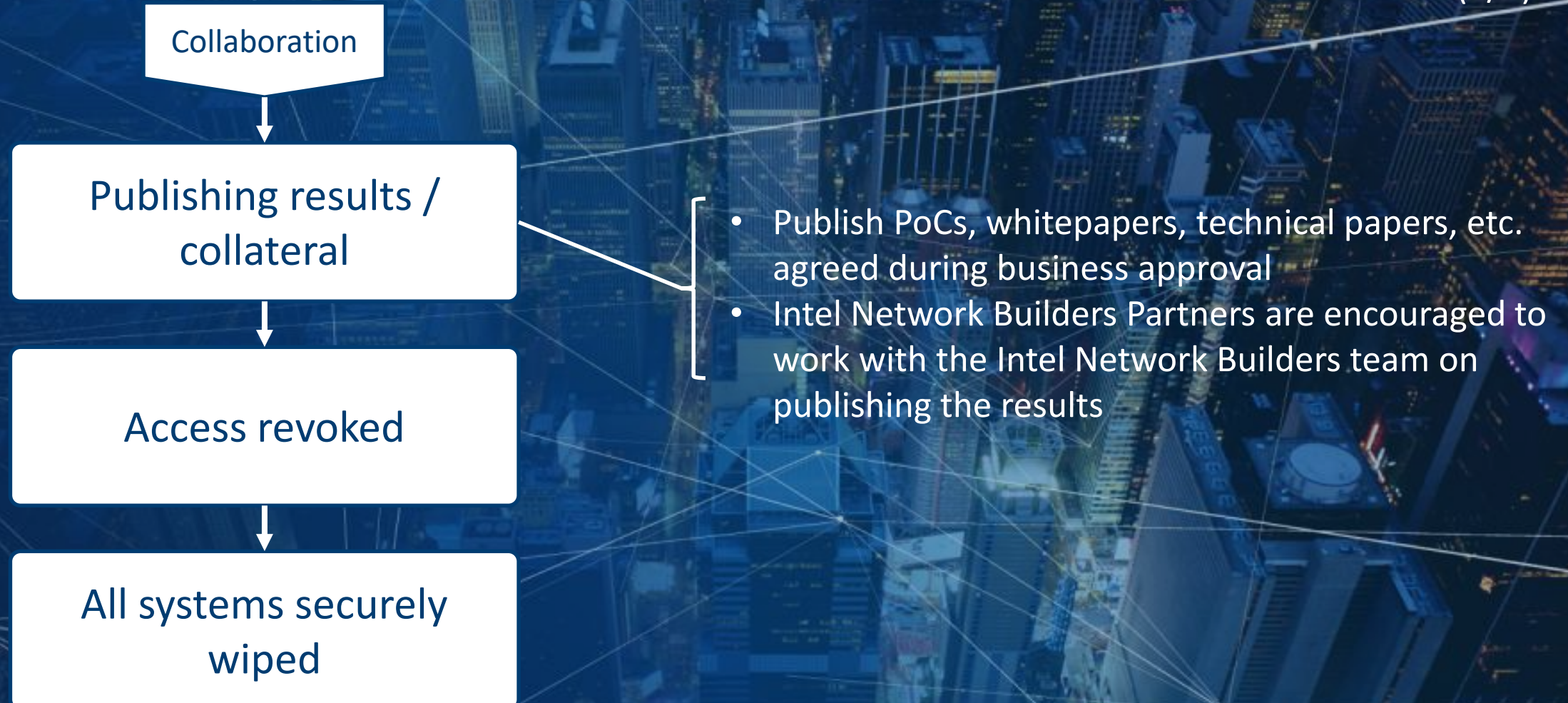
resources

- Access requests: Please work with your IEM (Intel Enabling Manager)

- Tech info on 2nd Gen Intel Xeon Scalable Processors

  https://itpeernetwork.intel.com/data-centric-network/

  https://ark.intel.com/content/www/us/en/ark/products/series/192283/2nd-generation-intel-xeon-scalable-processors.html

- DPDK

  https://software.intel.com/en-us/articles/dpdk-performance-optimization-guidelines-white-paper

  http://core.dpdk.org/perf-reports/

- Experience Kits

  https://networkbuilders.intel.com/network-technologies/network-transformation-exp-kits

resources

Intel® Network Builders University

- Intel® Builders University
https://builders.intel.com/university

- Feedback or Support
university@builders.intel.com

- Intel Network Builders University
https://builders.intel.com/university/networkbuilders

contact@networkbuilders.intel.com

How to join intel® network builders

- Contact Network Builders team and let us know if you are interested in our program

- You will be notified of acceptance in the program based on discovery meeting

- Sign up to the program following the instructions we'll provide. There are no membership dues or fees associated with program
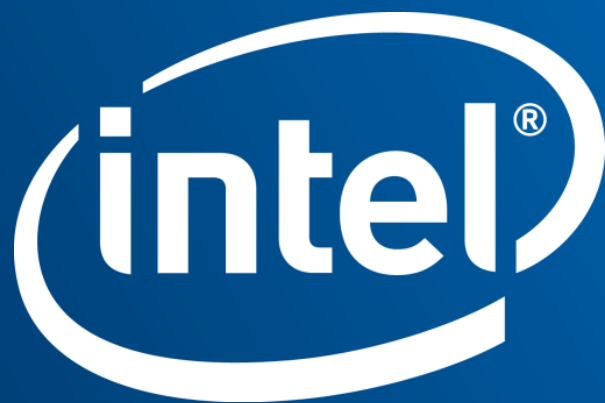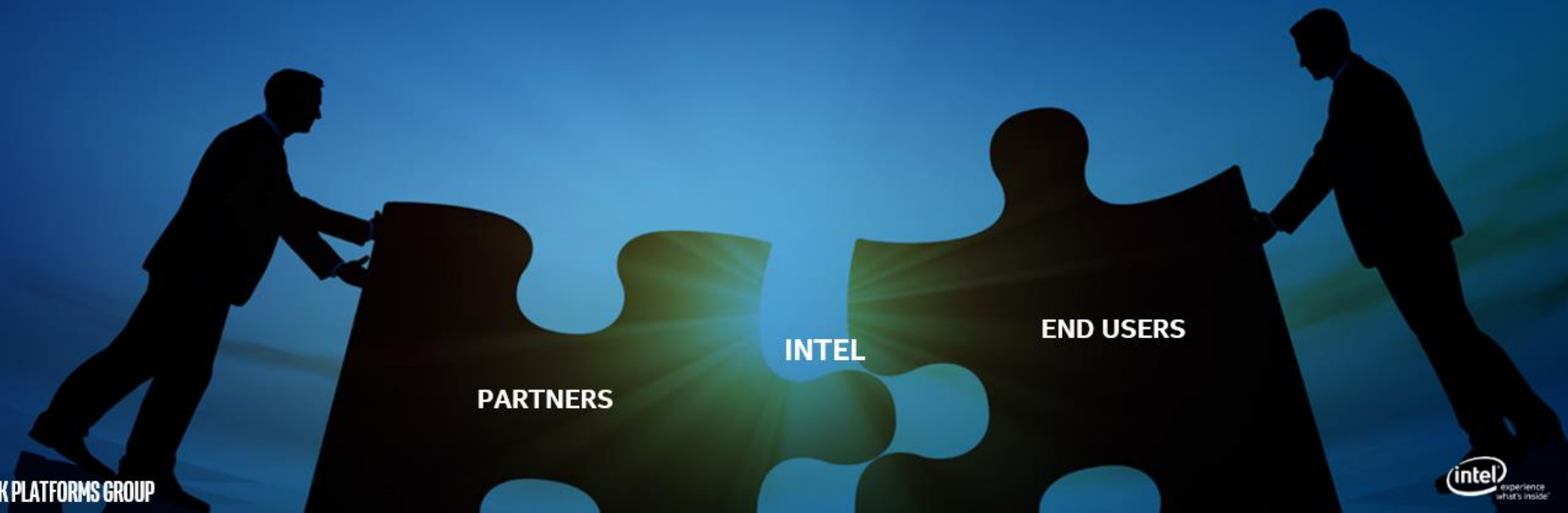
Intel is Investing to Lead Network Transformation

Deliver Technology Leadership

Silicon and Software

Performance, Packet Processing, Security, Orchestration, Service Assurance and Scalability

Advance Open Source Standards

DPDK openstack Open Source MANO AKRAINO EDGE STACK

FD.io ETSI OPEN DAYLIGHT ONAP

OpenVINO OpenFlow OPNFV TELECOM INFRA PROJECT
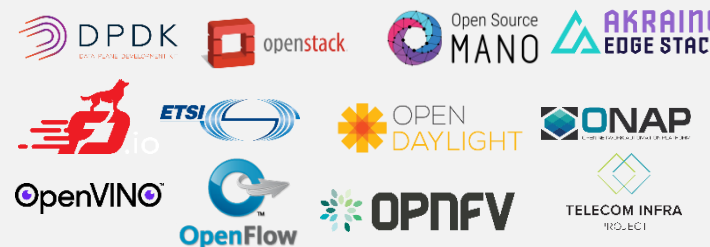
Enable an open ecosystem

An ecosystem of ISVs, SIs, OSVs, OEMs, ODMs
315 Ecosystem Partners
57 Edge Ecosystem Members

Collaborate with End Users

Comms   Cloud   Enterprise

37 End User members

INTEL TECHNOLOGY LEADERSHIP

Top-to-Bottom Product Portfolio

(intel)

System integrators

Engaging with motivated and knowledgeable SIs to help accelerate, implement, and invest in the network transformation

- ✓ Technical assistance and guidance
- ✓ System Integrators Ecosystem Matchmaking
- ✓ Deep-dive on ISV solution capabilities

- ✓ Info on Solution/Services catalog through
- Intel co-branded technical papers, webinars,
- event speaking opportunities and demos