

# Innovation Accelerated

**Vipul Shah – Regional Director  
Cisco Connect – Oct'21**



WORLDWIDE PARTNER

✓ **2<sup>nd</sup> BEST** Summer Olympics performance ever amidst the pandemic (13 medals)



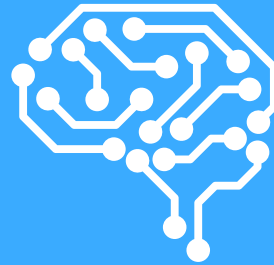
Congratulations **ASEAN!**

# Key Industry Inflections

**5G Network Transformation**



**Artificial Intelligence**



**Intelligent Edge**



**Cloudification of Everything**



# Intel: Data Centric Portfolio

## Move Faster



## Store More



## Process Everything



Software & System Level **Optimized**



# 3rd Gen Intel® Xeon® Scalable Processors

Outstanding gen-on-gen performance for various segments/use-cases



Hybrid-Cloud

UP TO

1.5x

Improvement in  
Latency Sensitive  
Workloads



5G

UP TO

1.62x

Improvement  
in Network and  
Communications  
Workloads



IoT

UP TO

1.56x

Image Classification  
Inference  
Improvement

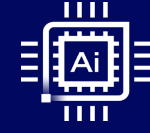


HPC

UP TO

1.57x

Faster Modeling  
for Critical Vaccine  
Research



Artificial  
Intelligence

UP TO

1.74x

Language Processing  
Inference  
Improvements

World's Most **Broadly Deployed**  
Data Center Processor

**>50M**  
Shipped Since 2017

# Transformation of the Network

**2012**

NFV defined

**2015**

20%  
CoSPs adopt  
NFV

**2020**

50%  
Core network  
deployments  
virtualized

**2024**

>80%  
Core network  
deployments  
virtualized

# Intel: Making 5G A Reality...

**Invest**  
Open Source And Standards



**Industry Collaboration**  
Intel® Network Builders & Intel® Developer Zone

**350+**  
Member Companies

**100+**  
POCs/Trials/Deployments  
Based on Member Solutions

**12,000+**  
Members

**35+**  
CoSPs

**13,000+**  
Developers Trained Worldwide

**50+**  
Network Edge Ecosystem  
Program Members

**Accelerating TTM**  
with software and solutions

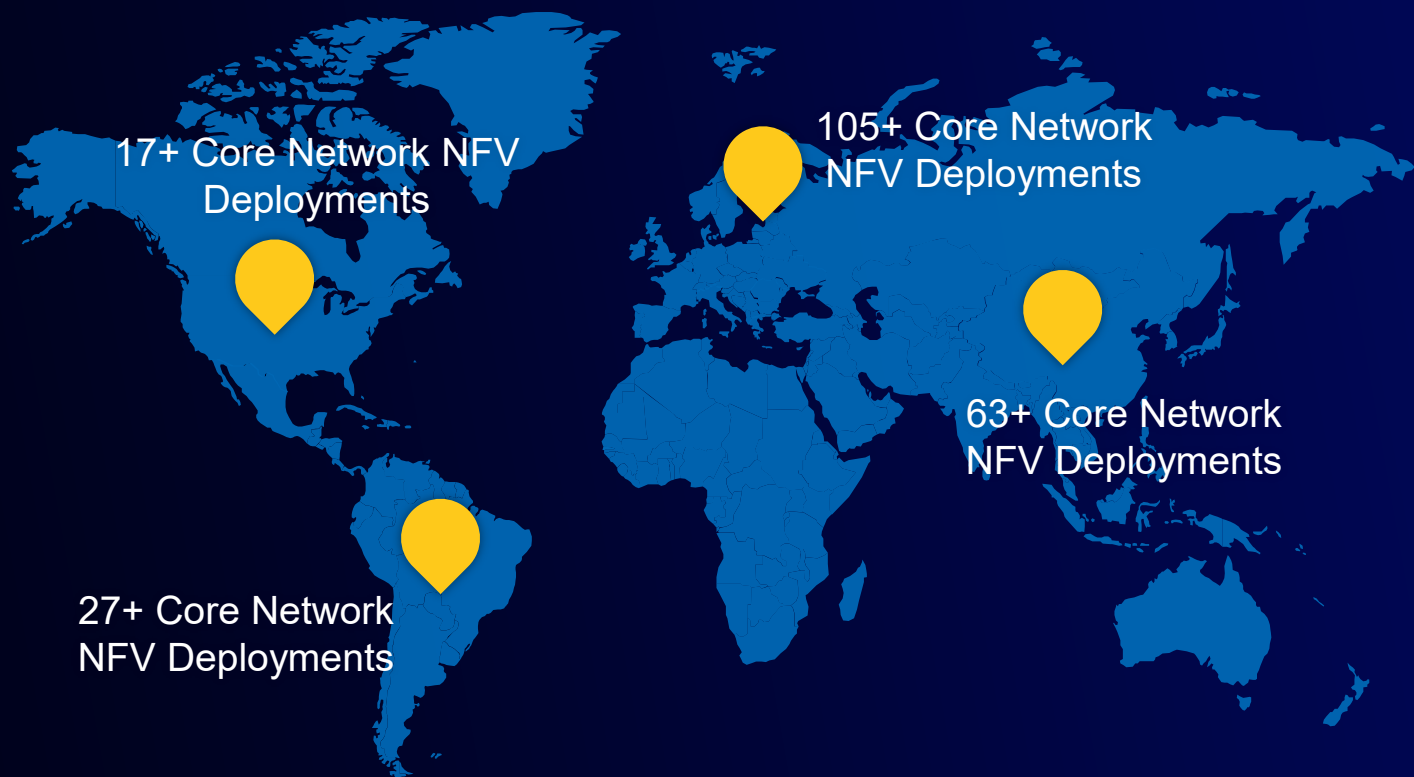


**Network  
functions**  
(5G UPF, EPC,  
BNG, VRAN etc)

**Intel FlexRAN  
Reference  
Architecture**

Bringing Together The **5G Ecosystem**

# Network Transformation Progress...



200+ NFV Deployments Globally

805,000 5G Base Stations shipped in 2020



4G/5G vRAN & O-RAN



5G Radio, Wireless Core



Cloud-native 5G, Intel FlexRAN



Cloud-native 5G



O-RAN w/Intel FlexRAN

5G/vRAN engagements



# Flexible AI Acceleration

## CPU *only*

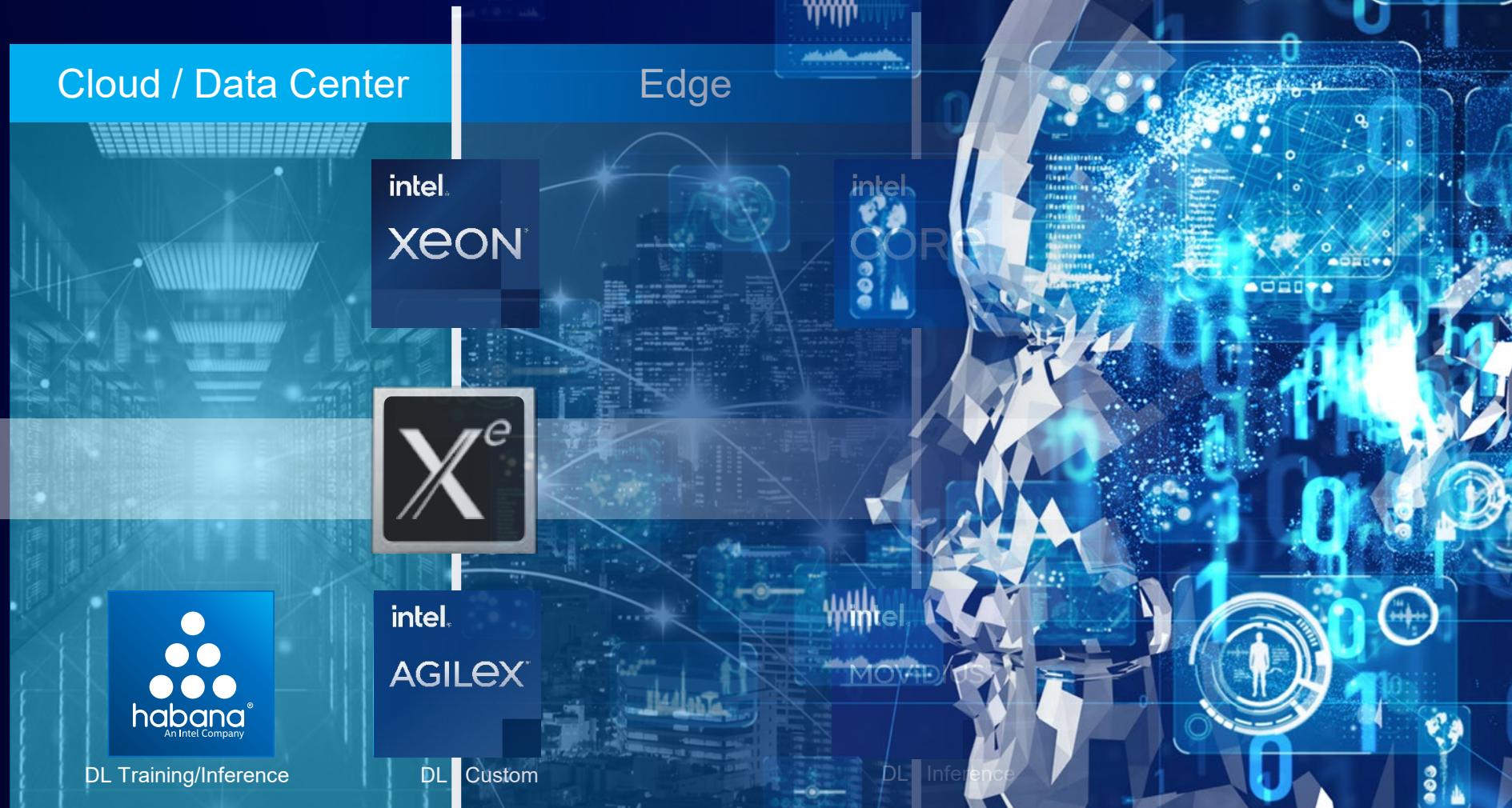
Built-in AI acceleration for mainstream AI use cases

## CPU + GPU

When compute is dominated by AI, HPC, graphics, and/or real-time media

## CPU + custom

When compute is dominated by deep learning (DL)



# Accelerate Your AI, Today

3rd Intel® Xeon® Processor Family



up to  
**10 - 100x**  
faster with Intel-optimized over  
default TensorFlow and Scikit-Learn  
(image recognition) (SVC & kNN predict)

up to **74%** faster from  
gen-to-gen  
(natural language processing)

up to **25x** faster than AMD  
EPYC 7763  
(image recognition)

## And across a broad set of machine and deep learning models...

**1.5x** Higher perf than AMD EPYC 7763  
on 20 key customer AI workloads

**1.3x** Higher perf than Nvidia A100 GPU  
on 20 key customer AI workloads

Data Processing  
Train-test-split†  
Classification  
brute force knn†, SVC\*

Neural Networks  
Resnet50-v1.5\*,  
SSD-ResNet34\*,  
BERT target†

Gradient Boosting Machines  
XGBoost\*

Clustering  
Kmeans\*, dbscant†

Regression  
Linear\*, Logistic\*,  
Ridge\*, elastic-  
net†



\*Training & Inference  
†Inference Only

See claims [43, 44, 45, 117, 118, 123] at [www.intel.com/3gen-xeon-config](http://www.intel.com/3gen-xeon-config) for workloads and configurations. Results may vary.



1. See <https://www.intel.com/content/www/us/en/customer-spotlight/stories/sk-telecom-ai-customer-story.html> for more details on case study.

# Intel AI Builders

An ecosystem approach for diverse AI solutions

## Vertical Partners

<b>Retail</b> GIGASPACE, bigdatacorp, ninf TECH, Build, SKY, REC, ReadSense, MALONG, ARDIC	<b>Healthcare</b> OrboGraph, Carestream, HEARTVISTA, Laura, JP 健培, John Snow LABS, SARADA, ubotica	<b>Bfsi</b> WorkFusion, Alpaca, vPhrase, Fluid AI, Allgoo	<b>Transportation</b> WI-TRONIX, GLOBAL EDGE, Playment, ERA	<b>Media, travel &amp; entertainment</b> ZIVA, sensifai, Taboola, keemotion, Gramener, pimloc, ShotTracker	<b>Sec &amp; govt</b> DEEPCRYPT, simbiote social, POLSEC	<b>Sw tools &amp; services</b> UiPath, Ittiam, ANACONDA, IFDAQ	<b>Prof. Services</b> seedlink, kenoby, LEGAL LABS, finch, reachr, voiceitt	<b>Agri</b> LeBoy, tbit, Aerobics, Manuf, A2	<b>Telecom</b> SUBEX, Aricent, Energy & Utilities, CertusNet
---	---	--	--	---	---	---	--	---	---

## Horizontal Partners

CISCO, DELL EMC, hp, inspur, EXXACT, EQUUS, Lenovo	accnture, HCL, Tech Mahindra, TATA CONSULTANCY SERVICES, ALTOROS, valtech
--	---

<b>BI &amp; analytics</b> SIGOPT, DataRobot, sky mind, macnica	<b>Vision</b> Matroid, altia, imagga, restb.ai, CrowdAI, ENTROPIK TECH, gestos	<b>Conv. Bots</b> ovoamo, 247.ai, nama	<b>NLU/NLP</b> JQUANT, mihup, verbo, AIS, FORMCEPT, gnani.ai, Aimirim, gamalon	<b>AI tools &amp; consulting</b> QuikFynd, cloudera, axondata, iMerit, nologin, Julia computing	<b>AI PaaS</b> KuberLab, Paperspace, RocketML, H2O, NIMBIX, clusterone	<b>Big data</b> MoBagel, labs
---	---	---	---	--	---	----------------------------------



For a complete list of partners, go to [builders.intel.com/ai/membership](https://builders.intel.com/ai/membership)

# The Cloud Runs On Intel



**>1B Intel Xeon Processor Cores**

Deployed in the Cloud Since 2013<sup>1</sup>

**>800 Cloud Providers**

with Intel® Xeon® processor-based servers  
deployed<sup>1</sup>

**50,000 instance types available globally**

on Intel® Xeon® Scalable processors from leading CSPs<sup>3</sup>

<sup>1</sup> Source: Intel internal estimate using IDC Public Cloud Services Tracker and Intel's Internal Cloud Tracker, as of March 1, 2021.

<sup>3</sup> Litr Cloud Components Tracker April 2021, <https://litrinsights.com/cloud-components-tracker>

# Hybrid Cloud Trends

- >44% of Enterprises → **No executable Hybrid Cloud strategy yet**
- Top challenges and aspirations
  - Cost optimization across Public & on-prem
  - Extend IT capacity of on-prem
  - Enable workload migration
  - Single management framework

# Introducing: Cisco UCS X-Series



Intersight



Adaptable



Future-Ready



FI - Intersight  
Managed Mode



All Benefits of  
5108

Unified Fabric  
Service Profiles, Policies  
Stateless Servers – SW Defined

Simpler Management

Intersight Managed  
IMM Fabric Interconnect

New Chassis – 7RU

Power & Cooling Innovations  
Energy Efficient, High Watt CPUs/GPUs  
Future Ready – Next Decade

New Compute Node

Dual CPU, More DIMMs  
More Drives (6xSFF, 2xM.2), 2x VICs  
More Real Estate (for future GPUs)

Unified Fabric

9108 Intelligent Fabric Modules

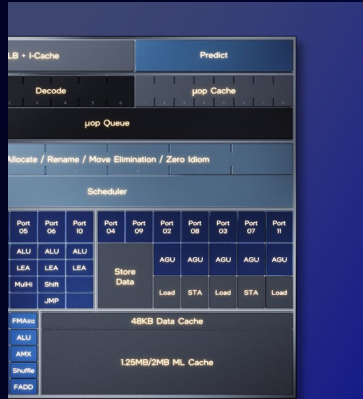
New X-Fabric  
Technology

For Low Latency Traffic (PCIe, CXL)  
Invisible, Within Chassis  
Backplane less design

New Node Types\*

PCIe Nodes (For GPUs, FPGAs)  
Drive Nodes  
Memory Nodes

# New Architectural Foundations



## Efficient Core

Deeper, Wider, Optimized

## Intel Thread Director

Scalable Hybrid Arch. Scheduling

## Xe-core

Xe - core Foundational Building Block for Xe With Xe Matrix Extensions

## Xe HPC & Ponte Vecchio

Back to FLOP Leadership

## Performance Core

Biggest Shift in x86 yet

## Sapphire Rapids

Biggest Leap in DC Capabilities in a decade

## AMX

Advanced Matrix Extension - Engine

## Alder Lake Performance

## Xe SS

Warp

## Xe HPG

Gaming & Creation First Architecture

## Alchemist SoC

## Mount Evans

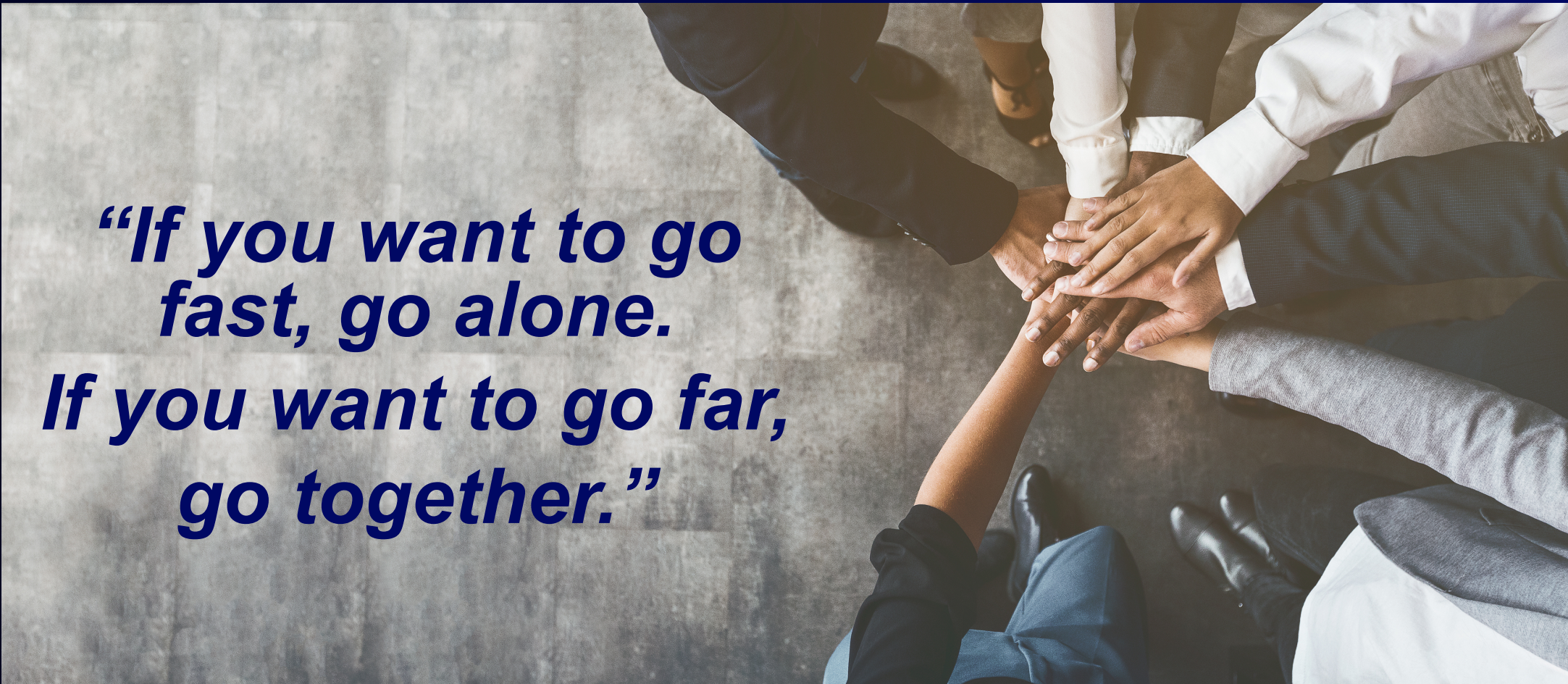
Dedicated SoC IPU



# Summary

- Strategic 25+ year partnership with Cisco
- Unmatched data-centric portfolio
- Proven DC leadership for over 3 decades
- Extensive partner & solution ecosystem
- Range of apps, workloads and use-cases
- Bold investments for the future

# African Proverb



*“If you want to go fast, go alone.  
If you want to go far,  
go together.”*

It's in **Our DNA** to go far

intel®