



Accelerating 5G Success: Unleashing the Benefits of a Converged Core Network

5G

Cisco Knowledge Network

May 23, 2023

Today's Presenters



James Brannan
Director, Provider Mobility Product
Management and Technical
Marketing



Darin Kaufman
Director, Provider Mobility
Product Management



Rohit Jain
Principle Engineer
Provider Mobility



Benefits of 5G SA for Service Providers



INCREASED
CAPACITY &
BANDWIDTH



LOWER COST PER
BIT



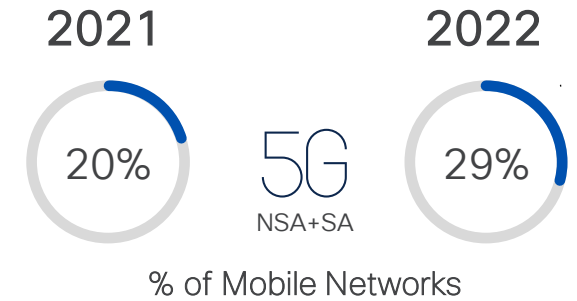
LOWER
OPERATIONAL
COST



NEW CLOUD
TECHNOLOGY FOR
A NEW GENERATION

How do Communication Service Providers *monetize* 5G?

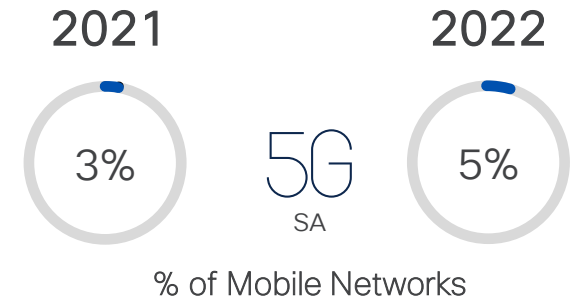
5G Commercialization



twenty-nine percent

Sources: GSMA Intelligence, December 2021, 5G Data provided by TeleGeography & 5G Americas as of 01/16/2023. 5G SA Data from Counterpoint Research 5G SA Core Tracker, January 2023. Total Worldwide MNO data from GSMAi, February 2023.

5G SA Commercialization



Sources: GSMA Intelligence, December 2021, 5G Data provided by TeleGeography & 5G Americas as of 01/16/2023. 5G SA Data from Counterpoint Research 5G SA Core Tracker, January 2023. Total Worldwide MNO data from GSMAi, February 2023.

5G SA Market for Service Providers

- Lacking convincing business justification
 - Both for operators and vendors
 - Flat or declining ARPU environment
- Technology complexity
 - Server based architecture
 - Control and user plane separation
 - Micro-service container-based infrastructure
- Legacy, Parity and Continuity
 - “Feature Parity” *in perpetuity*
 - What to do with 2G and 3G devices?

Cisco’s strategy is to accelerate adoption of 5G SA by *overcoming* adoption hurdles

Cisco in the Service Provider Mobility Market

- More than 1.2B connections on Cisco Packet Cores globally
- 100M users on TMO core
 - Announced in Dec 2022
- On Prem Customers
 - 30+ 5G SA/NSA Converged Core
 - 350+ Other/Legacy Platforms
- Converged Packet Core Migration:
 - Moved from Appliance based platforms to Server based
 - Separated Control and User Planes
 - Developed Cloud Native Control Plane
- Macro 5GaaS in Development

Cisco 5G Go to Market Models

Traditional
On Prem
Deployments



VPC / CUPS
5G NSA

5G

4G/5G SA Cloud Core
eMBB, FWA

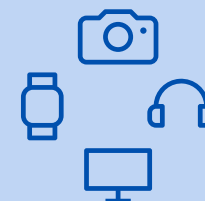
New 5GaaS
Cloud Delivered

5G

4G/5G SA Cloud Core
eMBB, FWA



4G/5G SA Cloud Core
Private



4G/5G SA Cloud Core
IoT

One Converged Platform, Multiple Offers

On Prem+

- Network operation and automation at scale
- Converged Core 4G, 5G NSA/SA
- Cloud Native control plane
- High Performance UPF
- Network Slicing and MEC

Macro 5GaaS

- Pre-integrated, E2E solution
- eMBB and FWA initial service offerings
- Comprehensive service insights and KPIs
- Hybrid deployment model



Private 5G

- Control Center + Converged Core
- aaS consumption & economics
- 5G, CBRS, 4G support
- Common identity across 5G & WiFi
- Private + Macro handoff

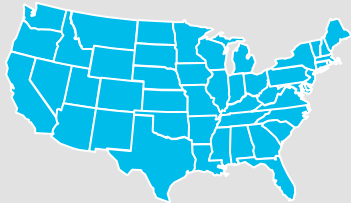
Mobile IoT

- 5G IoT aaS consumption & economics
- Leader in 5G Connected Car
- Zero Touch Deployment & ML

5G Network at Scale



First and Fastest
4G/5G Core



Nationwide



Users



100 Tbps
Capacity



Fully Automated
60% Time Saved



50+ locations



Enabling Multiple
Use Cases



Cloud Native
Control Plane

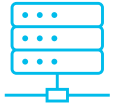


50% Reduction
In Power



20% Reduction
In CPU Cores

Converged Core – Key Principles



Cloud Native Platform

Common platform supporting both containerized deployment as well as VM's on KVM

Light weight K8s artifacts optimized for 5G NF's



Control Plane

Geo-redundant deployment

Combo 4G/5G gateway supporting both 5G & legacy UE's

Multiple use case support on same deployment



User Plane

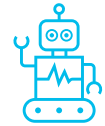
High performing UPF's catering multiple use cases like consumer, IOT and FWA

Multiple redundancy modes supported; 1:1 and N:M



Policy

Large, K8s deployments serving IMS calls for both 4G and 5G UE's



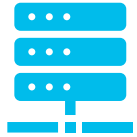
Automation & Monitoring

E2E automation of the entire cisco stack, including both platform setup and NF instantiation

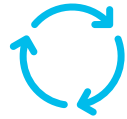
Integrated CI/CD pipeline

Continuous network monitoring and KPI reporting

Cisco's Value Proposition - Benefits



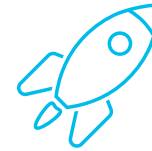
Use of single platform across all NFs results in fewer platform related failures.



Standardized install / upgrade workflow for all 5G applications



Centralized monitoring for both platform and application

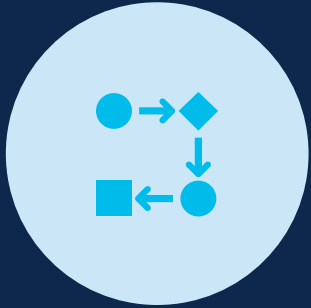


Faster launch of new services with in-service upgrades



Enhanced performance resulting in hardware footprint reduction

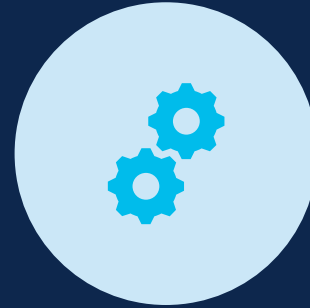
Lessons Learned are Building Blocks



STANDARDIZE
DAY-0 BRING UP



BREAKOUT USE
CASES INTO
DEDICATED
INSTANCES



AUTOMATE
UPGRADE
FLOW

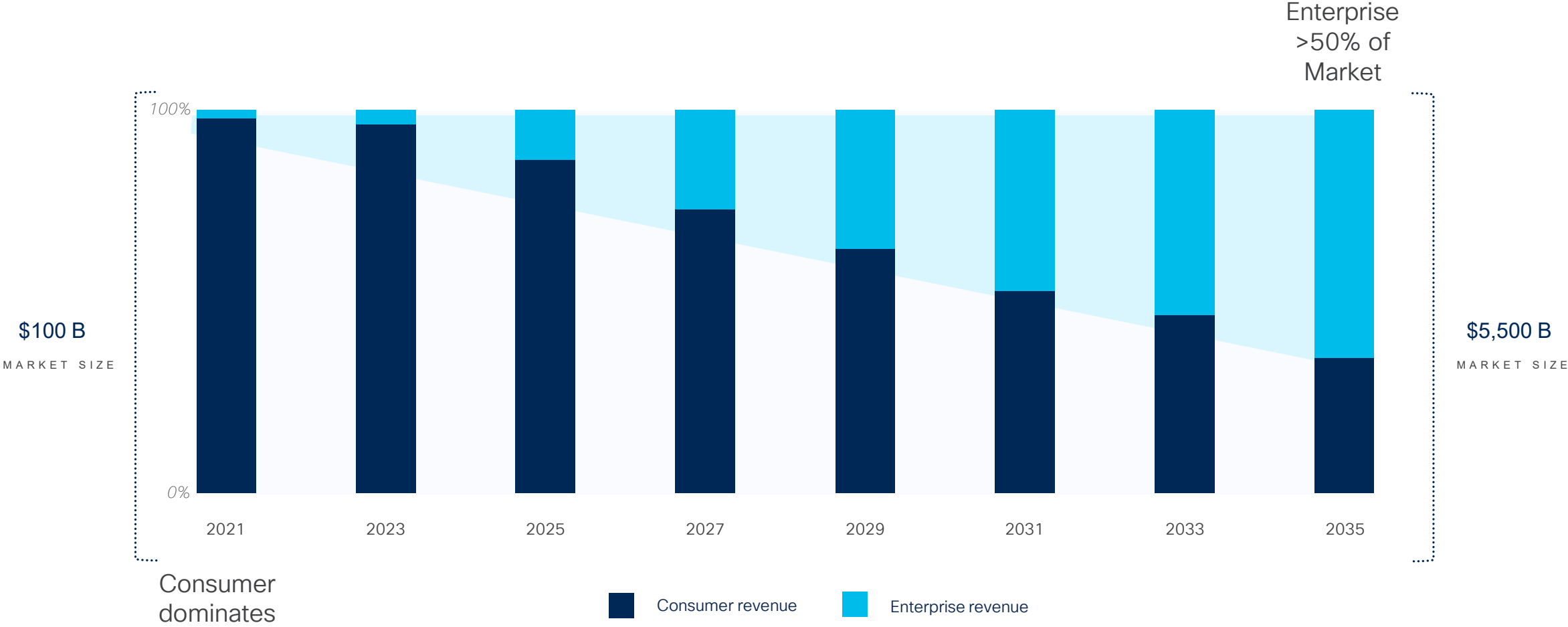


STANDARDIZE
MONITORING

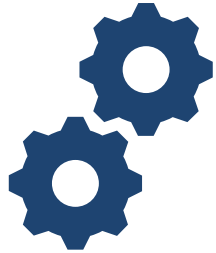
Our experience with the 5G Converged Core is what makes the move to 5GaaS possible

5G Opportunity – Enterprise

Enterprise & Industry are Key for 5G Monetization



What if...



5G core benefits without all the complexity



Solutions proven at massive scale, delivered from a trusted partner



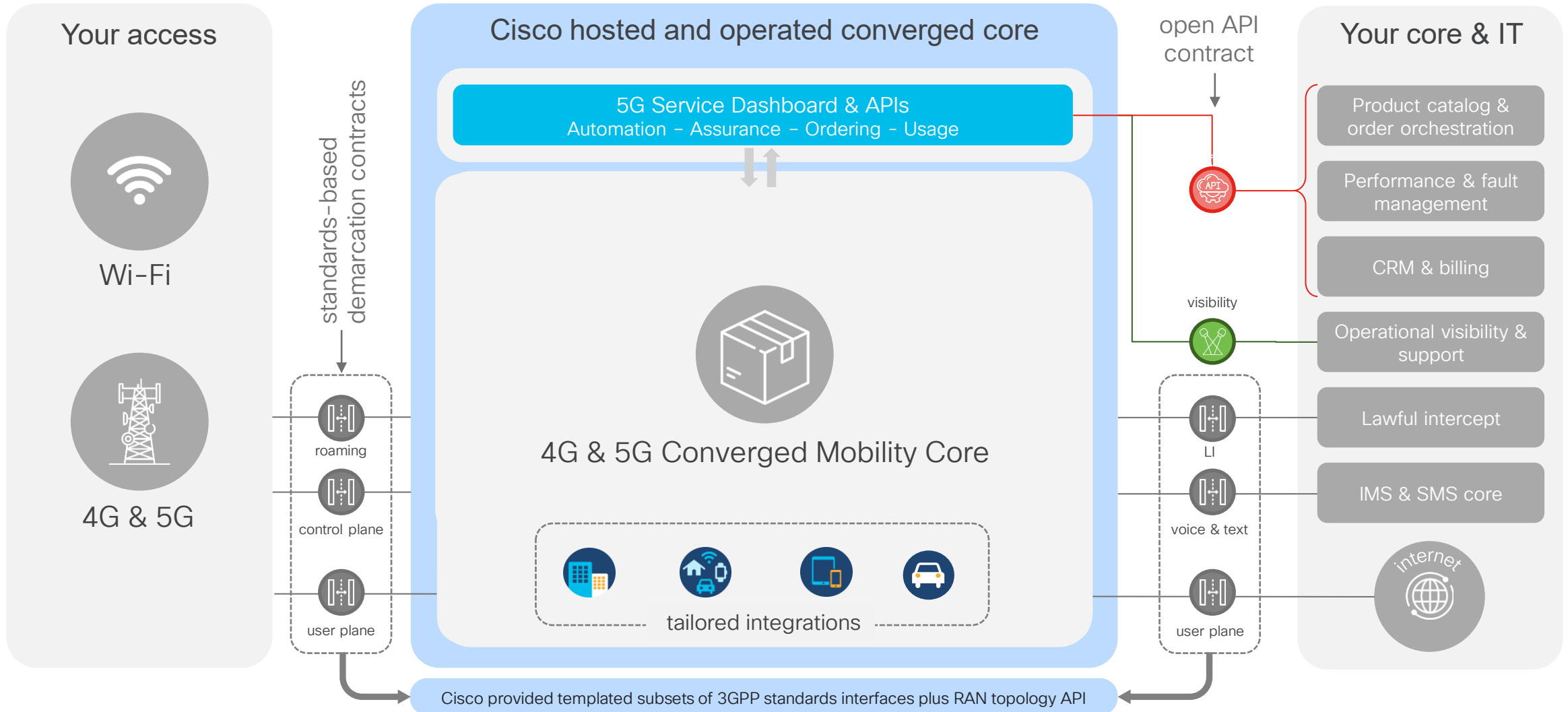
Most popular enterprise solutions pre-integrated, helping drive top line growth

Cisco Macro 5G as a Service

- A **pre-integrated 4G and 5G (N)SA mobility core** system which is delivered as a service through well-defined external interfaces and APIs.
 - Initially targeted to Enterprise offers in the Macro network
- The metered, pay-as-you-grow service is **built and operated by Cisco** using technology and knowhow **proven at production scale**.

A fully functional, pre-integrated, easily consumable service ready to support end-customer product offers.

Cisco's Macro 5G as a Service



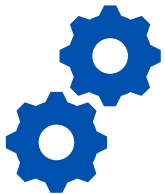
Key Benefits



- Faster Time to Market / Value
 - Flexible service creation & rapid prototyping
 - Native integration with Service Provider's service catalogues / marketplaces via standard APIs

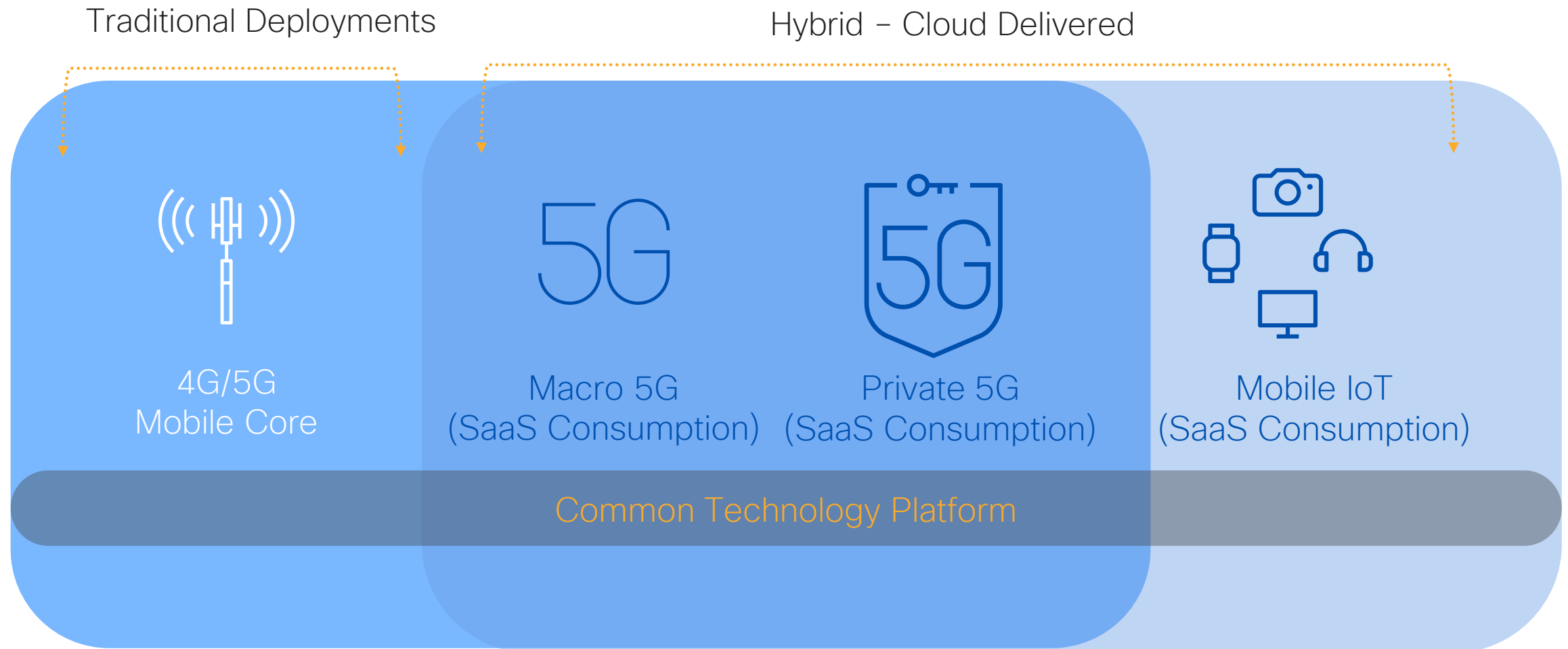


- Improved Profitability at Lower Risk
 - Subscription-based commercial model
 - Offloaded ownership and operation of infrastructure



- Best-in-class Service Provider and Enterprise solution components
 - 4G/5G converged Core backed by Control Center – proven at scale
 - Integrations enabling common Enterprise identity, policy, security across access technologies via Cisco Identity Services Engine, Umbrella, Talos, etc.

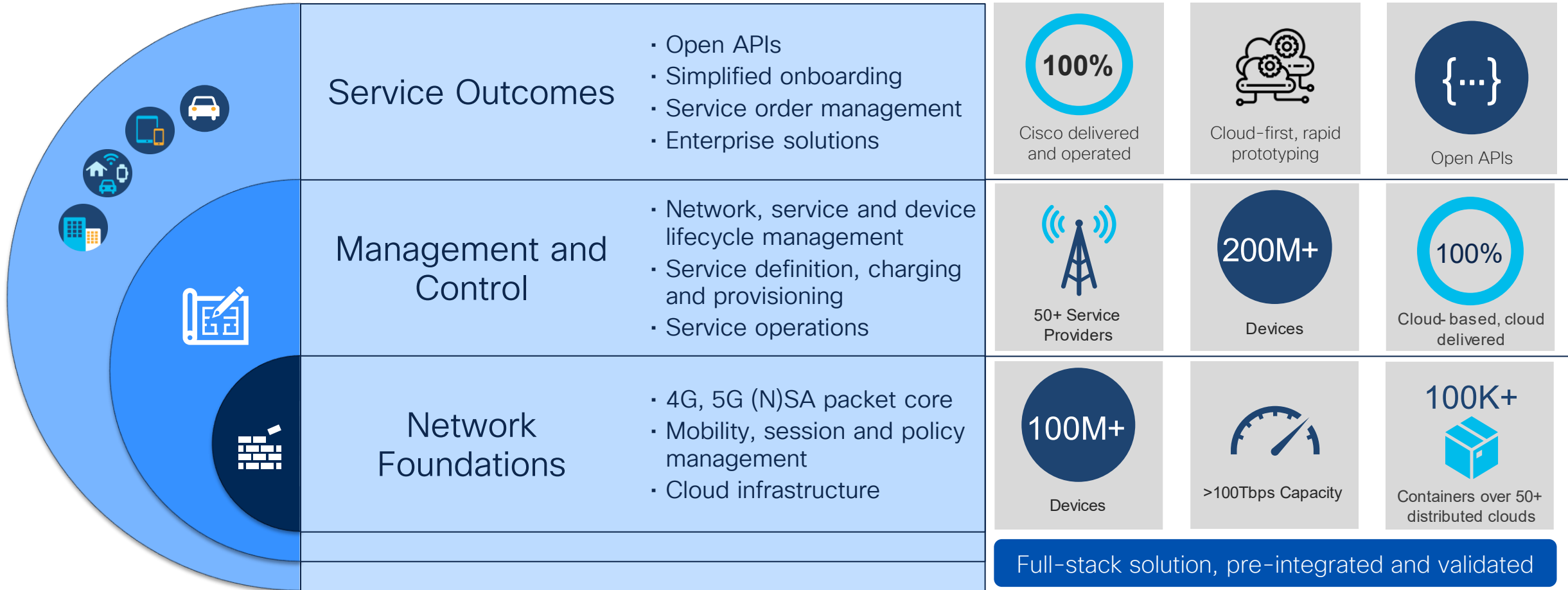
Mobility Portfolio Evolution



Simplicity

Speed-to-Market

Scale



For more information
visit:

cisco.com/go/5G



The screenshot shows the Cisco 5G Network Architecture landing page. At the top, there is a navigation bar with the Cisco logo, links for 'Products and Services', 'Solutions', 'Support', and 'Learn', and a search bar. Below the navigation bar is a hero section with a background image of a van parked on a cliffside overlooking the ocean. The main heading is '5G Network Architecture'. Below the heading is a sub-heading: 'Break free of proprietary limitations to realize the potential of 5G with a Cisco open, cloud-native architecture.' There is a video player thumbnail for 'Cisco 5G agility (1:24)'. Below the hero section is a secondary navigation bar with links for '5G Network Architecture', '5G Monetization', 'Solutions', 'Products', and 'Resources', and a 'Contact Cisco' button. The main content area features a section titled 'Deploy services your customers want, when and where they need them'. Below this is a paragraph: 'The Cisco cloud-to-client approach unifies multivendor mobile solutions into an open, cloud-native architecture. Build a 5G network that is cost-efficient, simplified, and trustworthy. Differentiate your business with connected experiences and cloud services.' There are four icons with corresponding text: 1. 'Unify your architecture' with a lightbulb icon: 'The Cisco Cloud-to-client, open, multivendor, multi-technology 5G architecture simplifies the complicated.' 2. 'Reduce your costs' with a Euro, Dollar, and Yen symbol icon: 'Simplified IP network operations and service creation improves efficiency.' 3. 'Monetize your network' with a globe icon: 'An application and mode-driven cloud platform freely and quickly monetizes new services.' 4. 'Mitigate your risk' with a bar chart icon: 'Secured and trusted solutions for your network establishes premium value with your customers.' Below this is a section titled 'Cisco 5G cloud-native architecture' with a paragraph: 'Deploy a proven open 5G ecosystem, dedicated to simplifying an open and converged access network, allowing connections to move between various access types. Enhance quality of experience, cost management, and traffic optimization all in one 5G architecture.' At the bottom, there is a section titled 'Reimagining the emerging mobile network' with a background image of a person standing on a cliff overlooking a city. The text says: 'As a new provider of mobile network services, you need an innovative yet proven network. With a Cisco 5G software-defined architecture, your network will be defined by applications and services not just access technology.' There are two buttons: 'Watch video (3:41)' and 'Read white paper'.

Questions?





The bridge to possible