



# Solving the Networking Puzzle

## From IoT to SDN and Everything In-Between

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# The Evolved Network: Making Networking Infrastructure Consumable

## Software-Defined Networking

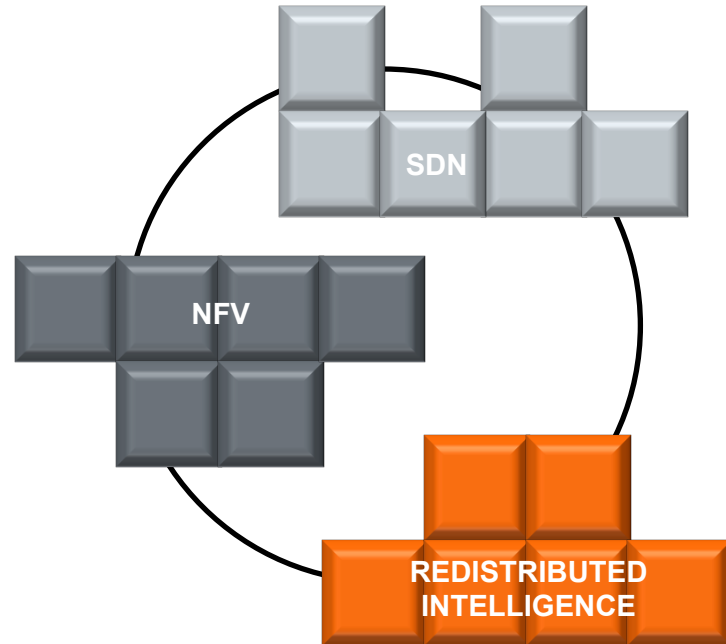
- Simplify and improve network configuration
- Accelerate roll-out of network apps

## Network Functions Virtualization

- Improve resource elasticity
- Reduce cost of network services

## Redistributed Intelligence

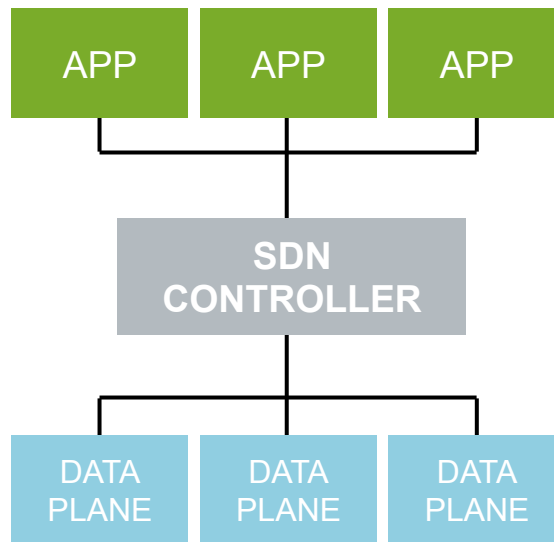
- Reduce network infrastructure cost
- Enable new applications
- Improve application performance



# SDN Defines a Platform for Network Applications

## Software-Defined Networking

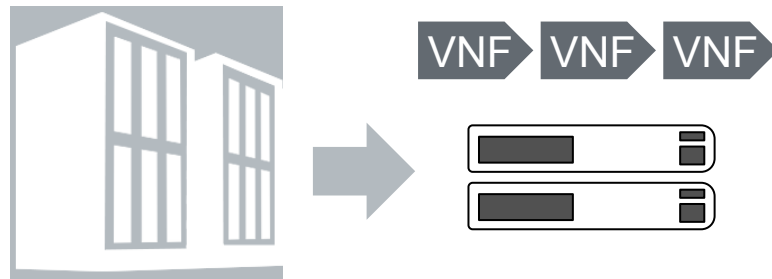
- **How to improve configurability and feature velocity?**
  - Make the network programmable
  - Centralize control
  - Developers need access to network
- **Use Cases**
  - Auto provisioning
  - Service creation/insertion
  - WAN virtualization
  - Network monitoring and analytics



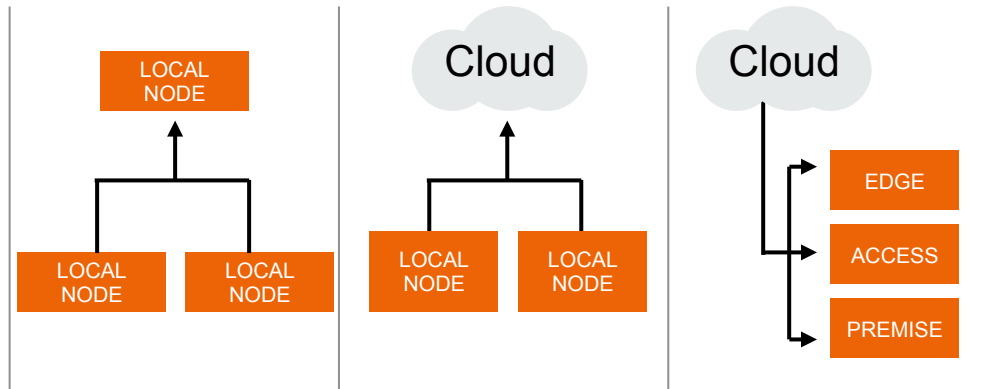
# NFV Decouples Applications from Hardware

## Network Functions Virtualization

- **How to improve cost and speed of network applications?**
  - Move functions to software
  - Replace bespoke hardware with more general systems
  - Virtualize software
- **Use Cases**
  - Mobile core-network functions
  - Broadband remote-access servers

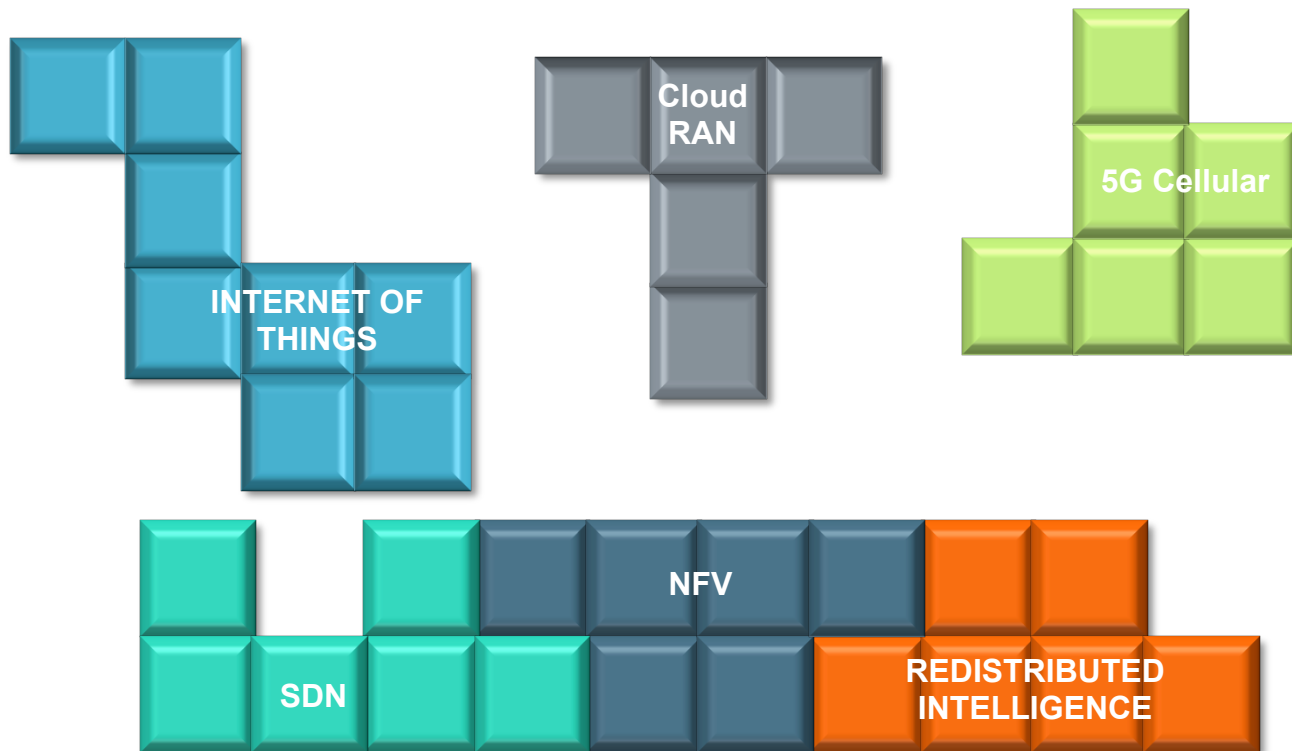


# Redistributed Intelligence: Context Defines Where Intelligence Goes



	Centralize Locally	Move to Cloud	Distribute
Coordination	LOCAL	GLOBAL	LOCAL
Latency Sensitivity	HIGH	LOW	HIGH
Backhaul Required	HIGH but LOCAL	HIGH and WIDE AREA	LOW and WIDE AREA
Example	SDN CONTROL	Virtual CPE	CACHING

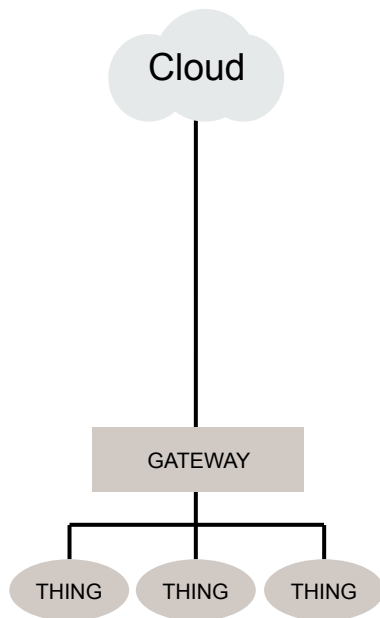
# Other Technologies Build on the Evolved Network



# IOT: Intelligence Is Available Where Needed

PAST

THING-CENTRIC



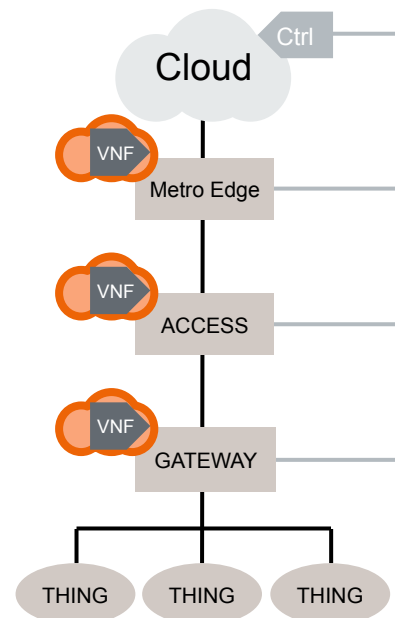
Software-Defined Networking

Network Functions Virtualization

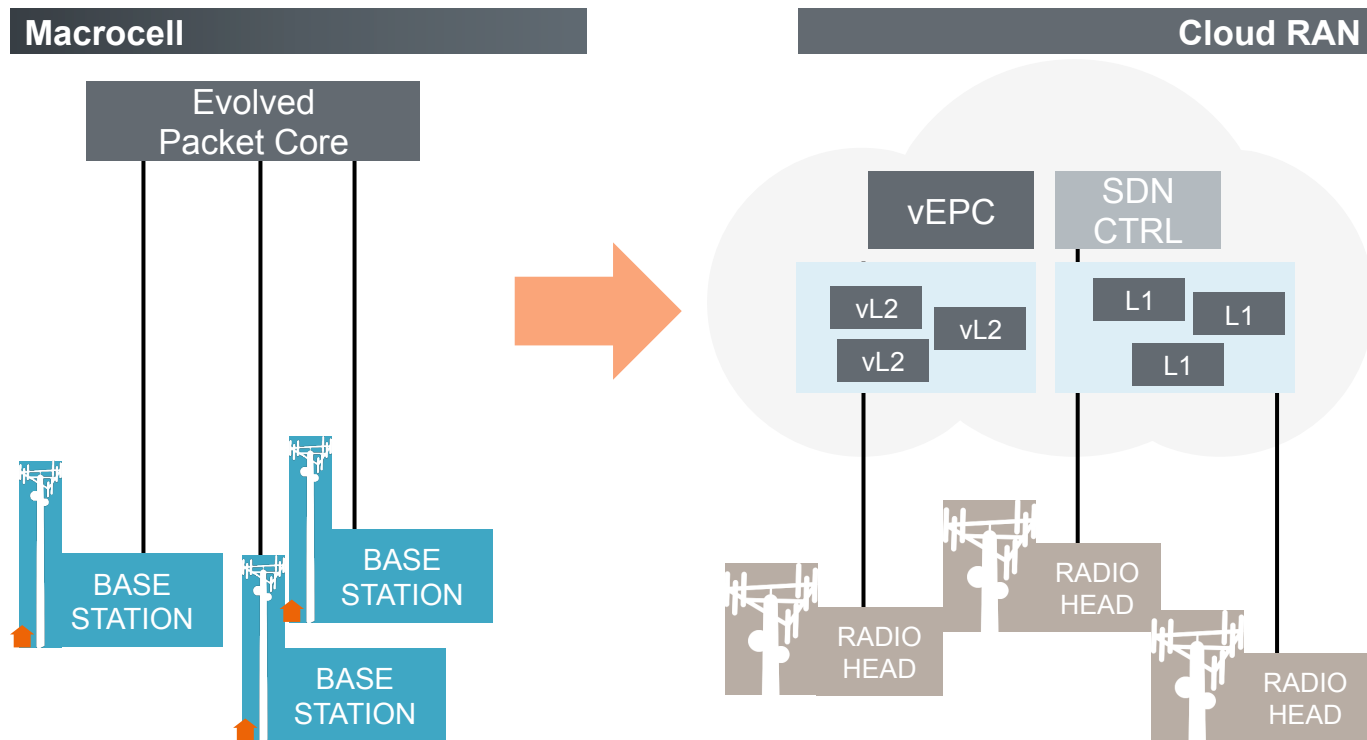
Redistributed Intelligence

FUTURE

EVOLVED

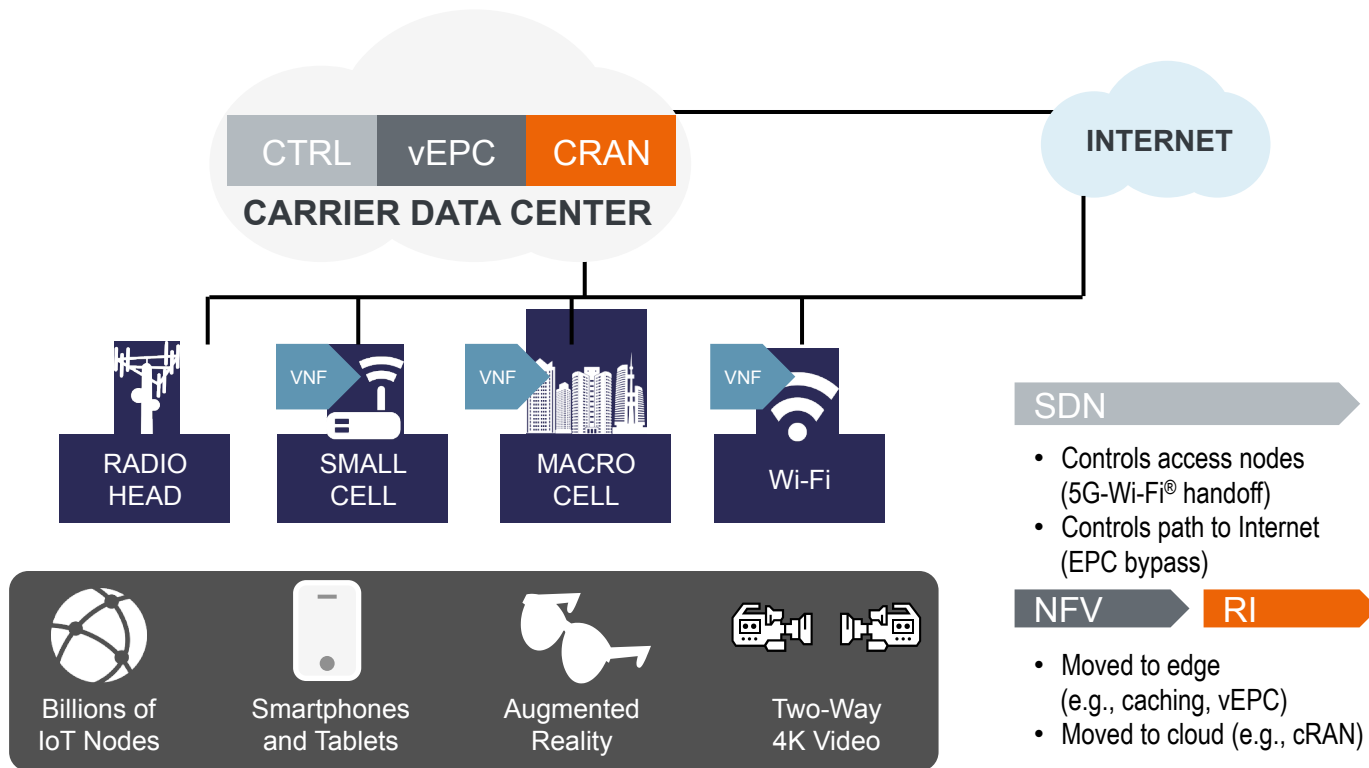


# Cloud RAN: An Alternative Network Architecture





# 5G: Support 100x Network Users and 100x Bandwidth



# How Must Multicore Processors Change?

**#1**

**Easy to use**

**#2**

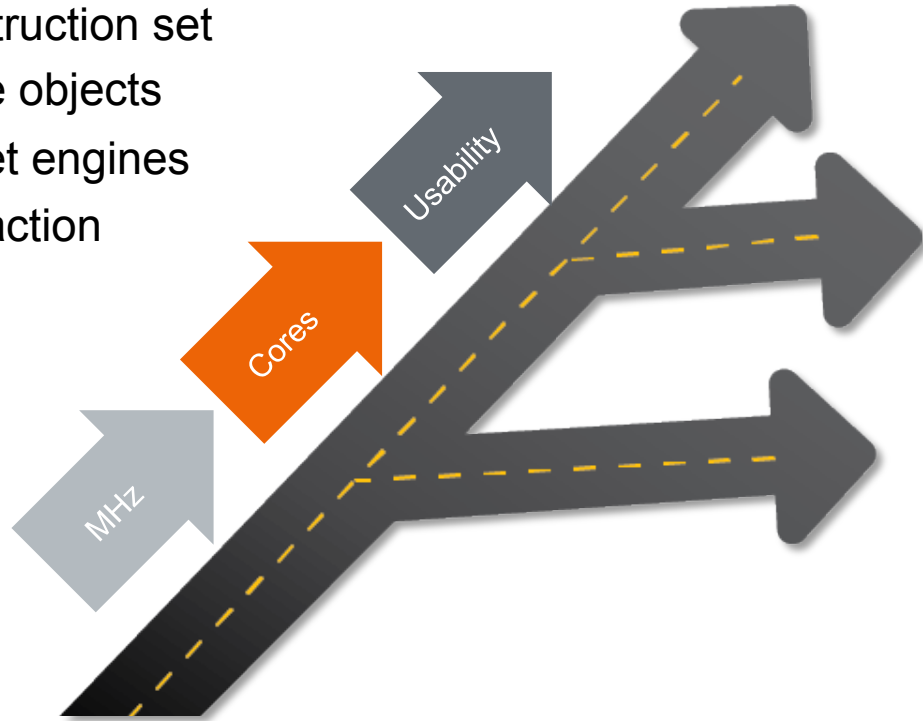
**Scalable**

**#3**

**Supported by software**

# The New Multicore Path: Improving Ease of Use

- Open (multivendor) instruction set
- Peripherals as software objects
- C-programmable packet engines
- Mgmt and config abstraction



# A Single Multicore Architecture Must Scale



To **MASSIVE**  
Comm Systems

From small IoT  
gateways



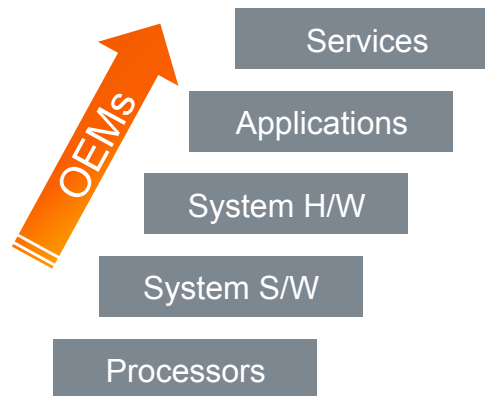
# Software Complements Multicore Processors

A void is opening in the value chain

- OEMs are moving up
- OS/tools landscape changes

Multicore companies must fill the void

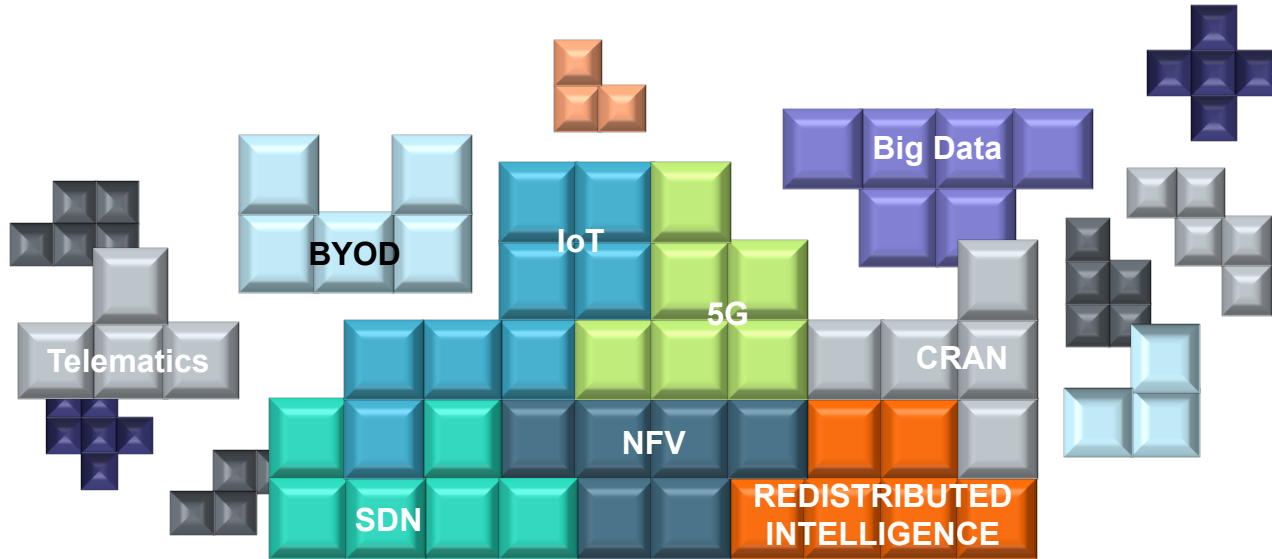
- Vendor-neutral APIs
- Turnkey, optimized code
- Vendor-supported Linux<sup>®</sup>
- Development services



# How Freescale Enables This New Vision

- **Multicore QorIQ communications processor Layerscape architecture**
  - Easy to use
  - Designed for the Evolved Network
- **Industry's broadest portfolio**
  - Multicore QorIQ communications processors scaling from 1 to 24 cores
  - Wireless processors from femtocell to cloud RAN
  - IoT components from sensors to cloud
- **Investment in software and standards**
  - 700 software engineers
  - Commercial software and services
  - OpenFlow™ plugfests
  - Engaged with operators and OEMs on NFV

# Building on the Evolved Network, We Create Something Great



Can *your* multicore supplier do this?



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