BROADCOM STRATAXGS® TRIDENT II SERIES:

USHERS NEW ERA IN CLOUD-SCALE NETWORKING

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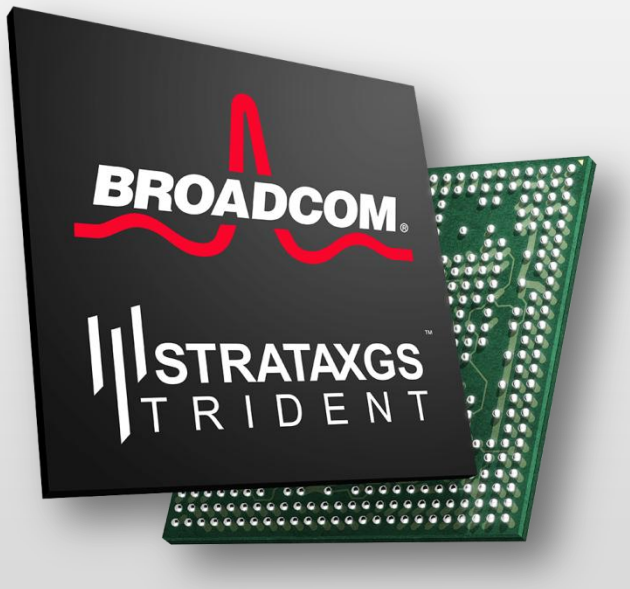
AGENDA



- Market Dynamics
- 10/40GbE Opportunity
- Series Introduction
- Summary

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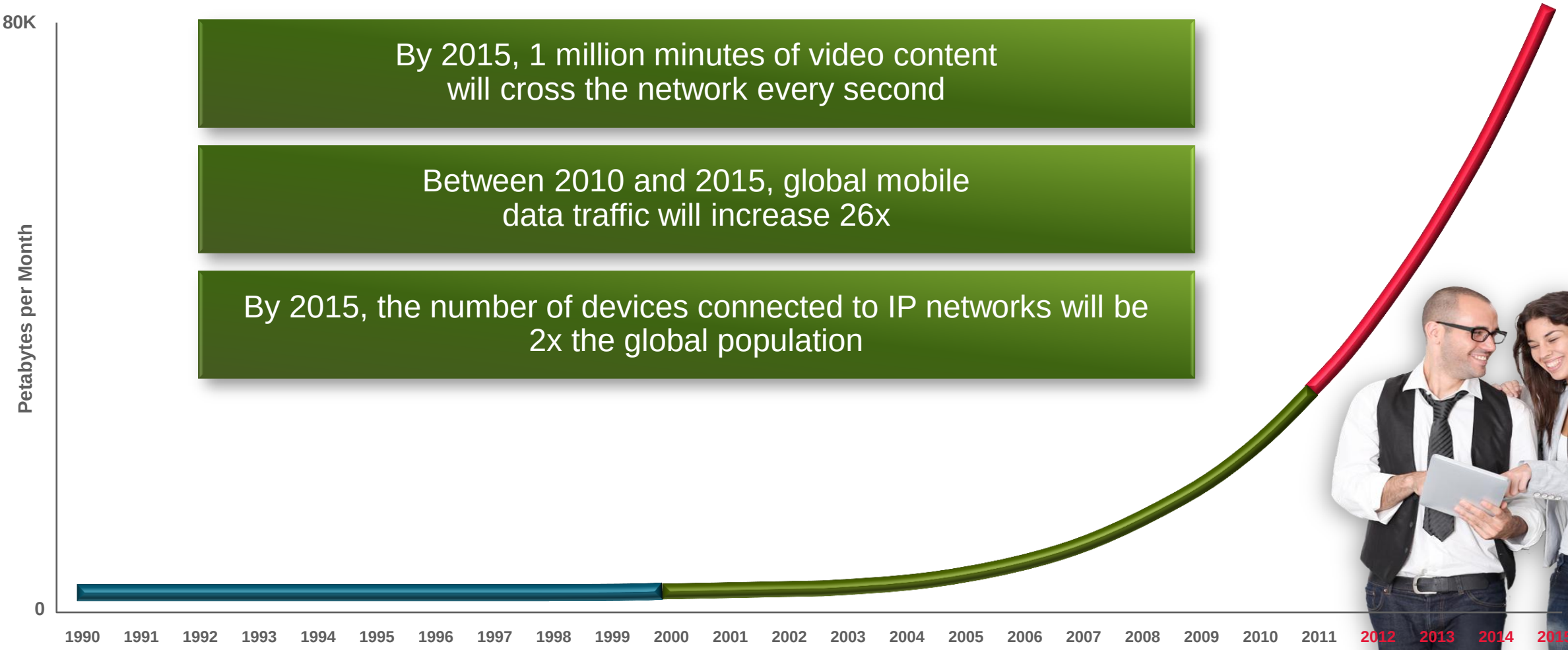
CONTENT CONSUMPTION DRIVING TRAFFIC GROWTH

>100% CAGR Since 1990



Source: Cisco VNI, sixrevisions.com

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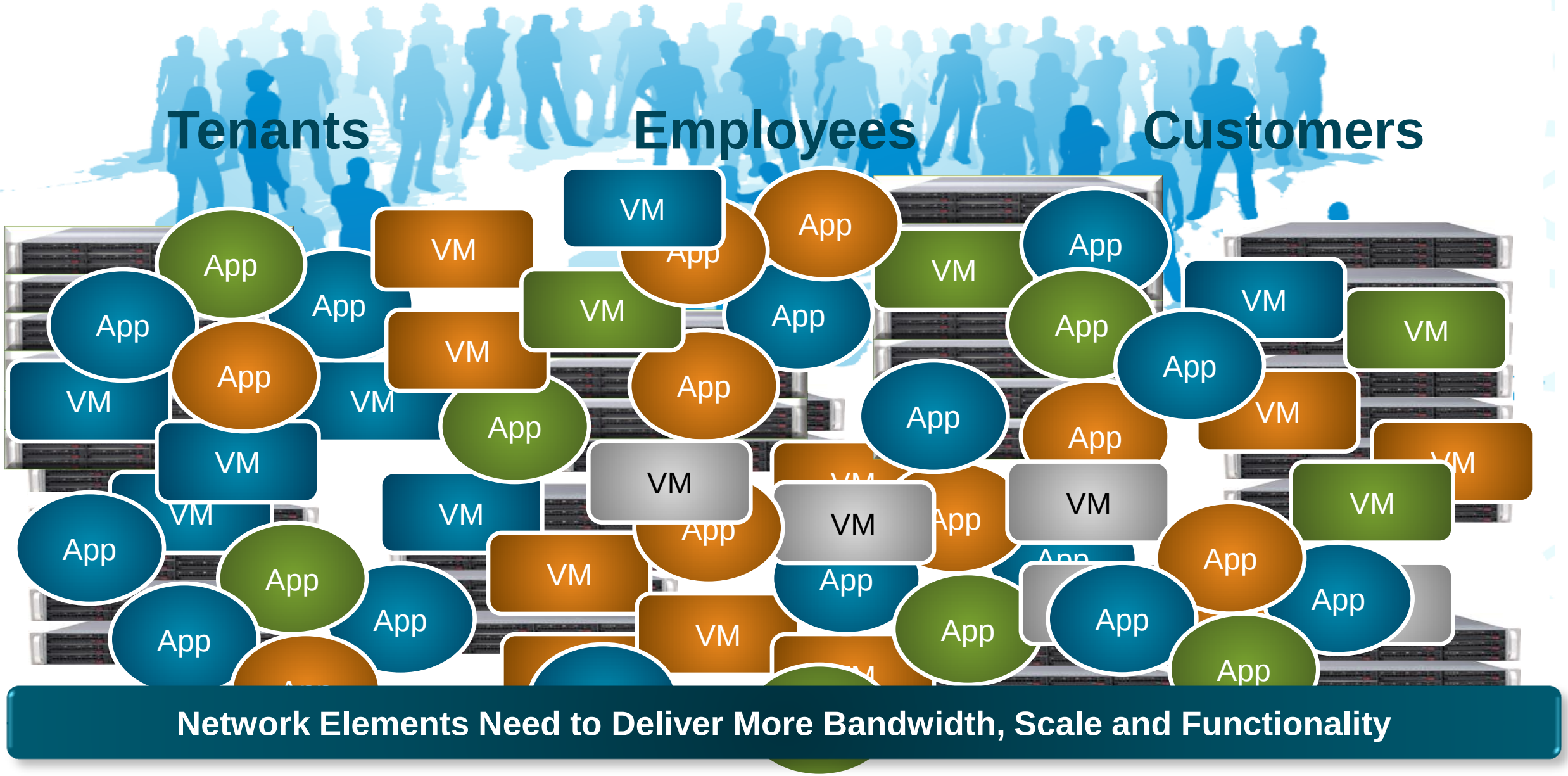
EXPONENTIAL GROWTH IN USERS AND APPS



Network Elements Need to Deliver More Bandwidth, Scale and Functionality

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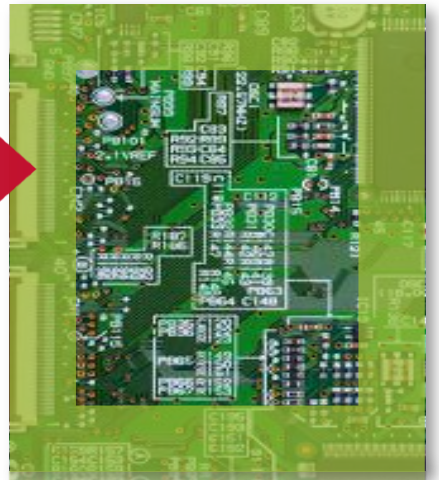
THE CUSTOMER CHALLENGE

Goal

Delivering
More Bandwidth, Scale and Functionality

Constraints



Board Space

System Cost

Power Consumption

Changing the Paradigm of How Cloud Networks are Built

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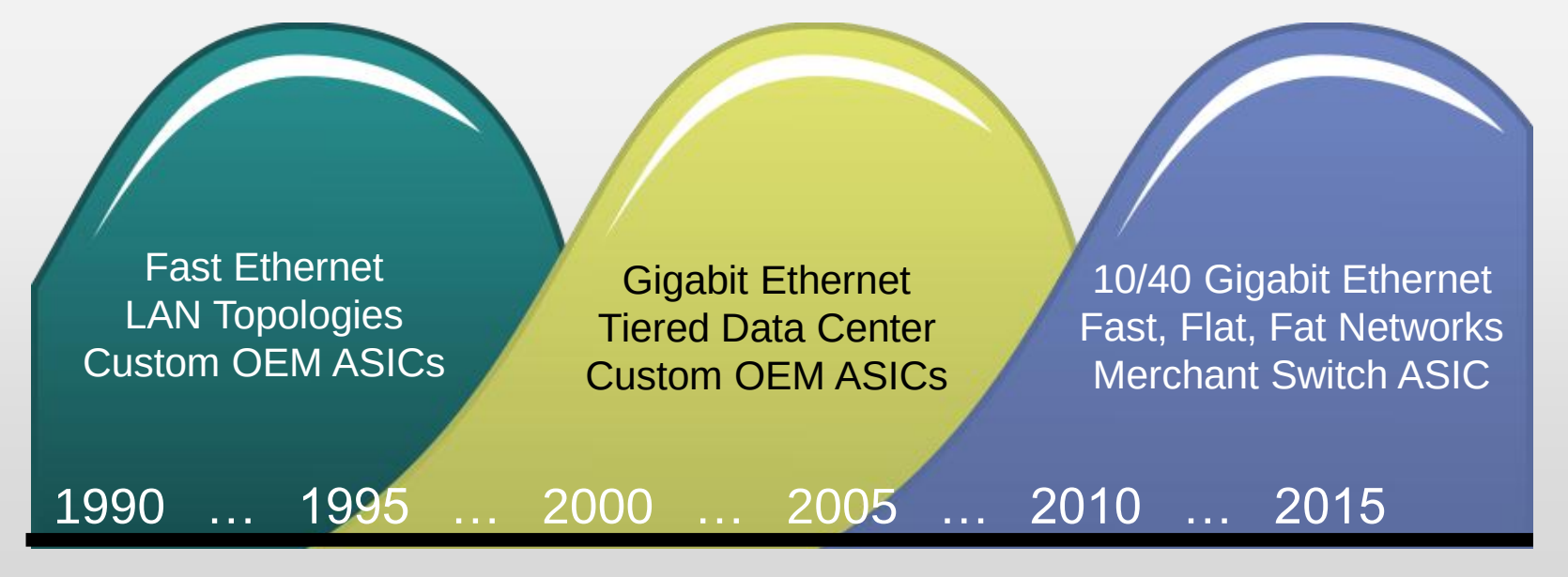
FUNDAMENTAL SHIFT IN DATA CENTER NETWORK INFRASTRUCTURE AND SWITCHING DESIGNS



- Cloud IP traffic will grow at a 66% CAGR 2012 – 2015: >34% of total DC traffic
- Public cloud workloads to increase at a 50 percent CAGR in the next three years
- 40 percent of servers are virtualized, projected to increase to 75 percent by 2015
- Data center 10GE ports projected to grow at a 40% CAGR 2012 - 2016
- 40GE ports projected to grow at a CAGR of 130 percent from 2012 - 2016

Strong Market Trends and New Workloads Driving to Fast, Flat and Fat Network Designs

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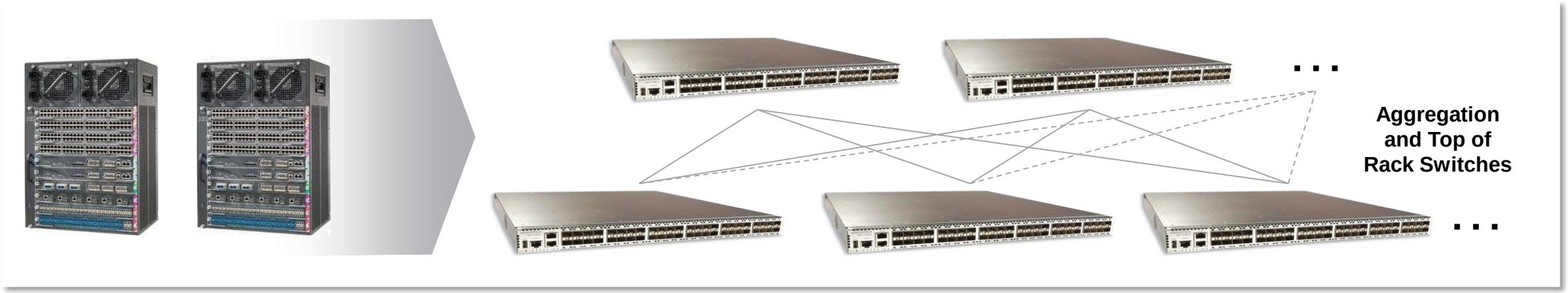
FROM SCALE-UP “BIG IRON” TO EFFICIENT SCALE-OUT CLUSTERS



Modular Switches with Multiple Silicon Components

- North-South traffic patterns
- Designed for tiered and oversubscribed networks
- Differentiation

Fixed Form Factor Switches with Single Integrated Silicon

- East-West and virtualized traffic patterns
- Fast, fat and flat networks
- Common network architecture

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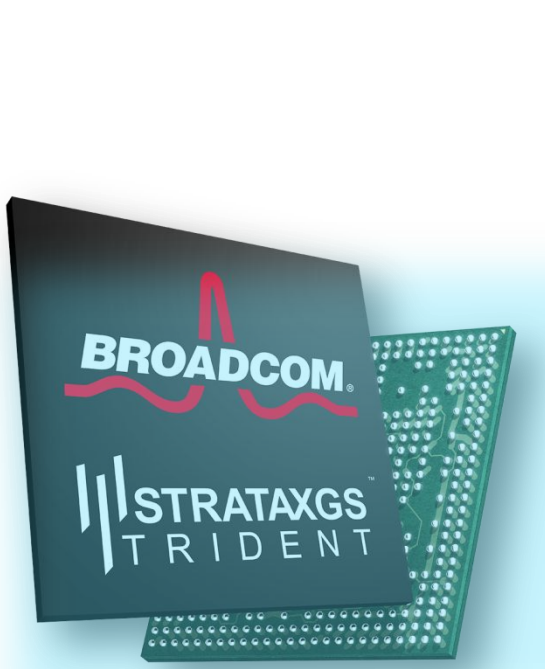
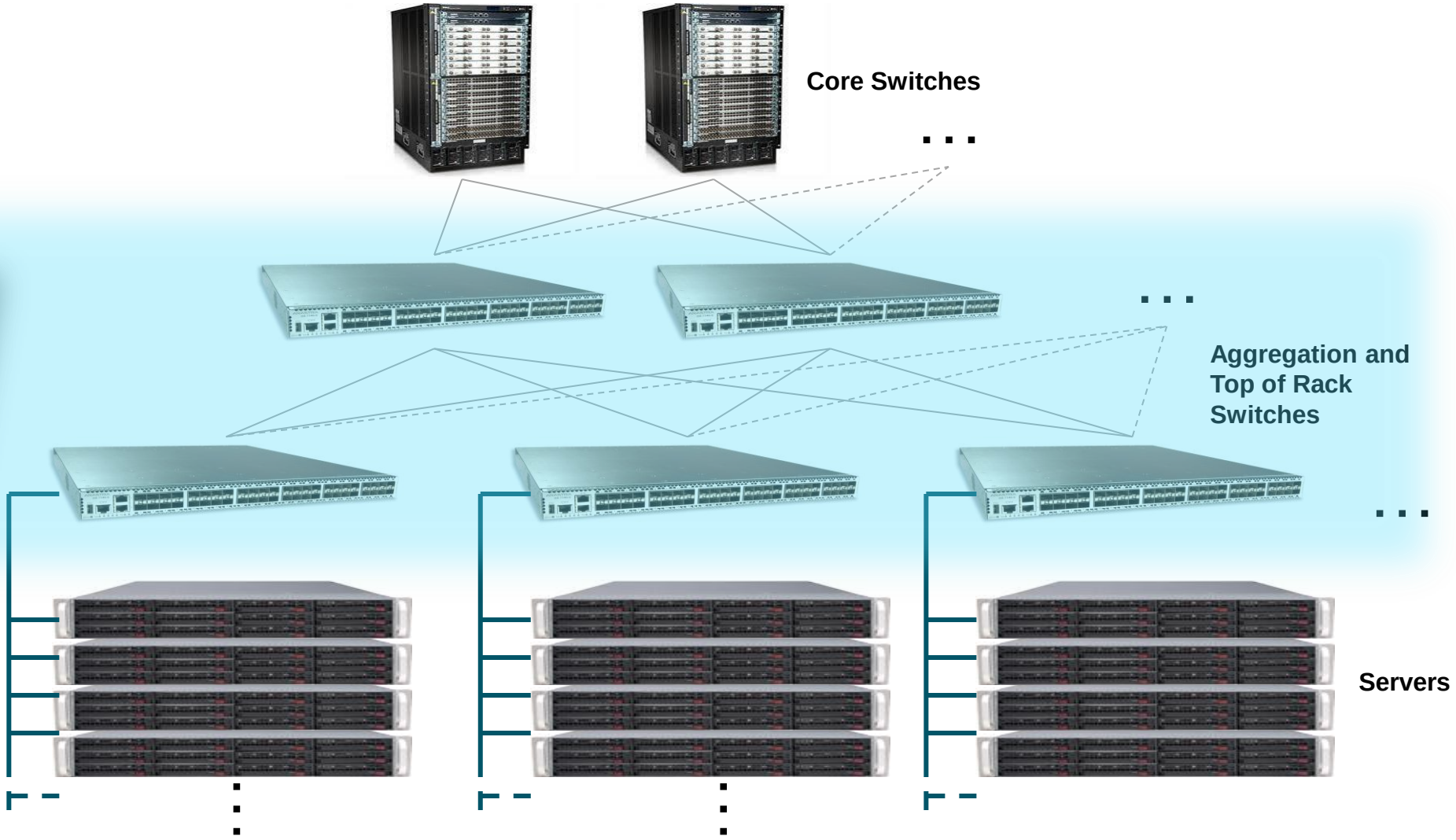
PROLIFERATION OF THE COMMON BROADCOM-BASED SWITCH ARCHITECTURE





Common X86 Architecture

OEM Control Plane Software & SDN Software Built on Common SDK & Data Plane APIs

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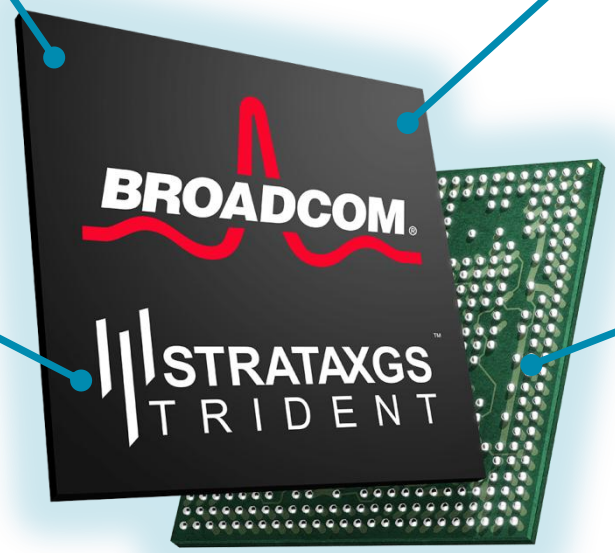
INTRODUCING STRATAXGS® TRIDENT II SERIES

Higher Bandwidth and Integration

960-1280Gbps Ethernet Switching Capacity

Very Large Network Nodes and Topology Scale

Smart-Table technology enables large & configurable L2/L3 tables



Significant Price- Performance Improvements

Smart-Buffer & Smart-Hash technologies for improved congestion handling, reliability and visibility

Higher Network Utilization & Multi-Tenancy Support

Smart-NV technology for VxLAN, NVGRE-based network virtualization

Extending Leadership with New Cloud-Optimized Ethernet Switch with 100+ 10GE Ports

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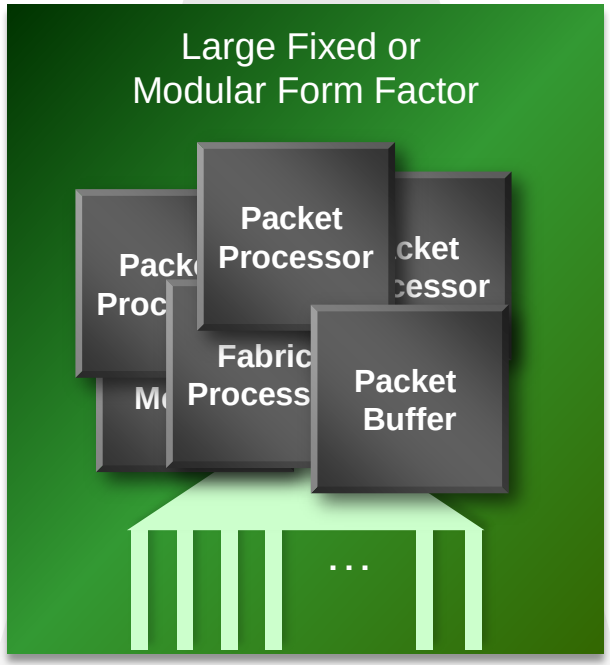
DELIVERING UNPRECEDENTED VALUE AND SCALE

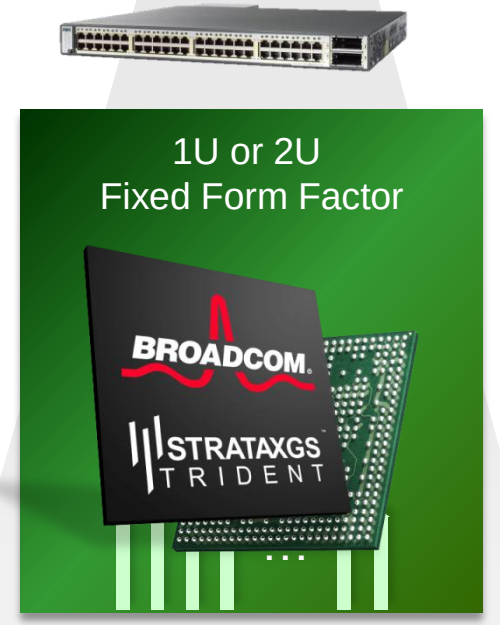
Data Center Aggregation and Access Switches

Traditional High Density Switch Using Multiple Chips



Higher Cost, Higher Power, More Space, Higher Latency

Single Chip Delivering High Scale & Performance



104x10GE, 96x10GE + 8x40GE, 64x10GE+16x40GE, 32x40GE,

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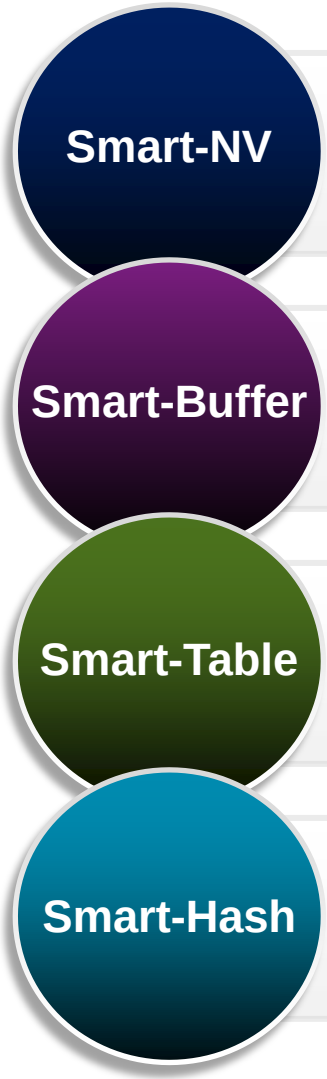
CLOUD-OPTIMIZATION WITH NEW SMARTSWITCH TECHNOLOGIES



Network Infrastructure Virtualization @ Wire Speed

Higher Network **UTILIZATION** with more VMs & Multi-tenancy

4X HIGHER

Load-Based, Shared, Dynamic Packet Buffering

High Burst Absorption for **DETERMINISTIC** Performance

5X BETTER

Largest Address Tables with Network Topology-Based Profiling

SCALE to Very Large Number of VM and Server Nodes

2X LARGER

Eliminates polarization in networks with high, diverse traffic patterns

Reliable Network **PERFORMANCE & VISIBILITY**

RELIABILITY

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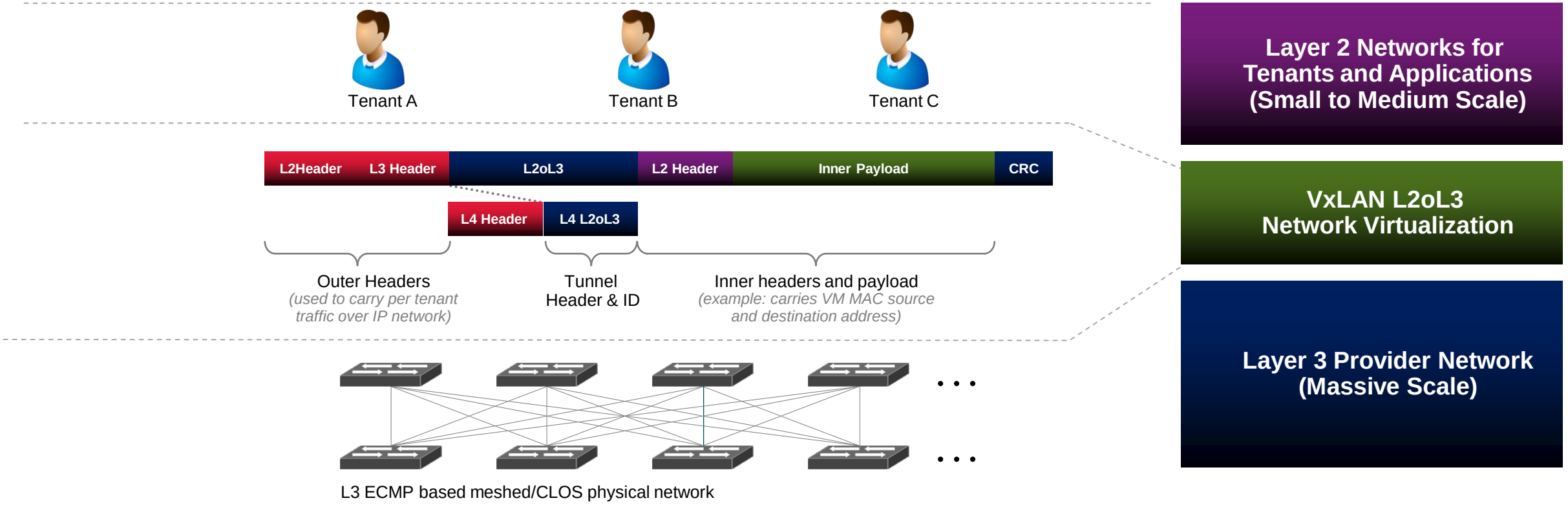
INTEGRATED VXLAN NETWORK VIRTUALIZATION SUPPORT



Industry's highest Layer 3 and ECMP table scale for massive network scale with full cross-sectional bandwidth

Integrates VxLAN Transit Switch and Gateway features on-chip. BRCM is a co-author of the VxLAN specification

Delivers network services & QoS for up to 8K tenants and 16K VM abstractions for legacy hosts connectivity

Source: Tenant images sourced from clker.com, freeiconsweb.com, iconarchive.com

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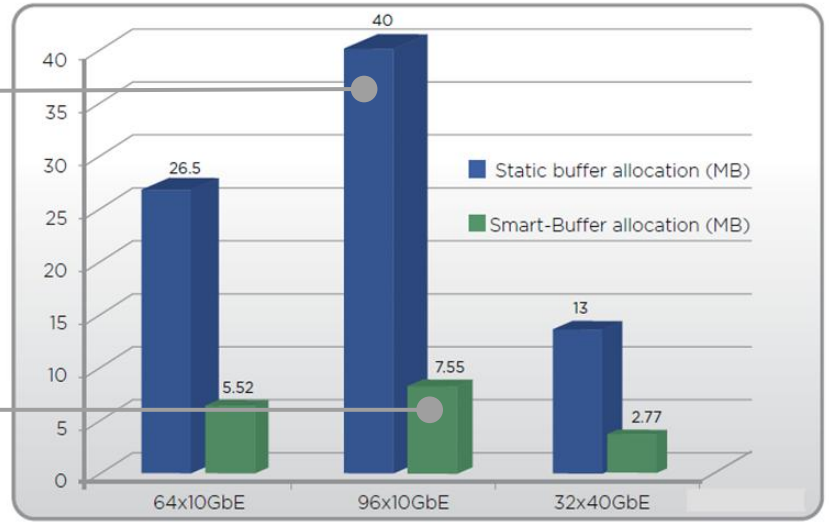
UNIQUE AND INTELLIGENT PACKET BUFFERING DELIVERS 5X BETTER UTILIZATION

- **Smart-Buffer technology utilizes on-chip packet buffer memory**
- **Minimizes latency by avoiding packet reads/writes to/from external memory.**
- **Packet buffers are dynamically shared across all ports/queues**
- **Queue discard thresholds sized dynamically based on congestion**
- **Provides excellent burst absorption and optimal buffer utilization**

96x10GE Switch without Smart-Buffer requires 40MB buffer

96x10GE Switch with Smart-Buffer requires 7.6MB buffer to deliver same level of performance



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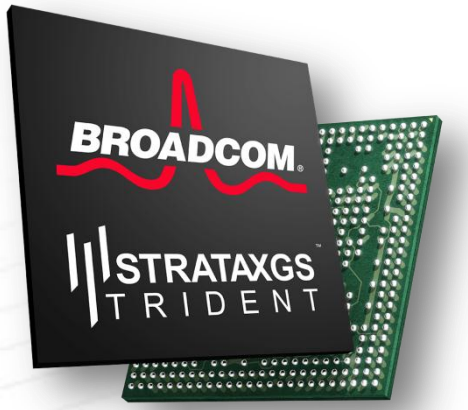
SUMMARY

- **World's highest density, feature-rich 10/40GbE switch**
- **First single chip to deliver 100+ 10GbE ports**
- **4X network virtualization scale**
- **2X greater forwarding capacity**
- **Scales to support tens of thousands of server, VM & storage endpoints**
- **Integrated SmartSwitch technologies**

CLOUD SCALE NETWORKING
POWERED by BROADCOM®



Unprecedented Innovation for Cloud-Scale Networking

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Thank You