# **ARRIS INVESTOR DAY 2018**

March 2018

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## SAFE HARBOR FORWARD-LOOKING STATEMENTS



Statements made in this presentation, including those related to projected financial results for the first quarter 2018 and beyond, the impact of the Ruckus Networks acquisition, market share growth, our expected tax rate, increased profitability, shareholder returns, the timing of introduction and acceptance of new products, and the general market outlook and industry trends are forward-looking statements. These and other forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those indicated in the forward-looking statements. Such risks and uncertainties include, but are not limited to: projected results for the first quarter and full year 2018 are based on preliminary estimates, assumptions and projections that management believes to be reasonable at this time, but are beyond management's control; the anticipated benefits from the Ruckus Networks acquisition may not be realized and we may encounter significant integration costs and unknown liabilities in connection with the acquisition; volatility in component pricing and supply could impact revenues and gross margins more than currently anticipated and we may not be able to pass increased costs on to our customers; recently announced U.S. tariffs and expected tariffs imposed in foreign jurisdictions as a result could materially impact the costs associated with our products which we may not be able to pass on to our customers; volatility in the currency fluctuation may adversely impact our international customers' ability or willingness to purchase products and the pricing of our products; regulatory changes, including those related to recently completed changes to the U.S. tax code, could have an adverse impact on our operations and results of operations; the impact of litigation and similar regulatory proceedings that we are currently involved in, or may become involved in, including the costs of such litigation, could have an adverse effect on our operations and results; our customers operate in a capital intensive consumer-based industry, and volatility in the capital markets or changes in customer spending may adversely impact their ability or willingness to purchase the products that we offer.

These factors are not intended to be an all-encompassing list of risks and uncertainties that may affect our business. Additional information regarding these and other factors can be found in our reports filed with the Securities and Exchange Commission, including our Annual Report on Form 10-K for the year ended December 31, 2017. In providing forward-looking statements, we expressly disclaim any obligation to update publicly or otherwise these statements, whether as a result of new information, future events or otherwise, except as required by law.

## Agenda 2018 ARRIS INVESTOR DAY



8:00 - 8:05	Welcome	Bob Puccini
8:05 - 8:25	ARRIS Strategy and Industry Trends	Bruce McClelland
8:25 - 8:45	Customer and Market Overview	Steve McCaffery and Tim O'Loughlin
8:45 - 9:10	Network & Cloud Business Update	Dan Whalen
9:10 - 9:35	Customer Premises Business Update	Larry Robinson
9:35 - 9:50	Break	
9:50 - 10:20	Enterprise Networks Business Update	Dan Rabinovitsj
10:20 - 10:50	Technology Talk - CBRS	Steve Martin
10:50 - 11:15	Financial Update	David Potts
11:15 - 11:50	Leadership Panel Q&A	Executive Team
11:50 - 12:00	Wrap-up	Bruce McClelland



## ARRIS Strategy and Industry Trends

**Bruce McClelland** 



# WE ARE ARRIS

Bringing networks to life and connecting 100s of millions of people around the globe \$6.6B FY2017A Revenue
1,700 Service Provider Customers Served
~10,000 Enterprise Channel Partners
73 Countries with direct & indirect presence
~8,700 Employees
5,000+ Patents approved or pending

### **REDEFINING CONNECTIVITY**

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## Leading the Internet Transformation





### **PROVEN TRACK RECORD OF CREATING VALUE**

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 ARRIS is a global innovator enabling the Gigabit Generation with a new era of compelling connectivity experiences where we live, learn, work, and play

- We partner with the world's leading network operators and enterprises providing them with:
  - Innovation in the network from core to edge
  - Seamless connectivity that just works meeting and exceeding ever increasing consumer and business demands
  - Cost-effective scalable solutions enabling customers and partners to succeed

## Why ARRIS?





### SYSTEMS KNOWLEDGE

Video Delivery Networks Complex Data Networks

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## Investing for Today and Tomorrow





Core Cable Edge Residential CPE Video Infrastructure Optical Access Enterprise Wi-Fi Device Management

### Growth

Gigabit Internet Cloud Wi-Fi Campus Switching Smart Cities Federal IT Managed Services Professional Services Direct to Consumer

### Emerging

Connecting the Next Billion Users CBRS 3.5GHz LTE Small Cell Dell OEM Nextgen FTTx (10Gb EPON / NGPON-2) Access Network SDN/NFV IoT (Residential and Industrial) Full Duplex DOCSIS

## Value Creation Drivers





## **Organic Value Creation Strategy**





## Gigabit Networks



## Global investment to deploy mass market Gigabit Internet

- Continued exponential growth in data consumption and devices
- Constant technology upgrades and investments are needed to meet demand
   Global IP traffic (PB per month)<sup>1</sup>

300.000

200,000

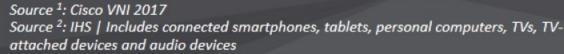
100,000

2016

2017

10.9 Billion

- Core Network and Transport
- Edge Processing
- Access Network
- Local Network
- Wi-Fi and Home Network
- Increasing dependency on automation and software defined networking



2017

Consumer

2018

Business

2019

Global Connected Devices <sup>2</sup> CAGR (2017-2021) = 16%

2020

Total IP Traffic

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24%

2021

21%

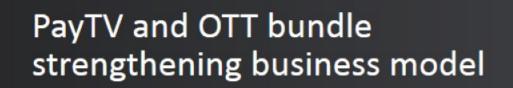
24%

CAGR

2021

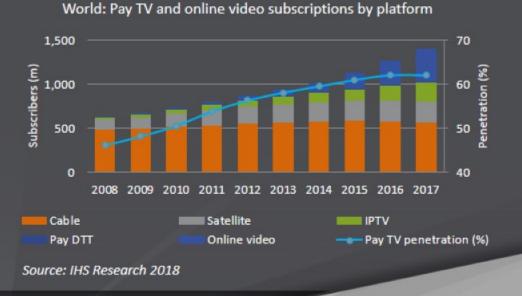
19.7 Billion

## Video Everywhere





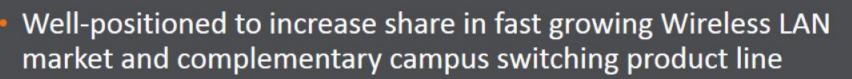
- Traditional PayTV subscriber base growing internationally with modest decline in North America
  - OTT content aggregation as part of bundle improves sustainability
  - Technology upgrades (ie. 4K) underpin continued investment
- OTT Video consumption continues significant growth
  - Augmenting, not replacing traditional TV viewing
  - More prevalent in North America
  - Underpins value proposition and investment in Broadband
  - Increases the importance of local wireless network importance



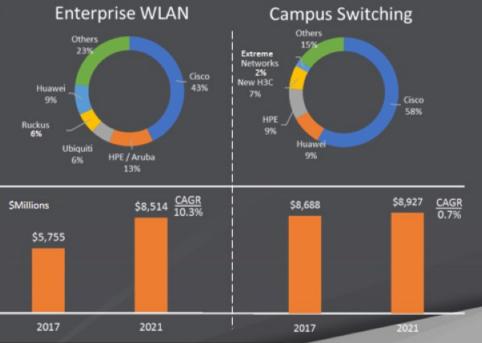
## Enterprise Networking



## Expanding share of fast growth market



- Immediately accretive with significant margin lift and higher industry valuation multiples
   Enterprise WLAN
   Camput
- Highly targeted vertical market strategy
  - Education, Hospitality, Smart City, Federal, Public Venues, Service Provider
- Technology and channel synergies with ARRIS
- Targeting 20%+ growth in 2018



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### Mobile Network Convergence

## Everything going wireless...



- Increasing prevalence of unlimited mobile plans driving demand for mobile-offload solutions
- Unprecedented opportunity to expand mobile capacity cost effectively utilizing CBRS Shared Spectrum
- Broad array of applications and use cases
  - Fixed Wireless Access
  - Mobile Capacity Augmentation
  - Alternate Mobile Carriers
  - Private LTE Networks
  - Multi-Carrier Neutral Host
- Secure LTE technology and performance with Wi-Fi economics



## Margin Expansion

## Intense focus on margin expansion





### Product mix

- New Enterprise segment
- Network and Cloud growth
- Increasing Software and Services



### Pricing

- Adjustments to reflect continued component cost pressure
- Increased discipline on new opportunities



### Cost improvements

- **Factory divestiture**
- Component costs
- **Operational efficiencies**

## Investing for Sustainable Shareholder Value



Effective Cash Utilization		M&A Strategy	
Organic R&D Investment	2016 — \$585M 2017 — \$539M 2018(E) — ~\$700M	Objective: Integrated Provider of converged connectivity and infrastructure solutions to Service Provider and Enterprise Near Adjacency Enterprise	
Share Repurchases	2016 — \$178M 2017 — \$197M 2018 <sub>(YTD)</sub> — \$25M		
Strategic M&A	2013 – Motorola 2016 – Pace 2017 – Ruckus		

### STRONG CAPITAL STRUCTURE, STRONG CASH GENERATION, DEPLOYING CASH TO ENHANCE SHAREHOLDER VALUE

## Today's Key Messages



- Well-positioned to benefit from mass-market Gigabit Internet spend
- Deeply entrenched leadership in evolving video market
- Expanded addressable market with increasingly diversified customer base
- Leadership in emerging mobile CBRS LTE small cell market
- Three year outlook and earnings growth target
- Capital allocation strategy



## **Customer Overview**

Steve McCaffery and Tim O'Loughlin

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## **Global Customer Trends**





### Broadband and Mobile Connectivity Key

7.6B mobile subscriptions by 2021, 1.1B broadband subscribers by 2021<sup>1</sup>

### **Massive Bandwidth Demand**

Unrelenting traffic from video, mobile offload, broadband subscriber growth, and IoT. Data traffic growing 20-30% year over year <sup>2</sup>

### **Evolution of Video**

4K consumer adoption underway, OTT application integration, rich media user interface, and voice control driving CPE refresh and subscriber trends

### Wi-Fi as Core Service

Residential and business customers demanding Wi-Fi connectivity and throughput resulting in ongoing device refresh

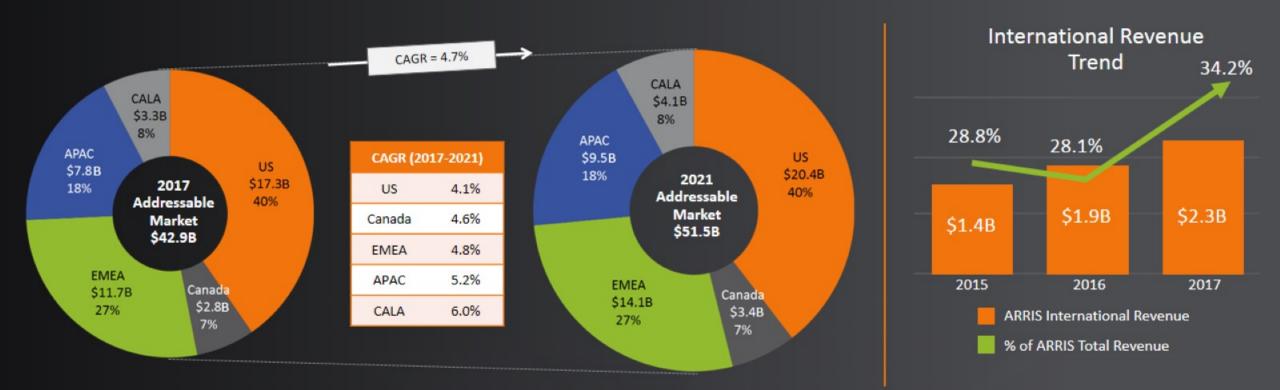
### **Service and Control**

Driving cloud control, virtualization, and telemetry across residential, mobile, and enterprise customers

<sup>1</sup> Source: Dataxis 3Q17 <sup>2</sup> Source: IHS Markit

## **Global Addressable Market**





#### Source: IHS, SNL Kagan, F&S, ABI, ARC, Ovum, TBR, Dell'Oro and ARRIS Estimates

CPE - Cable, Telco IPTV and Satellite STB; Cable Modems, Broadband Gateways, EMTAs; ADSL, ADSL+, G.Fast, VDSL CPE, ONT Residential Gateway; WiFi Routers, WiFi Extenders, Retail Video and Smart Home Devices N&C - CableEdge (CMTS/CCAP/EQAM/CMC); Access HFC (HEO, Nodes, AMP, PS, Passives, Accessories) & RFoG; Video Systems (Encoder, Transcoder, IRDs, Advance and Linear Ad Systems); Security Solutions (Traditional STB CAS, DRM, CAS Infrastructure, PKI); Assurance (On-Premise, SaaS, Home Network Assurance); Global Services (Network Build, Infrastructure Integration, Planning Design & Optimization, OSS Integration, Managed Services, and Wireless Consulting) Wireless - WLAN AP and controllers, carrier WiFi APs and Controllers, Service provider and Enterprise Small Cells | Campus/IXC - 1,10,40 GBps Wired LAN switches

### ~\$14.4B ADDRESSABLE MARKET EXPANSION DUE TO RUCKUS ACQUISITION

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## **Expanded Diversified Opportunity**



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—	CAGR = 4.7%	\$51.5B			
\$42.9B	\$45.3B	Network & Cloud \$10.3B			
Network & Cloud	Network & Cloud \$8.4B				
\$7.9B	695	CPE \$22.9B			
CPE \$20.5B	CPE \$21.4B				
Enterprise \$14.4B	Enterprise \$15.4B	Enterprise \$18.4B			
2017	2018	2021			

#### ARRIS All Products Global Addressable Market

#### Source: ARRIS View based on I.H.S. markit, ABI, Frost, Dell'Oro, TBR and IDC

Source: IHS, SNL Kagan, F&S, ABI, ARC, Ovum, TBR, Dell'Oro and ARRIS Estimates

CPE - Cable, Telco IPTV and Satellite STB; Cable Moderns, Broadband Gateways, EMTAs; ADSL, ADSL+, G.Fast, VDSL CPE, ONT Residential Gateway; WiFi Routers, WiFi Extenders, Retail Video and Smart Home Devices

N&C - CableEdge (CMTS/CCAP/EQAM/CMC); Access HFC (HEO, Nodes, AMP, PS, Passives, Accessories) & RFoG; Video Systems (Encoder, Transcoder, IRDs, Advance and Linear Ad Systems); Security Solutions (Traditional STB CAS, DRM, CAS Infrastructure, PKI); Assurance (On-Premise, SaaS, Home Network Assurance); Global Services (Network Build, Infrastructure Integration, Planning Design & Optimization, OSS Integration, Managed Services, and Wireless Consulting)

Wireless - WLAN AP and controllers, carrier WiFi APs and Controllers, Service provider and Enterprise Small Cells | Campus/IXC -1,10,40 GBps Wired LAN switches

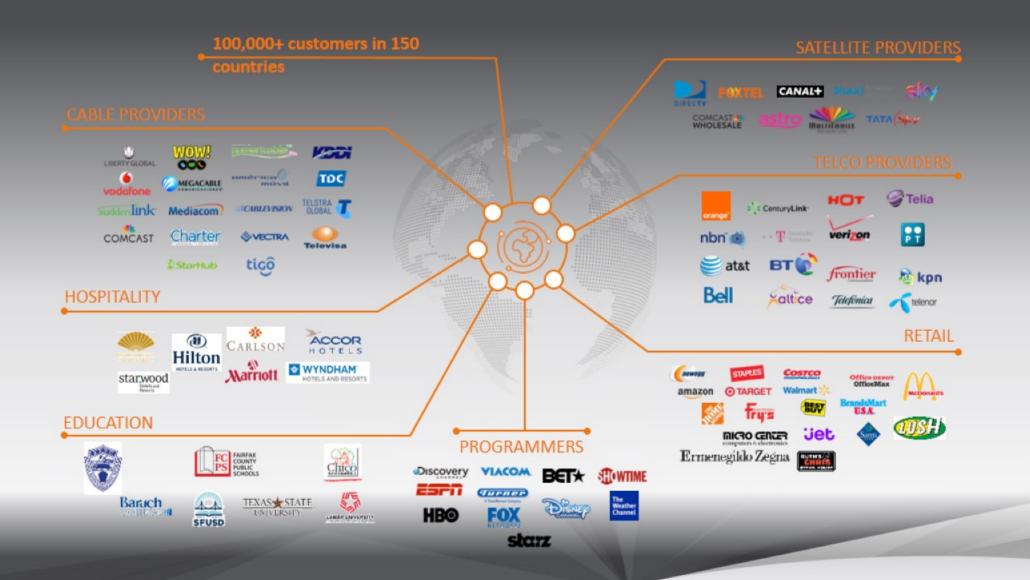
twork & Cloud	<ul> <li>Growth in bandwidth demand driving Access Networks business (CMTS, PON, and Node)</li> <li>Shift towards distributed architecture enables more bandwidth, digital optics and virtualization</li> <li>Stable and profitable video business</li> <li>Professional Services opportunities</li> </ul>
CPE	<ul> <li>Market leading portfolio of broadband, voice, and video CPE</li> <li>Technology upgrade cycles drive cyclical demand (ie. D3.1, 4K, 802.11AX)</li> <li>Demand for video devices evolving to 4K, wireless, and IP client</li> <li>Broadband and home networking segments growing</li> </ul>
erprise	<ul> <li>WLAN market projected to grow 9% CAGR</li> <li>All segments showing demand strength</li> <li>Exposure to large campus switching market</li> <li>Service providers investing in business services</li> <li>CBRS LTE opportunities germinating with mobile operators, mobile disrupters, private enterprise, etc.</li> </ul>

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## **Global Relationships**





## Diversified and Deep Customer Engagement



Large	Cable C	perator
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- CMTS
- Optical Access
- CPE
- Wi-Fi for Enterprise
- Bulk Wi-Fi for MDU
- Pro-services

### **Global Hospitality Brand**

- Wi-Fi Access Points
- Wi-Fi Controllers
- Campus Switching
- Pro-services

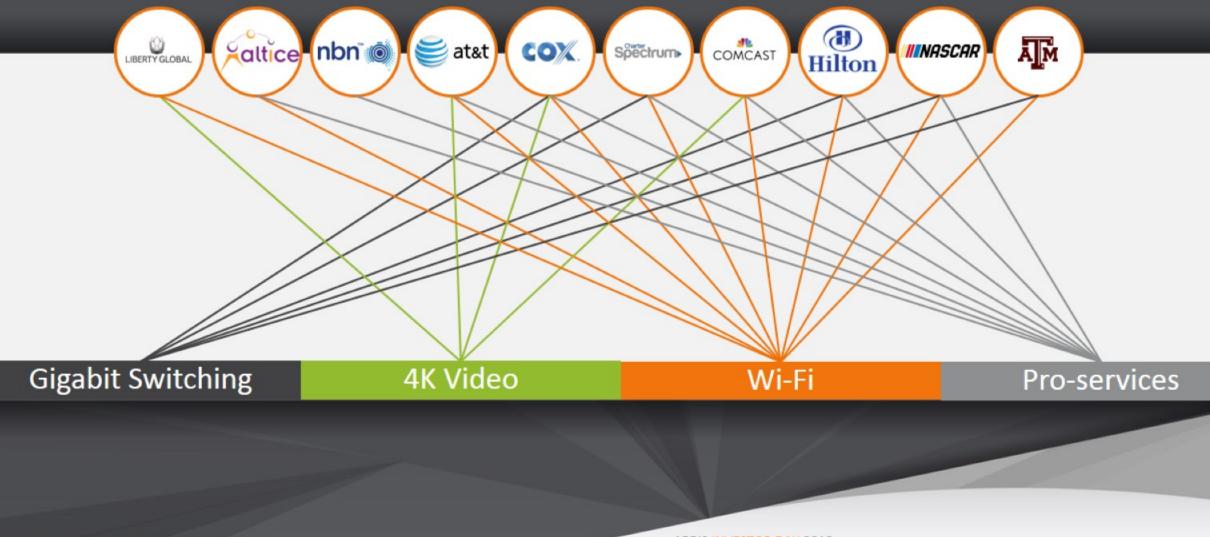
Mobile/Telco Network Operator

OTT CPE

- Device Management
- Legacy CPE
- Wi-Fi for Enterprise
- Bulk Wi-Fi for MDU



## Core Technologies Applicable to Multiple Verticals



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## U.S. Cable and Direct to Consumer (Retail)



### CUSTOMERS



### CUSTOMER TRENDS

- Bandwidth expansion
- DOCSIS 3.1 Technology upgrade cycle
- Evolving video product
- Integrating OTT into video product
- Continued focus on business services

### **ARRIS STRATEGY**

- CMTS upgrade licensing and nodes
- Leverage CPE and CMTS position
- Focus on 4K, wireless, and IP CPE
- Offering software and services
- Expanding Ruckus footprint

- Focused on high end Wi-Fi gateway
- Consumers demanding more speed
- Share of consumer spend increasing on home networking
- AX router in development
- Upgraded DOCSIS in modems
- Portfolio expansion (mesh, tri-band, whole home)

## U.S. Telco, Satellite, and Programmers



### CUSTOMERS



### **CUSTOMER TRENDS**

- Operators successful in broadband with mixed results in video
- Bandwidth expansion through FTTx
- Wi-Fi refresh cycle
- Traditional wireline IPTV and satellite flat to declining
- Residential broadband and mobility service blending

### **ARRIS STRATEGY**

- Maintain majority share on Tier 1 broadband gateway
- Win new FTTx opportunities
- Developing advanced Wi-Fi products
- Focus on wireless, 4K and IP clients
- Enable services with node upgrade modules, service provider Wi-Fi and CBRS offerings



## Canada Market Macro View

- Cable and Telco competition driving innovation, ARRIS supporting multiple 4K launches across both industries.
- Addressing Cable offering services for HSD and mobile data as they represent the highest margin business for operators.
- Rogers and Shaw execution against announced Comcast syndication.

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- Supporting Bell in all aspects of business through video partnership.
- Maintain dominant share in Telco space.

ROGERS

MTS

Shaw)

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TELUS

Bell

## **EMEA Market Macro View**

- Consolidation to continue in Cable market with expanded focus on Altice, LGI and Vodafone.
- Network transformation models creating a services growth business for ARRIS.
- In-home networking, higher broadband speed and integrated OTT leading the technology transition with ARRIS as partner.
- High Broadband penetrations allow for ARRIS to provide service differentiation.
- Increase engagement with SKY and Multi-Choice.
- Plan for New Business expansion in markets like Middle East and eastern Europe.





## **CALA Market Macro View**

- Growth in 2018 as environment stabilizes.
- Business models to support diverse economic conditions across the markets.
- Focus on global players that operate inside and outside region ie Telefonica, Altice, LGI, AMX.
- Significant technology transition underway led by DVB and deep fiber, creating a focus new customer opportunities.
- Increased D3.1 transformation creating services offerings.
- Target the ongoing significant HFC investment expected to continue through 2019.

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Televis

MEGACABLE

Telefonica

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IBERTY GLOBA

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## **APAC Market Macro View**

- Consolidation of cable providers and increased telco competition driving investment with focus on high RPU markets.
- Driving increased selection on key operators in China.
- Increased focus on adoption of Gigabit and 4K services in Japan, Korea and Hong Kong.
- Supporting market through extensive wide-reaching Channel program, increased market and segment reach.
- Build on incumbent position at NBN for rolling out D3.1 with full service offering.
- Develop the growing DVB market in specific countries.
- Build on established business in Japan and new growth through key events. (ie: Tokyo 2020)

non telstra FOXTEL SKYCABLE J:COM PROCNS astro



## Enterprise Market Opportunity



### Strong Go-to-Market Architecture

- Diversified verticals
  - Hospitality
  - Education
  - Enterprise
  - Retail
  - Venue
  - Smart Cities
- +8,000 Channel Partners (VARs, Distributors, partners)
- Close cooperation with traditional Service Providers as a channel to Enterprise



## **ARRIS Strategy for Customers**





### **Broadband and Mobile Connectivity Key**

Grow with service providers in broadband and mobile space

### Wi-Fi as Core Service

Leverage Ruckus portfolio to win traditional enterprise verticals and service provider driven initiatives in business services space

### **Evolution of Video**

Enable next generation of video services: operator OTT, 4K, wireless and IP client

### Service and Control

Win more cloud, pro-services, managed services, and device management



## Network and Cloud Overview

Dan Whalen

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## **Network and Cloud Segment Summary**



- Strong portfolio addressing Cable Internet Service Providers and broader video systems networks
- Growing Professional Services capability
- Growth in Over-the-top video streaming creating strong fundamentals
- State-of-the-art internet access is a key global social imperative
- Highly competitive industry dynamics compelling Service Providers to invest

Note 1 – Sources: ARRIS View based on I.H.S Markit, Frost, TBR, ARC and IDC

### WELL POSITIONED FOR CONTINUED PROFITABLE GROWTH





## Network and Cloud Segment Overview



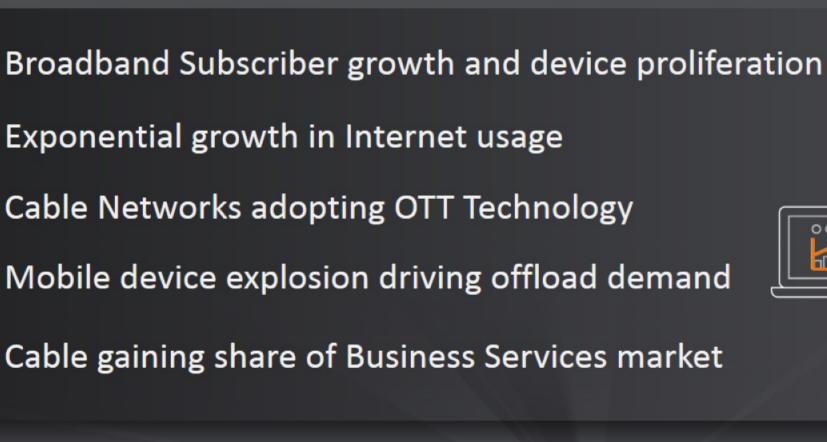
- 2017 Segment results
  - \$2.1B revenue / \$673M adjusted direct contribution
- Industry leading product portfolio
  - E6000<sup>®</sup> CCAP
  - Optical Nodes and Headend Optics
- Strong market positions<sup>1</sup>
  - #1 CCAP
  - #1 Optical nodes
  - #1 Cable video networks
- Deep customer engagement

Note 1 – Source: I.H.S 4Q2017 report

### MARKET LEADER FOR SERVICE PROVIDER BROADBAND SOLUTIONS



### Key Drivers Behind Continued Exponential Bandwidth Growth

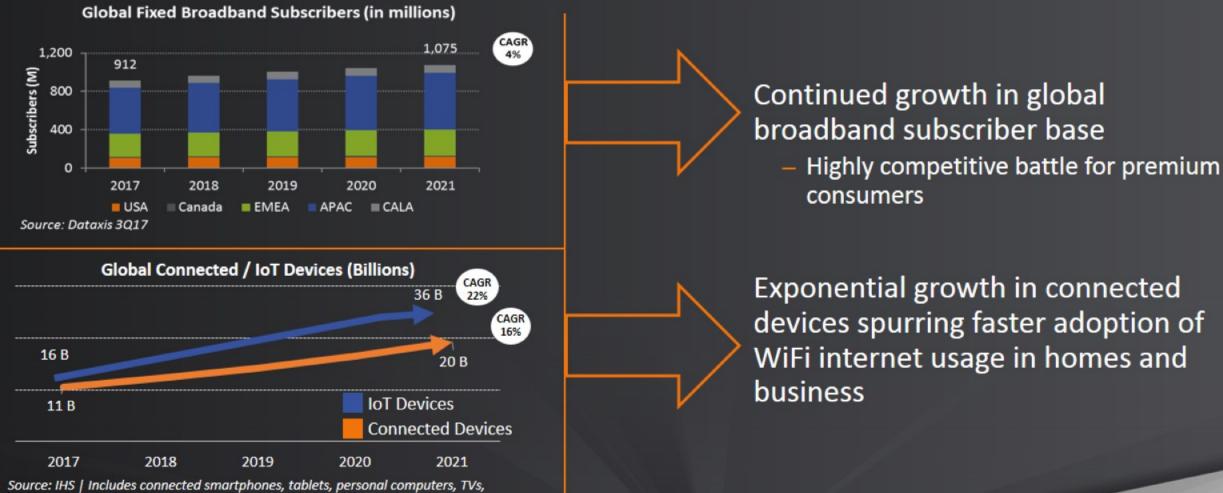




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### Broadband Subscriber Growth and Device Proliferation



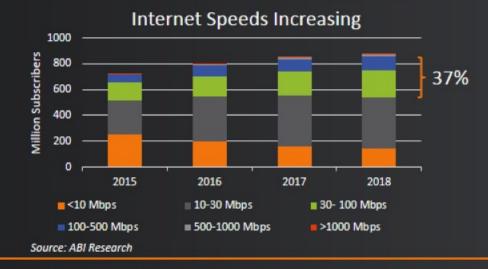
TV-attached devices and audio devices

Source Frost and Sullivan | Includes Connected CE Devices, Sensors, Actuators

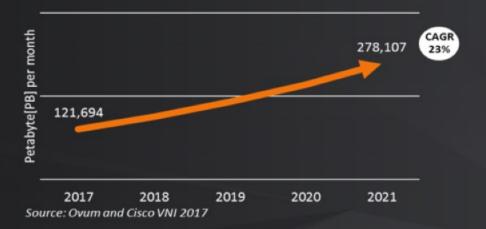
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#### ARRIS

### **Exponential Growth in Internet Usage**



Global IP traffic (PB per month)

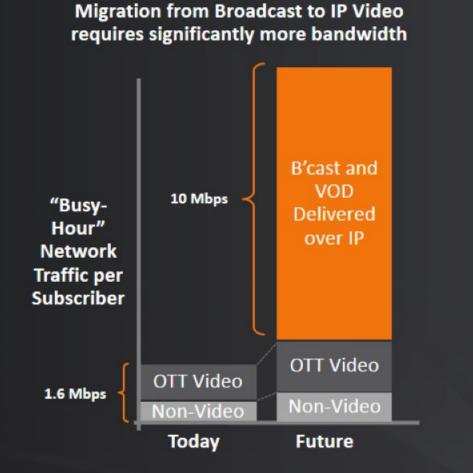


Consumer adoption of OTT Video continues to grow

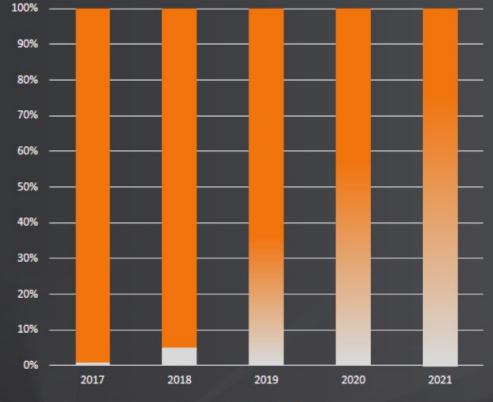
- Majority of internet traffic
- Increasing variety of content sources
- Higher quality = Higher speeds
- 37% of subscribers 30Mbps+

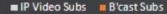
Internet subscription the most important element of the bundle – Reliability and performance are key factors in consumer choice

### Cable Networks adopting OTT Technology



#### Broad migration to IP Video starting in 2018

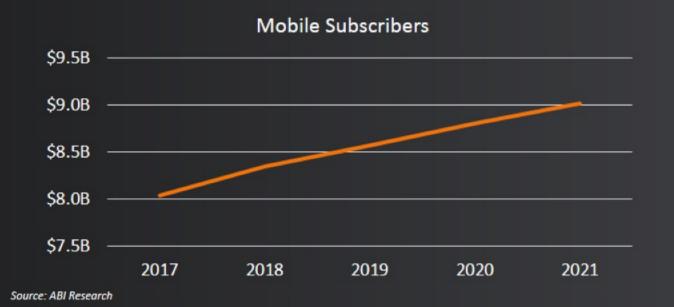




Source: ARRIS forecast based on network data

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### Mobile Device Explosion Driving Offload Demand



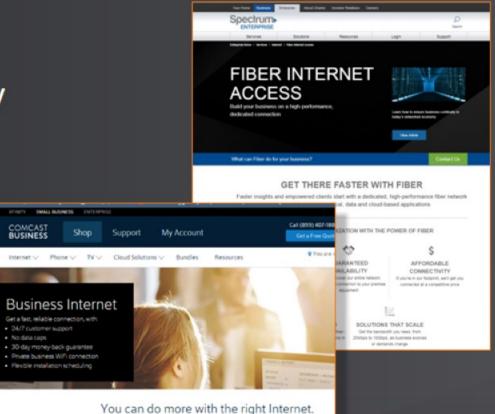
- Mobile Networks 7.5% of Global IP traffic in 2016<sup>(2)</sup>
- Mobile Networks forecast to be 17% of Global IP traffic in 2021<sup>(2)</sup>

- Public Wi-Fi hotspots forecast to grow from 180M in 2016 to 540M in 2021<sup>(1)</sup>
- Mobile and Wi-Fi traffic forecast to be 63% of internet traffic by 2019<sup>(2)</sup>
- Cable operators deep fiber networks well positioned to handle offload

Note 1 – Source: Statista.com Note 2 – Sources: Cisco VNI 2017 ARRIS

### Cable Gaining Share of Business Services Market

- \$200B+ global market
- Cable gaining share and growing 20% annually
- Key services:
  - Gigabit services
  - Dedicated Ethernet
  - Double and triple play bundles
  - Mobility
  - Cloud services



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Sources: Fiercecable and Fiercetelecom

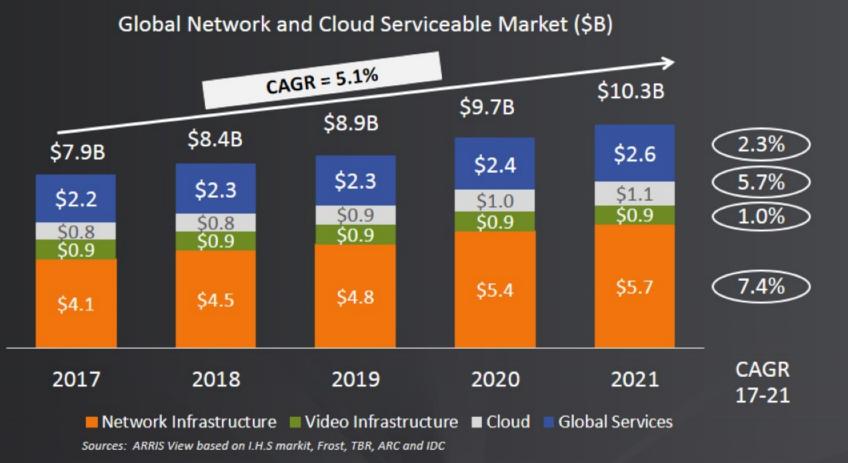
### CABLE IS INVESTING TO GROW METRO-ETHERNET AND DATA SERVICES TO BUSINESSES

### Access Network Technology Upgrades crucial to addressing Market Demands



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### Network and Cloud Market Opportunity



Network Infrastructure – CableEdge, Access HFC, PON; Video Infrastructure – Encoder, Transcoder, IRDs, Advance and Linear Ad Systems, Security Solutions; Cloud – Assurance (On-Premise, SaaS, Home Network Assurance); Global Services – Network Build, Infrastructure Integration, Planning Design & Optimization, OSS Integration, Managed Services, and Wireless Consulting

#### STRONG GLOBAL MARKET OPPORTUNITY

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## Network and Cloud Portfolio Strategy



Build on CMTS and Optical Access Leadership

- Gen 2 Expansion
- DOCSIS 3.1
- Optical nodes
- Headend Optics

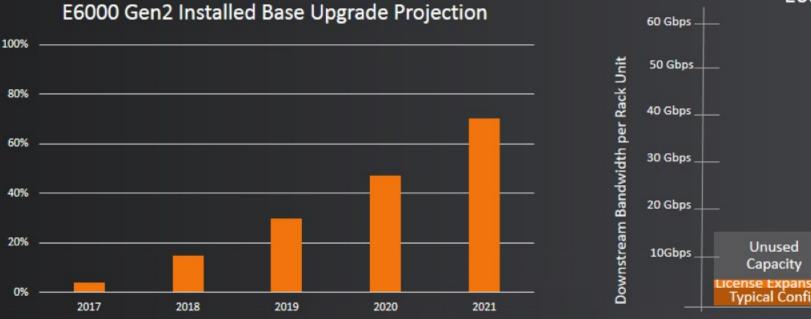
Expand Portfolio in Sync with Bandwidth Demand

- Distributed Networks
- Virtualized Solutions
- Full Duplex DOCSIS
- Extended Spectrum DOCSIS
- 10G EPON
- Ultra HD Encoding

Invest in Complementary Product Lines and Services

- Orchestration
- Content Management and Distribution
- Device Management
- Managed Services
- MDU Solutions

### Multi-year E6000 Gen 2 Upgrade Cycle

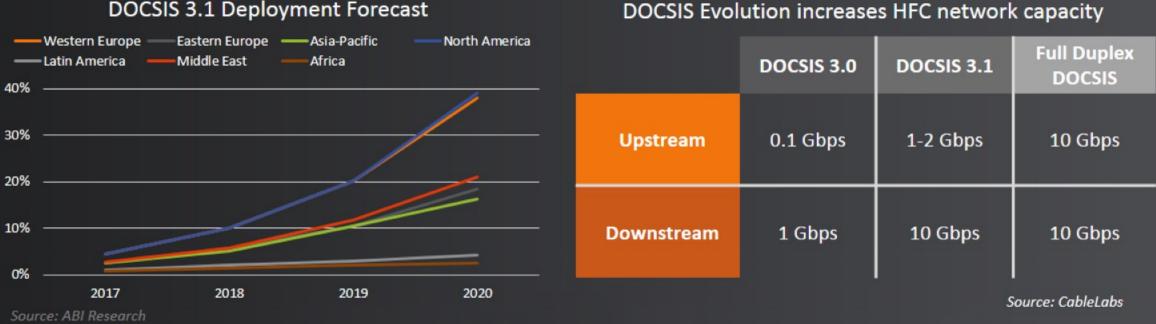


E6000 Platform Capacity Roadmap

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- 40 Gbps \_\_\_\_\_\_\_ 30 Gbps \_\_\_\_\_\_\_ 20 Gbps \_\_\_\_\_\_\_ 10Gbps \_\_\_\_\_\_Unused Capacity Unused Capacit
- Gen 2 upgrade process accelerating across customer base
- Doubles density inside the same chassis footprint
- E6000 support of digital Remote Phy node (eCORE) unlocks additional capacity and increases density

### DOCSIS 3.1 Technology Enabling Cost-effective **Gigabit Cable Networks**



DOCSIS Evolution increases HFC network capacity

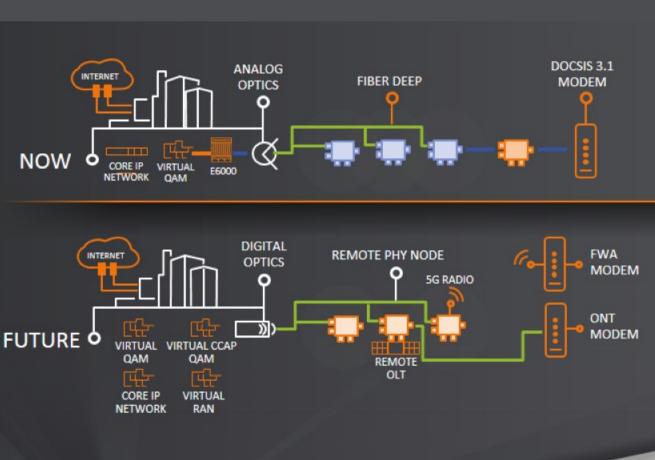
- Up to 50% improved spectrum efficiency over current DOCSIS 3.0 networks
- ARRIS E6000 platform provides simultaneous support of DOCSIS 3.0 / 3.1 with flexible capacity license model

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### Cable Networks Evolving to Leverage Virtualization and Distributed Computing

- Distributed Access (DAA) potential:
  - Digital optics to extend reach and capacity with less real estate
  - Provide more intelligence and programmability reducing Opex
  - FDX providing Symmetrical Gigabit Services
- ARRIS positioned to grow with DAA:
  - Existing E6000 CCAP platform supports DAA via SW upgrade – lower cost leveraging current investments
  - Incremental DAA devices, shelves, and SFPs
  - New Node deployments and existing Nodes upgradeable to support DAA, PON, or LTE



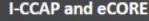




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### Leading the CCAP Evolution to Distributed Access

- Industry-leading E6000 CCAP installed base is the foundation for CCAP and Distributed Access evolution
  - Continued expansion of installed base with bandwidth licensing is economically attractive for operators
  - Evolution to more complex DAA solutions using the same E6000 chassis via software upgrade is a low risk alternative for MSOs
  - Virtualization using ARRIS expertise and Software will provide a more consistent implementation across the entire eco-system
  - Support for other DAA solutions, like EPON in the same chassis
- Distributed Access supplements I-CCAP for long reach fiber nodes and greenfield deployments initially
- Distributed Access growth as technology matures and network automation and intelligence help simplify the solution and improve operational efficiency



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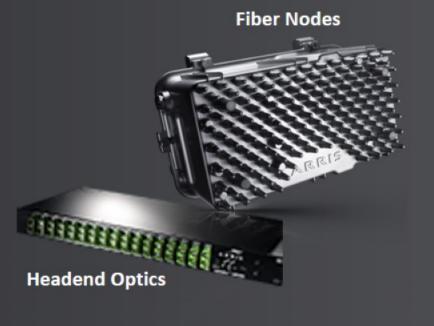


Virtual CCAP

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# Well Positioned in Growing Cable HFC Segment

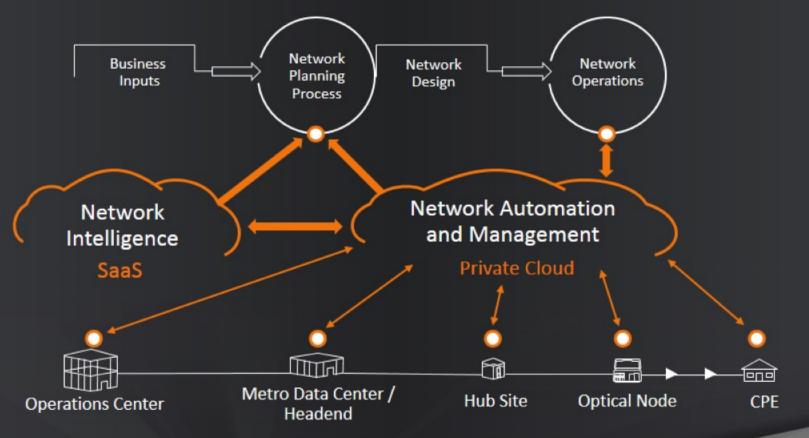
- Industry leading positions in both Analog and Digital Optics
- Global investment to extend fiber networks deeper and gain capacity
  - Extensive construction work
  - Smaller Service Groups allow for increased subscriber Internet capacity, and is creating strong Fiber Node split demand
- Transition to digital fiber optics to support Distributed Access Architecture
- Optical Nodes platform potential:
  - Upgradeable to FTTH, PON, 5G backhaul, Metro-Ethernet, Wireless and other network technologies





## **Network Orchestration and Automation**

- Distributed Access Architecture needs network automation for efficient operation and reliable service
- Big Data analytics provides insights to manage traffic and predict network growth
- Virtualized implementation builds on open source software
  - Software Defined Networks
  - Network Function Virtualization



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### FTTH 10G EPON Options Available



10G EPON Installs in E6000 Chassis



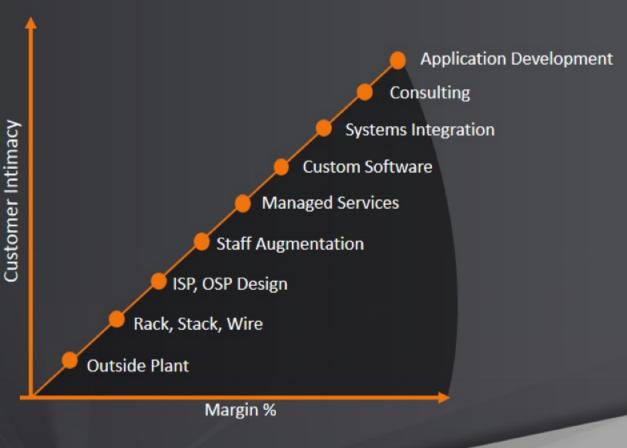
RFoG

- Currently the largest FTTH technology being deployed by our customers
- ARRIS is the performance leader in this technology
- 10 EPON Options
  - ARRIS has the widest selection of EPON technologies available to the MSO Industry
    - DPOE 2.0 Compatibility
    - Headend and Node Based Variants
    - 300k EPON-ready ARRIS Nodes deployed
    - EPON Extenders designed to better utilize EPON architectures
- EPON is a fast growing market with a 17% CAGR <sup>(1)</sup>
  - Provides 10G symmetrical services
  - Suitable for Business Service Customers

1 - Source IHS Markit

### Software and Services Business Poised for Continued Growth

- Expanding into higher value and higher margin
- Improved customer diversification
- Growing managed service business to support DAA, Virtualization, and Business Services
- Custom software development programs to provide service providers with differentiated services



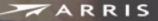


## Network & Cloud Outlook

- Projecting 4 -7% long term annual growth with margin stability
- Building on leading share in CCAP and Optical Access
- Near-term growth driven by:
  - E6000 capacity licensing and Gen 2 upgrades
  - Optical Access bandwidth expansions and upgrades
  - Roll-out of initial Distributed Access Architecture
- Longer-term growth driven by convergence of services on one network
  - Platform extensibility of the E6000 CCAP and OM6000 Node
  - Business services and Metro-Ethernet, Mobile traffic, Wi-Fi, CBRS
  - Intelligent software to manage complexity of virtualization and DAA
- Growing software & services business

#### LEADING INDUSTRY POSITION IN A GROWING MARKET!





# Customer Premises Equipment

Larry Robinson

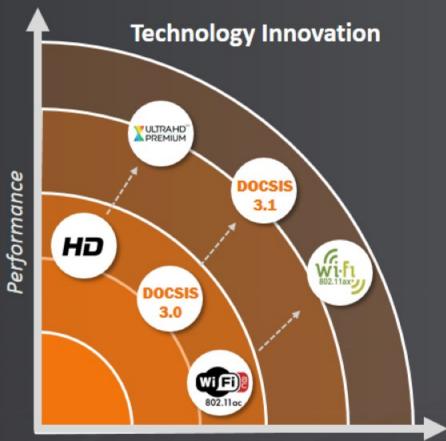
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### **CPE Segment Summary**



- \$20B+ market driven by technology upgrade cycles
  - Demand for gigabit-capable broadband services accelerating
  - UltraHD shift underway incorporating greater OTT options
  - International investment increasing in video & broadband
- Worldwide market leader in Service Provider CPE
- Managing business for profitability
  - Grow international position with solid margin contributions
  - Maintain U.S. market leadership
  - Drive product cost reductions, improved mix & market pricing



Time

#### FOCUSED ON PROFITABILITY AND CASH GENERATION

### **Segment Overview**



- 2017 Segment results
  - \$4.48B revenue / \$437M adjusted direct contribution
- Industry leading product portfolio
  - ~50M devices shipped annually
  - Evolving product mix 60% video & 40% broadband
- Strong market positions
  - #1 Set top supplier Worldwide<sup>1</sup>
  - #1 Broadband CPE supplier in Americas<sup>2</sup>
  - #2 Broadband CPE supplier Worldwide<sup>2</sup>
- Service Provider & Direct to Consumer channels

Note 1 – Source: IHS Markit, IHS STB Intelligence Databases, Global Set-top Box Market, Q3 2017 Publication. Data represents Q2 2017 IHS estimates Note 2 – Source: IHS Markit, IHS Technology, Broadband CPE Market Tracker, Q4 2017. Data represents Q3 2017 IHS estimates

### MARKET LEADER FOR SERVICE PROVIDER CUSTOMER PREMISES EQUIPMENT SOLUTIONS

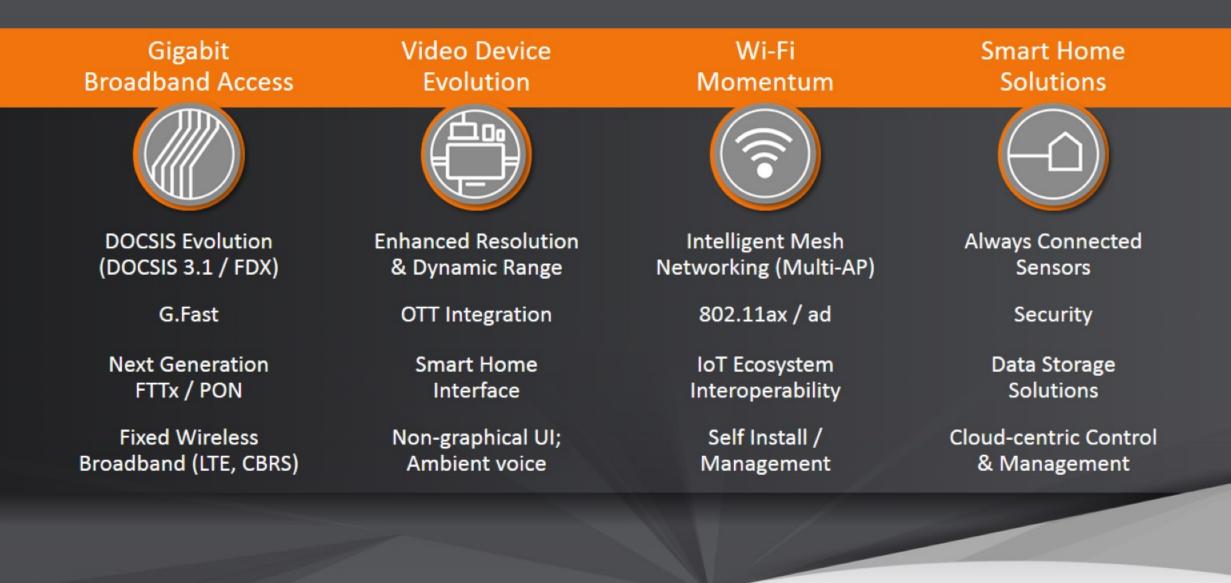
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#### CUSTOMER PREMISES EQUIPMENT

- VIDEO PRODUCTS STB & SERVER IP, QAM, OTA, SATELLITE
- BROADBAND & NETWORKING
   SOLUTIONS FIBER, DSL, DOCSIS, LTE/CBRS

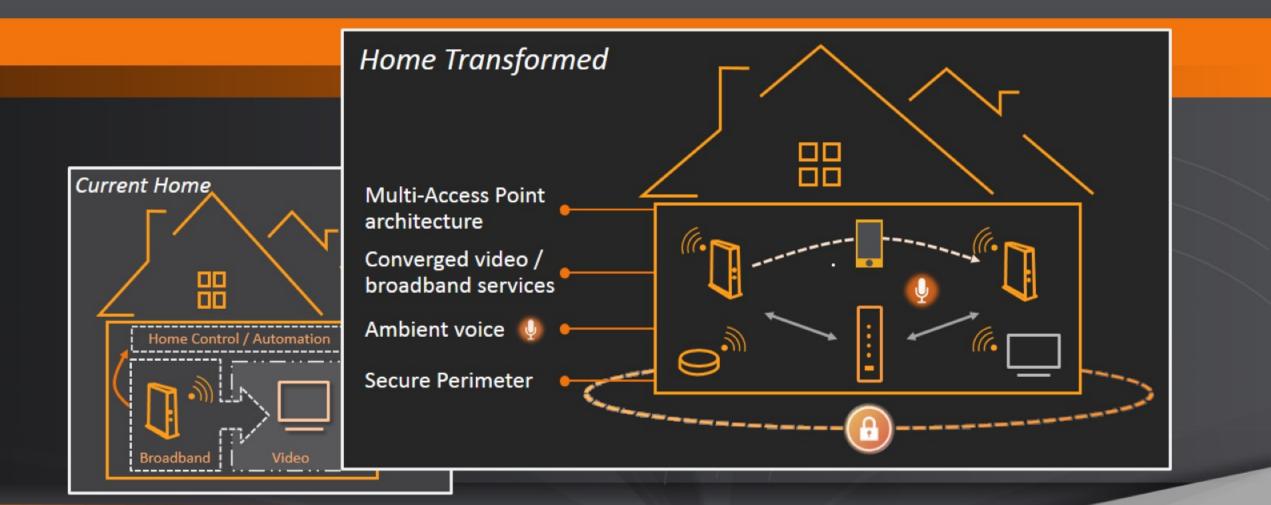


## Market Trends Enabled By Technology Advances



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### **Market Trends Driving Home Evolution**



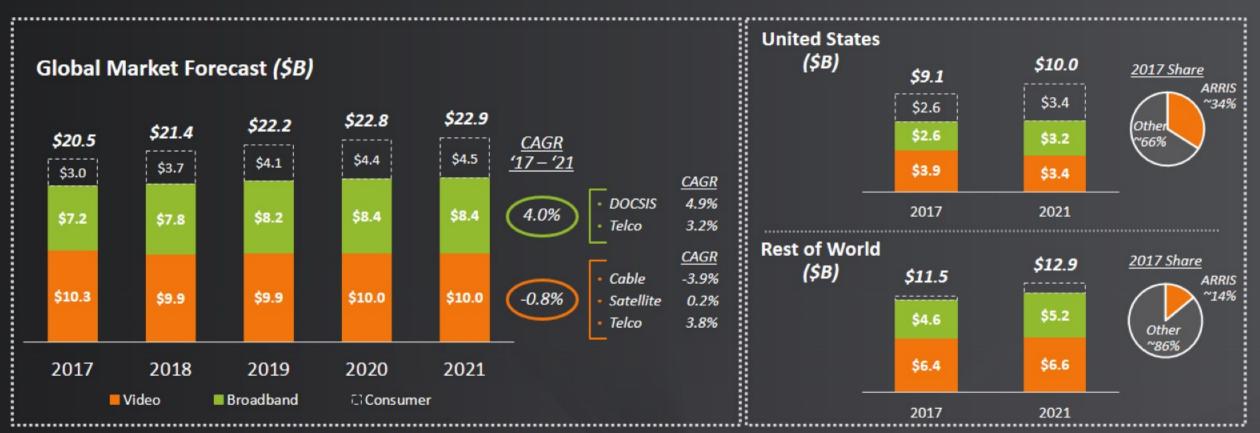
#### SEAMLESS INTEGRATION OF IP SERVICES ENABLES NEW CONSUMER EXPERIENCES & DRIVES INVESTMENT

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### Significant Addressable Market



Source: ARRIS 2017 SAM & Share Analysis – IHS, SNL Kagan, F&S, ABI, ARC, Ovum, TBR and ARRIS Estimates.

Video includes Cable, Telco IPTV and Satellite STB (SD/HD/UHD, non-DVR/DVR, Multimedia Gateway, SD/HD DTA); Broadband includes Cable Modems, Broadband Gateways, EMTAs; ADSL, ADSL+, G.Fast, VDSL CPE, ONT Residential Gateway (Active Ethernet, EPON, GPON); Consumer includes retail WiFi Routers, WiFi Extenders - MoCA, HomePlug, HPNA and WiFi Only, Retail Video and select Smart Home devices

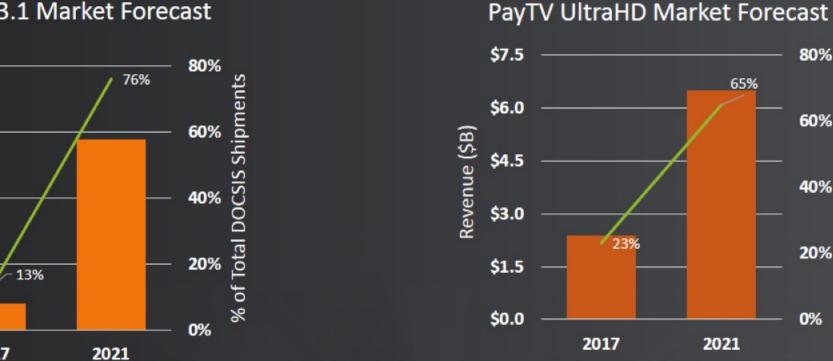
### DECLINE IN TRADITIONAL U.S. CABLE SET TOPS OFFSET BY GROWING BROADBAND & INTERNATIONAL

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### Key Technologies Driving Upgrade Cycle



#### DOCSIS 3.1 Market Forecast

Source: ARRIS estimates (IHS, SNL Kagan, F&S, ABI, ARC, Ovum, and TBR

2017

#### TECHNOLOGY UPGRADES CONTINUE TO DRIVE THE CUSTOMER PREMISES EQUIPMENT MARKET

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\$4.0

\$3.0

\$2.0

\$1.0

\$0.0

Revenue (\$B)

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80%

60%

40%

20%

0%

pments

Shil

STB

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### **Product Portfolio Evolution**



- Gigabit services expansion
- Residential gateway feature & capability growth
- Cable networks migration to IP-delivered video services
- Cloud-based services
   Network Storage



#### **INCREASING EMPHASIS ON BROADBAND OPPORTUNITY**



### **Key Business Objectives**



3

- Build upon product leadership position
- Disciplined portfolio evolution / management
- Expand customer connections
  - Grow international service provider business
  - Increase direct-to-consumer solution investment
- Streamline business operations
  - Increase operational efficiency
  - Drive product cost improvements
  - Enhance OPEX leverage



#### **FOCUSED ON CASH GENERATION & PROFITABILITY**

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### Targeted investments to address growing broadband and international opportunities



# 100 kg

#### Maintain Set-Top Market Leadership

- Technology upgrades cycles
- HDR, HFR & higherresolution technologies
- Video over Wi-Fi
- Video application ecosystem development

#### Continue to Build Broadband Momentum

- Gigabit home capabilities
- High-bandwidth technologies
- Converged Services platform extensibility
- Advanced Wi-Fi management solutions
- Home network portfolio expansion

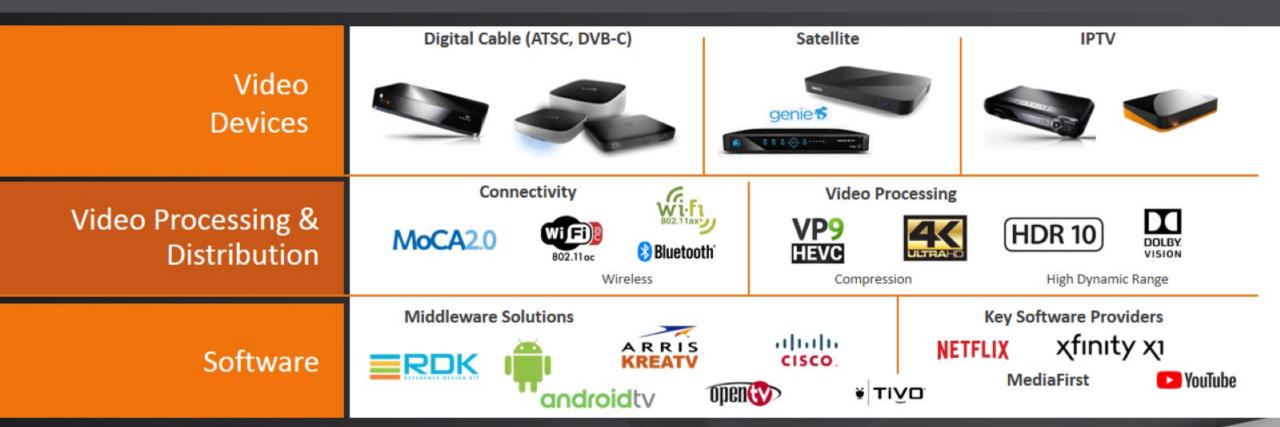
#### Increase Investments in Emerging Applications

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- Connected home evolution
- Security Solutions
- Fiber portfolio expansion
- Fixed Wireless Access
- Retail channel growth

### **Comprehensive Video Portfolio**





## **Gigabit Broadband Portfolio**



Broadband Devices	Cable Modems     Cable Gateways     Telco xDSL Solutions     Fiber / LTE Gateways     Extenders / Adapters       Image: Ima
Access Network Technology	DOCSIS 3.0 -> 3.1 FDX ADSL G.Fast 10G PON XGS-PON LE EuroDOCSIS VDSL2 NG-PON2
Home Networking Solutions	Wireless Interfaces       MoCA2.0     NBASE-T     Wireless Interfaces       MoCA2.0 Channel Bonded     Nulti-Gigabit Ethernet     B02.11 oc     B02.11 oc
Software	Cable Platform Code       Telco Platform Code       Wi-Fi Management Software         A R R IS

## **Market Differentiation**



#### **Video Devices**



- Comprehensive product line-up
- Video systems & processing expertise
- Robust product design & security
- Middleware integration & optimization

#### **Telco Broadband**



- Modular / flexible architecture
- Proven software stack
- Wi-Fi mgmt with extender features
- Ruckus LTE CBRS pre-integration

#### Cable Broadband



- Broadband network expertise
- In-Home Wi-Fi management
- Network security
- Customized software solutions

#### **Operational Excellence**



- Industry scale
- Supply chain agility
- Global Services capabilities
- Customer intimacy

### COMPELLING PRODUCTS COMPLEMENTED BY ARRIS NETWORK SOLUTIONS

### **CPE Segment Outlook**

Market leader with blue-chip customers and diverse product portfolio
 Deeply embedded in customers' core operations

- Growth in bandwidth demand driving increased broadband investment
- Managing for profitability and cash generation
  - Projecting long term sales trend of -5% to +1%
  - Targeted investments in broadband and international growth opportunities
  - Improved price / cost stability
- Further simplifying business operations to drive greater efficiency

#### FOCUSED ON REDEFINING IN-HOME CONNECTIVITY

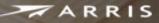




# **Enterprise Networks**

Dan Rabinovitsj

### **Enterprise Networks**







Robust go-to-market approach leveraging a large partner community



**Diversified customer base** 





Growth in new areas such as CBRS and IoT



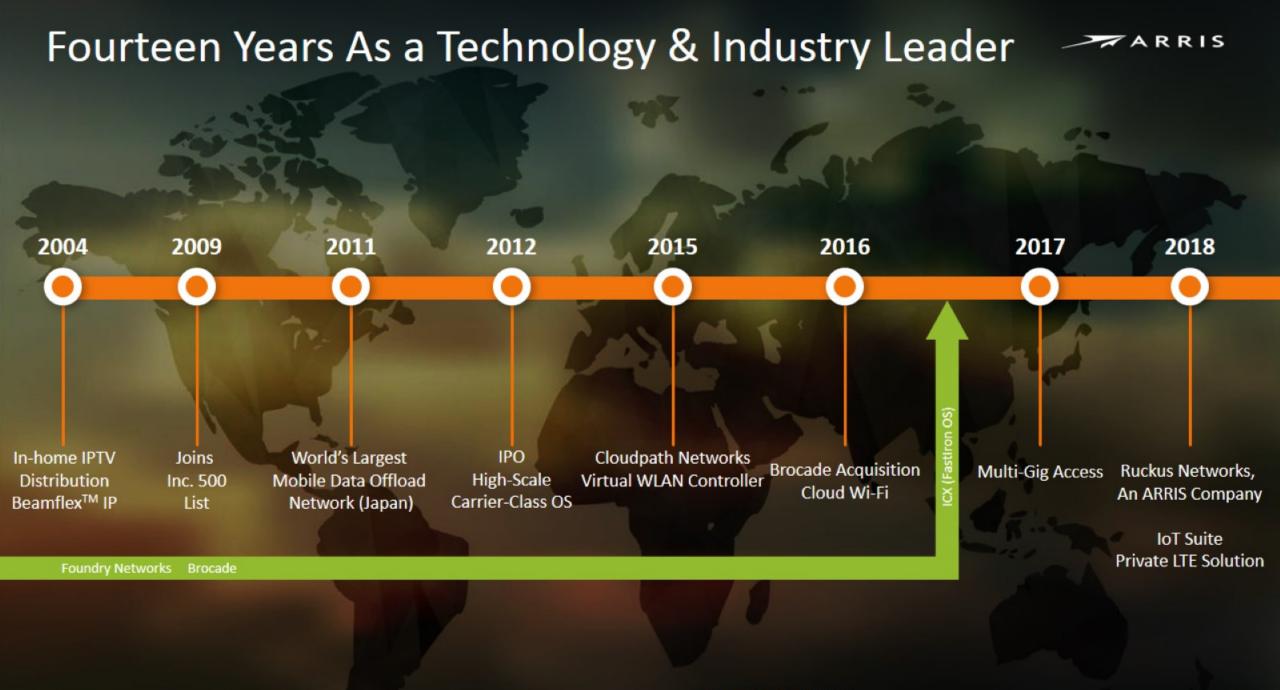
Heritage of innovation with sustainable differentiation



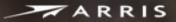


Building on the integration with ARRIS through stronger Service Provider momentum





## Enterprise Networks by the Numbers



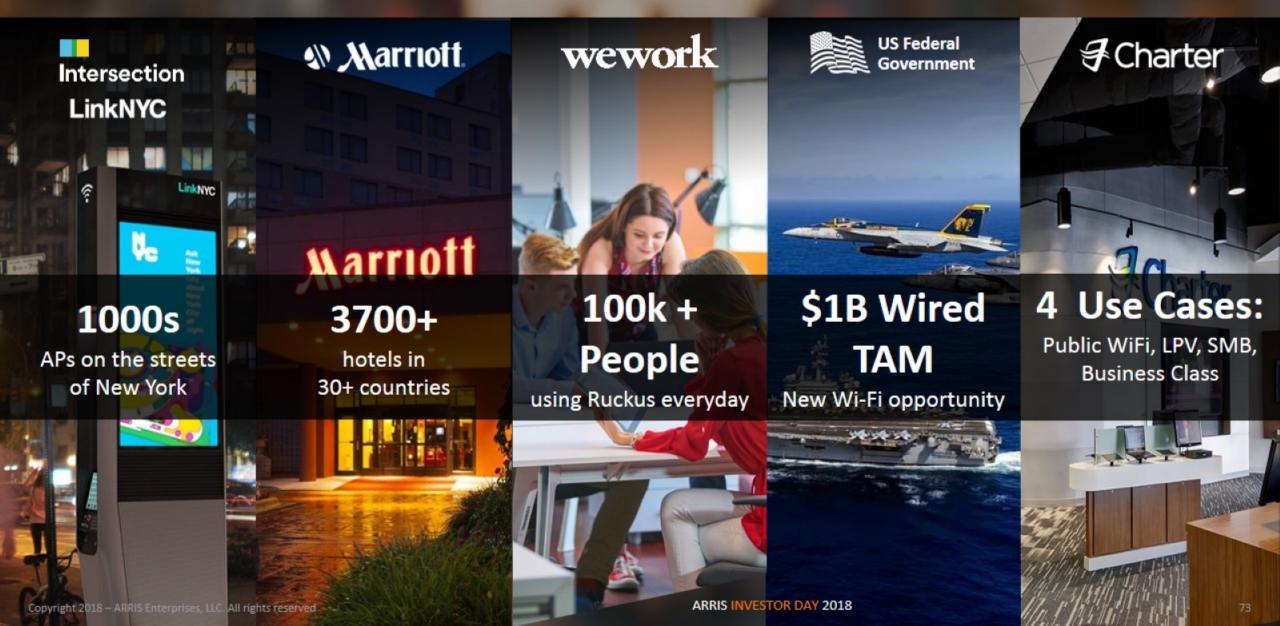


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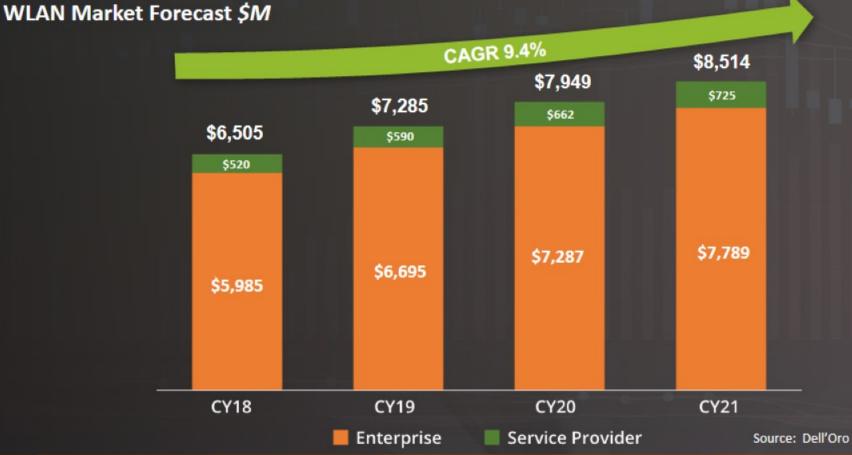
#### **These Organizations Trust Ruckus**

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#### Enterprise Networks Addressable Market



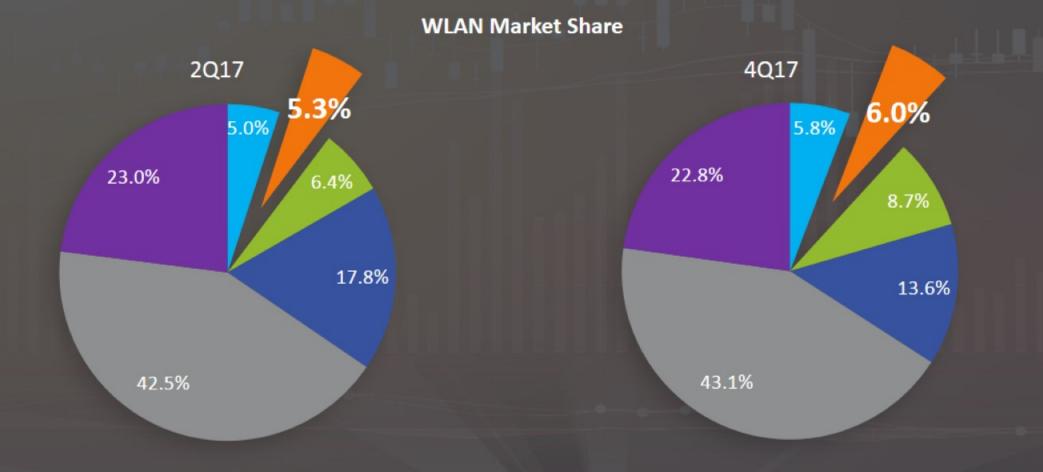


#### ENTERPRISE WIRELESS AND WIRED NETWORKING OPPORTUNITY \$15-17B PER YEAR

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### **Building Momentum**

ARRIS



Ubiquiti Ruckus Huawei HPE Aruba Cisco Other Source: Dell'Oro 📕 Ubiquiti 📕 Ruckus 📕 Huawei 📕 HPE Aruba 🗏 Cisco 📕 Other

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#### Trends Shaping the Future of Enterprise Networking and Public Wi-Fi

Secular Upgrades to Higher Performance Networking Broadband for the Next Billion People

Smart Cities and IoT

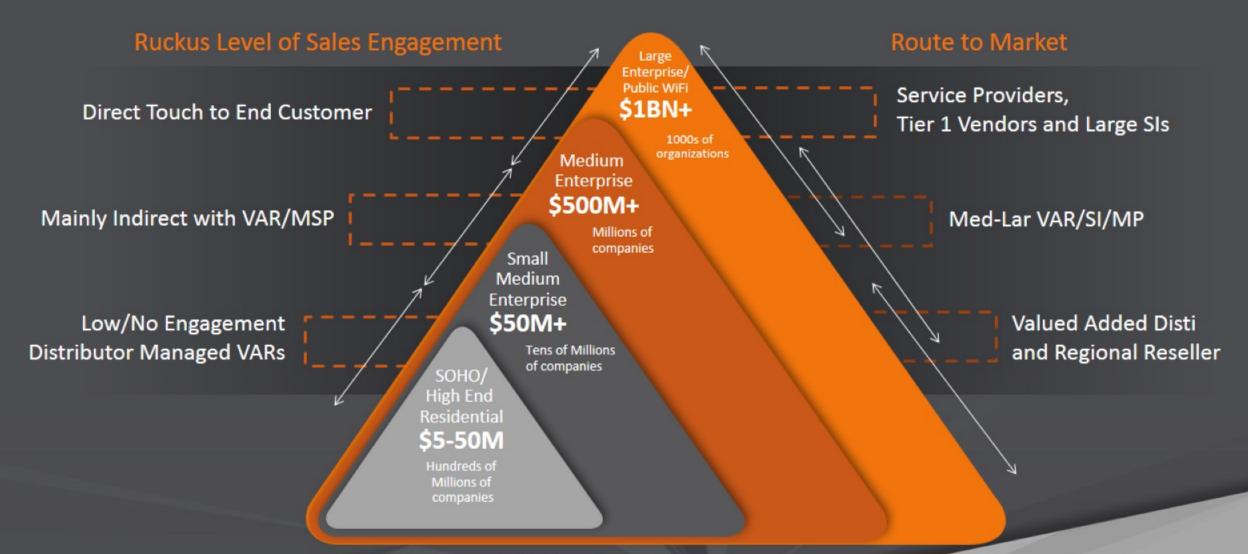
Managed Services

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### How the Sales Model Works





Note: 90%+ of all Enterprise business is fulfilled through 2-tier distributors

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#### **Target Verticals**



SMART CONNECTED CITIES

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FEDERAL

A STREET, BOARD

LARGE PUBLIC VENUES K-12 / HIGHER EDUCATION

HOSPITALITY

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#### Networking, Software & SaaS Portfolio



Software & SaaS	Security & Policy		Network Intelligence	La	SPOT
Control & Management	Physical Appliance	Virtual Appliance	Cloud-managed	Controller-less	IoT
Switches	Access	ICX 7250	Aggregation	ICX 7650	Core
Access Points	Outdoor T, P Series	Indoor R Series	Specialty H, C Series		

#### 2018 Focus Areas





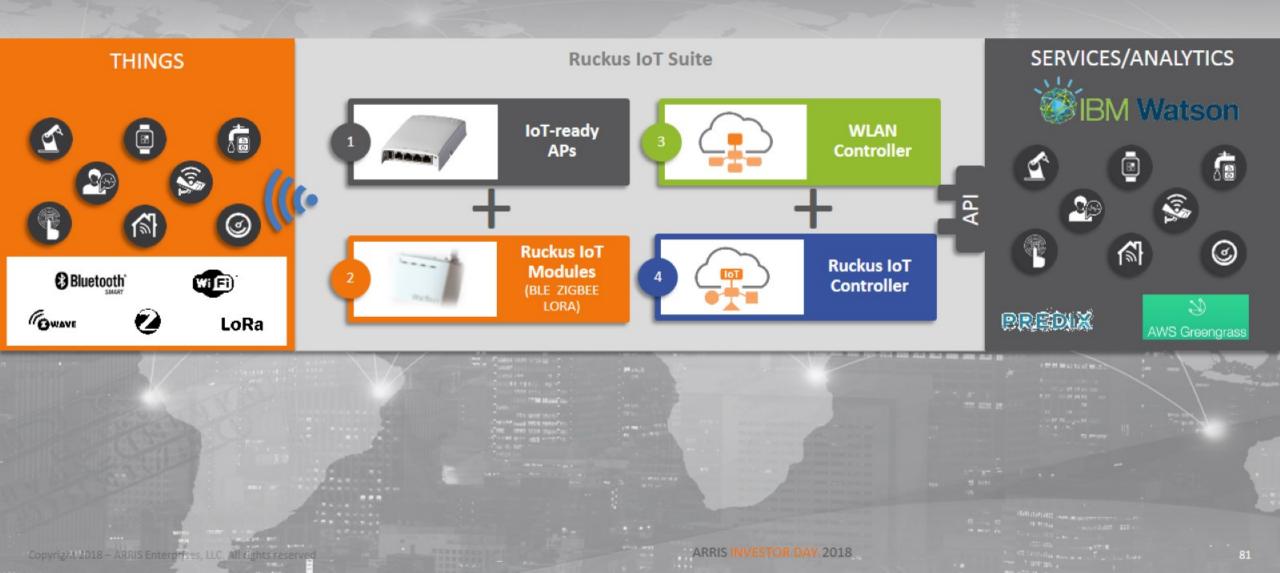
**Ruckus Cloud** 

Dell OEM and Strategic Partnerships

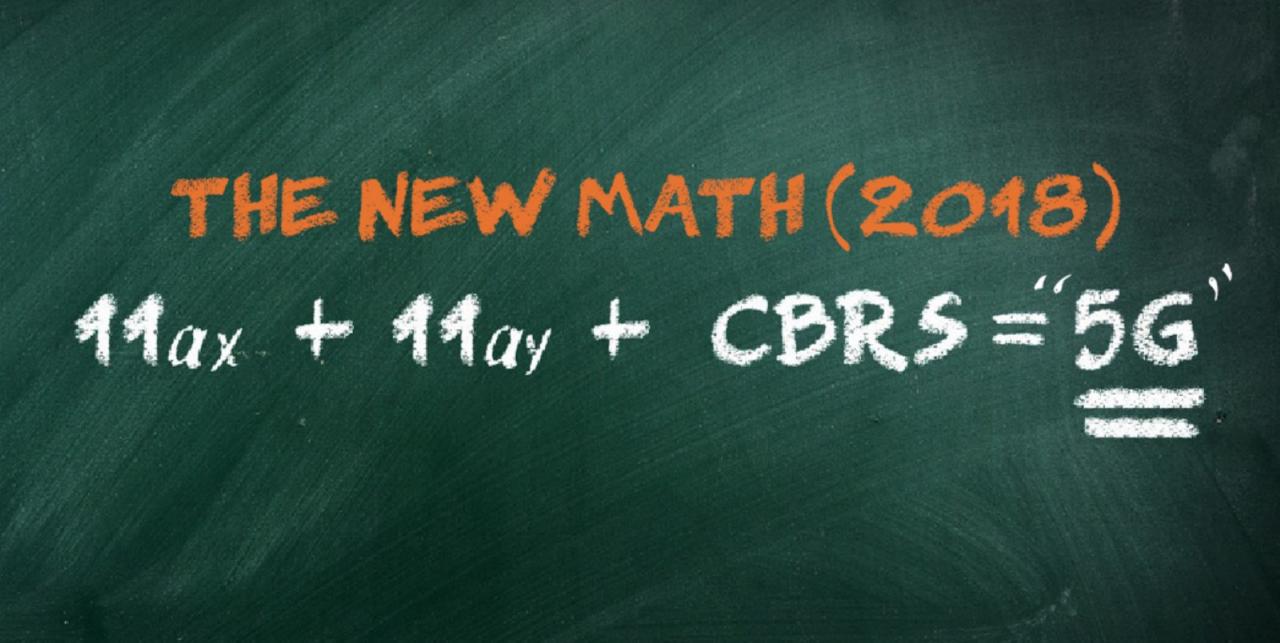
Commercialization of OpenG Expansion of our Federal Government Mission ARRIS INVESTOR DAY 2018

Vertical Market Expansion into MDU and Retail Network Intelligence and IoT

### Connecting THINGS to SERVICES and ANALYTICS



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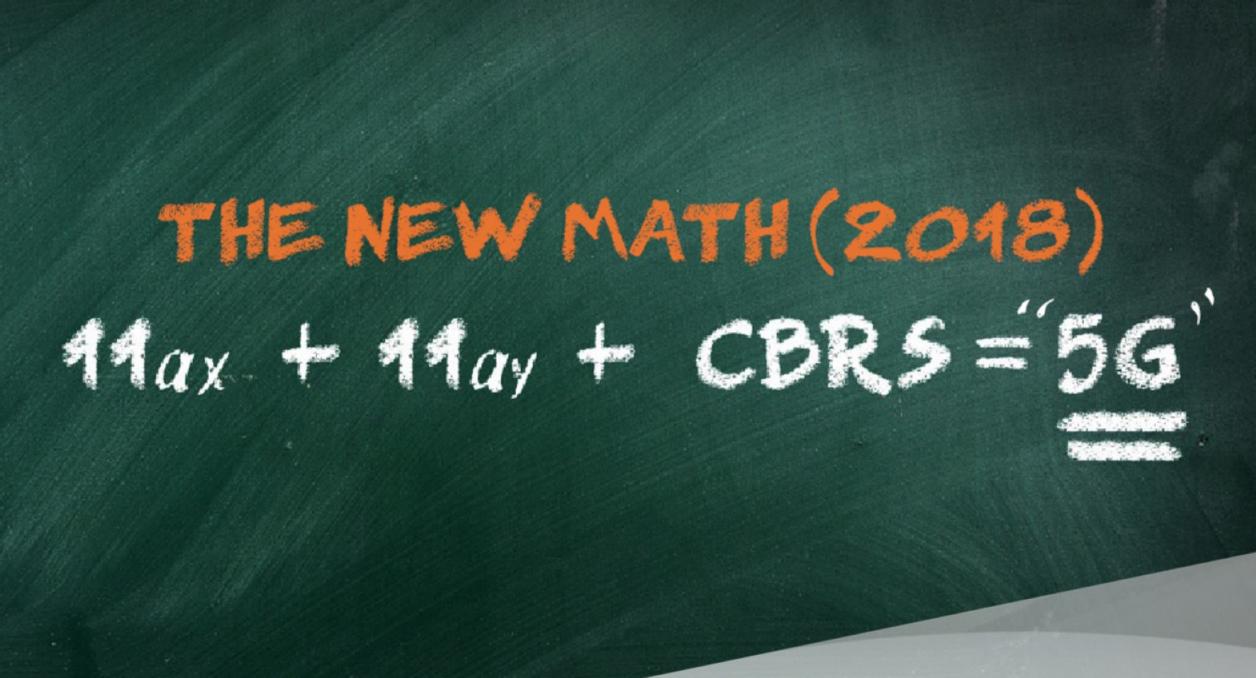
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# Technology Talk - CBRS

Steve Martin

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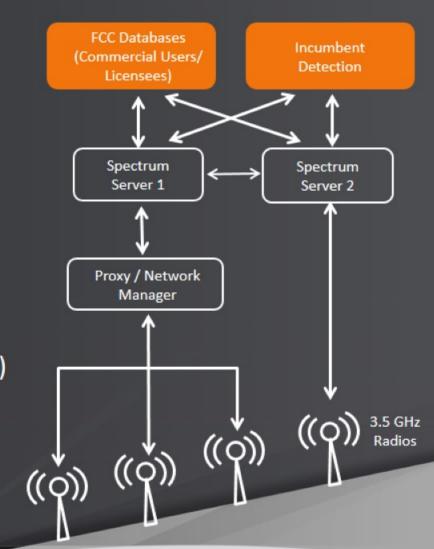
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#### U.S. CBRS – Innovative New Spectrum Sharing Model



- Citizens Broadband Radio Services (CBRS)
- 150MHz in 10MHz blocks @ 3.5 GHz
- Three tier dynamic spectrum sharing system
- FCC order released April 17, 2014 (updated 2016)
- FCC rule modifications under consideration (expect May 2018 ruling)
  - Proposed larger PAL license areas
  - Proposed longer PAL terms with renewability
  - Proposed relaxed emission masks to support wider channel operation
- Commercial service launch expected 2H 2018



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#### **CBRS Alliance Overview**







Support the development, commercialization, and adoption of LTE solutions for the US 3.5 GHz Citizens Broadband Radio Service (CBRS)

- Evangelize CBRS technology and applications
- Drive necessary technology requirements (Coexistence, Radio, E2E Services)
- Establish certifications to ensure vendor interoperability



#### ... 85 MEMBERS AFTER JUST 18 MONTHS!

### OpenG for CBRS – The Best of Both Worlds



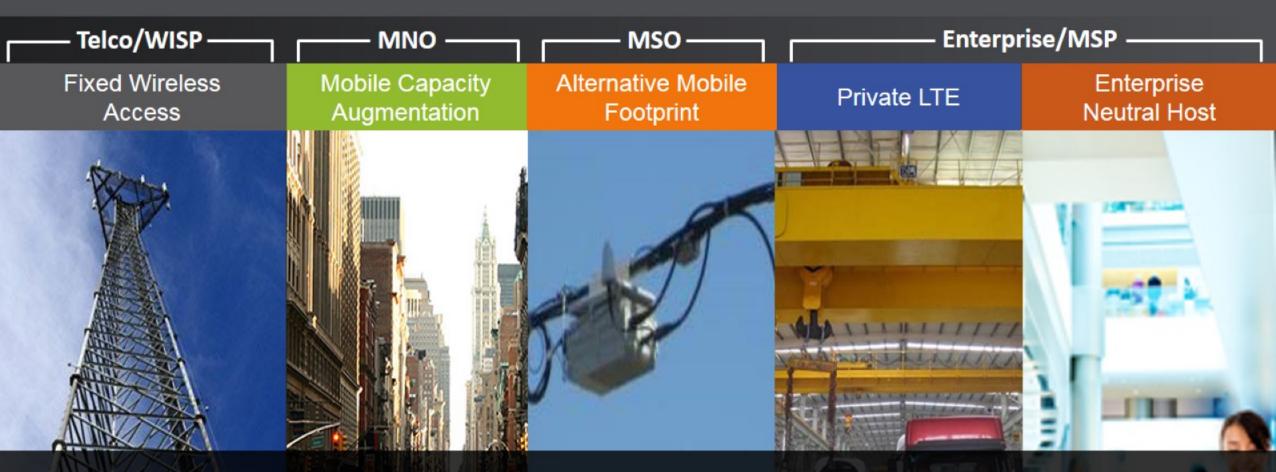
LTE	OpenG	Wi-Fi
Licensed Spectrum Exclusive to mobile operators	Coordinated Shared Spectrum Lightly licensed, cost efficient	Unlicensed Spectrum Open for everyone to use
Small number of carriers each control 100-200MHz of spectrum	Anyone can deploy, but central spectrum management required	Anyone can deploy and use, unmanaged spectrum
Dependable QoS, range, security, mobility of LTE	Combines dependability, security,	Variable QoS, shorter range, and limited mobility of Wi-Fi
Expensive, large barrier to entry	mobility of LTE with cost model and deployment flexibility of Wi-Fi	Very low cost, no barrier to

"We leave behind the tired notion that we face a choice between licensed and unlicensed airwaves"

- Jessica Rosenworcel, FCC Commissioner

entry

### Disrupting Mobile Infrastructure with OpenG<sup>™</sup>



Broadband Access Rural Connectivity

Low cost capacity boost to mobile networks

No cost MVNO within wired footprint Residential, Enterprise and Outdoor Strand

Financial, Transportation, Government, Oil & Gas, Manufacturing, Shipping, Healthcare Lower cost and complexity versus Distributed Antenna Systems (DAS) or MNOspecific small cells

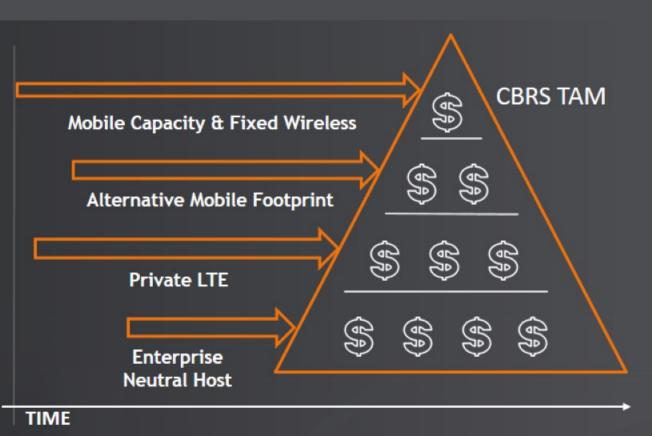
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### U.S. CBRS Market Outlook & Timing



#### Market Overview

- Potential to grow to \$1B market over five years
- Disruptive to current indoor DAS market
- New opportunities in Industrial IoT and Federal
- Enterprise Neutral Host business drivers critical
  - Ruckus distribution channels are a key asset



Additional Ruckus/ARRIS opportunities in international and alternate spectrum bands

### **Customer Field Trial Momentum**

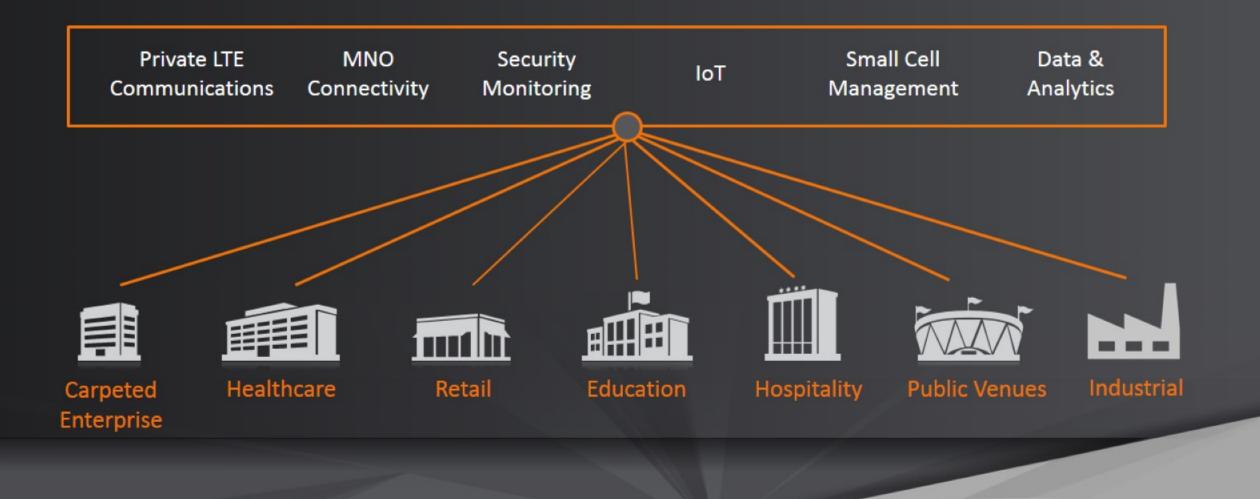


Trial Activity/Sophistication Continues to Increase

- 15 complete, 6 in progress, 7 pipeline
- Largest trial 90 nodes indoor/outdoor
- Spanning multiple market segments
  - MSO/MNO
  - Managed Service Provider
  - Enterprise Private LTE
  - International



### The CBRS Opportunity for Enterprise MSPs



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### Wireless - The 4<sup>th</sup> Utility for In-Building Services

#### #1 Amenity for the Modern Building

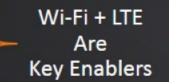
- Enable the all wireless enterprise
- Securely connect building infrastructure
- Optimized wireless coverage throughout

#### Wireless as a Service Drives Efficiency

- DIY painful, often poor results for tenants
- Faster time to tenant occupancy
- Reduce churn, enable new revenue stream

#### Managed Platform for Services Delivery

- Broadband
- Safety & security
- IoT

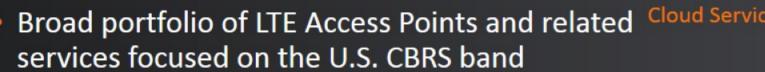




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### Ruckus/ARRIS OpenG Solution Overview





- Cloud Network Provisioning and Management
- Indoor and Outdoor LTE Access Points
- LTE Access Point plug-ins to Wi-Fi Access Points
- Residential and enterprise gateway devices
- Standard 3GPP TD-LTE air and network interfaces
- Carrier-grade Quality of Service and Mobility, Enterprise-grade Cost and Simplicity

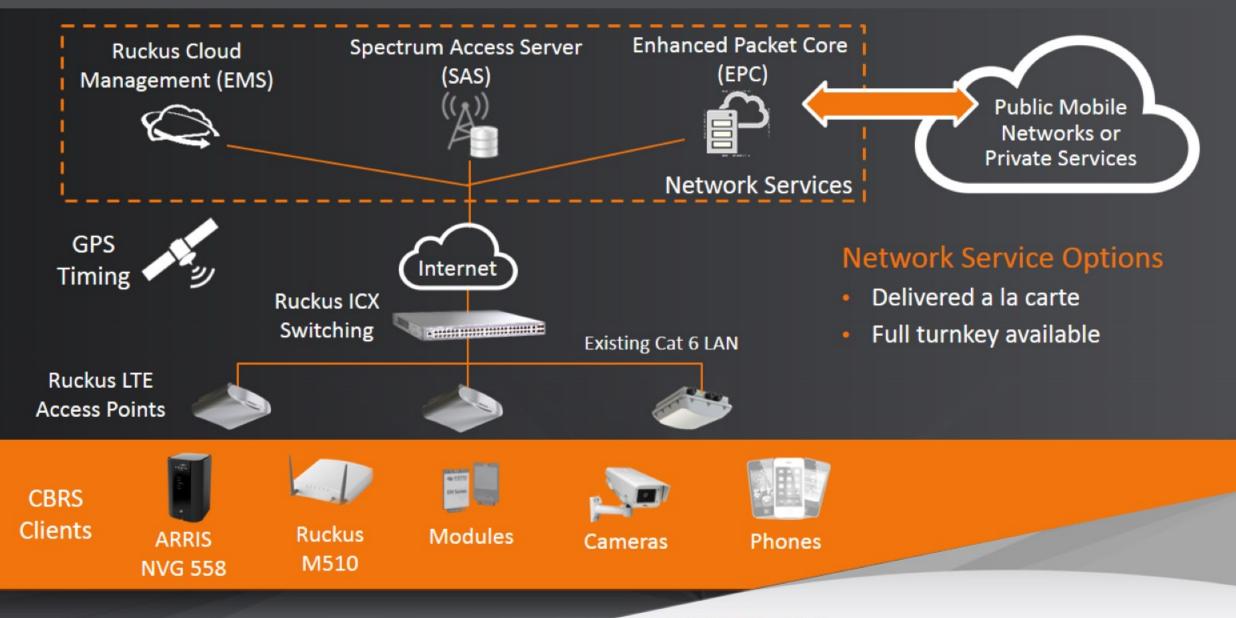


#### **Simplified Deployment & Operations**

- Move complexity into Cloud
- Zero touch installation & provisioning
- Out of the box managed services solution

### Ruckus OpenG Network Topology





### Ruckus LTE Access Point Highlights



#### Plug-and-play, deployed like Wi-Fi

- Attractive design, internal antennas
- Connect to existing Ethernet LAN
- CBRS Category A, no professional install required
- SON technology for automatic configuration
- Cloud management system, unified with WiFi
- Advanced Technology
  - 3GPP TD-LTE Release 10 on Band 48 (CBRS)
  - PoE+ power (802.3at Type 2) or AC adapters
  - Built-in timing (GPS & IEEE1588 PTP)
  - Built-in BeamFlex<sup>™</sup> Smart Antennas



#### The ARRIS/Ruckus CBRS Advantage Building the Future

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- Products and Solutions
  - LTE with the deployment and cost model of Wi-Fi
  - Unified services platform for delivering LTE, Wi-Fi, Switching, & Analytics
  - Innovations include Zero Touch install, automatic timing, and LTE ChannelFly<sup>™</sup>
- Go To Market
  - Leveraging ARRIS strength with NA Service Providers
  - Leveraging Ruckus enterprise distribution channels for unprecedented reach
- Competitive
  - Traditional mobile equipment vendors locked into costly models
  - Other Wi-Fi market leaders not participating
- Strategic Leverage
  - Continues to build on cloud services delivery model
  - Opens expansion opportunity to worldwide LTE and 5G markets
  - Positions Ruckus as next gen, cost efficient, radio agnostic RAN vendor



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## Financial Update

**David Potts** 

#### **Value Creation Drivers**

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### 2017: Gained Momentum Through the Year





- Achieved Sales and Non-GAAP EPS targets
- International Sales growth > 15% YoY
- Meaningful improvement in customer diversification
- Generated ~\$600M of cash from operating activities, excluding Ruckus
- \$197M of share repurchases
- Refinanced all long-term debt
- Completed acquisition of Ruckus

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#### 2018 Outlook



	2018
Sales - \$M	7,100 – 7,350
EPS - GAAP	\$0.48 - \$0.73
Adjusted EPS – Non-GAAP <sup>(*)</sup>	\$2.80 - \$3.05
Cash From Operating Activities	\$750M - \$850M
Capex	\$80M – \$90M
Non-GAAP Tax Rate	20%
* See GAAP to Non-GAAP reconciliation	

#### Expanded Segment Disclosures: 2017



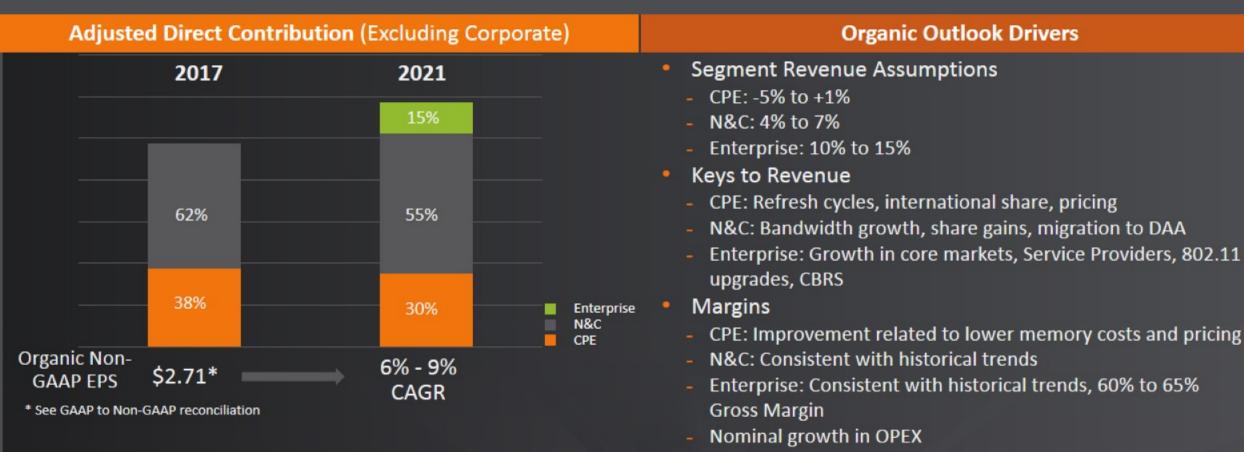
#### **Adjusted Direct Contribution**

	СРЕ	N&C	ENT	CORP	TOTAL
Revenue \$M	4,475	2,094	46	(1)	6,614
Adjusted Direct Contribution \$M	437	673	2	(292)	820
Adjusted Direct Contribution %	9.8%	32.1%	NM	NM	12.4%

- New "Adjusted Direct Contribution" more closely aligned to EBITDA
- Moved certain Corporate costs to segments where appropriate
- Additional Details Attached

#### **Financial Goals**





- Growth in core business EPS with more diversified contribution mix
- Accretive M&A and Share Repurchases provide incremental upside

### Strong Capital Structure



Debt	Leverage	Cash	Shares
Current Debt \$2.2B • Matures in 2022/2024 • All-in Rate ~3.6%	<ul> <li>Target Leverage 2.5x</li> <li>Currently 2.4x</li> <li>Provides flexibility</li> </ul>	Target Cash: \$500M Target Revolver: \$500M • On target • Liquidity buffer • Provides flexibility	<ul> <li>Share Count ~190M</li> <li>\$25M Repurchase, Q1 2018</li> <li>~\$375M Repurchases over past two years</li> <li>\$500M authorization</li> </ul>

#### **Capital Allocation Priorities**



Invest in Current Portfolio

 Market leadership in Service Provider solutions

 Expand Enterprise offerings and invest in Go to Market Acquisitions are part of our Growth Strategy

 Customer and portfolio diversification

- Time to Market advantages
- Leverage scale to drive earnings growth

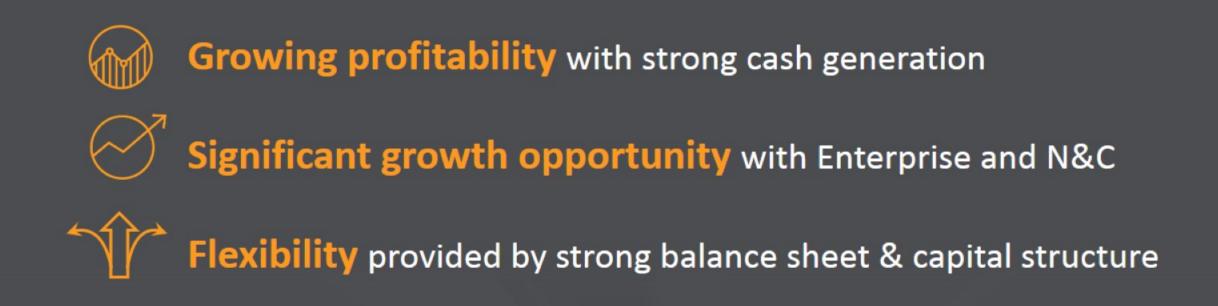
 Continue approach of utilizing share repurchases

**Return of** 

Capital

## Summary





### Today's Key Messages



- Well-positioned to benefit from mass-market Gigabit Internet spend
- Deeply entrenched leadership in evolving video market
- Expanded addressable market with increasingly diversified customer base
- Leadership in emerging mobile CBRS LTE small cell market
- Three year outlook and earnings growth target
- Capital allocation strategy



#### 2018 Estimated GAAP to Non-GAAP EPS Guidance Reconciliation



	Full Year 2018
	Guidance
Estimated GAAP EPS	\$0.48 - \$0.73
Reconciling Items:	
Amortization of Intangibles	2.12
Stock Compensation Expense	0.50
Integration and Other Costs	0.15
Purchase Accounting Items	0.20
Impairment of Goodwill and Intangibles	0.04
Net tax items	(0.69)
Subtotal	2.32
Estimated Adjusted Non-GAAP EPS	\$ 2.80 - \$ 3.05

#### 2017 GAAP to Non-GAAP EPS Guidance Reconciliation

(in thousands, except per share data)	Q1	2017	Q2	2017	Q3	2017	Q4 2	2017	ΥTE	2017
		Per Diluted		Per Diluted		Per Diluted		Per Diluted		Per Diluted
	Amount	Share	Amount	Share	Amount	Share	Amount	Share	Amount	Share
Net (loss) income attributable to ARRIS International plc	\$ (39,098)	\$ (0.21)	\$ 30,336	\$ 0.16	\$ 88,320	\$ 0.47	\$ 12,469	0.07	\$ 92,027	\$ 0.49
Highlighted items :										
Im pacting gross m argin:										
Stock compensation expense	3,252	0.02	3,495	0.02	3,897	0.02	3,303	0.02	13,947	0.07
Reduction in net s ales related to warrants	2,423	0.01	2,658	0.01	3,084	0.02	(8,145)	(0.04)	-	
Acquisition accounting impacts of deferred revenue	-	-	-	-	-		1,120	0.01	1,120	0.01
Acquisition accounting impacts of inventory valuation	908	-	-	-	-		7,580	0.04	8,488	0.04
Im pacting operating expenses:										
Integration, acquisition, restructuring and other costs	10,095	0.05	9,690	0.05	10,837	0.08	67,735	0.36	98,357	0.52
Amortization of intangible assets	93,646	0.49	91,011	0.48	90,162	0.48	100,588	0.53	375,407	1.98
Impairment of goodwill and intangibles	-	-	-	-	-	-	55,000	0.29	55,000	0.29
Stock compensation expense	16,163	0.08	18,829	0.10	16,316	0.09	15,403	0.08	66,711	0.35
Noncontrolling interest share of non-GAAP adjustments	(804)	-	(811)	-	(711)	-	(20,026)	(0.11)	(22,352)	(0.12)
Im pacting other (incom e) / expense:										
Impairment (gain) on Investments	2,750	0.01	-	-	(1,821)	(0.01)	-	-	929	
Remeas urement of deferred taxes	2,112	0.01	2,828	0.01	3,569	0.02	851		9,360	0.05
Debt amendment fees			2,782	0.01			3,069	0.02	5,851	0.03
Net tax item s	(13,333)	(0.07)	(40,854)	(0.22)	(62, 698)	(0.33)	(73,286)	(0.39)	- (190,151)	(1.00)
Total highlighted items	117,212	0.61	89,628	0.47	62,615	0.33	153,192	0.81	422,647	2.23
Net income excluding highlighted items	\$ 78,114	\$ 0.40	\$ 119,984	\$ 0.63	\$ 150,935	\$ 0.80	\$ 165,661	\$ 0.88	\$ 514,674	\$ 2.71
Weighted average ordinary shares - basic		189,796		186,803		187,084		188,548		187,133
Weighted average ordinary shares - diluted		192,879		189,002		188,941		188,829		189,616



#### NOTES TO GAAP/ADJUSTED NON-GAAP FINANCIAL MEASURES



The Company reports its financial results in accordance with accounting principles generally accepted in the United States ("GAAP" or referred to herein as "reported"). However, management believes that certain non-GAAP financial measures provide management and other users with additional meaningful financial information that should be considered when assessing our ongoing performance. Our management regularly uses our supplemental non-GAAP financial measures internally to understand, manage and evaluate our business and make operating decisions. These non-GAAP measures are among the factors management uses in planning for and forecasting future periods. Non-GAAP financial measures should be viewed in addition to, and not as an alternative to, the Company's reported results prepared in accordance with GAAP. Our non-GAAP financial measures reflect adjustments based on the following items, as well as the related income tax effects:

Adjustments to Revenue Related to Warrants: We entered into agreements with two customers for the issuance of warrants to purchase up to 14.0 million of ARRIS's ordinary shares. Vesting of the warrants is subject to certain purchase volume commitments, and therefore the accounting guidance requires that we record any change in the fair value of warrants as a reduction in revenue. Until final vesting, changes in the fair value of the warrants will be marked to market and any adjustment recorded in revenue. We have excluded the effect of the implied fair value in calculating our non-GAAP financial measures. We believe it is useful to understand the effects of these items on our total revenues and gross margin.

<u>Stock-Based Compensation Expense</u>: We have excluded the effect of stock-based compensation expenses in calculating our non-GAAP operating expenses and net income (loss) measures. Although stock-based compensation is a key incentive offered to our employees, we continue to evaluate our business performance excluding stock-based compensation expenses. We record non-cash compensation expense related to grants of restricted stock units. Depending upon the size, timing and the terms of the grants, the non-cash compensation expense may vary significantly but will recur in future periods.

Acquisition Accounting Impacts Related to Deferred Revenue: In connection with our acquisition of Ruckus Networks, business combination rules require us to account for the fair values of arrangements for which acceptance has not been obtained, and post contract support in our purchase accounting. The non-GAAP adjustment to our sales and cost of sales is intended to include the full amounts of such revenues. We believe the adjustment to these revenues is useful as a measure of the ongoing performance of our business. We have historically experienced high renewal rates related to our support agreements and our objective is to increase the renewal rates on acquired post contract support agreements; however, we cannot be certain that our customers will renew our contracts

Acquisition Accounting Impacts Related to Inventory Valuation: In connection with the accounting related to our acquisitions, business combinations rules require the acquired inventory be recorded at fair value on the opening balance sheet. This is different from historical cost. Essentially we are required to write the inventory up to end customer price less a reasonable margin for the selling effort. We have excluded the resulting adjustments in inventory and cost of goods sold as the historic and forward gross margin trends will differ as a result of the adjustments. We believe it is useful to understand the effects of this on cost of goods sold and margin.

Integration, Acquisition, Restructuring Costs and Other Costs: We have excluded the effect of acquisition, integration, and other expenses and the effect of restructuring expenses in calculating our non-GAAP operating expenses and net income (loss) measures. We incurred expenses in connection with the ActiveVideo, Pace and Ruckus Networks acquisitions, which we generally would not otherwise incur in the periods presented as part of our continuing operations. Acquisition and integration expenses consist of transaction costs, costs for transitional employees, other acquired employee related costs, and integration related outside services. Restructuring expenses consist of employee severance and abandoned facilities. We believe it is useful to understand the effects of these items on our total operating expenses.

Amortization of Intangible Assets: We have excluded the effect of amortization of intangible assets in calculating our non-GAAP operating expenses and net income (loss) measures. Amortization of intangible assets is non-cash, and is inconsistent in amount and frequency and is significantly affected by the timing and size of our acquisitions. Investors should note that the use of intangible assets contributed to our revenues earned during the periods presented and will contribute to our future period revenues as well. Amortization of intangible assets will recur in future periods.

Impairment of Goodwill and Intangibles: We have excluded the effect of the estimated impairment of goodwill and intangible assets in calculation our non-GAAP operating expenses and net income measures. Although an impairment does not directly impact the Company's current cash position, such expense represents the declining value of the technology and other intangible assets that were acquired. We exclude these impairments when significant and they are not reflective of ongoing business and operating results.

#### NOTES TO GAAP/ADJUSTED NON-GAAP FINANCIAL MEASURES



Noncontrolling Interest share of Non-GAAP Adjustments: The joint venture formed for the ActiveVideo acquisition is accounted for by ARRIS under the consolidation method. As a result, the consolidated statements of operations include the revenues, expenses, and gains and losses of the noncontrolling interest. The amount of net income (loss) related to the noncontrolling interest are reported and presented separately in the consolidated statement of operations. We have excluded the noncontrolling share of any non-GAAP adjusted measures recorded by the venture, as we believe it is useful to understand the effect of excluding this item when evaluating our ongoing performance.

Impairment (Gain) on Investments: We have excluded the effects of other-than-temporary impairments and certain gains on investments in calculating our non-GAAP financial measures. We believe it is useful to understand the effect of this non-cash item in our other expense (income).

Debt Amendment Fees: In 2017, the Company amended its credit agreement. This debt modification allowed us to improve the terms and conditions of the credit agreement and extend the maturitities of the debt. We have excluded the effect of the associated fees in calculating our non-GAAP financial measures. We believe it is useful to understand the effect of this item in our interest expense.

Credit Facility - Ticking Fees: In connection with our acquisition of Pace, the cash portion of the consideration was funded through debt financing commitments. A ticking fee was paid to our banks to compensate for the time lag between the commitment allocation on a loan and the actual funding. We have excluded the effect of the ticking fee in calculating our non-GAAP financial measures. We believe it is useful to understand the effect of this item in our other expense (income).

Foreign Exchange Contract Losses Related to Cash Consideration of Pace Acquisition: In the second quarter of 2015, the Company announced its intent to acquire Pace pic in exchange for stock and cash. We subsequently entered into foreign exchange forward contracts in order to hedge the foreign currency risk associated with the cash consideration of the Pace acquisition. These foreign exchange forward contracts were not designated as hedges, and accordingly, all changes in the fair value of these instruments are recognized as a loss (gain) on foreign currency in the Consolidated Statements of Operations. We believe it is useful to understand the effect of this on our other expense (income).

Remeasurement of Certain Deferred Tax Liabilities: The Company recorded a foreign currency remeasurement (gain) loss related to a deferred income tax liability, in the United Kingdom, arising from the assignment of intangibles acquired in the Pace acquisition. This deferred income tax liability is denominated in GBP. The foreign currency remeasurement (gain) loss derives from the remeasurement of the GBP deferred income tax liability to the USD, since the date of the acquisition. We have excluded the impact of this (gain) loss in the calculation of our non-GAAP measures. We believe it is useful to understand the effect of this item on our total other expense (income).

France R&D Tax Credit: France R&D tax credits were recorded as an other asset on the date of our acquisition of Pace, as Pace France, a subsidiary of Pace, had a history of losses and did not expect to utilize their R&D Tax Credits against a future France income tax liability but rather expected to use the credits to offset non-income taxes. In the third quarter of 2016, our restructuring in France required a reclassification of the R&D tax credits from other assets to deferred tax assets prior to the utilization of the tax credits. This impact of the reclassification was a charge to other expense with an offsetting tax benefit. However, during the fourth quarter of 2016, the Company determined that the original classification within income taxes was more appropriate and therefore the reclassification from the third quarter of 2016 reversed. We have excluded the effect of the other expense and tax benefit in the calculation of our non-GAAP financial measures. We believe it is useful to understand the effects of this event on our total other expense (income) and income tax.

Foreign Withholding Tax: In connection with our acquisition of Pace, ARRIS US Holdings, Inc. transferred shares of its subsidiary ARRIS Financing II Sari to ARRIS International pic. Under U.S. tax law, based on the best available information, we believe the transfer constituted a deemed distribution from ARRIS U.S. Holdings inc. to ARRIS International pic that is treated as a dividend for U.S. tax purposes. A deemed dividend of this type is subject to U.S. withholding tax to the extent of the current and accumulated earnings and profits (as computed for tax purposes) ("E&P") of ARRIS U.S. Holdings inc., which include the E&P of the former ARRIS Group, inc. and subsidiaries through December 31, 2016. Accordingly, ARRIS U.S. Holdings inc. remitted U.S. withholding tax in the amount of \$55 million based upon its estimated E&P of \$1.1 billion and the U.S. dividend withholding tax rate of 5 percent (as provided in Article 10 (Dividends) of the United Kingdom-United States Tax Treaty). We have excluded the withholding tax in calculating our non-GAAP financial measures.

Income Tax Expense (Benefit): We have excluded the tax effect of the non-GAAP items mentioned above. Additionally, we have excluded the effects of certain tax adjustments related to tax and legal restructuring, state valuation allowances, research and development tax credits and provision to return differences.

#### **Expanded Segment Disclosure**



#### The Approach

Direct Contribution – Prior Reporting Format

Less: Direct Bonus, Equity Compensation and Other

- = Direct Contribution New Reporting Format
- Less: Allocated Facility Costs, Service Provider Sales and Marketing Costs

Plus: Depreciation and Equity Compensation

= Adjusted Direct Contribution

#### What's Left on Corporate

- Executive, Finance, HR, Legal, IT and Other Costs
- Unallocated Bonus and Equity Compensation
- Unallocated Facility Costs
- Purchase Accounting Items (Fair Market Value of Inventory Adjusted, Deferred Revenue Adjustments)
- Customer Warrant Costs, if Applicable

#### Adjusted Direct Segment Contribution - 2017



#### **Direct Contribution**

	Prior	New
CPE	498	457
N&C	806	724
Enterprise	6	1
Corporate	(659)	(531)
Total	652	652

#### **Expanded Disclosure**

_	CPE	N&C	Ent	Corp	Total
Revenue	4,475	2,094	46	(1)	6,614
Direct Contribution - New (1)	457	724	1	(531)	652
Adjusted Direct Contribution - \$ <sup>(2)</sup>	437	673	2	(292)	820
Adjusted Direct Contribution - %	9.8%	32.1%	4.3%	NM	12.4%
Other Items					
Amortization of Intangibles	257	105	10	3	375
Impairment	0	55	0	0	55
Integration/Restructuring/Other	4	13	78	3	98
Depreciation	38	29	1	20	88
Equity Compensation	24	36	1	20	81

 Direct Contribution New – Prior Direct Contribution less direct bonus, equity compensation and other costs.

(2) Adjusted Direct Contribution – Direct Contribution New less allocated facility and service provider costs plus depreciation and equity compensation