

MOTOROLA NETWORK SOLUTIONS



**WELCOME TO THE WORLD
OF WIRELESS AGILITY™**





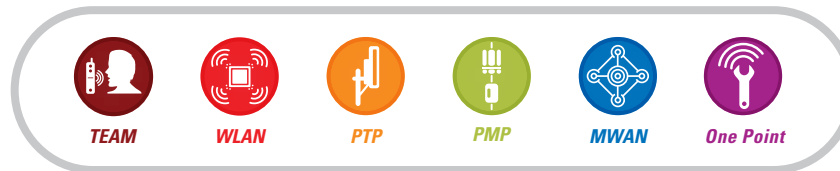
WIRELESS SOLUTIONS. WIRELESS AGILITY.™

There's a reason why Motorola Wireless Network Solutions are used around the world in over 120 countries and 10,000 wireless networks. Our unrivaled portfolio of Point-to-Point (PTP), Point-to-Multipoint (PMP), and Mesh Wide Area Network (MWAN), WLAN and VoWLAN solutions make governments, enterprises, and service providers more agile by helping them deploy voice, video, and data applications right where they need them.

Government Organizations use Motorola's wireless solutions to provide broad-area indoor and outdoor public safety access as well as high-speed citywide connectivity for eGovernment initiatives.

Wireless Enterprise Networks for business mobility are realized through Motorola's reliable, secure and low total cost of ownership solutions that provide ubiquitous indoor and outdoor network access in carpeted, campus and cross-town environments.

Service Providers use Motorola wireless solutions to deploy and extend networks to reach new business and residential customers outdoors, indoors and on the move.





PRODUCT PORTFOLIO.



TEAM SOLUTIONS: Total Enterprise Access and Mobility means seamless, innovative solutions providing mobile access to critical voice and data communication services and interoperability with existing communication solutions throughout the enterprise. motorola.com/team



WLAN: Unmatched reliability, gap-free security and lowest TCO through a comprehensive portfolio of wireless controllers and access points. Perfect for superior wireless VoIP, video and data performance in retail stores, hospitals, schools or hotels. motorola.com/enterprisewlan



Point-to-Point: Industry-leading wireless Ethernet solutions in unlicensed, shared, and licensed spectrums offering highly reliable connectivity across challenging environments, distances and weather conditions. Perfect for T1/E1 replacement or redundancy, building-to-building connectivity, WiMAX/LTE backhaul, video surveillance and connecting in NLoS areas. motorola.com/ptp



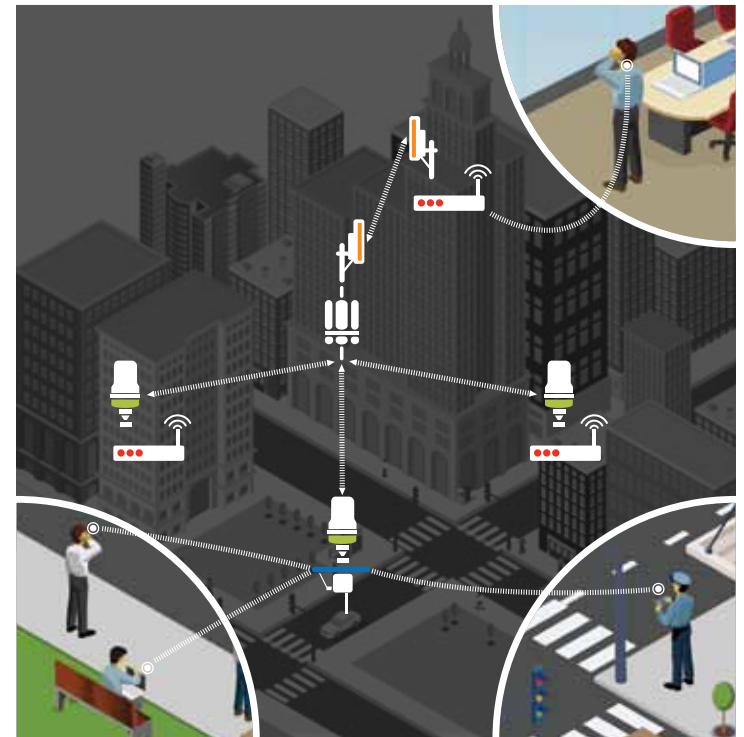
Point-to-Multipoint: Access point/subscriber networks offering industry-leading interference tolerance, unique GPS-synchronized timing which allows for denser networks, and easy installation. Perfect for enterprise and residential internet service, video surveillance, VoIP and data applications, backhaul for WLAN and MWAN. motorola.com/pmp



Mesh Wide Area Networks: Self-forming/self-healing fixed or mobile access networks employing standards-based Wi-Fi or Motorola's unique MEA (Mobility Enabled Access) technology. Motorola MWAN connects even at highway speeds and routes data along the best path. Perfect for wide-area broadband access networks for public safety or private use. motorola.com/mesh



One Point Wireless Suite: A powerful set of software tools used to design, deploy, manage and protect your indoor/outdoor wireless network. Perfect for creating cost-optimized and robust network designs and managing networks for maximum uptime. motorola.com/onepoint





Motorola knows Wireless, and we believe the right software makes wireless solutions deliver their full potential. With our One Point Wireless approach, we build smart integrated wireless network design and management tools for indoor and outdoor deployments. Working together, they create a smoother flow from design to operation to security and deliver solid, secure network performance that you can trust.

INDOOR WLAN

LANPlanner

Powerful WLAN predictive design and survey tool. Includes 802.11n throughput predictions and application-specific design tools for superior support of VoWLAN, Video and or Locationing.

SiteScanner

Fully featured site survey tool used as a stand-alone or together with LANPlanner

AirDefense Infrastructure Management

Centralized management and control for any WLAN consisting of the following modules:

WLAN Management

Central multi-vendor console enhances visibility and control

Centralized Management Console

Single aggregate dashboard view for large networks with thousands of network devices

AirDefense Network Assurance

Unique vendor-agnostic tools for WLAN performance monitoring and remote troubleshooting. Modules:

Advanced Troubleshooting

End-to-end client connectivity testing

Spectrum Analysis

Classify interference sources with installed sensors

LiveRF

Real-time heatmaps of network coverage

Advanced Forensics

Detailed real-time and historical views of wireless activity

AirDefense Security and Compliance

Advanced analytics and auto threat mitigation. Modules:

Wireless Intrusion Prevention

Industry leading threat library, real-time detection and auto mitigation

Wireless Vulnerability Assessment

Patented security testing using installed sensors

Advanced Forensics

Track threat activity with detailed historical data

Mobile Workforce Protection

Policy enforcement and protection at the edge

Legacy Encryption Protection

Patented protection for legacy wireless encryption

OUTDOOR WIRELESS

BroadbandPlanner

Quote, design, measure and troubleshoot large-scale multi-vendor Mesh and Point-to-Multipoint wireless networks. Fast, powerful and easy to use

BroadbandPlanner SE

Quote and design small or medium sized Motorola Mesh and Point-to-Multipoint wireless networks

BroadbandScanner

Portable survey tool for Mesh and Point-to-Multipoint networks. Used as standalone or together with BroadbandPlanner

PTP LINKPlanner

Free tool to determine optimal PTP equipment to use based on non-line-of-sight RF predictions that consider terrain height, antenna height, equipment and antenna used and other obstructions above the terrain. Rich integration with Google Earth helps visualize a multi-link network in the target environment.

Wireless Manager

See your entire multi-vendor outdoor network (PTP, PMP and Mesh) in one live Google map view. Real time status and metrics for links are shown with easy to see color coding and customizable alarms let you know right away if a problem is developing.

	WS2000	RFS4000	RFS6000	RFS7000
Wireless Controllers	<p>Small Office Controller</p> <ul style="list-style-type: none"> • 6 a/b/g access points • 200 users • Hotspot capable • 8 WLANs • Automatic Load Balancing • Integrated AAA/ DHCP Server 	<p>802.11n Branch Office Controller</p> <ul style="list-style-type: none"> • 6 a/b/g/n access points • 200 users • 5 POE Ports • Optional integrated 802.11a/b/g/n dual radio access point • 3G backhaul • Integrated WIPS • Integrated locationing 	<p>WLAN Controller</p> <ul style="list-style-type: none"> • 256 a/b/g/n adaptive access points • 48 a/b/g access points • 8 POE Ports • Up to 20,000 connected devices • 3G backhaul • Active failover and load balancing 	<p>WLAN Controller for large scale deployments</p> <ul style="list-style-type: none"> • 1024 a/b/g/n adaptive access points • 256 802.11a/b/g • Up to 96,000 connected devices • Active failover and load balancing
	<ul style="list-style-type: none"> • Hot spot / guest access capable • Security: Layer 2-7 stateful firewall, AAA/DHCP server, Role and location based access control, WIPS, VPN, FIPS 140-2, CC EAL-4 • VoWLAN and FMC ready 		<ul style="list-style-type: none"> • Integrated Locationing and RFID • With Motorola devices: Pre-emptive roaming, Fast Roaming with opportunistic channel scan, Load balancing, Power save polling (PSP), Virtual AP Location based Access Control 	
Access Points	THIN ACCESS POINTS		ADAPTIVE ACCESS POINTS	
	<ul style="list-style-type: none"> • AP 650 802.11a/b/g/n • AP 300 802.11b/g or a/b/g, Internal or External Antenna 		<ul style="list-style-type: none"> • AP 7131 802.11a/b/g/n • AP 5131 802.11a/b/g • AP 5181 802.11a/b/g (outdoor) 	
	<ul style="list-style-type: none"> • Internal antenna model: 0°C to 40°C, wall or in ceiling • External antenna model: -20°C to 50°C, in-ceiling mount, plenum rated housing 		<ul style="list-style-type: none"> • Dependent and independent operation • Mesh connectivity • High availability • Up to 127 devices supported • Security: Layer 2-7 stateful firewall, AAA/DHCP server, Role and location based access control, WIPS, VPN. IPS 140-2, CC EAL-4, Rogue AP detection • AP-5181: housing IP56; NEMA 4X, rated -30°C to 55°C 	
	<ul style="list-style-type: none"> • SMART RF* • Optimized QoS for Voice and Video* • 802.11i, WPA2, 802.3af PoE* • Use as WIPS security and troubleshooting sensor* • 2.4/5.0 sensing from a single radio* 			

For more information on Wireless LAN, specifications, and capabilities, click here » motorola.com/enterprisewlan

* Applies to both Thin and Adaptive Access Points

	TEAM Voice over WLAN	TEAM Express	TEAM Radio Link Solution	TEAM Badge EWB100
Description	<p>Mobile access over the enterprise WLAN to key voice and data services:</p> <ul style="list-style-type: none"> • PBX telephony, PTT • Email, calendar, contacts • SMS (within the WLAN) • Mobile internet • Business apps 	<p>PTT over WLAN client for multiple, disparate devices, including Motorola voice-capable mobile computers.</p>	<p>PTT talk-group communications between two-way radio systems and TEAM VoWLAN and TEAM Express devices.</p>	<p>PTT over WLAN via small wearable badge device. Utilizes the TEAM Express voice client, enabling interoperability with other TEAM Express enabled devices.</p>
Components	<p>Infrastructure:</p> <ul style="list-style-type: none"> • Wireless Services Manager (WSM)-feature appliance <p>Network Services:</p> <ul style="list-style-type: none"> • Manager (NSM) provisioning and management software <p>Devices:</p> <ul style="list-style-type: none"> • Windows Mobile® 6.1 VoWLAN smartphones – EWP1000 Professional and EWP2000 Semi-Rugged 	<ul style="list-style-type: none"> • TEAM Express 1.0 software voice client • Downloadable to a broad range of Motorola voice-capable mobile computing devices 	<ul style="list-style-type: none"> • RLS appliance • Radio Interface Unit (RIU) • Donor 2-way radios 	<ul style="list-style-type: none"> • Tiny, 1.6 oz TEAM badge • Other TEAM VoWLAN, TEAM Express or RLS-connected devices
Key Capabilities	<ul style="list-style-type: none"> • Comprehensive voice and data in a single device • Toll quality voice • Enterprise-grade PTT • Scalable from a handful of users up to 4,500 per Wireless Services Manager • Interoperability with TEAM Express devices and two-way radios (via TEAM RLS) 	<ul style="list-style-type: none"> • PTT connectivity for up to 32 talk groups leveraging existing WLAN infrastructure • Interoperability between disparate devices equipped with the TEAM Express client • One-to-many PTT over WLAN with private response capability 	<ul style="list-style-type: none"> • Enables interoperability between devices • Leverages existing investments • Users can use the best device to meet their needs 	<ul style="list-style-type: none"> • Interoperable with other TEAM Express enabled devices • Price point opens the door to mobile voice communications for all workers • One-to-many PTT over WLAN with private response capability

For more information on TEAM Solutions, specifications, and capabilities, click here » motorola.com/team

* Compatible with VMM 4300

	PTP 100	PTP 200	PTP 300	PTP 500	PTP 600	PTP 800
Radio Frequencies	• 2.4, 5.2, 5.4, 5.8 GHz	• 4.9, 5.4 GHz	• 5.4, 5.8 GHz	• 5.4, 5.8 GHz	• 2.5, 4.5, 4.8, 4.9, 5.4, 5.8, 5.9 GHz	• 11 (FCC), 18, 23, 26 (ETSI) GHz
Throughput	• 2, 7, 14 Mbps	• 21 Mbps	• 25 Mbps • 50 Mbps LOS option	• 105 Mbps	• 300 Mbps (freq and channel width dependent)	• 364 Mbps Full Duplex
Latency (One Way)	• <3.5 ms Ethernet	• <3.5 ms Ethernet	• 1.7 ms T1/E1 (modulation dependent)	• 1.7 ms T1/E1 (modulation dependent)	• 1.7 ms T1/E1 (modulation dependent)	• 115 μs
LOS Range	• 35 mi (56 km)	• 5 mi integrated antenna (8 km)	• 155 mi (250 km)	• 155 mi (250 km)	• 124 mi (200 km)	• NA
nLOS Range	• NA	• <5 mi (8 km)	• 25 mi (40 km)	• 25 mi (40 km)	• 20 mi (32 km)	• NA
NLOS Range	• NA	• NA	• 6 mi (10 km)	• 6 mi (10 km)	• 5 mi (8 km)	• NA
Channel Width	• 20 MHz	• 10 MHz	• Selectable 5, 10, 15 MHz	• Selectable 5, 10, 15 MHz	• Selectable 5, 10, 15, 20, 30 MHz (freq dependent)	• 7-56 MHz variable (freq dependent)
System Gain	• 125 dB (freq dependant)	• 141 dB (freq dependant)	• 167 dB	• 167 dB	• 168 dB (freq dependent)	• 117 dB
Security	• 56-bit DES, 128-bit AES	• 56-bit DES, 128-bit AES	• 128-bit AES, 256-bit AES	• 128-bit AES, 256-bit AES	• 128-bit AES, 256-bit AES	• 128-bit AES, 256-bit AES
DFS	• Y	• Y	• i-DFS	• i-DFS	• i-DFS	• NA
OFDM	• N	• Y	• i-OFDM	• i-OFDM	• i-OFDM	• NA
MIMO	• N	• N	• Y	• Y	• Y	• NA

For more information on Point-to-Point products, specifications, and capabilities, click here » motorola.com/ptp

LOS - Line of Sight, nLOS - near Line of Sight, NLOS - Non Line of Sight

* Availability varies by country



	PMP 120	PMP 120 900 MHz	PMP 130	PMP 320*	PMP 400	PMP 430 10MHz Ch.	PMP 430 20MHz Ch.
Radio Frequencies	• 2.4, 5.1, 5.2, 5.4, 5.7, 5.9 GHz	• 900 MHz	• 2.4, 5.1, 5.2, 5.4, 5.8, 5.9 GHz	• 3.3, 3.5, 3.6 GHz	• 4.9, 5.4 GHz	• 5.4, 5.8 GHz	• 5.4, 5.8 GHz
Throughput	• 7 Mbps	• 4 Mbps	• 14 Mbps	• 23 Mbps (up to 40 Mbps with MIMO)	• 20 Mbps	• 20 Mbps	• 40 Mbps
Latency (One Way)	• 3.5 ms	• <7.5 ms	• 3.5 ms	• 25 ms	• 3.5 ms	• 3.5 ms	• 3.5 ms
System Gain (dB)	• 2.4 GHz: 125 • 5 GHz: 123	• 138	• 2.4 GHz: 125 • 5 GHz: 123	• 149	• 4.9 GHz: 141 • 5.4 GHz: 133	• 5.4 GHz: 125 • 5.8 GHz: 134	• 5.4 GHz: 122 • 5.8 GHz: 131
System Gain with Passive LENS (dB)	• 5 GHz: 133	• NA	• 5 GHz: 133	• NA	• NA	• 5.4 GHz: 130 • 5.8 GHz: 140	• 5.4 GHz: 127 • 5.8 GHz: 137
System Gain with Passive Reflector (dB)	• 2.4 GHz: 138 • 5 GHz: 141	• NA	• 2.4 GHz: 138 • 5 GHz: 141	• NA	• NA	• 5.4 GHz: 133 • 5.8 GHz: 149	• 5.4 GHz: 130 • 5.8 GHz: 146
Channel Width (MHz)	• 20	• 8	• 20	• 5 • 7 • 10	• 10	• 10	• 20
Security	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified	• 128-bit AES FIPS 197 Certified	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified	• 56-bit DES • Optional 128-bit AES FIPS 197 Certified
OFDM	• N	• N	• N	• Y	• Y	• Y	• Y
Maximum Subscribers Per Access Point	• 200	• 200	• 200	• 200	• 200	• 200	• 200
Access Point Sector	• 60°	• 60°	• 60°	• 90°	• 90°	• 90°	• 90°

For more information on Point-to-Multipoint products, specifications, and capabilities, click here » motorola.com/pmp

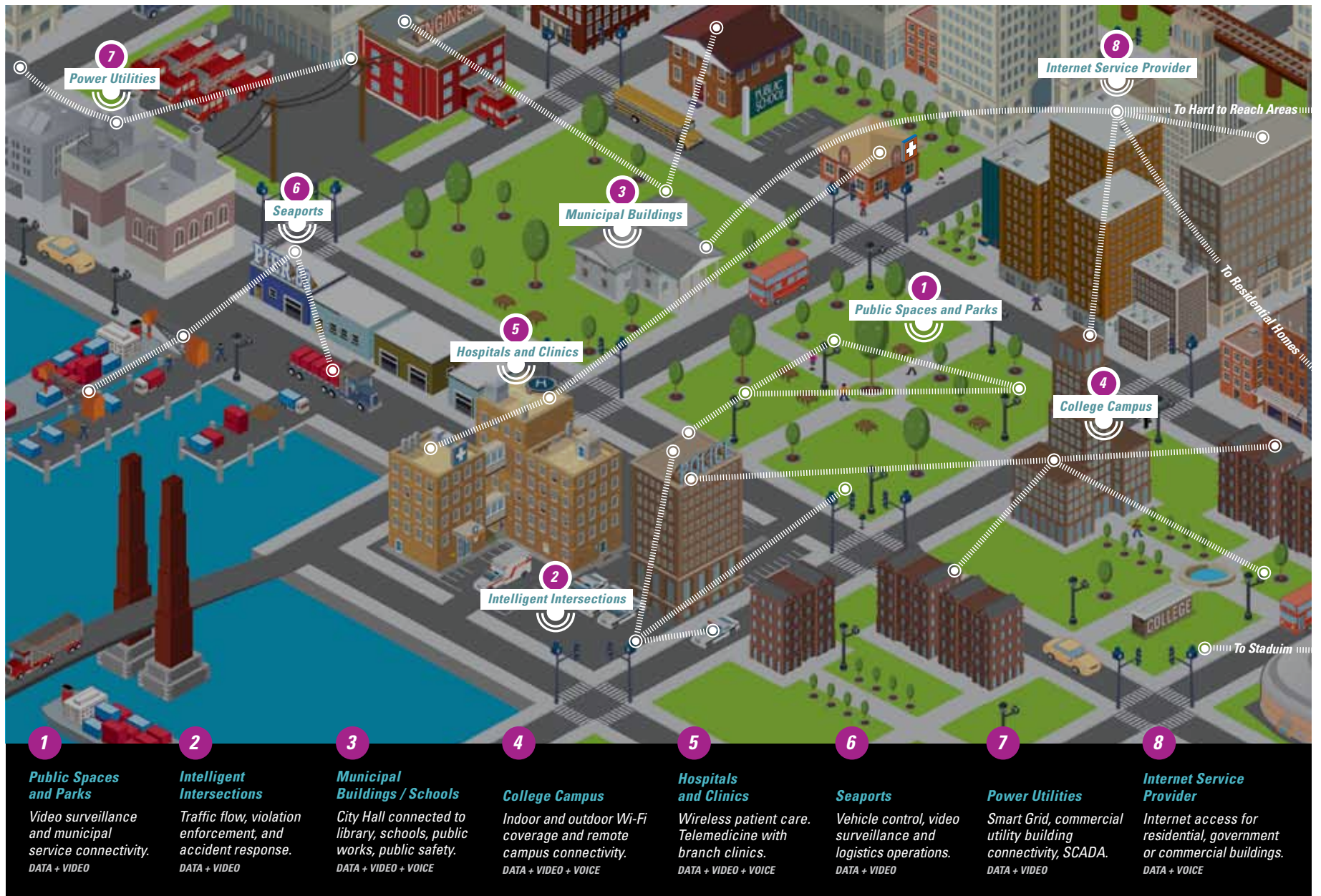
* Interoperable with WiMAX CPE



	4300 SERIES	6300 SERIES	7181 SERIES	7300 SERIES
Radio Frequencies	<ul style="list-style-type: none"> • 2.4 GHz, (802.11b/g) • 4.9, 5.4, 5.8 GHz (802.11a) 	<ul style="list-style-type: none"> • 2.4 GHz 2nd ISM Band 	<ul style="list-style-type: none"> • 802.11 b/g/n – 2.4 GHz and 802.11 a/n – 5.4, 5.8 GHz 	<ul style="list-style-type: none"> • 2.4 GHz or 4.9 GHz
Channel Width	<ul style="list-style-type: none"> • 10 MHz and 20 MHz 	<ul style="list-style-type: none"> • 20 MHz 	<ul style="list-style-type: none"> • 20 MHz and 40 MHz 	<ul style="list-style-type: none"> • 20 MHz
Mobility	<ul style="list-style-type: none"> • Up to 70 mph (110 kmh) 	<ul style="list-style-type: none"> • 200+ mph (320 kmh) 	<ul style="list-style-type: none"> • Up to 70 mph (110 kmh)* 	<ul style="list-style-type: none"> • 200+ mph (320 kmh)
Throughput (Burst Data Rate)	<ul style="list-style-type: none"> • 54 Mbps 	<ul style="list-style-type: none"> • 6 Mbps 	<ul style="list-style-type: none"> • 300 Mbps 	<ul style="list-style-type: none"> • 6 Mbps (MEA) • 54 Mbps (802.11b/g)
Routing Protocol	<ul style="list-style-type: none"> • MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness 	<ul style="list-style-type: none"> • MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness 	<ul style="list-style-type: none"> • MeshConnex patented Layer 2 hybrid proactive/reactive routing or Spanning Tree situational-awareness 	<ul style="list-style-type: none"> • MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness
Quality of Service	<ul style="list-style-type: none"> • 802.11e 	<ul style="list-style-type: none"> • 802.1p 	<ul style="list-style-type: none"> • 802.1p/q with 8 queues per VLAN • 802.11e WiFi Multimedia Extensions 	<ul style="list-style-type: none"> • 802.11e • MEA-802.1p
Client Encryption Support	<ul style="list-style-type: none"> • For 802.11b/g: WEP, AES, TKIP, WPA and WPA2 (802.11i) 	<ul style="list-style-type: none"> • WEP, AES, WPA (TKIP) and WPA2 (802.11i) 	<ul style="list-style-type: none"> • Open, WEP, AES-CCM, TKIP 	<ul style="list-style-type: none"> • For 802.11b/g: WEP, AES, TKIP, WPA2 (802.11i)
Intra-Mesh Encryption Authentication	<ul style="list-style-type: none"> • SecureMesh / AES • 802.1x (infrastructure/ client) • MAC Authentication 	<ul style="list-style-type: none"> • Secure Mesh / AES • RADIUS, 802.1x, EAP-TTLS or EAP-PEAP 	<ul style="list-style-type: none"> • Secure Mesh / AES • WPA, WPA2-PSK, WEP, 802.11i, RADIUS, 802.1X (includes EAPTLS, EAP-TTLS) • 802.1X (infrastructure/client) and MAC address hardware authentication 	<ul style="list-style-type: none"> • Secure Mesh / AES • MEA-Hardware device authentication & EAP/802.1xmutual • 802.11 b/g-RADIUS 802.1x with EAP/TTLS (or EPP/PEAP)
Product Options	<ul style="list-style-type: none"> • Access Point • Vehicle Mounted Modem 	<ul style="list-style-type: none"> • Access Point • Mesh Wireless Router • Wireless Serial Modem • Wireless Modem Card • Vehicle Mounted Modem 	<ul style="list-style-type: none"> • Access Point 	<ul style="list-style-type: none"> • Access Point • Mesh Wireless Router • Wireless Serial Modem • Wireless Modem Card • Vehicle Mounted Modem
Temperature Range	<ul style="list-style-type: none"> • -22 to 140°F (-30 to 60°C) 	<ul style="list-style-type: none"> • -22 to 140°F (-30 to 60°C) 	<ul style="list-style-type: none"> • Operating: -40 to 131°F (-40 to +55°C) and Storage: -40 to 185°F (-40 to +85°C) 	<ul style="list-style-type: none"> • -31 to 131°F (-35 to 55°C)

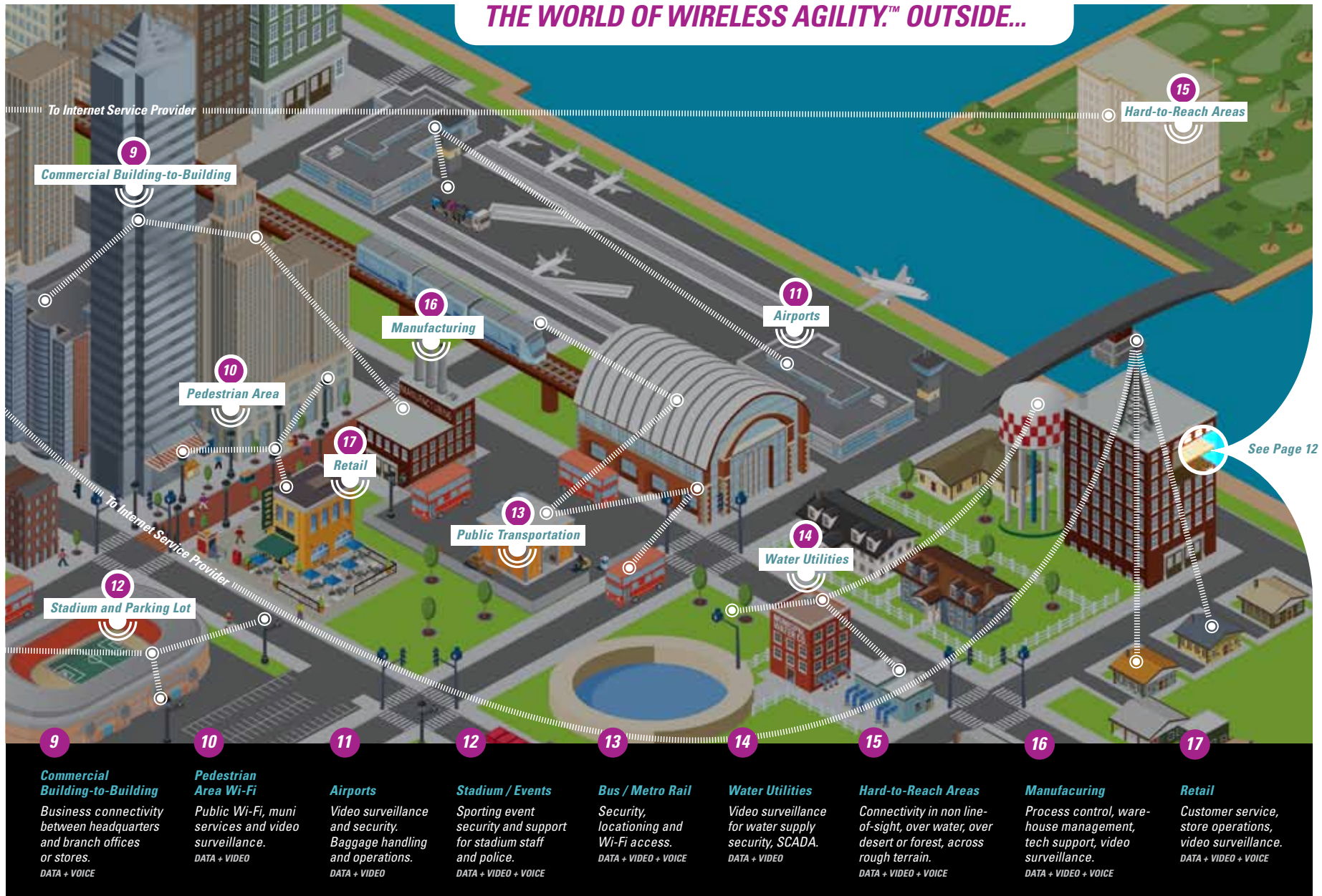
For more information on Mesh Wide Area Networks products, specifications, and capabilities, click here » motorola.com/mesh

* Compatible with VMM 4300





THE WORLD OF WIRELESS AGILITY.™ OUTSIDE...



9

Commercial Building-to-Building
 Business connectivity between headquarters and branch offices and stores.
 DATA + VOICE

10

Pedestrian Area Wi-Fi
 Public Wi-Fi, muni services and video surveillance.
 DATA + VIDEO

11

Airports
 Video surveillance and security. Baggage handling and operations.
 DATA + VIDEO

12

Stadium / Events
 Sporting event security and support for stadium staff and police.
 DATA + VIDEO + VOICE

13

Bus / Metro Rail
 Security, locationing and Wi-Fi access.
 DATA + VIDEO + VOICE

14

Water Utilities
 Video surveillance for water supply security, SCADA.
 DATA + VIDEO

15

Hard-to-Reach Areas
 Connectivity in non line-of-sight, over water, over desert or forest, across rough terrain.
 DATA + VIDEO + VOICE

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Manufacturing
 Process control, warehouse management, tech support, video surveillance.
 DATA + VIDEO + VOICE

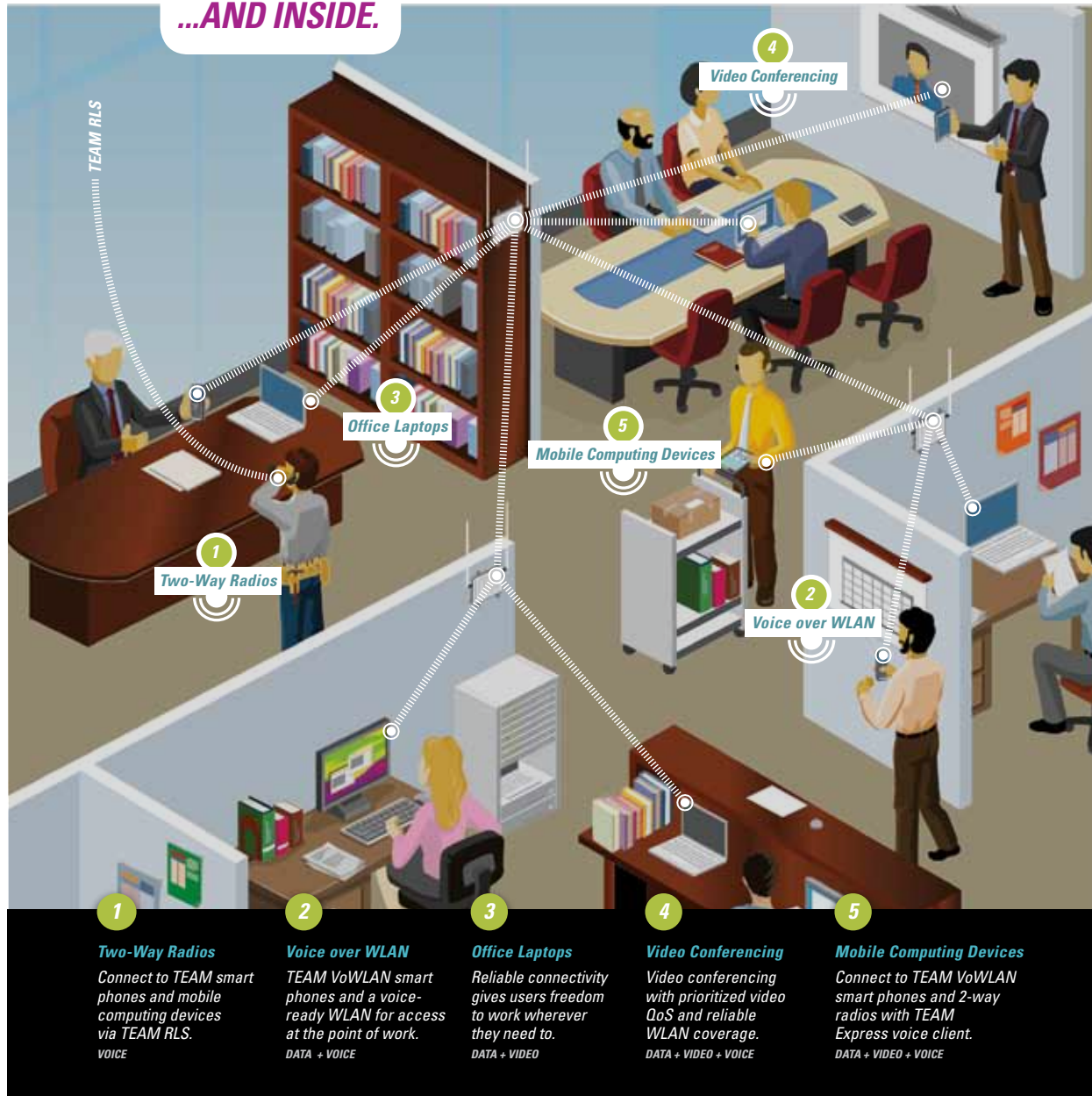
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Retail
 Customer service, store operations, video surveillance.
 DATA + VIDEO + VOICE

See Page 12



...AND INSIDE.



- 1**

Two-Way Radios
 Connect to TEAM smart phones and mobile computing devices via TEAM RLS.
VOICE
- 2**

Voice over WLAN
 TEAM VoWLAN smart phones and a voice-ready WLAN for access at the point of work.
DATA + VOICE
- 3**

Office Laptops
 Reliable connectivity gives users freedom to work wherever they need to.
DATA + VIDEO
- 4**

Video Conferencing
 Video conferencing with prioritized video QoS and reliable WLAN coverage.
DATA + VIDEO + VOICE
- 5**

Mobile Computing Devices
 Connect to TEAM VoWLAN smart phones and 2-way radios with TEAM Express voice client.
DATA + VIDEO + VOICE

MOTOROLA WIRELESS NETWORK SOLUTIONS

Motorola delivers seamless connectivity that puts real-time information in the hands of users, giving customers the agility they need to grow their business or better protect and serve the public. Working seamlessly together with its world-class devices, Motorola's unrivaled wireless network solutions include indoor WLAN, outdoor wireless mesh, point-to-multipoint, point-to-point networks and voice over WLAN solutions. Combined with powerful software for wireless network design, security, management and troubleshooting, Motorola's solutions deliver trusted networking and anywhere access to organizations across the globe.

motorola.com/wns



MOTOROLA

The information presented herein is to the best of our knowledge true and accurate. Specifications are subject to change.

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