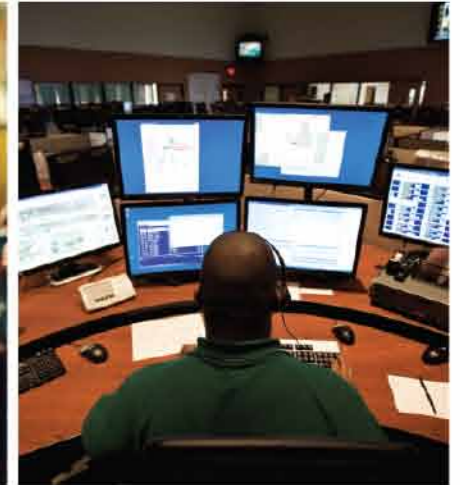
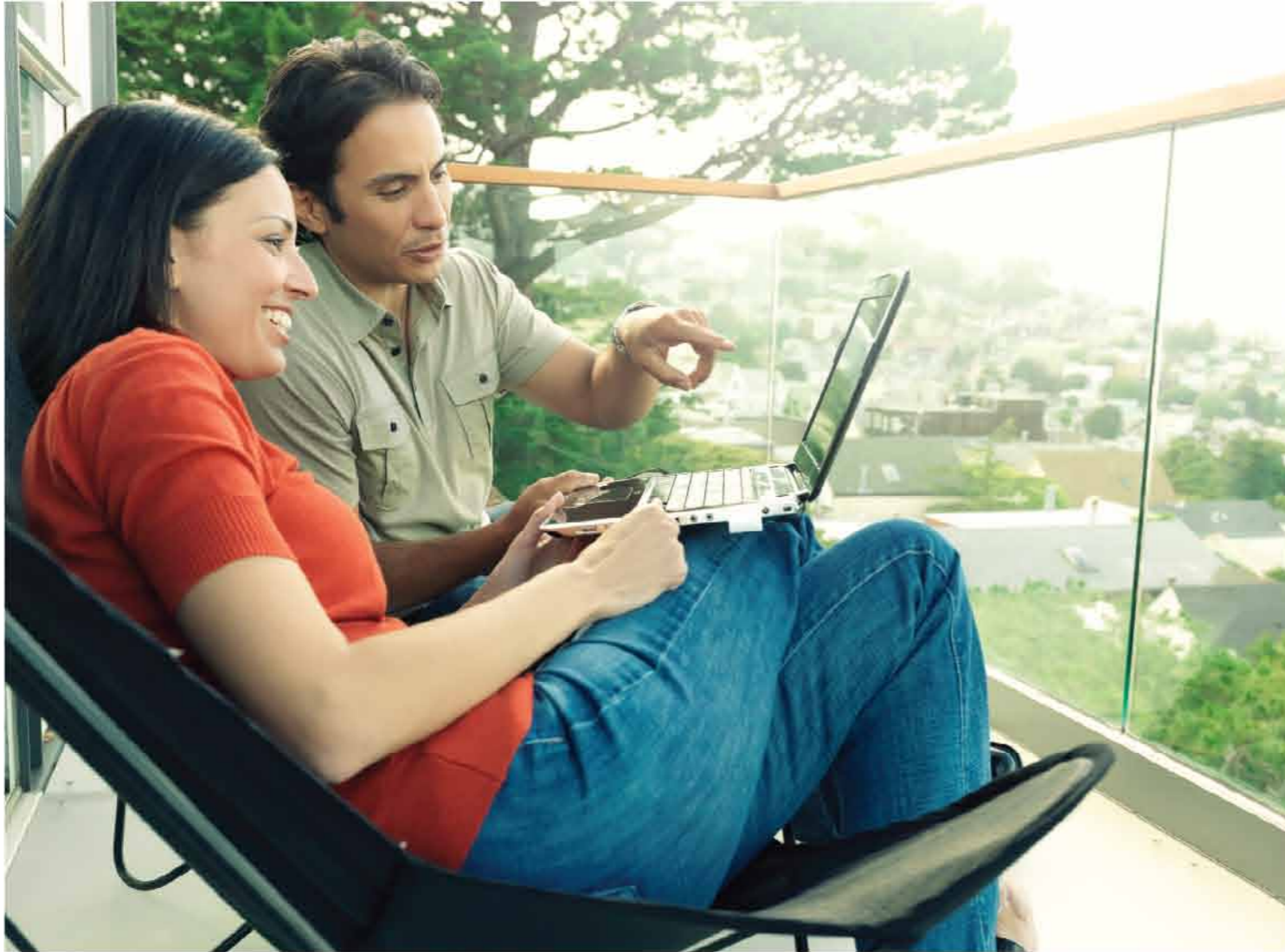


**MOTOROLA WIRELESS NETWORK SOLUTIONS**  
**CONNECTED.**  
**WHERE YOU NEED IT.**  
**WHEN IT COUNTS.**



# WIRELESS AGILITY

## THE SPEED AND CONFIDENCE TO ADAPT



# BUILD AGILITY FOR BETTER RESPONSE

Success depends on your organization's ability to respond more quickly and accurately to your customers' needs. With Wireless Agility™, you can meet and exceed their expectations. Our broad portfolio of wireless solutions provides trusted connectivity right where you need it and right when it counts. Now you can ensure your workforce has the mobile voice, video and data applications that empower them to do more for customers and citizens.

## GOVERNMENT

Better information leads to better outcomes. Serve and protect your community better, manage assets more easily and save cost at the same time with a new wireless network solution.

## ENTERPRISE

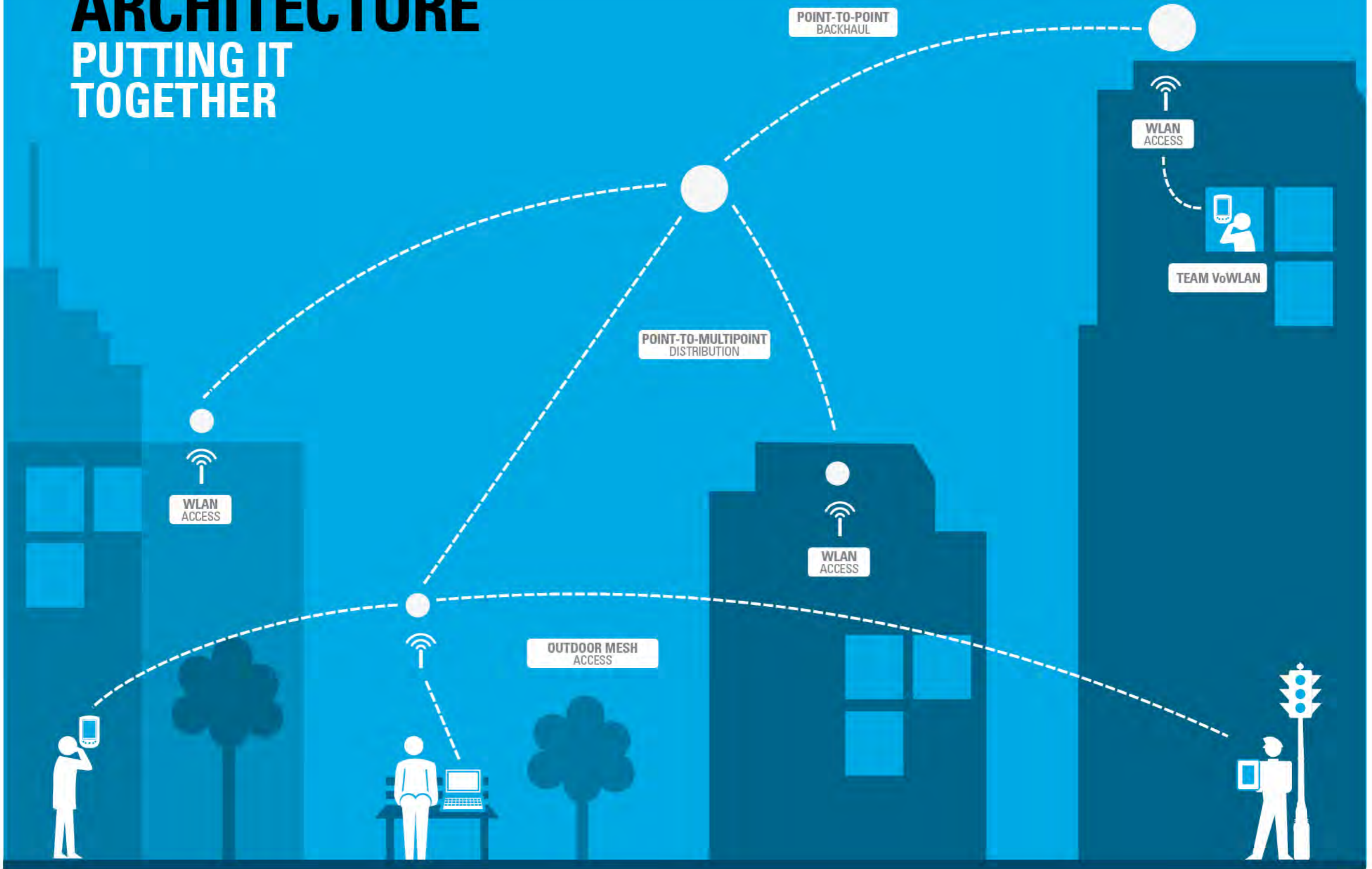
Growth and prosperity depend on your ability to quickly adapt and respond to the rising expectations of your customers. Offer dynamic new services and empower workers to be more responsive to customers through access to real-time information wherever they are.

## SERVICE PROVIDERS

Boost loyalty and net subscriber additions by offering new levels of connectivity as well as enabling innovative wireless, data-enabled services for consumers and enterprise customers. Wireless IP networks complement wide area network infrastructure by making operations more agile and offloading heavy data traffic in high-density areas.

# NETWORK ARCHITECTURE

## PUTTING IT TOGETHER



# OUR BROAD PORTFOLIO

Experience trusted and secure connectivity, easier network management and cost savings with this end-to-end wireless portfolio. We've designed these wireless solutions to work together to deliver you unparalleled agility.

## OUTDOOR NETWORK DESIGN AND MANAGEMENT

Experience simplified and streamlined planning, deployment and management of your outdoor wireless networks with powerful outdoor RF modeling engines and innovative real-time, map-based visualization technology.

## POINT-TO-POINT

Deploy T1/E1 replacements or backups, building-to-building connectivity, WiMAX/LTE backhaul, video surveillance and links to NLoS areas with our industry-leading wireless Ethernet bridges. They operate in unlicensed and licensed spectrum and deliver highly reliable connections across challenging environments.

## POINT-TO-MULTIPOINT

Build a private network for data, voice and video applications. Connect islands of WiFi coverage back to the core network. Operate as an Internet service provider for business and residential connectivity. Point-to-multipoint solutions provide industry-leading interference tolerance, high reliability, GPS-synchronized transmit & receive cycles, and easier and faster installations.

## MESH WIDE AREA NETWORKS

Enable the mobile applications you need to access information, improve traffic control, read meters and enhance security through video surveillance with our self-forming/self-healing outdoor mesh networks. Build better public safety, municipal services and enterprise operations with these outdoor WiFi access solutions.

## WLAN DESIGN AND MANAGEMENT

Advanced indoor RF modeling enables better coverage planning for VoIP and data applications. Our AirDefense Solutions make multi-vendor management and troubleshooting easier while delivering industry-leading network security.

## WLAN

Get higher capacity, better network resilience and a better user experience with WiNG 5 distributed intelligence that performs QoS, security and mobility services at the edge. And with our broad portfolio and flexible network deployment options, you get the network you need with less hardware to buy.

## TEAM SOLUTIONS

Empower your workers with the communication services they need – where they need them. Our integrated voice technology links users with VoWLAN phones, mobile computers and two-way radios so everyone is connected to each other and has access to the information they need to take action.

# THE SMARTER, MORE EFFICIENT WAY TO DESIGN, MANAGE AND SECURE YOUR NETWORK

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 that 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 standalone 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 and 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.

# TEAM SOLUTIONS

## TEAM VOICE OVER WLAN

## TEAM EXPRESS

## TEAM RADIO LINK SOLUTION

## TEAM BADGE EWB 100

### DESCRIPTION

Provides mobile access over the enterprise WLAN to voice and data services, such as PBX telephone, e-mail, calendar, contacts, SMS (within the WLAN), Mobile Internet and business apps.

This is a PTT over WLAN client for multiple, disparate devices, including Motorola voice-capable mobile computers.

Enables PTT talkgroup communications between two-way radio systems and TEAM Express devices.

Provides PTT over WLAN via a small wearable badge device. Utilizes the TEAM Express voice client, enabling interoperability with other TEAM Express enabled devices.

### COMPONENTS

It comprises the following components:

**Infrastructure:**

- Wireless Services Manager (WSM) feature appliance.
- Network Services Manager (NSM) provisioning and management software.

**Devices:**

Windows Mobile® 6.1 VoWLAN smartphones - EWP1000 Professional and EWP2000 Semi-Rugged.

The TEAM Express 1.0 software voice client is downloadable to a broad range of Motorola voice-capable mobile computing devices.

Its components include: the RLS appliance, a Radio Interface Unit (RIU), and Donor two-way radios.

This is a tiny, 1.6 oz TEAM badge interoperable with other TEAM VoWLAN, TEAM Express or RLS-connected devices.

### KEY CAPABILITIES

Comprehensive voice and data in a single device that provides toll quality voice, enterprise-grade PTT and is scalable from a handful of users up to 4,500 per Wireless Services Manager. It is also interoperable with TEAM Express devices and two-way radios (via TEAM RLS).

Enables PTT connectivity for up to 32 talk groups leveraging existing WLAN infrastructure. It is interoperable between disparate devices equipped with the TEAM Express client. One-to-many PTT over WLAN with private response capability.

Enables interoperability between devices and it leverages existing investments so users can use the best device to meet their need.

It is interoperable with other TEAM devices. Its affordable price point opens the door to mobile voice communications for all workers. It also enables one-to-many PTT over WLAN with private response capability.

# WIRELESS LAN

## WIRELESS CONTROLLERS

- Hot spot / guest access capable
- 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
- Integrated Locationing and RFID
- With Motorola devices: Pre-emptive roaming, Fast balancing, Power save polling (PSP), Virtual AP Location based Access Control

### RFS 4000

802.11n Branch Office Controller for up to 200 users, comprises 6 a/b/g/n access points, 5 POE Ports, Optional integrated 802.11a/b/g/n dual radio access point, 3G backhaul, integrated WIPS and integrated locationing

### RFS 6000

WLAN Controller that admits up to 20,000 connected devices, comprises 256 a/b/g/n adaptive access points, 48 a/b/g access points, 8 POE Ports, 3G backhaul, active failover and load balancing

### RFS 7000

WLAN Controller that admits up to 96,000 connected devices, comprises 1024 a/b/g/n adaptive access points, 256 a/b/g access points, active failover and load balancing

## ACCESS POINTS

### THIN ACCESS POINTS

#### AP 650

#### AP 6511 a/b/g/n Wall Plate

#### MC 802 a/b/g Wall Plate

- 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\*

### ADAPTIVE ACCESS POINTS

#### AP 7131 802.11a/b/g/n

#### AP 5131 802.1

#### AP 5181 802a/b/g (outdoor)

- 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

For more information on Wireless LAN, specifications, and capabilities, visit » [motorola.com/wlan](http://motorola.com/wlan)

\* Applies to both Thin and Adaptive Access Points

# POINT-TO-POINT

PTP 100	PTP 200	PTP 300	PTP 500	PTP 600	PTP 800
<b>RADIO FREQUENCIES</b>					
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
<b>THROUGHPUT</b>					
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
<b>LATENCY (ONE WAY)</b>					
<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 $\mu$ s
<b>LOS* RANGE</b>					
35 mi (56km)	5 mi integrated antenna (8km)	155 mi (250 km)	155 mi (250 km)	124 mi (200 km)	NA
<b>nLOS* RANGE</b>					
NA	<5mi (8 km)	25mi (40 km)	25mi (40 km)	20mi (32 km)	NA
<b>NLOS* RANGE</b>					
NA	NA	6 mi (10 km)	6 mi (10 km)	5 mi (8 km)	NA
<b>CHANNEL WIDTH</b>					
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)
<b>SYSTEM GAIN</b>					
56-bit DES, 128-bit AES	56-bit DES, 128-bit AES	128-bit DES, 256-bit AES	128-bit DES, 256-bit AES	128-bit DES, 256-bit AES	128-bit DES, 256-bit AES
<b>DFS</b>					
Y	Y	i-DFS	i-DFS	i-DFS	NA
<b>OFDM</b>					
N	Y	i-OFDM	i-OFDM	i-OFDM	NA
<b>MIMO</b>					
N	N	Y	Y	Y	NA

For more information on Point-to-Point, specifications and capabilities, visit » [motorola.com/ptp](http://motorola.com/ptp)

\*LOS: Line of Sight | nLOS: near Line of Sight | NLOS: Non Line of Sight.

# POINT-TO-MULTIPOINT

PMP 120	PMP 120 900 MHz	PMP 130	PMP 320*	PMP 400	PMP 430 10 MHz Ch.	PMP 430 20 MHz Ch.
<b>RADIO FREQUENCIES</b>						
2.4, 5.1, 5.2, 5.4, 5.7, 5.9 GHz	900 GHz	2.4, 5.1, 5.2, 5.4, 5.8, 5.9 GHz	3.3, 3.5, 3.6 GHz	4.9 GHz	5.4, 5.8 GHz	5.4, 5.8 GHz
<b>THROUGHPUT</b>						
7 Mbps	4 Mbps	14 Mbps	23 Mbps(up to 40 Mbps with MIMO)	20 Mbps	5, 10 and 20, 24 Mbps	5, 10 ,20, 40, 45+ Mbps
<b>LATENCY (ONE WAY)</b>						
3.5 ms	<7.5 ms	3.5 ms	25 ms	3.5 ms	3.5 ms	3.5 ms
<b>SYSTEM GAIN (dB)</b>						
2.4 GHz: 125, 5GHz: 123	138	2.4 GHz: 125, 5GHz: 123	149	4.9 GHz: 141	5.4 GHz: 133, 5.8GHz: 134	5.4 GHz: 133, 5.8GHz: 131
<b>SYSTEM GAIN with passive LENS (dB)</b>						
5 GHz: 133	NA	5 GHz: 133	NA	NA	5.4 GHz: 148, 5.8 GHz:140	5.4 GHz: 148, 5.8 GHz:137
<b>SYSTEM GAIN with passive Reflector (dB)</b>						
2.4 GHz: 138, 5GHz: 141	NA	2.4 GHz: 138, 5GHz: 141	NA	NA	5.4 GHz: 133, 5.8 GHz: 149	5.8 GHz: 130, 5.8 GHz:146
<b>CHANNEL WIDTH (MHz)</b>						
20	8	20	5, 7, 10	10	10	20
<b>SECURITY</b>						
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
<b>OFDM</b>						
N	N	N	Y	Y	Y	Y
<b>MAXIMUM SUBSCRIBERS Per Access Point</b>						
200	200	200	200	200	200	200
<b>ACCESS POINT Sector</b>						
60°	60°	60°	90°	90°	90°	90°

For more information on Point-to-Multipoint, specifications and capabilities, visit » [motorola.com/pmp](http://motorola.com/pmp)

\* Interoperable with WiMAX CPE

# MESH WIDE AREA NETWORKS

4300 SERIES	6300 SERIES	AP 7181	7300 SERIES
<b>RADIO FREQUENCIES</b>			
2.4 GHz, (802.11b/g), 4.9, 5.4, 5.8 GHz (802.11a)	2.4 GHz 2nd ISM Band	802.11 b/g/n – 2.4 GHz and 802.11 a/n – 5.4, 5.8 GHz	2.4 GHz or 4.9 GHz
<b>CHANNEL WIDTH</b>			
10 MHz and 20 MHz	20MHz	20 MHz and 40 MHz	20MHz
<b>MOBILITY</b>			
Up to 70 mph (110kmh)	200+mph (320 kmh)	Up to 70 mph (110kmh)*	U200+mph (320 kmh)
<b>THROUGHPUT (Burst Data Rate)</b>			
54 Mbps	6 Mbps	300 Mbps	6 Mbps (MEA), 54 Mbps (802.11 b/g)
<b>ROUTING PROTOCOL</b>			
MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness	MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness	MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness	MeshConnex patented Layer 2 hybrid proactive/reactive routing with Layer 1 situational-awareness
<b>QUALITY OF SERVICE</b>			
802.11 e	802.1 p	802.1p/q with 8 queues per VLAN 802.11e WiFi Multimedia Extensions	802.11e, MEA-802.1p
<b>CLIENT ENCRYPTION SUPPORT</b>			
For 802.11b/g: WEP, AES, TKIP, WPA and WPA2 (802.11i)	WEP, AES, WPA (TKIP) and WPA2 (802.11i)	Open, WEP, AES-CCM, TKIP	For 802.11b/g: WEP, AES, TKIP, WPA2 (802.11i)
<b>INTRA-MESH ENCRYPTION</b>			
Secure Mesh / AES	Secure Mesh / AES	Secure Mesh / AES	Secure Mesh / AES
<b>AUTHENTICATION</b>			
802.1x (infrastructure/ client) MAC Authentication	RADIUS, 802.1x, EAPTTLS or EAP-PEAP	WPA, WPA2-PSK, WEP, 802.11i, RADIUS, 802.1X (includes EAPTTLS, EAP-TTLS) 802.1X (infrastructure/client) and MAC address hardware authentication	MEA-Hardware device authentication & EAP/802.1x mutual 802.11 b/g-RADIUS 802.1x with EAP/TTLS or EPP/PEAP)
<b>PRODUCT OPTIONS</b>			
Access Point Vehicle Mounted Modem	Access Point, Mesh Wireless Router Wireless Serial Modem, Wireless Modem Card, Vehicle Mounted Modem	Access Point	Access Point, Mesh Wireless Router Wireless Serial Modem, Wireless Modem Card, Vehicle Mounted Modem
<b>CHANNEL WIDTH</b>			
10 MHz and 20 MHz	-22 to 140°F (-30 to 60°C)	Operating: -40 to 131°F(40 to+55°C) and Storage: -40 to 185°F(40 to+85°C)	-31 to 131°F (-35 to 55°C)

For more information on Mesh Wide Area Networks, specifications and capabilities, visit » [motorola.com/mesh](http://motorola.com/mesh)

\* Compatible with VMM 4300

# EXTENDING YOUR REACH OUTDOORS...



## SEAPORTS

Vehicle control, video surveillance and logistics operations.

**DATA + VIDEO**

## PUBLIC SPACES AND PARKS

Video surveillance and municipal service connectivity.

**DATA + VIDEO**

## INTELLIGENT INTERSECTIONS

Traffic flow, violation enforcement, and accident response.

**DATA + VIDEO**

## COLLEGE CAMPUSES

Indoor and outdoor coverage and remote campus connectivity.

**DATA + VIDEO + VOICE**

## MUNICIPAL BUILDINGS/SCHOOLS

City Hall connected to libraries, schools, public works and public safety.

**DATA + VIDEO + VOICE**

## POWER UTILITIES

Smart Grid, commercial utility building connectivity and SCADA.

**DATA + VIDEO**

## INTERNET SERVICE PROVIDERS

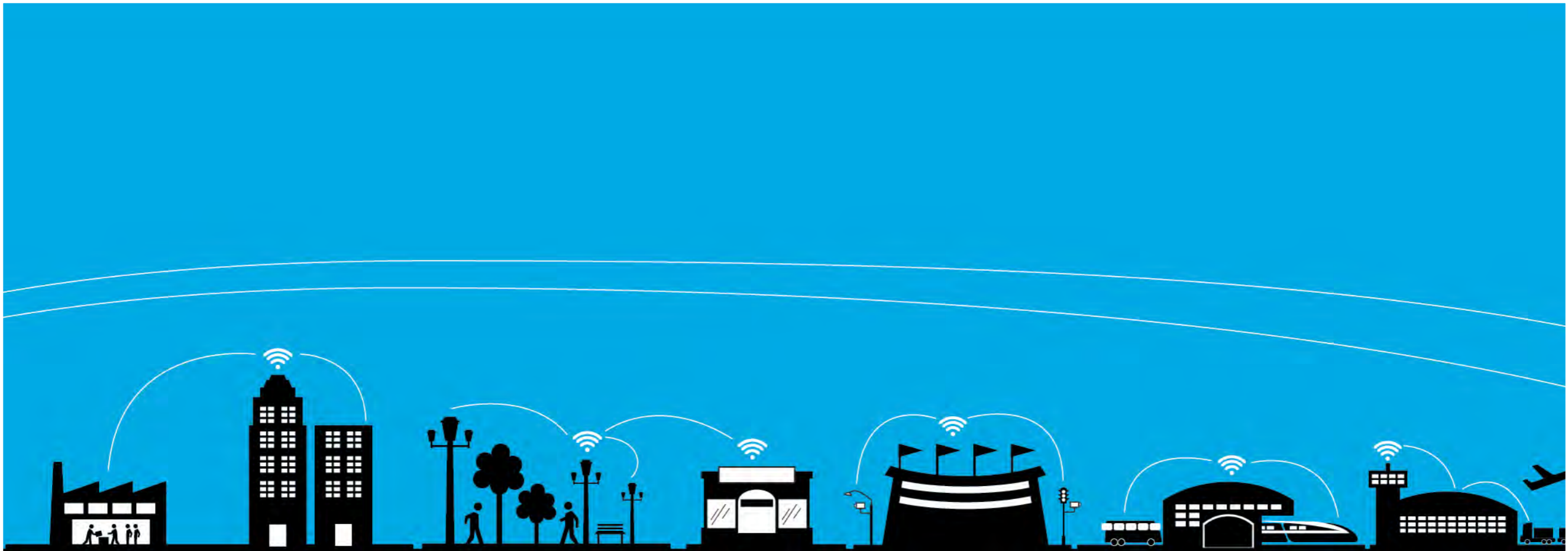
Internet access for residential, government or commercial buildings.

**DATA + VOICE**

## HOSPITALS AND CLINICS

Wireless patient care. Telemedicine with branch clinics.

**DATA + VIDEO + VOICE**



**MANUFACTURING**

Process control, warehouse management, tech support and video surveillance.

**DATA + VIDEO + VOICE**

**COMMERCIAL BUILDING-TO-BUILDING**

Business connectivity between headquarters and branch offices or stores.

**DATA + VOICE**

**PEDESTRIAN AREAS WIFI**

Public WiFi, muni services and video surveillance.

**DATA + VIDEO**

**RETAIL**

Customer service, store operations and video surveillance.

**DATA + VIDEO + VOICE**

**STADIUM / EVENTS**

Sporting event security and support for stadium staff and police.

**DATA + VIDEO + VOICE**

**BUSES/ METRO RAILS**

Security, locating and WiFi access.

**DATA + VIDEO + VOICE**

**AIRPORTS**

Video surveillance and security. Public WLAN access. Baggage handling and operations.

**DATA + VIDEO**

# ...AND INDOORS.



## WATER UTILITIES

Video surveillance for water supply security, SCADA.

**DATA + VIDEO**

## HARD-TO-REACH AREAS

Connectivity in non-line-of-sight, over water, over desert or forest, across rough terrain.

**DATA + VIDEO + VOICE**

## TWO-WAY RADIOS

Connect to TEAM smartphones and mobile computing devices via TEAM RLS.

**VOICE**

## OFFICE LAPTOPS

Reliable connectivity gives users freedom to work wherever they need to.

**DATA + VIDEO**

## VIDEO CONFERENCING

Video conferencing with prioritized video QoS and reliable WLAN coverage.

**DATA + VIDEO + VOICE**

## MOBILE COMPUTING DEVICES

With enterprise-grade smartphones and two-way radios get reliable voice, video and data via TEAM VoWLAN and TEAM EXPRESS voice client solutions.

**DATA + VIDEO + VOICE**

## VOICE OVER WLAN

The TEAM VoWLAN solution enables instant voice and data communications through enterprise-grade smartphones and other devices.

**VOICE + DATA**

## **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.

To learn more about our solutions visit our [Web Page](#) »  
For news and comments on the industry join the conversation at »  
To see how customers use our solutions check out the [World Tour](#) »

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GC-22-111



**MOTOROLA WIRELESS NETWORK SOLUTIONS**



# CONNECTED. WHERE YOU NEED IT. WHEN IT COUNTS.

To respond faster to your customers and citizens is your goal and our focus. That's why we designed our Wireless Network Solutions for greater speed, accuracy and intelligence. With more agility, you can quickly react to changing concerns, work better and easier as a team, and access real-time voice, video and data as you need it – indoors, outdoors, on the go and on multiple devices.

