Public Safety Council
CAPTAIN 3G Technology Refresh
September 30, 2008

Jim Donnelly, CAPTAIN Project Manager
John Bagdonas, AT&T
Bob Campbell, Sierra Wireless
Roseanne Aikens, AT&T
Dave Kimball, Telepartner
Andrew Jaffee, Sergeant, HPD (Host Agency)
Introduction

• At the end of this session, a system administrator should know the following:
  – The name and model number of the Sierra Wireless modem
  – The basic reasons for the technology refresh
  – The elements of the process that they need to complete in order to participate
  – What is expected of them in terms of installation and configuration
  – Why keeping the CRCOG inventory up to date is critical
Project Goals

• Upgrade old, obsolete MP775 modems with newer, faster MP881 modems
• Bring all mobile units to current CAPTAIN software levels
• Minimize impact to Agency Administrators and Field Officers
• Target completion by 12/31/2008
Assistance Needed

• Follow the procedures and roll-out process.
• Complete the inventory as requested.
• Install as soon as possible within the window of your assigned dates.
• Recognize that additional updates will be required during the first year.
• Try to train an alternate or two in your agency so that you have redundancy.
• Let CRCOG know if you are struggling. We can help.
AT&T Wireless Technology Update

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ATT Wireless Technology Update

- The New AT&T and Enterprise Positioning
- Network and Technology Update
- Solution Summary – EOD
The New AT&T
Leader in Enterprise Mobility

• AT&T combines wireless and wireline for unmatched capabilities virtually anytime, anywhere, on any device

• Serves virtually all Fortune 1000 companies and all S&P 500 companies with Global IP

• 70 million wireless subscribers

• Over 13.8 million broadband DSL lines in service

• Access to more than 77,000 Wi-Fi hot spots in more than 85 countries

• Thousands of patents issued or pending worldwide, and a successor to a heritage that produced 7 Nobel Prizes

Largest telecom company serving 97% of the world’s economy

Largest mobility network with widest global reach

Leading applications hosting, management and delivery infrastructure

AT&T Labs – Engine of innovation

300,000+ global workforce
Over 1,800 Government Agencies Choose AT&T Mobility

Network Reliability
Our wireless network is built for reliability and survivability.

Government Grade Security
Our network supports encryption and authentication to help ensure maximum security for customer data.

Best-in-Class Service & Support
Dedicated account team works every day to earn the right to be a trusted partner.
Technology
Network Investment and Coverage

- $18B network investment over last three years
- AT&T has the largest digital voice and data network in the nation – the ALLOVER™ network, which covers more than 293 million people
- AT&T now has 3G coverage in most Major Metro areas with continued expansion planned in 2008

Spectrum and Cell Sites

- AT&T holds significantly more spectrum than the closest competitor*
  - Spectrum depth allows AT&T to maintain high performance as network load increases
- AT&T operates the most cell sites on a single standard – over 47K
  - Cell site density allows: Better coverage plus better voice and data quality
Aloha acquisition plus 700 Mhz auction provide AT&T spectrum in top 200 MSAs

Global Reach and Capabilities

- AT&T Mobility network built on the global standard
  - 3 Billion GSM Subscribers Worldwide – approximately 86% of Global subscribers
- Broadest global roaming of any US carrier
  - Voice in 200+ countries, data in 145+ countries including 60 with 3G

Coverage is not available in all areas AT&T has 59Mhz of spectrum on average in the top 100 MSAs. *AT&T spectrum holdings in top 100 markets including 850/1900Mhz bands. Spectrum depth source: Raymond James Equity Research. Major metro areas include population centers 100K or greater.
3GPP Network Roadmap

- Peak theoretical throughputs by technology and estimated time period for commercial availability
Why LTE? Backward Compatibility: Continue Mobile Broadband Evolution

GPRS – 25 to 40 Kbps
48 Kbps peak

EDGE – 100 to 130 Kbps
237 Kbps peak

UMTS – 150 to 180 Kbps
384 Kbps peak

HSDPA – 400 to 700 Kbps
3.6 Mbps peak

HSUPA/HSPA – 500 to 800 Kbps
1.5 Mbps peak up (potential 5.76M)
600 to 1400 Kbps down
3.6 Mbps peak down (potential 14.4M)

HSPA+ (R7) – MIMO, 64QAM
Potential 11.5 Mbps peak up
Potential 28 Mbps peak down

LTE (R8) – 100 Mbps
and beyond peak down

Past

Present

Future

Time

Performance
Network Technology Comparison - Downlink

Downlink data throughput comparison (kbps)

User experience factors:
- Air-link
  - Throughput
  - Latency
- Signal strength
- Backhaul / Backbone
- Network load
- Spectrum

3G Metropolitan Area Coverage

<table>
<thead>
<tr>
<th>Technology Standard</th>
<th>Downlink data throughput comparison (kbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3G Metropolitan Area Coverage</td>
<td></td>
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<tr>
<td>1xEV-DO</td>
<td>3,600</td>
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<tr>
<td>EDGE</td>
<td>1,750</td>
</tr>
<tr>
<td>GSM</td>
<td>700</td>
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<tr>
<td>1xRTT</td>
<td>700</td>
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<tr>
<td>HSPA</td>
<td>2,400</td>
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<tr>
<td>1xEV-DO Rel. 0</td>
<td>700</td>
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<tr>
<td>CDMA</td>
<td>400</td>
</tr>
<tr>
<td>1xEV-DO Rev. A</td>
<td>3,100</td>
</tr>
<tr>
<td>CDMA</td>
<td>1,000</td>
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</tbody>
</table>

National Coverage
Fall-back from 3G

<table>
<thead>
<tr>
<th>Technology Standard</th>
<th>Theoretical Peak</th>
<th>Avg. User Experience</th>
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</thead>
<tbody>
<tr>
<td>GSM</td>
<td>XXX</td>
<td>XXX</td>
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<tr>
<td>CDMA</td>
<td>XXX</td>
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</tbody>
</table>

Theoretical Peak
Avg. User Experience
Technology Standard
Network Technology Comparison - Uplink

Downlink data throughput comparison (kbps)

User experience factors:
- Air-link
  - Throughput
  - Latency
- Signal strength
- Backhaul / Backbone
- Network load
- Spectrum

National Coverage
Fall-back from 3G

3G Metropolitan Area Coverage

Technology Standard

CDMA
GSM

Theoretical Peak
Avg. User Experience
Technology Standard
3G Deployment – What’s New
Enterprise-on-Demand
A self-service web portal, providing a one-stop experience for:
• Card Ordering
• Card Activation
• Trouble Ticketing
• Reporting
• Billing

Benefits
• Control – self-service tool that enables you to manage your wireless needs
• Flexibility - respond quickly to changing business needs
• Immediacy – keep deployment-ready devices on hand for exactly when they are needed

CRCOG now has access to Enterprise on Demand
### CRCOG/ATT Solution Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network Coverage</strong></td>
<td>Excellent Coverage</td>
</tr>
<tr>
<td></td>
<td>Aggressive Build Plan</td>
</tr>
<tr>
<td></td>
<td>Prioritize Government Needs</td>
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<tr>
<td></td>
<td>No Dormancy supporting CAD environment</td>
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<tr>
<td><strong>Reliability</strong></td>
<td>Core 99.999% Availability</td>
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<td></td>
<td>Radio Access Network 99.5%</td>
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<td></td>
<td>Minimum Down Time – SIM Technology</td>
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<tr>
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<td>Survivability – Fixed End Redundancy</td>
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<td><strong>Back-end Connectivity and Mgt</strong></td>
<td>Geographic Redundancy</td>
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<td>BGP Failover</td>
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<td>Internet, Frame and MPLS</td>
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<td>Managed Service Offering</td>
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<td><strong>Mobile Hardware</strong></td>
<td>Rugged Laptops</td>
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<td>Sierra Trunk Mount Mill Spec</td>
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<td>PC Card Modems</td>
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<td>Specialty Handhelds</td>
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<tr>
<td><strong>Support</strong></td>
<td>AT&amp;T Certified Project Management</td>
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<td>Enterprise on Demand (EOD) - Immediacy</td>
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<td></td>
<td>Enterprise Technical Support (ETS)</td>
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<td>Local Engineering and MAC Support</td>
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<td><strong>Public Safety Experience</strong></td>
<td>Proven Success</td>
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<td>NetMotion Reseller</td>
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<td>Panasonic Certified</td>
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<td>3rd Party Application Support</td>
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Thank You!
Sierra Wireless Modem and Cabling

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AirLink MP-881W for CRCOG

- MP-881W Form Factor
  - Ultra-Rugged in-vehicle wireless data platform with GPS receiver
  - Meets MIL STD 810F and SAE specs for:
    - vibration
    - shock & drop
    - rain & splash
    - humidity
    - sand & dust
    - salt & fog
    - electro-static discharge
  - Standard 3-year platinum warranty with world-class technical support
AirLink MP-881W for CRCOG

- MP-881W Robust Feature Sets
  - 3G broadband performance – HSUPA
    - Backwards compatible to EDGE and GPRS
  - Serial, USB and Ethernet host connection
  - 802.11 b/g access point
    - Routing for simultaneous LAN & WLAN devices
    - WAP Security Protocols
      - WEP / WPA / WPA2
  - VPN support for RNAP
  - Global 12 channel GPS Receiver
    - Advanced GPS options for local and remote applications
  - Input / Output
    - 4 digital input/outputs
    - 2 analog inputs
    - Event Alarms
AirLink MP-881W ‘3G Watcher’

3G Watcher
Desktop Utility & Configuration Tool
Clean user interface
Administrator window
Advanced configuration and maintenance
AirLink MP-881W Data Cabling Options

Data Interface Options
- Serial (DB-9)
- USB (Type B)
- Ethernet

Input / Output (DB-9)

DC Power In
(same as MP-775)

Data Interface Cabling Considerations:
DC power cable is the same as the MP-775 and can be reused, however connector housing & pins, cable and all power connections should be carefully inspected to ensure integrity. For safety and proper functionality it is critical to follow industry standard procedures for all power connections and correctly fuse all powered leads.

Check the data connection options that exist on mobile PC
Check all software applications on mobile PC and determine which connection interfaces are available for communications
Install new data cables for all current and intended future data interface connections
AirLink MP-881W Antenna Connections

**Antenna Considerations**

Existing cellular / GPS antenna considered for reuse should be carefully inspected and confirmed by a qualified RF technician.

Cellular antenna must be dual-band tuned for 850 & 1900 mHz bands.

Commercial antenna options available as individual and combined units.

- **GPS (SMA)**
  - [same as MP-775]

- **802.11 (RP-SMA)**

- **Rx Diversity (SMA)**
  - [optional]

- **Primary Cellular (TNC)**
  - [same as MP-775]
Receive Diversity Antenna Considerations

Receive diversity helps boost performance in multi-path environments or fringe network areas. A Sierra Wireless application note providing a detailed overview of receive diversity is available for distribution.

The use of a diversity antenna is optional. Failure to disable this feature in the modem configuration when no antenna is connected to the diversity connector will degrade modem performance.
Installation and Roll out Process and Procedures

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Project Scope

- Current Police Vehicles will be upgrading their Sierra Trunk mounted modems along with their SIMs and Antennas
- AT&T project manager will supply each Police Department with a modem and SIM
- AT&T will coordinate the schedules with each PD for delivery, installation and cut over to the new SIM
- Audit report will be provided to CRCOG for the entire project to include all of the key data points (Mobile Number, IMEI, ICCID, Location, Unique town ID, APN, etc.)
High Level Process

- Telepartner to provide list of all Vehicle IDs and current phone #s, by PD.
- AT&T and each PD will work on schedules as well as contingency plans for all vehicles.
- AT&T will provision Modem through Vendor and have modems shipped by vendor to PD based on the agreed upon schedule.
- AT&T will pre-provision and pre-activate all new SIMs and send to the PD according to schedule.
- Telepartner will provide PD with instructions on installation and software set up.
High Level Process

- PD will work with PM to confirm receipt of Hardware and SIMS
- PD will work with PM to do final confirmation of schedule
- PD will bring in vehicle and install pre-activated SIMs per schedule
- PD will record phone number, device ID and vehicle ID and send to AT&T PM
- AT&T PM will audit to ensure accuracy of SIM (APN, features, rate plans, FAN)
Expectations

- PD will be expected to provide schedule to AT&T PM
- PD will be expected to communicate any changes directly to AT&T PM
- PD will be expected to do installation of hardware and software
- Telepartner will be expected to provide inventory as needed of current devices/mobile numbers
- Telepartner will be expected to provide instructions and support for install
- AT&T PM will be expected to provision modems and SIMs
Expectations

- AT&T PM will be expected to communicate on a regular basis to entire team with status, issues, plan/timelines
- AT&T PM will be expected to work closely with PDs for SIM cut over and/or pre-activation schedule
- AT&T PM will be expected to document and track all issues and tasks associated with the project
- AT&T PM will be expected to provide a audit for all new orders – include Mobile number, IMEI, ICCID, Unique town Identifies, Custom APN, etc.
Inventory Management/Revised Software

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Telepartner International
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CAPTAIN Inventory

- Important because:
  - Basis for your agency’s annual CAPTAIN fees
  - Centerpiece for the modem upgrade project
  - Basis for vehicle identification in the AVL project
  - Valuable tool when diagnosing communications problems
Inventory Contains

- Modem and SIM identifiers:
  - IP Address, phone number, IMSI, IMEI, etc.

- Links to Agency

- Software versions:
  - CAPTAIN, Operating System, anti-virus, etc.

- NIMS classifications

- Audit trail of changes
CAPTAIN Software Upgrade

• Upgrade to BlueLink 5.5.16*

• Net Motion 7.2 VPN client

• CA eTrust 8.1 anti-virus

• Watcher for MP881W modem
What’s coming and what’s next?

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What not to do?

- Keep your existing SIMS
- Try WiFi on your own
- Purchase your own Net Motion server and licenses (we already own it for you)
What’s coming

• AVL
• ROBIR
• Managed Internet Access
• Instant Messaging
What’s next

• CAPTAIN Fire
• Citation Pilot for some towns
• CT:CHIEF/Data Sharing
• WiFi Potential
QUESTIONS?