Ontario

COMPASS

Alternative Communications and Establishing the Backbone of ITS

ITS Canada ACGM

May 28, 2013

MTO VIRTUAL PRIVATE NETWORK

OUTLINE

- History
- Needs Assessment
- IP-VPN Solutions
- Benefits of the IP-VPN Approach
- Expansion of the system
- Next Steps

HISTORY

- Ministry of Transportation, Ontario (MTO) notified that all analogue cellular services to be terminated by November, 2009
- Project initiated to identify all existing applications using analogue cellular and to migrate them to new digital cellular services
- At the time, the applications were:
  - Portable Variable Message Signs (PVMS)
  - Pole Mounted VMS
  - Road Weather Information System (RWIS) sites

NEEDS ASSESSMENT

- Thorough review conducted to identify existing shortcomings of the legacy system:
  - Slow communications
  - Unreliable communications
  - Costly for long distance cellular applications
    - ie often times there is a significant distance between the between operator and the actual field device
- Need to have a fast, reliable, secure and cost effective solution

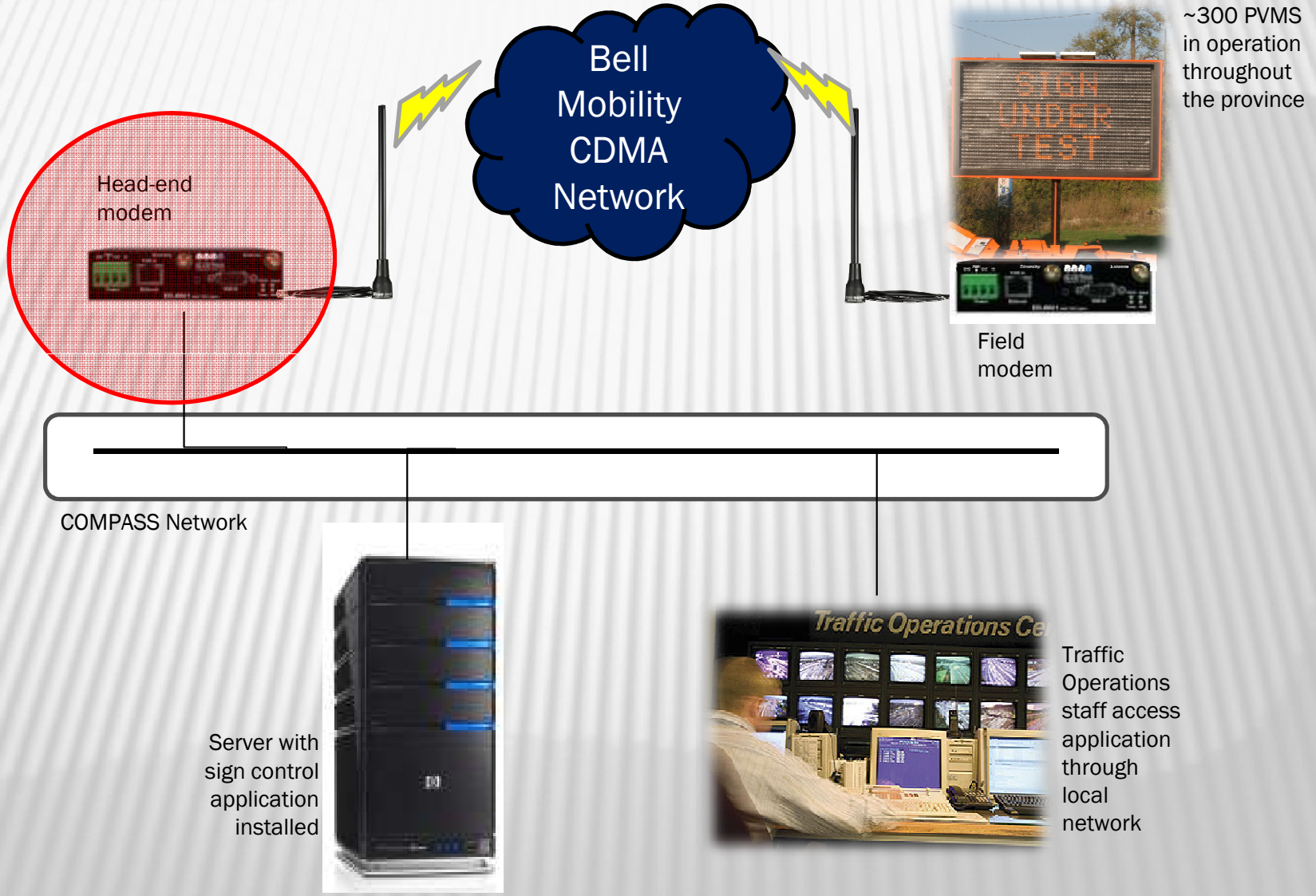
CONSIDERATIONS

- Investigated the three major service providers at the time: Bell Mobility, Rogers and Telus
- All three were migrating over to Ethernet over digital cellular
  - Security concern regarding use of public Internet
  - Need to have static IPs or else DNS solution
- Bell Mobility at the time, only service provider offering the IP-VPN solution

IP-VPN SOLUTION

- Ministry has our own separate pool of static IPs on the digital cellular network referred to as a "NAG"
- Modems on this network are assigned a phone number and static IP
  - Phone number for billing purposes
  - Static IP address for communications
- Only modems activated within the NAG can see and communicate each other

IP-VPN ARCHITECTURE (1ST GENERATION)



IP-VPN ARCHITECTURE (2ND GENERATION)

CONS TO THE APPROACH

- MTO is now in the ‘modem business’
  - Need to act as custodial office for the distribution of modems to all users (eg contractors)
    - Potentially paying twice for modems
  - Communications problems with modems now MTO responsibility
  - Fleet management of modem asset now a consideration

BENEFITS OF THE APPROACH

- Significant cost savings
  - For many legacy applications MTO was paying upwards of $300/month/modem
    - Cellular use + Long distance charges
    - Estimated provincial savings of over $600K per year in PVMS application alone
- Fast communications
  - Before 20 mins to put a message on a sign
  - Now reduced to seconds
- Reliable communications
  - Far more reliable than legacy system
  - Confirmation that message was sent and displayed

IP-VPN EXPANSION

- Given the business case, system expanded to include communications to:
  - Ministry owned, operated traffic signals
  - RWIS
  - Permanent Data Counting Stations
  - Portable CCTV cameras
  - Portable Vehicle Detection Systems
- Being given consideration for both mobile and static applications

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Questions?

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