Power System Engineering, Inc.

MultiSpeak AVL Integration: A Case Study in Security

GLE AVL Interface to an MPLS System

TechAdvantage 2010

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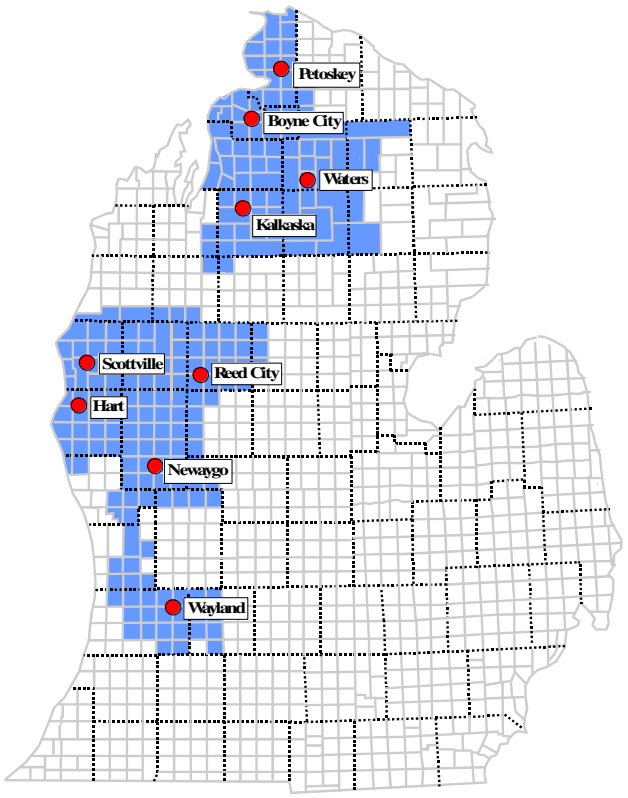
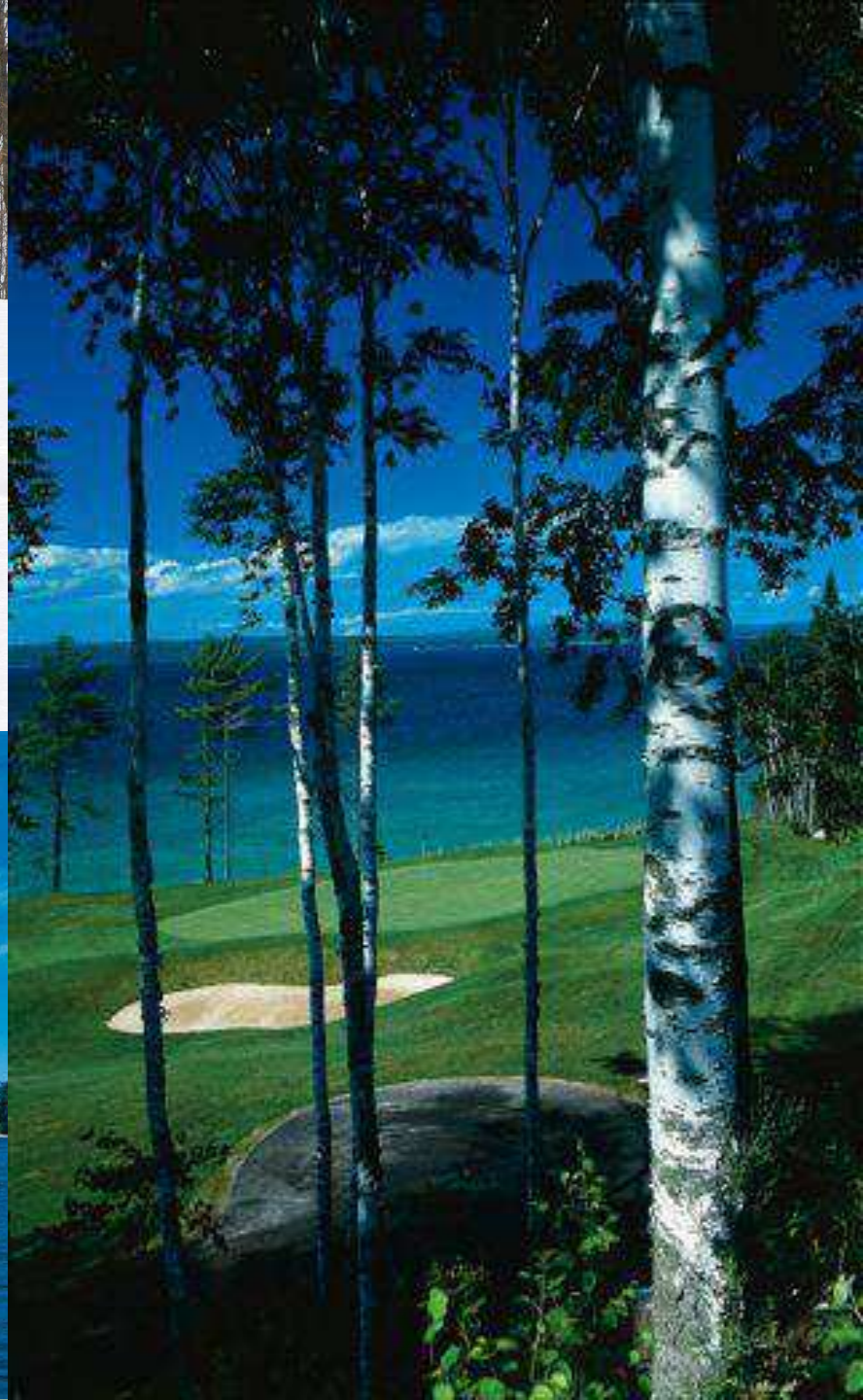
Great Lakes Energy Cooperative, Inc. and Power System Engineering, Inc.

TechAdvantage 2010

Introduction to GREAT LAKES ENERGY



- 124,000 electric meters
- 26 counties
- 11,000 miles of overhead line
- 2,400 miles of underground line
- 74 substations
- 9 district offices
- 32% seasonal rate customers
- 24/7 Dispatch



Great Lakes Energy

- **Mission**
  - Our mission is to deliver reliable electric service at the best possible value for rural Michigan members.
- **Vision**
  - GLE will be recognized by our members, employees and competitors as the leader in our industry.

"MI3" Trunking Radio System

- "MI3" is a shared radio system between two retail Co-ops and their serving G&T:

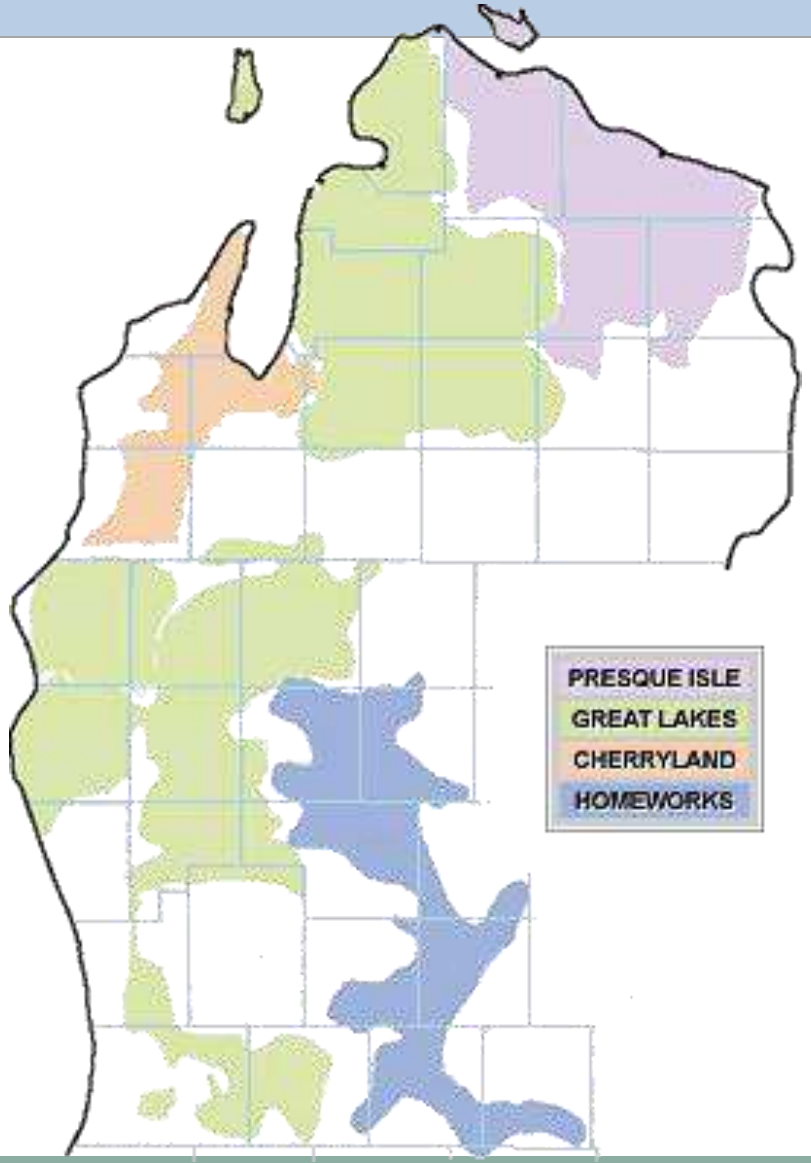
  Wolverine Power Supply Cooperative, Great Lakes Energy (GLE) and Presque Isle Electric and Gas (PIEG)

- Companies who do not normally hear each other now have the ability to work together using the same radio system
- The radio system is an Analog 450 MHz MPT system with 4 frequency channels at each tower site

"MI3" Trunking Radio System

- The radio system consists of:
  - 29 radio tower sites across 1/2 of Michigan with five dispatch center locations
  - MPLS commercially provided private IP Backbone using distributed switching between all tower and dispatch locations
- Short data messages and AVL available to the trucks using the radio control channel

Wolverine G&T Service Area



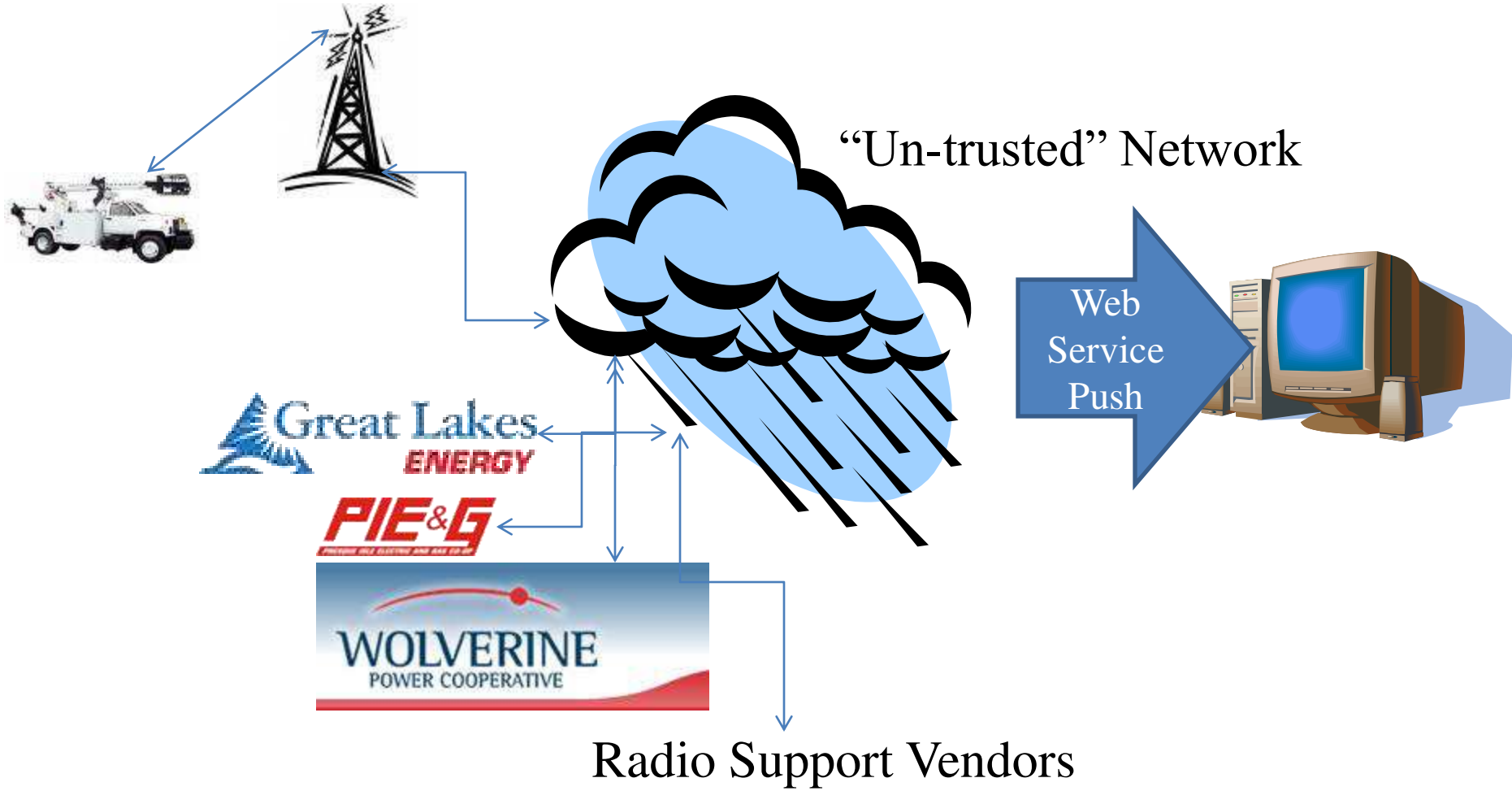
MI3 Designed AVL System

- GPS location information resides in the truck radio
- The AVL Gateway server requests AVL radio locations for the MI3 group through the MPLS backbone and radio control channel
- 10 minutes updates of all radio locations
- Server to push MultiSpeak "AVL change notification" method to the GLE and PIEG OMS suites residing on their corporate networks through a web service
- Wolverine designed a stand-alone in-house mapping system residing within the radio MPLS network

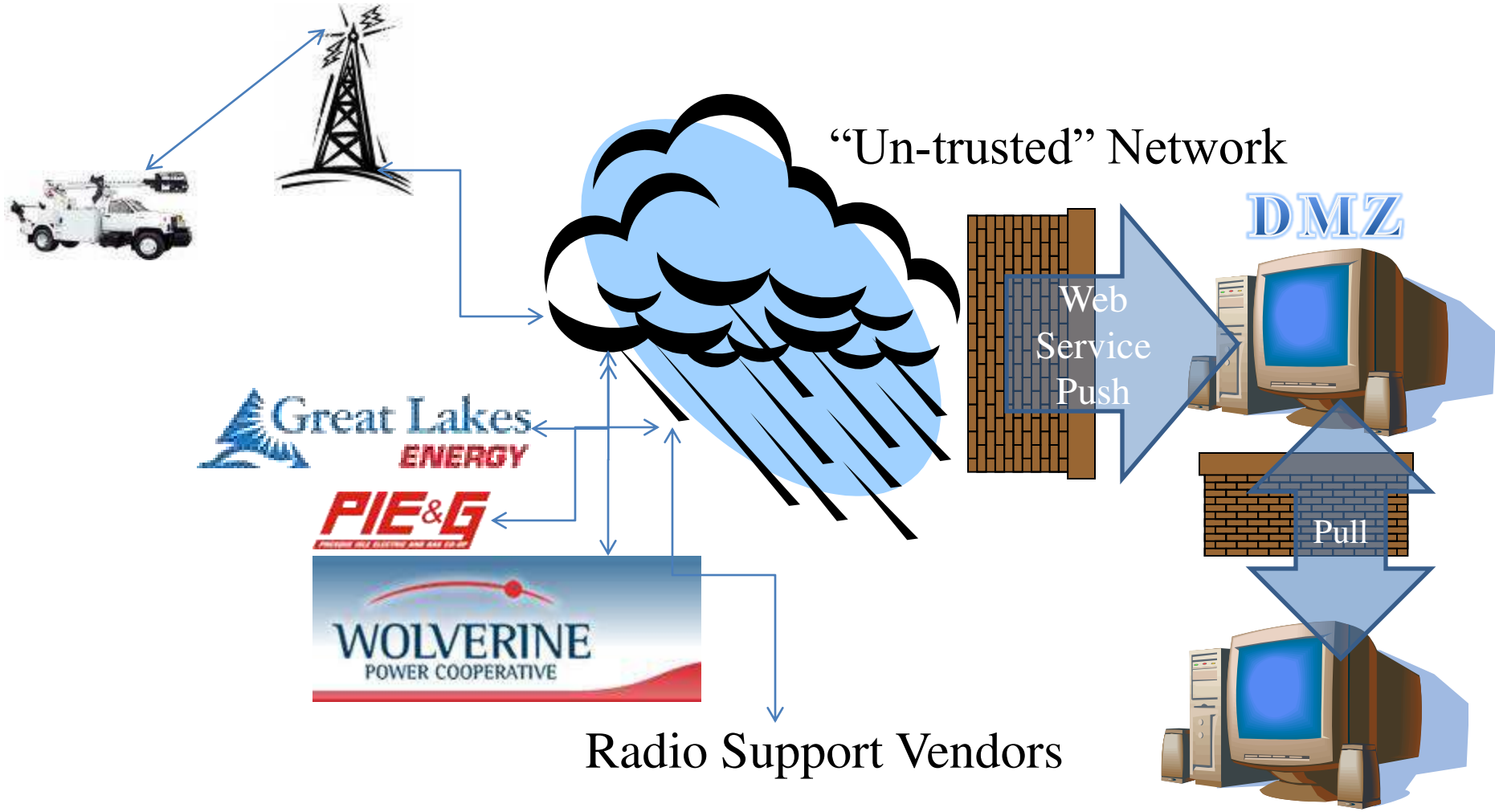
Security Concern at GLE

- The radio IP backbone is shared with 3 companies
  - Network is not considered trusted
- A Web service push from an un-trusted network is vulnerable
  - History shows past attacks through this method successful
  - Would need 24/7 monitoring tools and someone to evaluate the logs
  - Would need to determine how to accommodate for OMS server to have open web service access and remain PCI compliant

MultiSpeak Web Service "Push"



Answer to MultiSpeak Web Service "Push"



MultiSpeak Security Plan Needed

- MultiSpeak AVL methods are well defined, but….
- Security risk interpretation varies from utility to utility
- Big concern at GLE is pushed data using a web service from an un-trusted network across corporate firewall where members' sensitive data resides
- GLE feels that MultiSpeak should help address security compliance of published methods
- What is the general consensus of the MultiSpeak community?

Thank You

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