“GulfMesh”

Mobile Wireless Mesh Network

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About Rajant

- Headquarters in Malvern, PA (near Philadelphia, PA)
- 10 Years Old, Privately Held Corporation
- Major Investors in Rajant
  - US Department of Defense
  - Battelle Ventures
  - Ben Franklin Technology Partners
  - Innovation Valley Partners
- Technology was Developed and Inspired by the Lack of Communications During the Terrorist Attacks of 9/11
- Rajant Designs & Manufactures (in the U.S.) **Kinetic Wireless Broadband Networks**
  - Instantly deployable
  - Rugged, Portable & **Mobile**
  - Supports Wireless Voice, Video, and Data
  - Military, Public Safety & Mining Applications

Customers, Partners and Resellers

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US Army

US Army CECOM

Naval Research Lab

Navy EOD

US Marines

FBI

US Dept of Homeland Security

US Navy

75th Rangers

SPAWAR

SOCOM

Customers, Partners and Resellers

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B

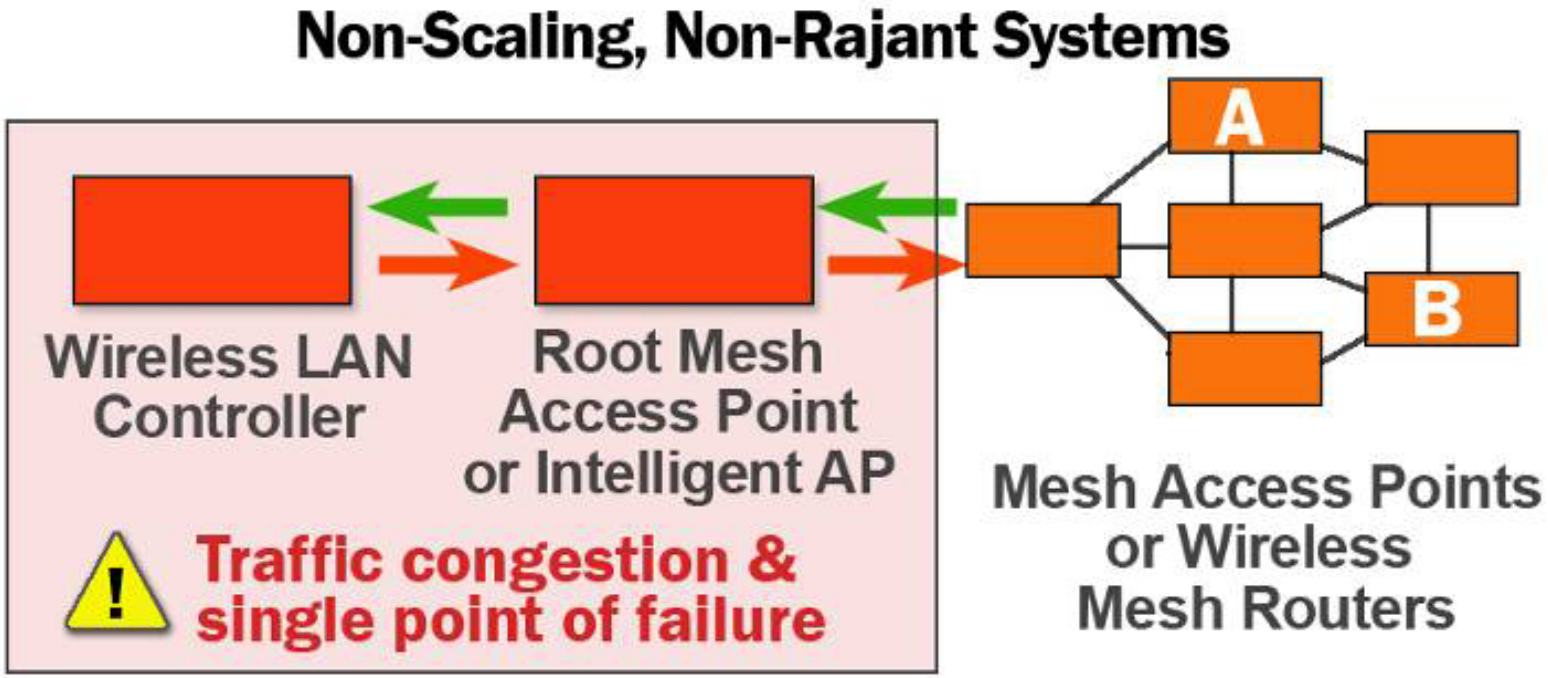
1. Simplicity & Flexibility

- Quick to deploy (Single switch operation)
- Easy to configure & manage
  - No IT degree required to implement & support
  - Powerful Management tool (**BC Commander**)
- Multiple configuration options
- Common radio configuration for both infrastructure (AP's) and mobile clients
  - Lower Infrastructure Cost
  - Less parts to inventory

2. Mobility & Scalability

- Designed from the ground up for mobility
- Node Independence: Each breadcrumb quickly and dynamically discovers and maintains all possible routes and connections as the network perpetually changes. (NO ROOT NODE or Master LAN Controller!)
- Can Elegantly Manage 100's of Mobile Nodes.

The Rajant Difference - Instamesh®



Other wireless mesh technologies use a root mesh, LAN controller or intelligent access point

- Centralized Processing
- Dramatically Reduces the Available Bandwidth
- Adds Latency
- Single Point of Failure

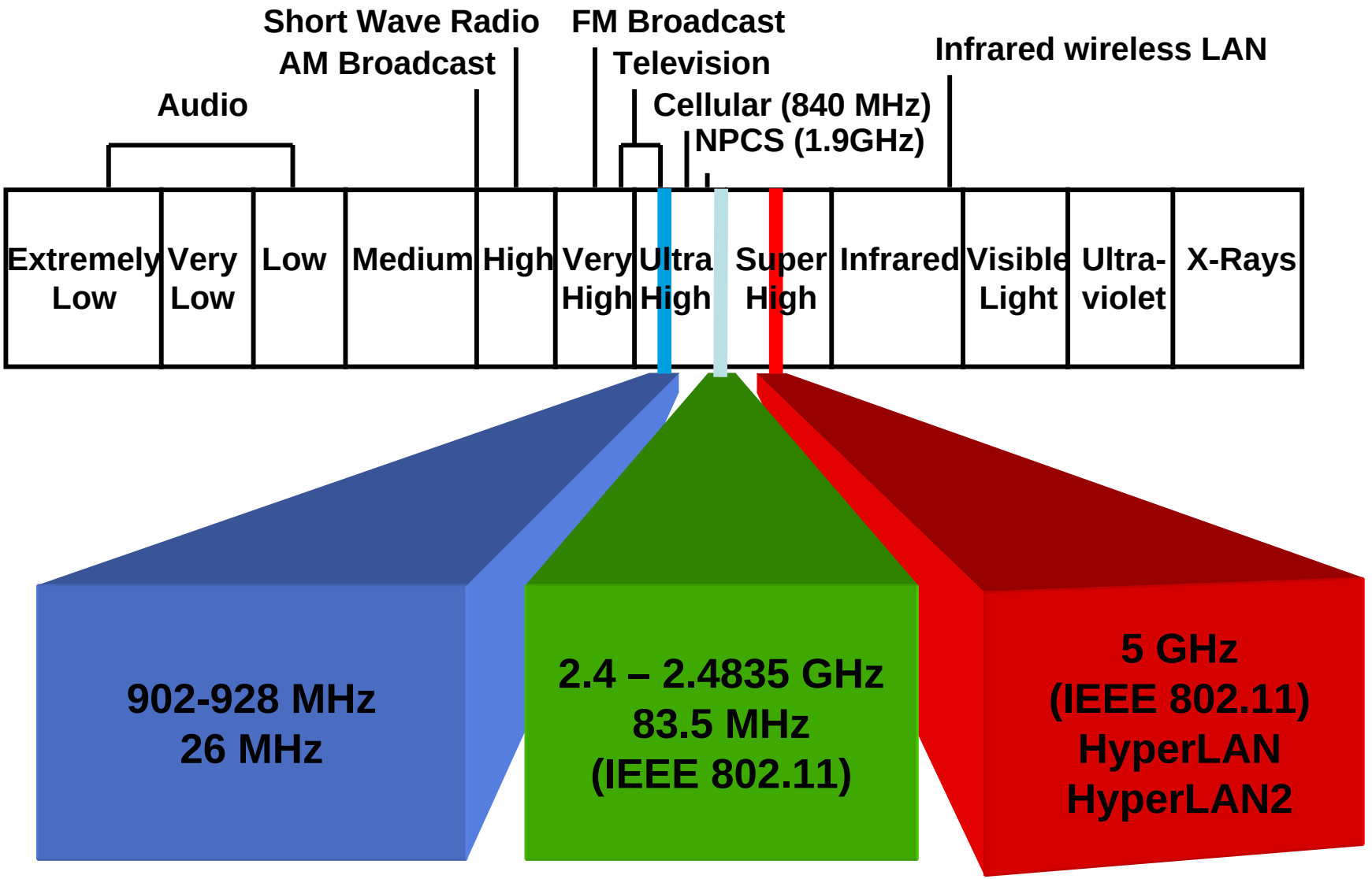
If Node A Wants to Communicate with Node B, the Connection Must First be Approved, Setup and Managed by the Master Node or LAN Controller.

The Rajant Difference

RAJANT

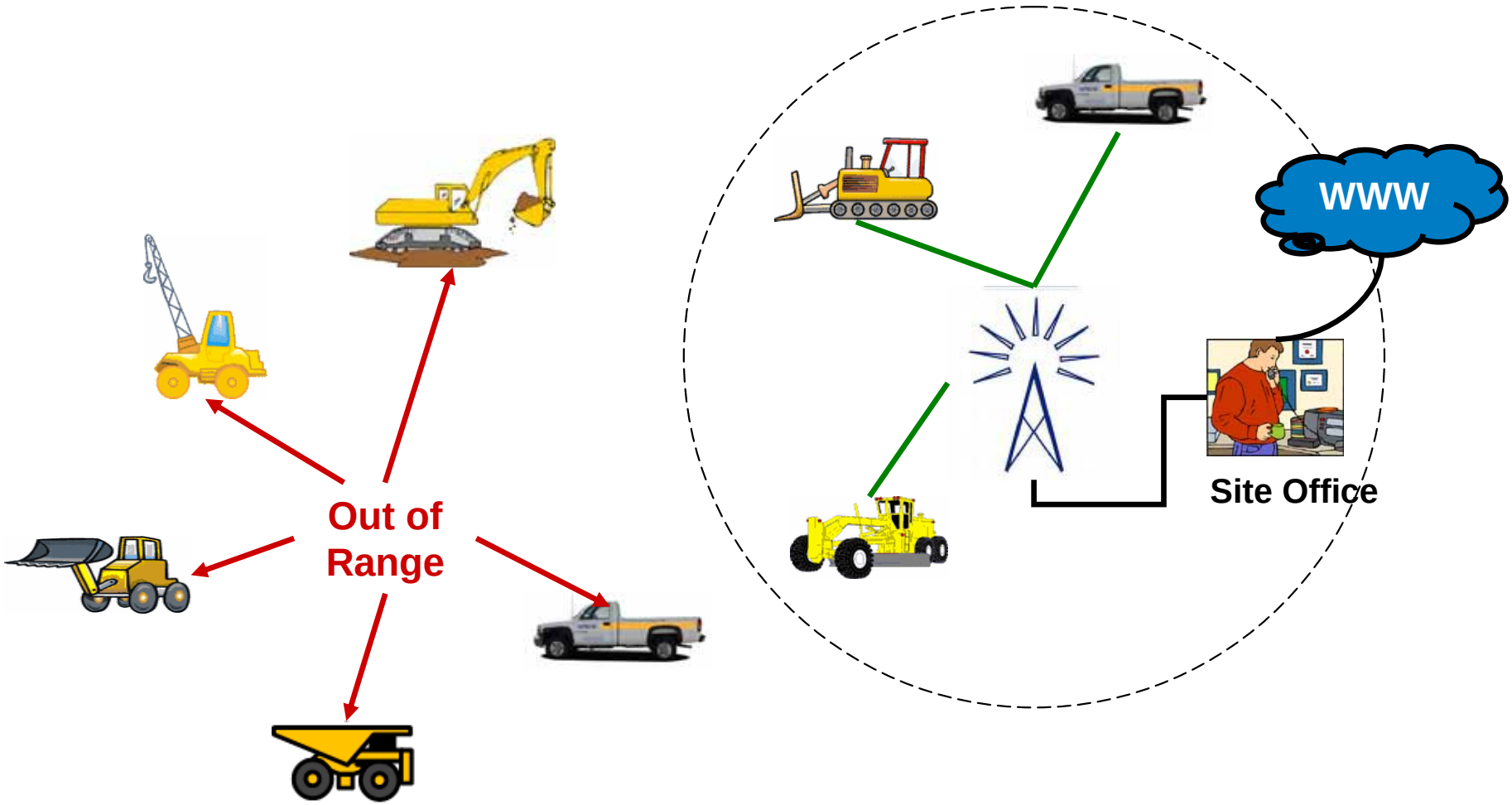
3. **Performance & Reliability** (High Bandwidth / Low Latency plus Built-in Redundancy)
   - Most effective use of multiple radio frequencies and channels resulting in higher performance and reliability.
     - Multiple frequencies for both client and backhaul communication
     - Does not require dedicated backhaul
   - Routing speed and efficiency (Load Balancing)
   - Rajant technology eliminates network bottlenecks and single points of failure that are inherent in traditional wireless networks.
   - Tight integration with "wired" LANs (APT)
     - Allows multiple ingress and egress connections
     - Allows Rajant wireless packets to utilize wired connections for transport
   - Application segregation and prioritization
   - Security

ISM Unlicensed Frequency Bands



Traditional Non-Mesh Networks

- One frequency for AP's and clients
  - No redundancy
  - Low bandwidth
- Infrastructure dependent



Traditional Non-Mesh Networks

- One frequency for AP's and clients
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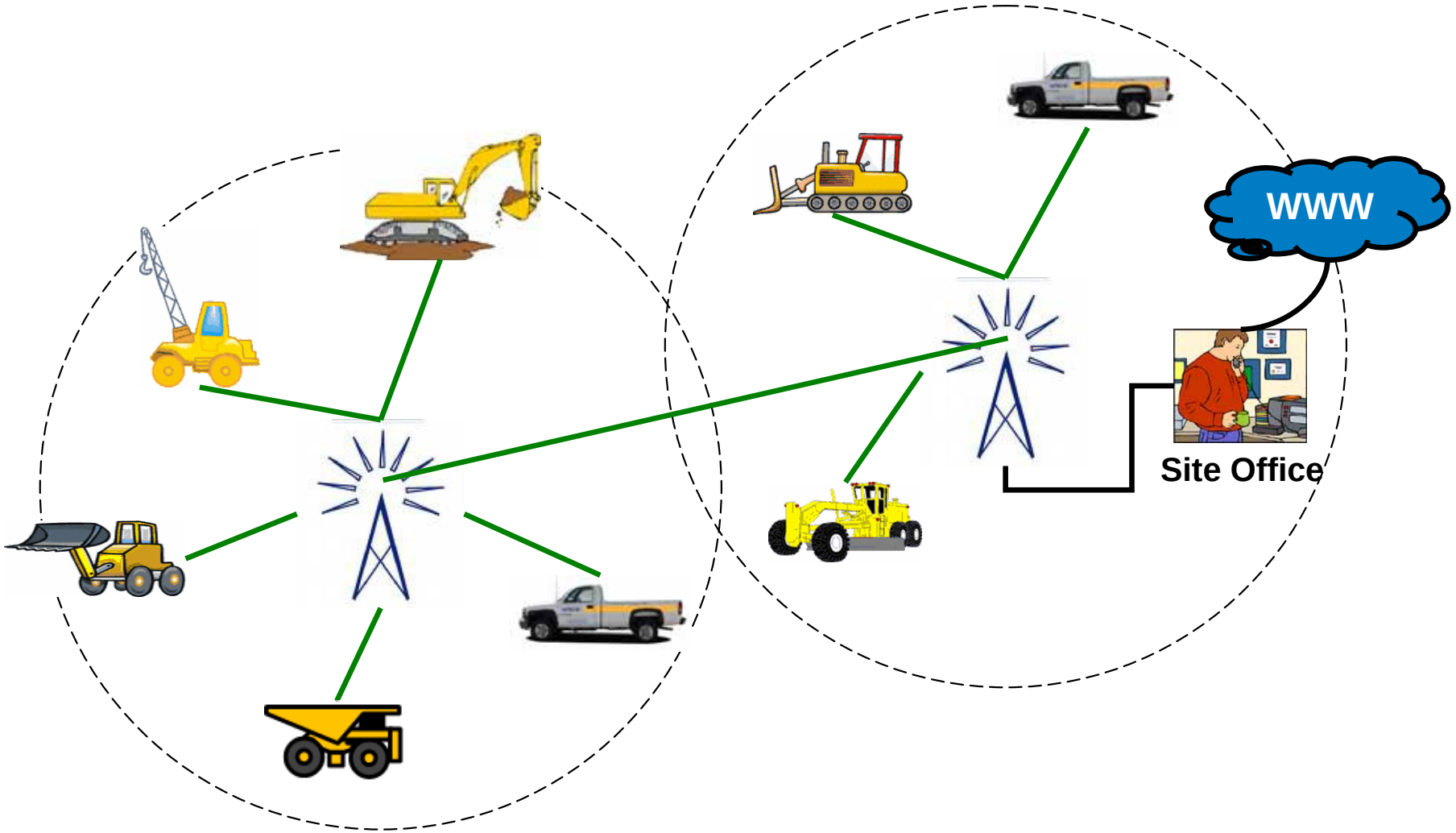
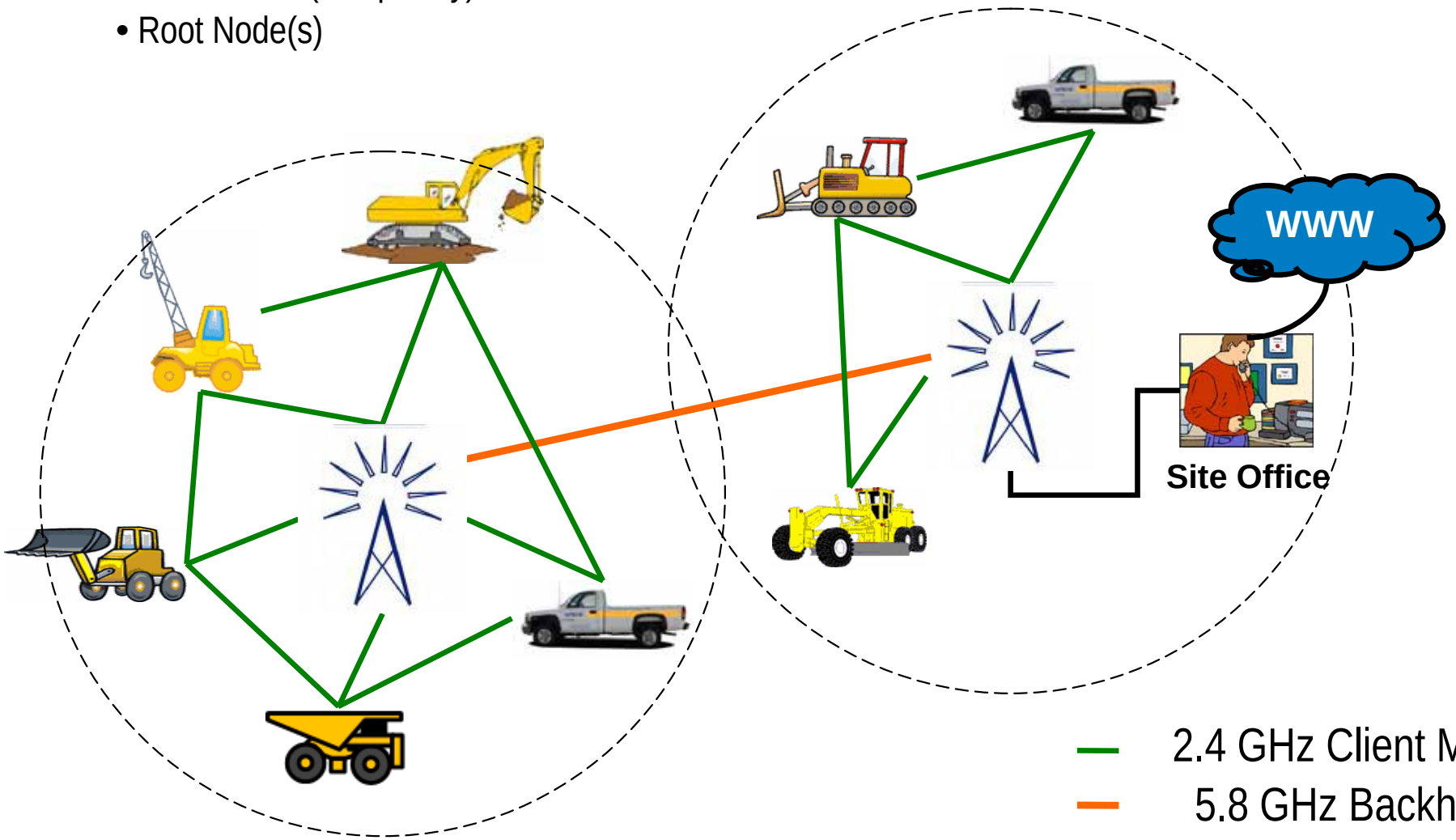
  - Low bandwidth
- Infrastructure dependent & intensive



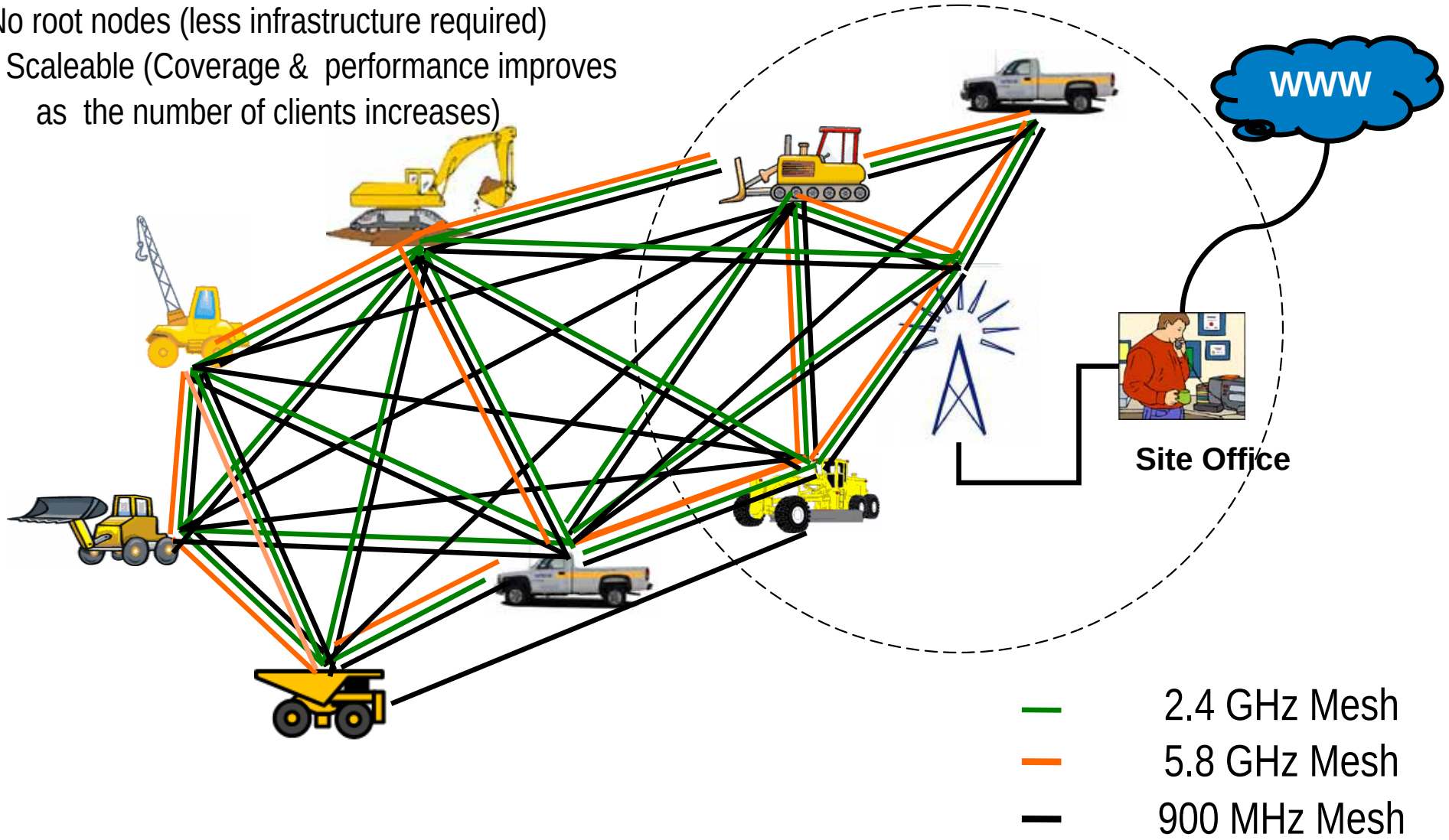
Competitive Mesh Networks

- Separate configurations for AP's and clients
  - Single frequency mesh clients
    - Dedicated backhaul
  - Infrastructure intensive (complexity)
    - Root Node(s)

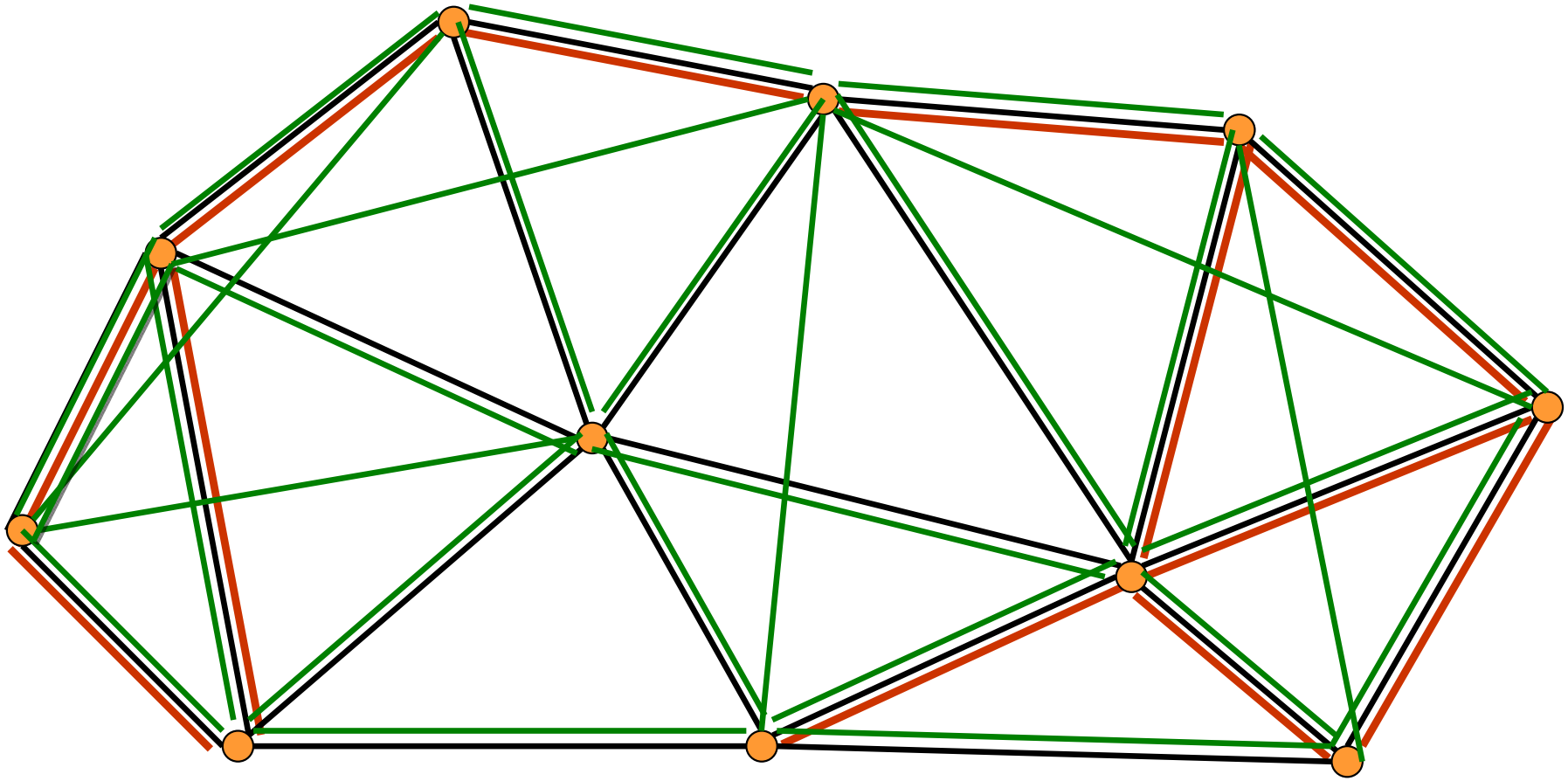


Rajant Mesh Network

- Common design for AP's and Clients
- Multi-frequency
- Dedicated backhaul not required
- No root nodes (less infrastructure required)
- Highly Scaleable (Coverage & performance improves as the number of clients increases)



Scalability



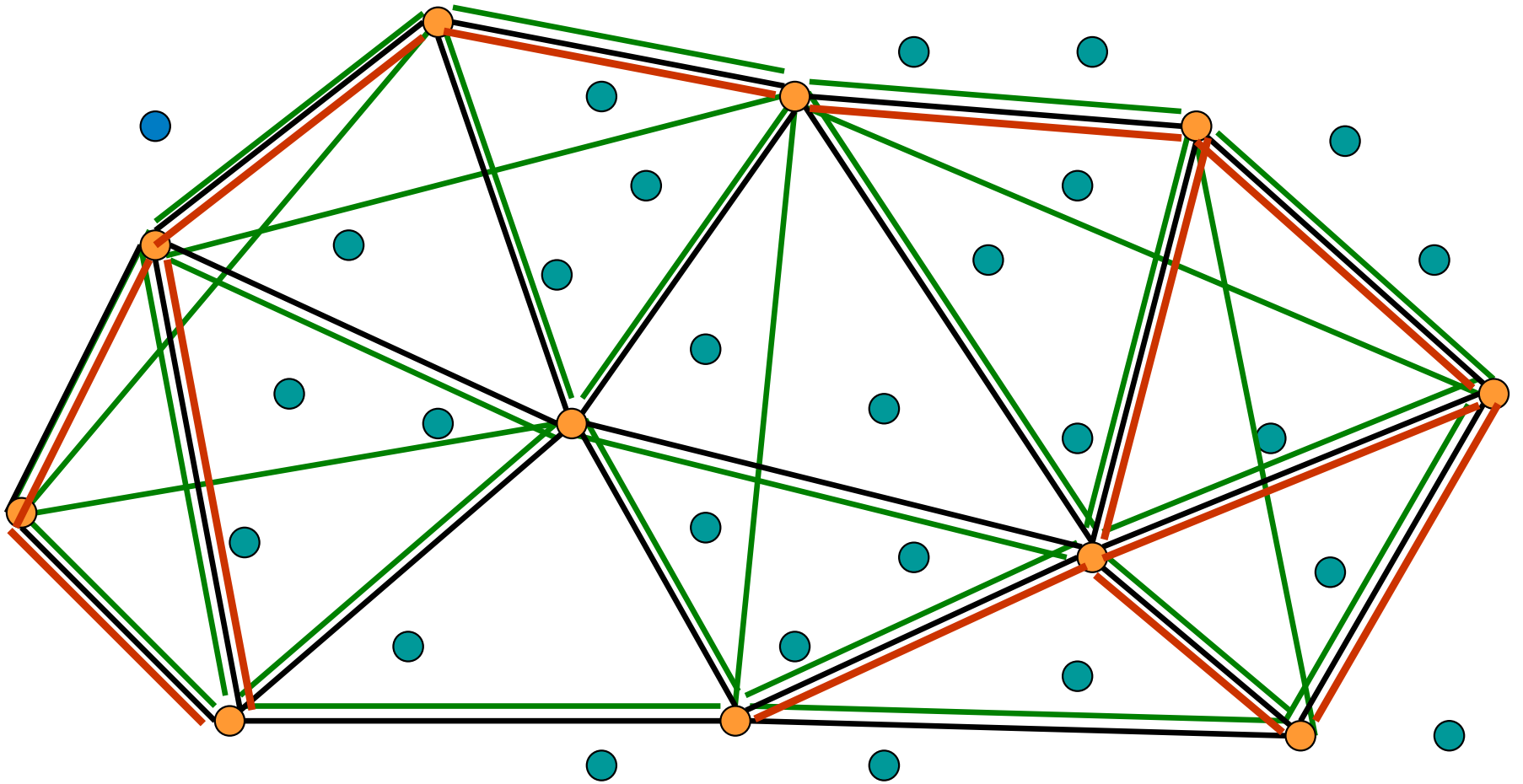
Infrastructure node

9 MHz Mesh

2.4 GHz Mesh

5.8 GHz Mesh

Scalability



Infrastructure node

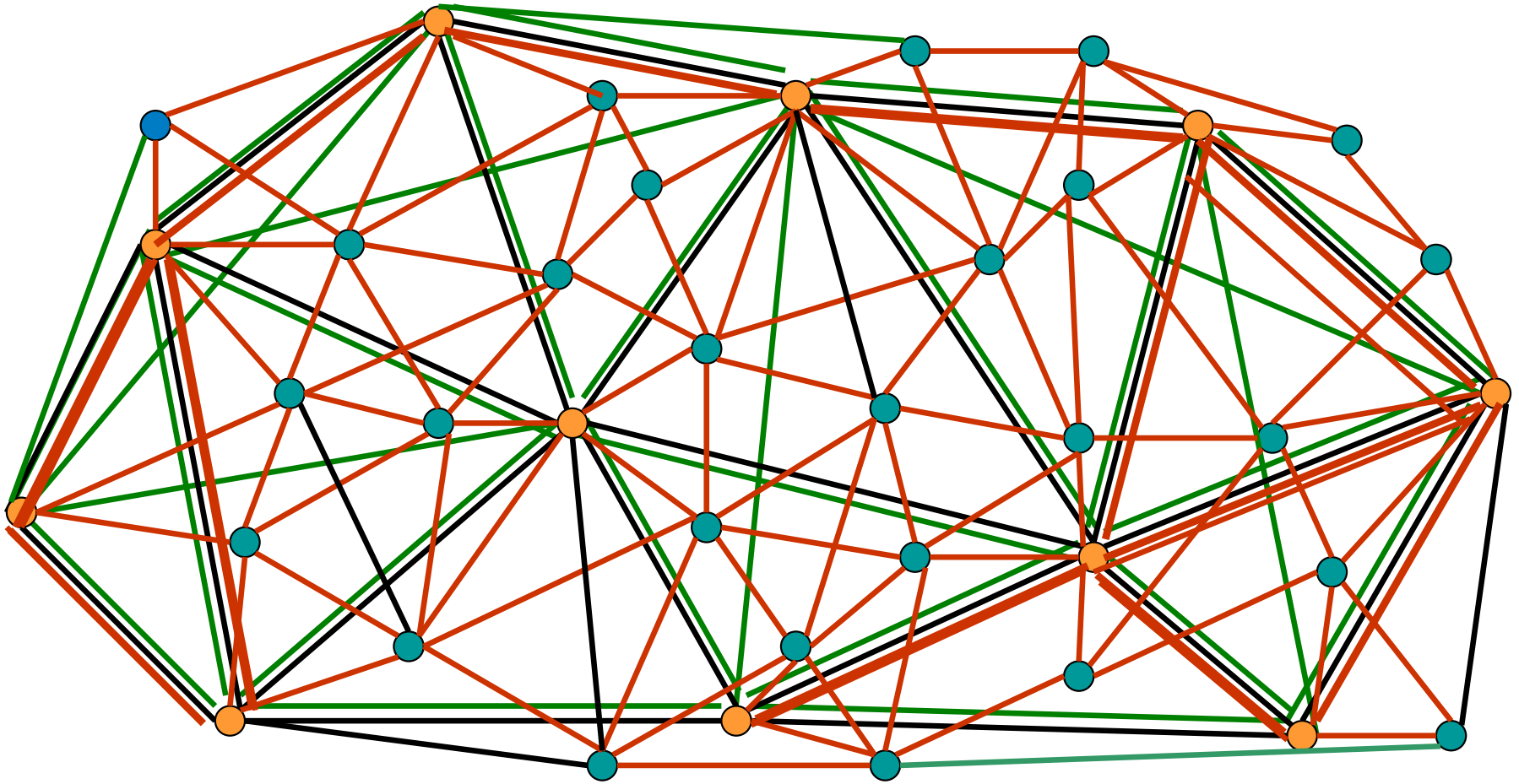
Mobile Equipment

9 MHz Mesh

2.4 GHz Mesh

5.8 GHz Mesh

Scalability



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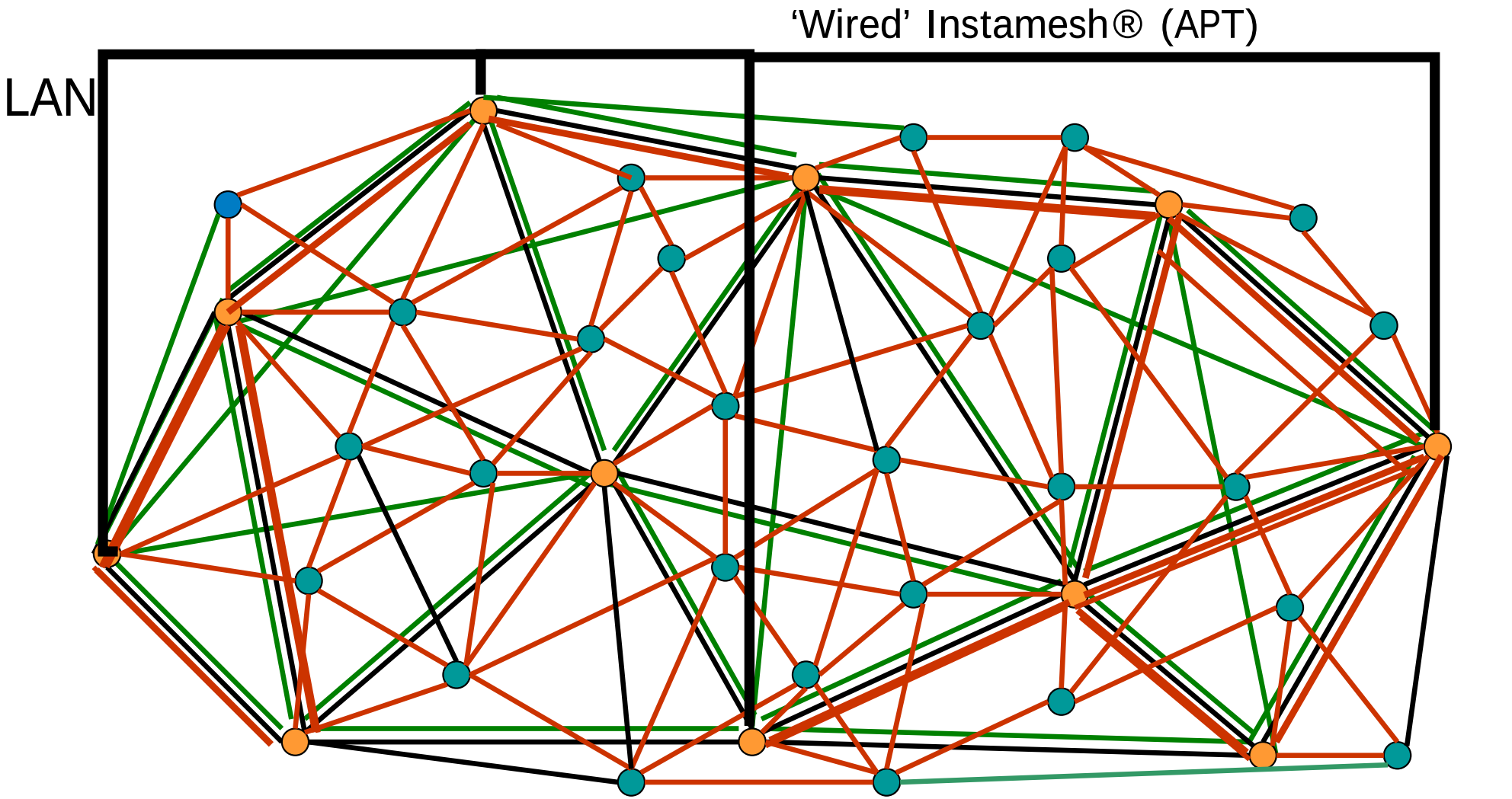

Infrastructure Coverage

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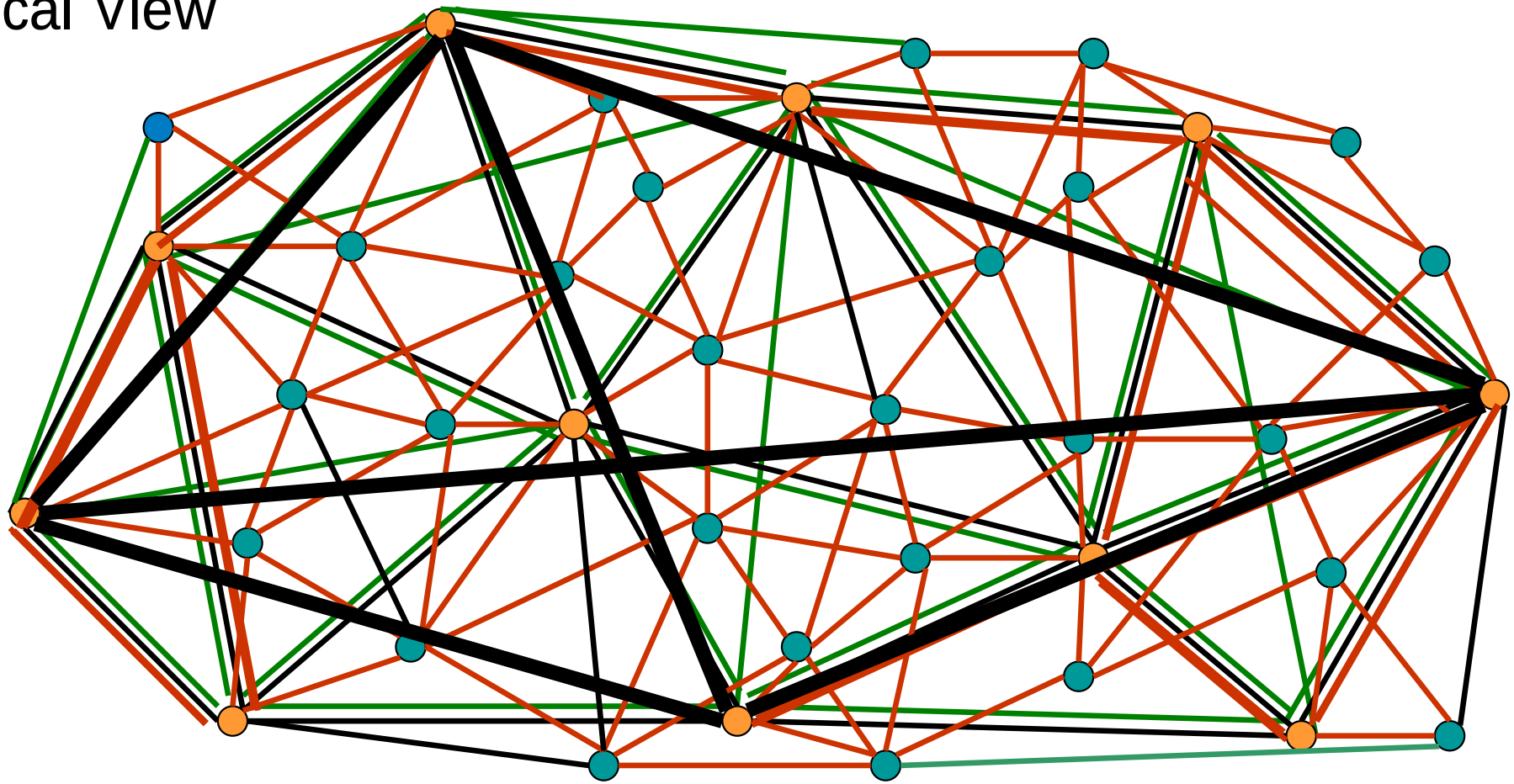
Logical View



Infrastructure node

Mobile Equipment

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'Wired' Instamesh®

Scalability – Kennecott Utah Copper Mine

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Dimensions:

- 2.5 miles across
- 1 mile deep
- furthest dump site is 6.4 miles from the pit

Scalability – One Network

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Kennecott Utah Copper Requirements

- 50 Infrastructure
  - 30 Access Points
  - 20 Mobile Trailers
- 20 Track Type Tractors
- 30 Dozers (9 RTD)
- 10 Drills
- 11 Shovels
- 5 Loaders
- 2 Stemmers
- 13 Graders
- 7 Backhoes
- 3 Cable Trucks
- 3 Fuel Trucks
- 6 Water Trucks
- 77 Haul Trucks

237 Total Breadcrumbs (185 mobile)

Scalability – Multiple Applications

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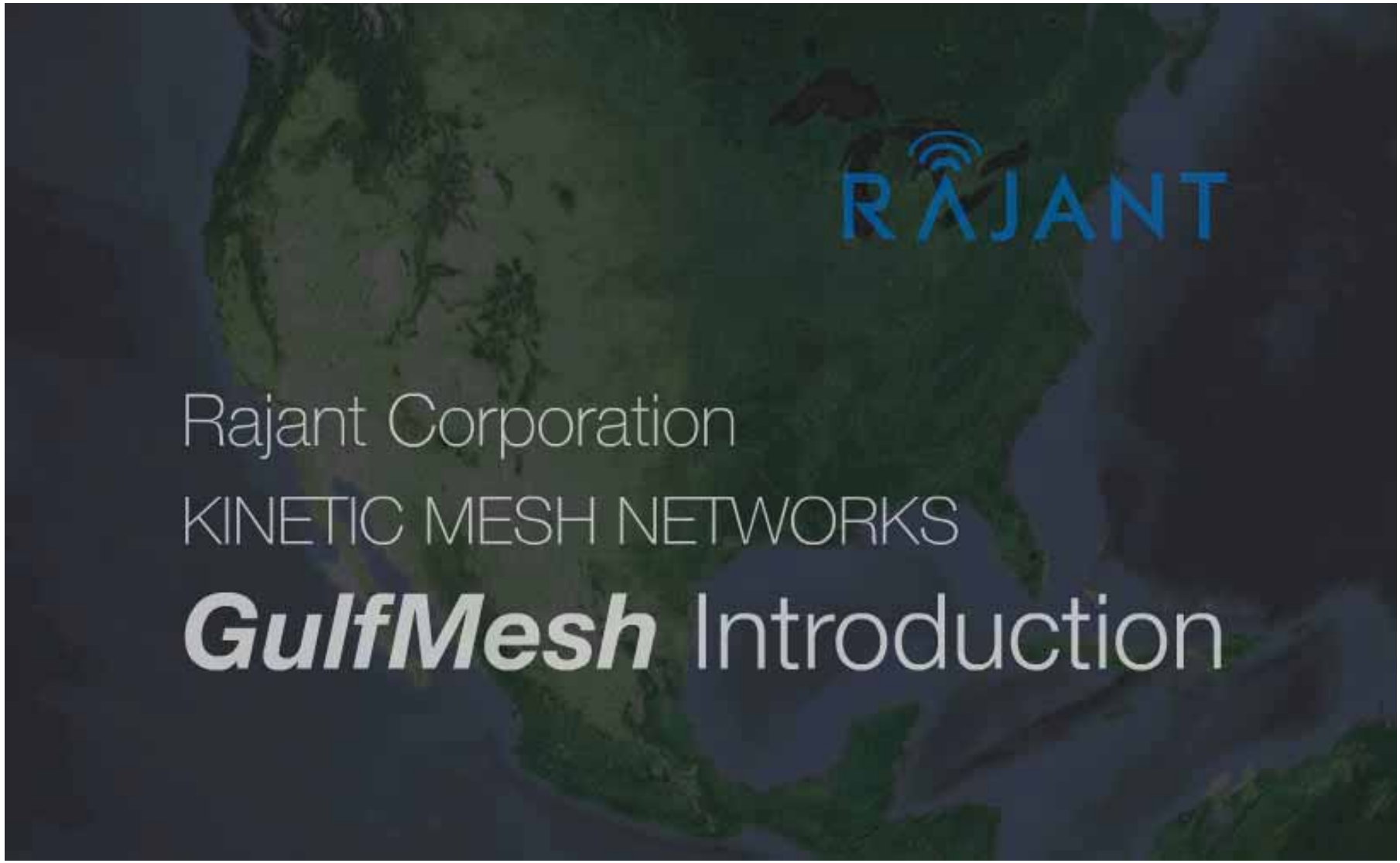
- **Production Monitoring and Control -** Provides optimized haul truck assignments, GPS-based equipment positioning, machine management, equipment tracking & production monitoring
- **Vehicle Health Monitoring** – Real-time monitoring of vehicle system sensors enabling the remote evaluation of the machine's condition.
- **High Precision Global Positioning System (GPS) -** Ground-based high precision GPS augmentation system
- **Slope Stability Radar -** provides continuous sub-millimeter measurements of rock wall movements.
- **Fuel Monitoring -** Electronic fuel monitoring system that provides a secure hydrocarbon management solution
- **Video Monitoring –** Pocket/Crusher levels & Equipment Re-fueling
- **PLC Monitoring –** Pump stations & Mobile Trailers
- **Laptops in Vehicles**
- **Voice over IP**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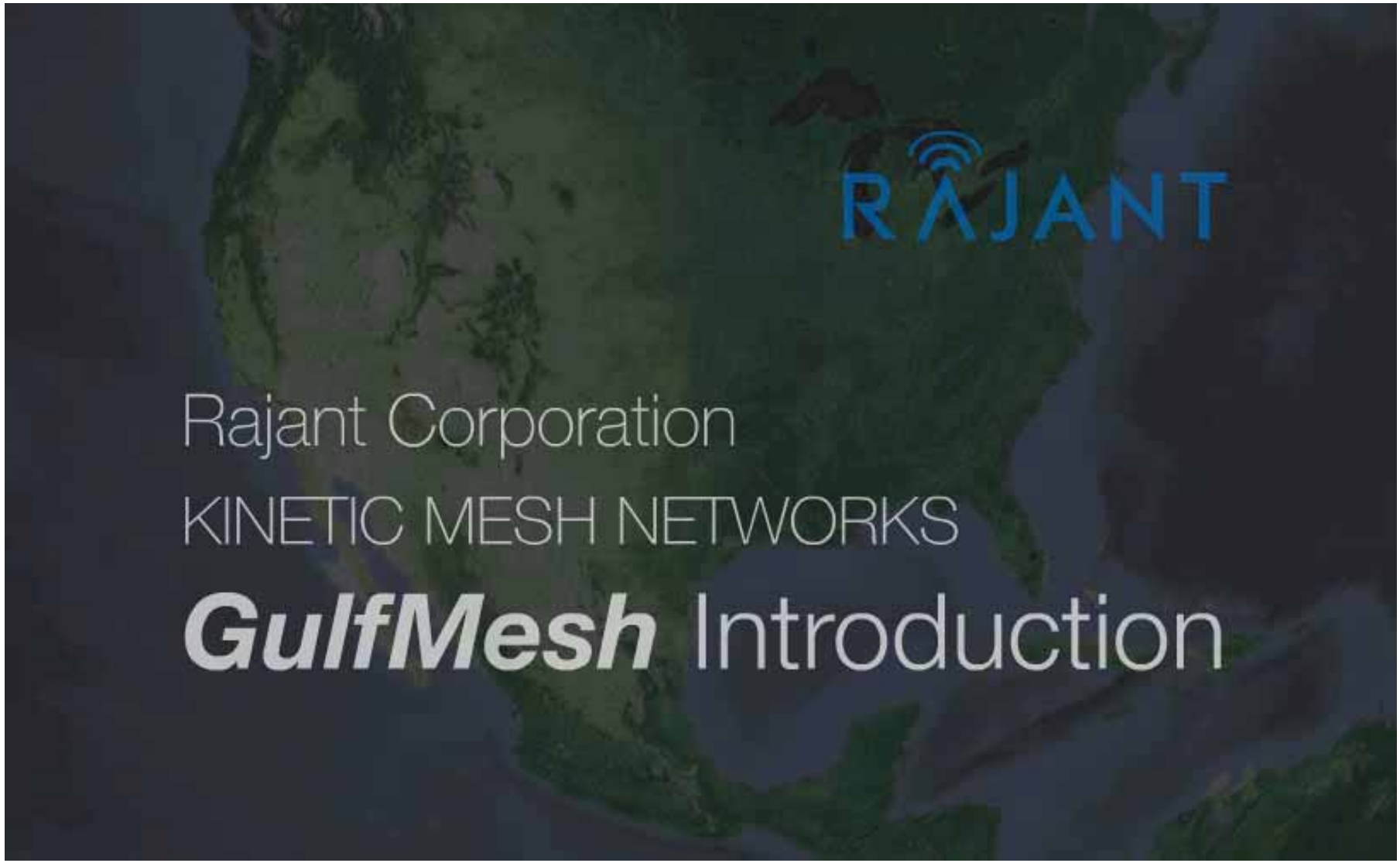
KINETIC MESH NETWORKS
GulfMesh Introduction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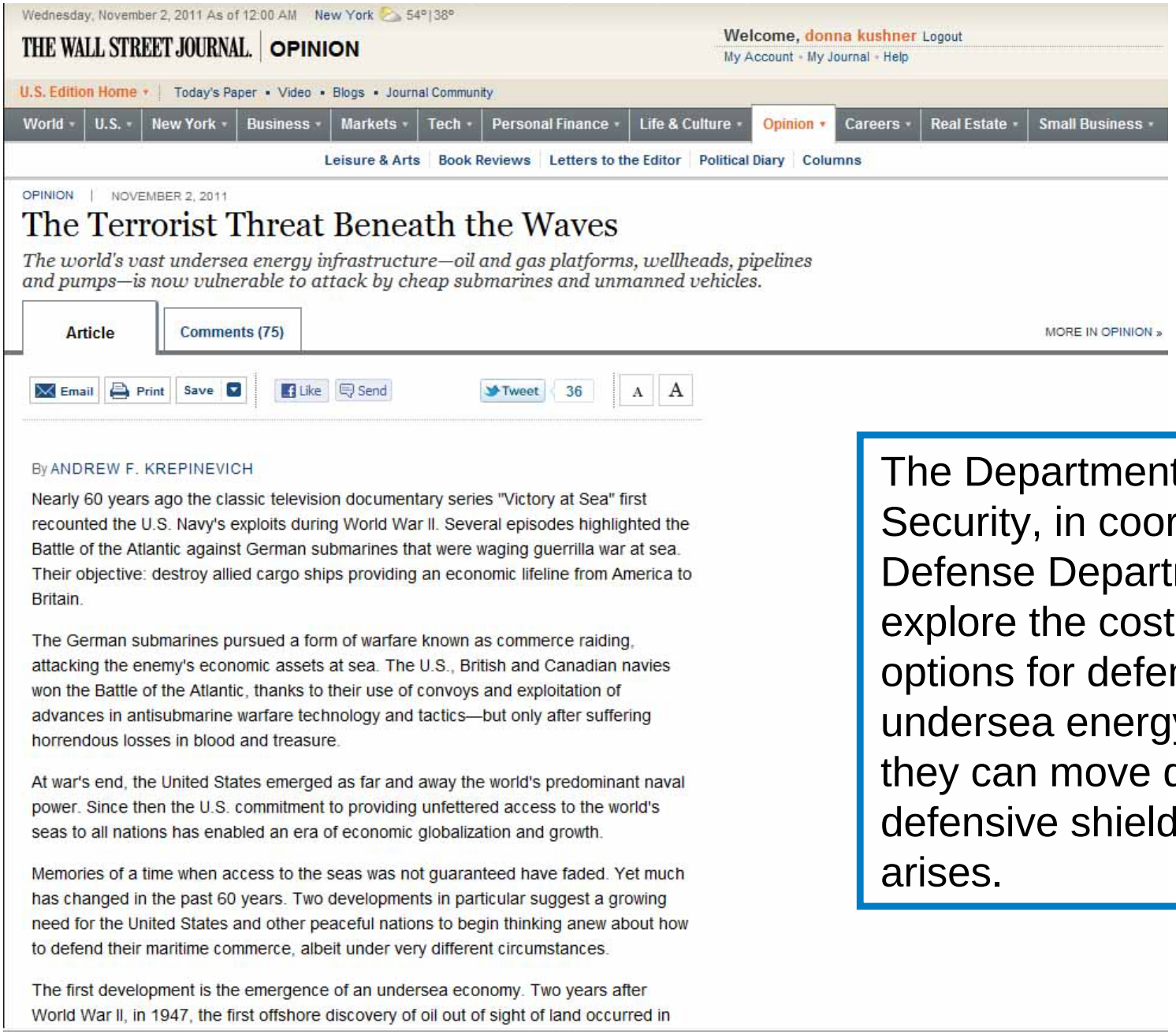
Terror Threat Beneath the Waves



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OPINION | NOVEMBER 2, 2011

The Terrorist Threat Beneath the Waves

The world's vast undersea energy infrastructure—oil and gas platforms, wellheads, pipelines and pumps—is now vulnerable to attack by cheap submarines and unmanned vehicles.

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By ANDREW F. KREPINEVICH

Nearly 60 years ago the classic television documentary series "Victory at Sea" first recounted the U.S. Navy's exploits during World War II. Several episodes highlighted the Battle of the Atlantic against German submarines that were waging guerrilla war at sea. Their objective: destroy allied cargo ships providing an economic lifeline from America to Britain.

The German submarines pursued a form of warfare known as commerce raiding, attacking the enemy's economic assets at sea. The U.S., British and Canadian navies won the Battle of the Atlantic, thanks to their use of convoys and exploitation of advances in antisubmarine warfare technology and tactics—but only after suffering horrendous losses in blood and treasure.

At war's end, the United States emerged as far and away the world's predominant naval power. Since then the U.S. commitment to providing unfettered access to the world's seas to all nations has enabled an era of economic globalization and growth.

Memories of a time when access to the seas was not guaranteed have faded. Yet much has changed in the past 60 years. Two developments in particular suggest a growing need for the United States and other peaceful nations to begin thinking anew about how to defend their maritime commerce, albeit under very different circumstances.

The first development is the emergence of an undersea economy. Two years after World War II, in 1947, the first offshore discovery of oil out of sight of land occurred in

The Department of Homeland Security, in coordination with the Defense Department, should explore the cost and feasibility of options for defending the undersea energy economy, so they can move quickly to build a defensive shield if the need arises.

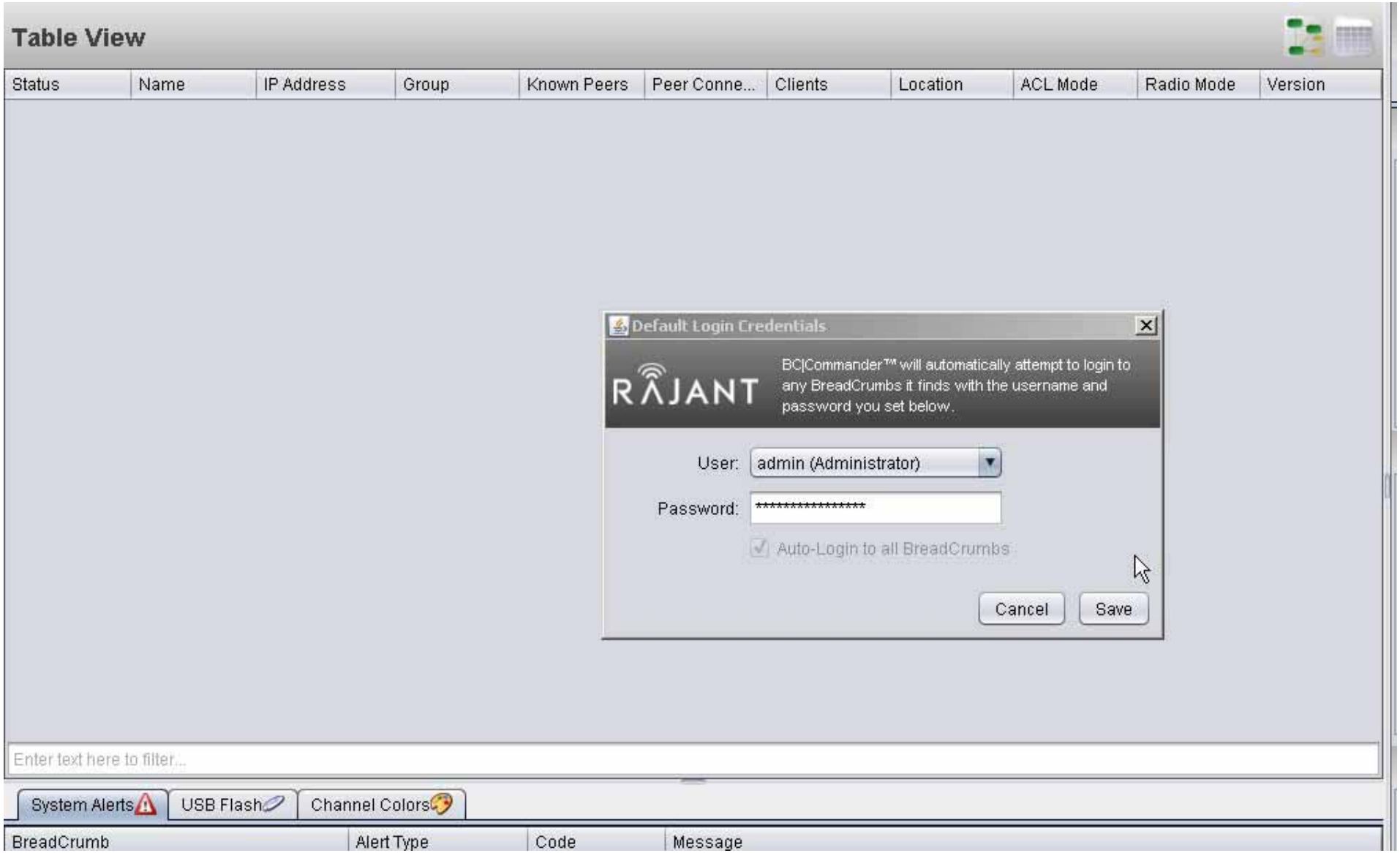
Terrorist Threat Under the Waves

Iran, the Zetas drug cartel and our porous Southern border

Why is Iran conspiring with Mexican drug dealers?

Iran Plotted With Mexican Drug Cartel to Assassinate Saudi Ambassador

Rajant Mesh Forming



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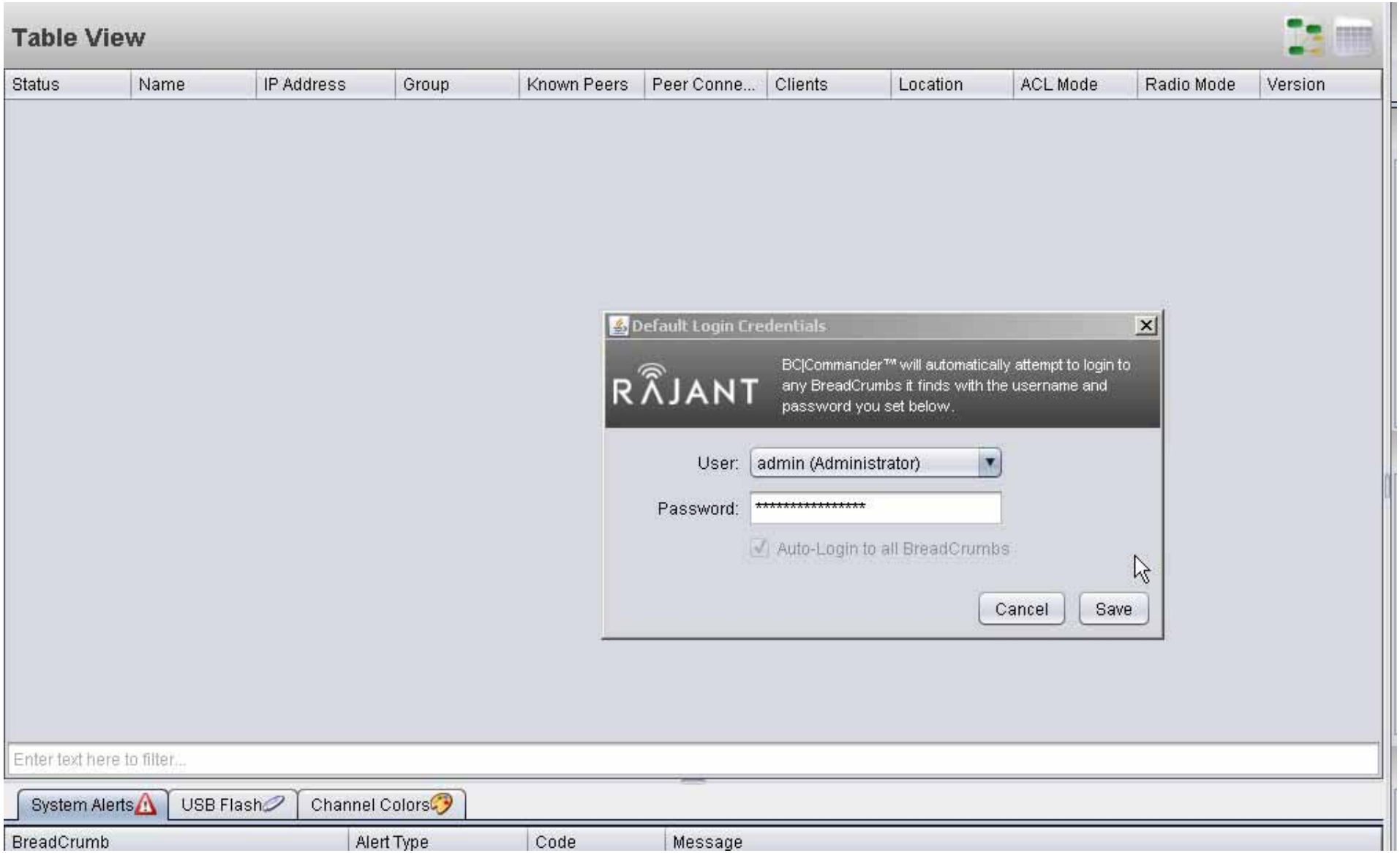

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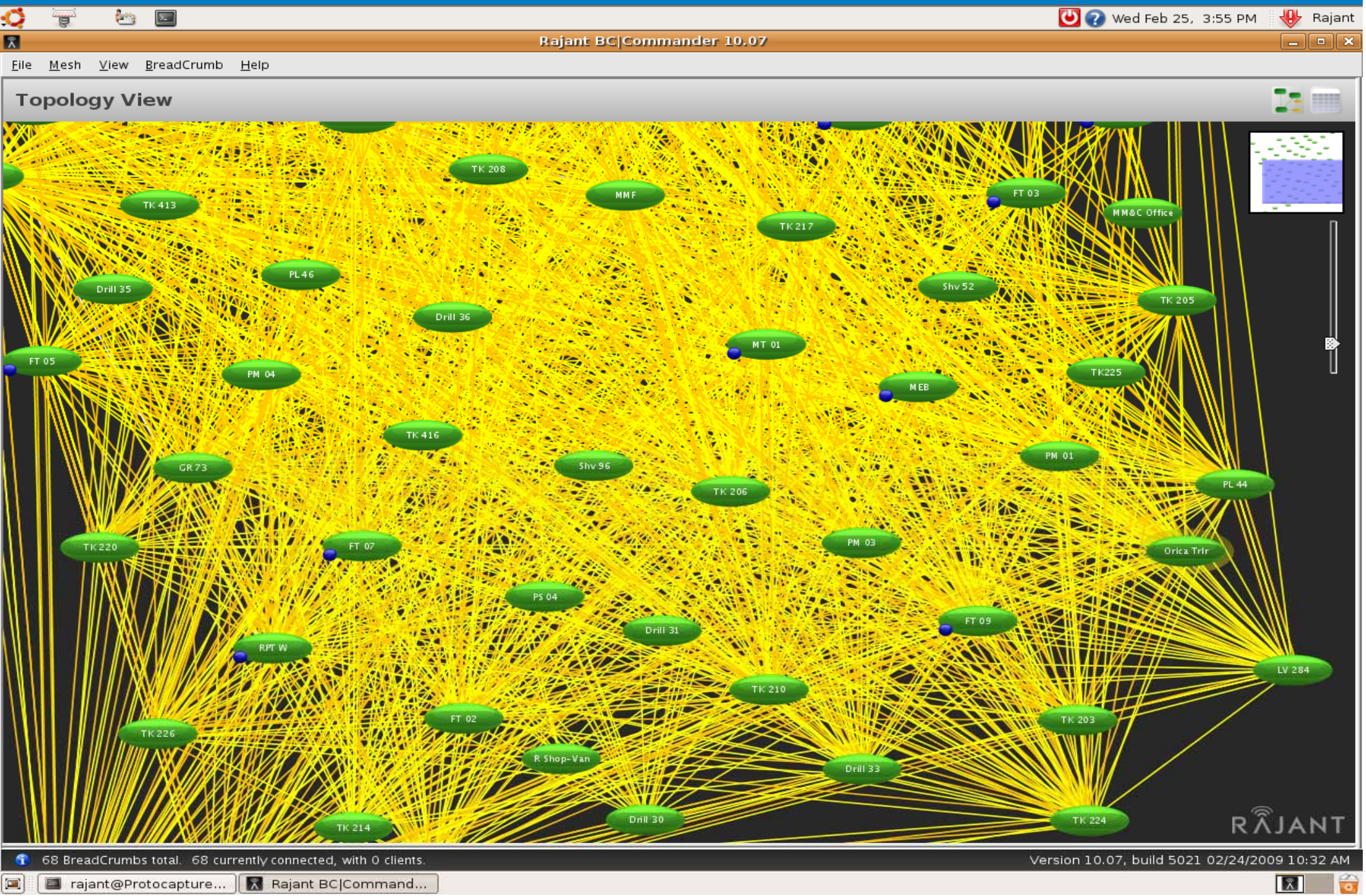

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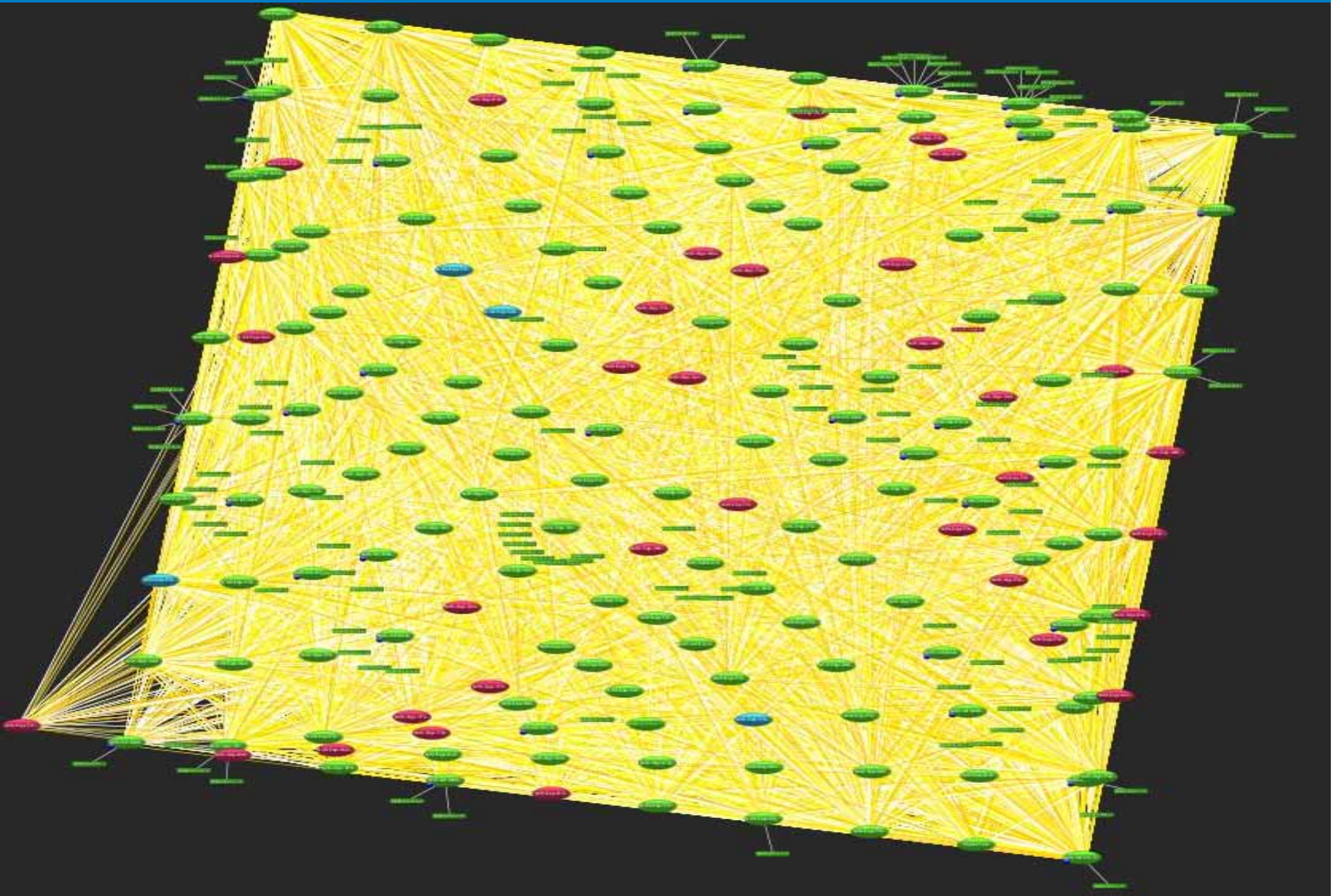
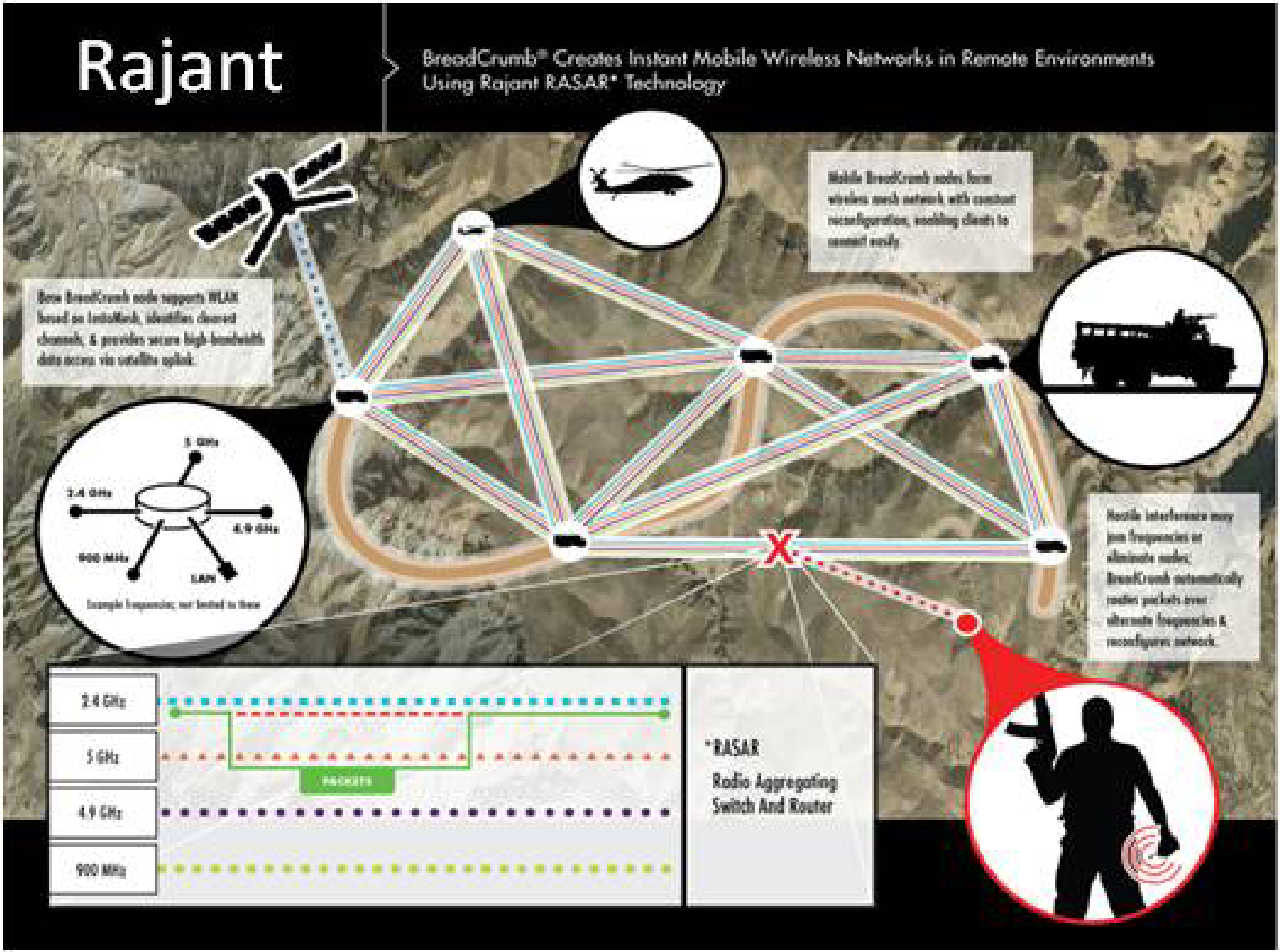
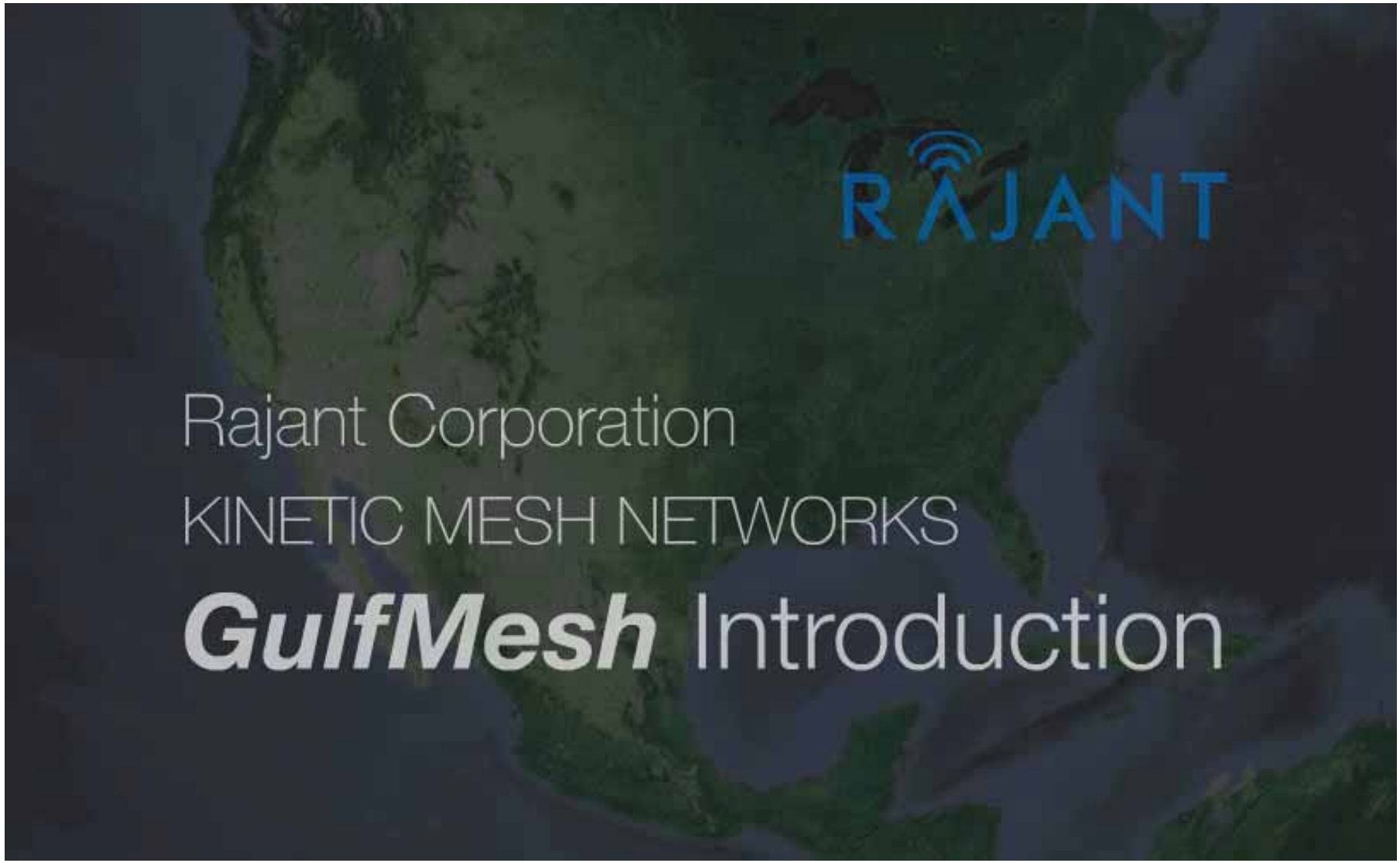


Radio Aggregating Switch and Router



GulfMesh – One More Time



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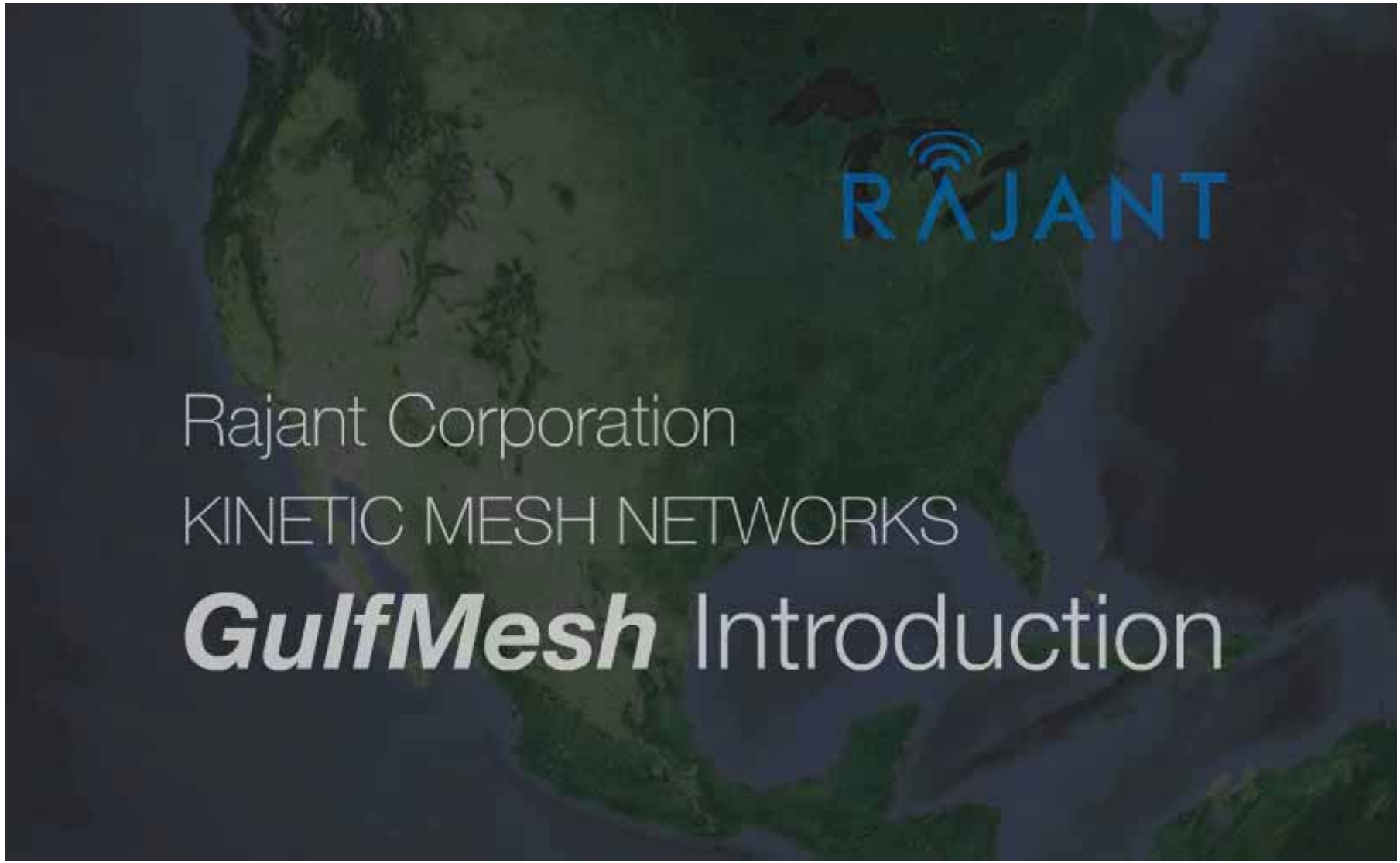

Questions & Answers

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