MikroTik
Routing the World
Homeland Security High Performance Case Study
Your Instructor

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  - WISP Experience
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WISPA!
See WISPA in the Vendor Area!
Great Member WIKI & List Servers!

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What is this about?
Project Requirements

Case Study
Homeland Security Network
Project Requirements

High Performance Data Network
Support Security Cameras
Support Multiple Government Agencies
Support VoIP Deployment
Support Multi-Meg Applications
High Availability
Fast Redundancy
Project Requirements

32 Sites
High-Capacity Wireless Links
No Signal Point of Wireless Failures

Network Monitoring
Link Speeds and Usage of Network
Firewalling at all Locations as Necessary
QoS at all sites
Design Approach

First Question?

What is High Performance?
Design Approach

First Question?

GigE Wireless Links!
150 – 300 Meg Links
Design Approach

Second Question?
Design Approach

Second Question?

Cameras?
Design Approach

Second Question?

Currently Around 800 Cameras on Network
Design Approach

Redundancy?
Redundancy?
Every Site Has a Minimum of Two Wireless Connections
Design Approach

Redundancy?

Every Site Has a Minimum of Two Wireless Connections

Some have upwards of Six
Design Approach

Firewall?
Firewall?

Prevent Common items, such as NetBIOS, large amounts of connections.
QoS
Quality of Service
For VoIP Connections
And specific Applications
Design Approach

Network Layout
Design Approach
Failover

Routing Protocol
Choose OSPF

Why?
Failover

Routing Protocol

Very Simple to Configure
Failover

Routing Protocol

State Changes Create
Network Topology Changes
Failover

Routing Protocol

Link Goes Down

= Instant Routing Change
Failover

Routing Protocol

Most Links Have OBM
Creates Super Fast State Changes
Failover

Full Simulated Failure of Node

Preformed by /sys shutdown!
Failover

Normal Path
Failover

Normal Path

Shutdown Router
Failover

New Path
Failover

<3 Seconds Reroutes

Typically Never Lost a Ping!
Hardware Used

Hardware

Supported & Tested Hardware

Powered by MikroTik
Hardware Used

Hardware

Supported & Tested Hardware
Preformance

IpPerf Testing
Performance

IpPerf Testing

993 Meg Though Up to 10 Hops!
Monitoring

The DUDE
Monitoring

The DUDE Link Monitoring and Graphing
Deployment

Phase 1

Initial Configuration
Deployment

Phase 1
Cable Up
Ethernet Based
Deployment

Phase 1

Configure Firewalls
Configure IP Addresses
Configure Routing
Deployment

Phase 1

Setup Network Monitoring
Verify DHCP Server
Verify Routing Failovers
Deployment

Phase 2

Actual Deployment Took about 2 months to Fully Deploy all wireless links, Routers, ETC.
System Running

Some Links Average of + 300 Meg of Camera Traffic

VoIP System
Case Study

Completed Network Rollout

Homeland Security
Approved
Hardware/Software
Thanks

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