

# Regional IP Addressing



# Discussion Topics

- **IPv4 Structure**
  - Private Network address range
  - Class A (RFC 1918)
- **IP Addressing**
- **Inter-connection addressing**
- **Network monitoring**

# IPv4 Addressing

## Private Network Address Range

IP Address Classful	Address Range	Number of Network addresses	Number of host addresses	Bits for Network ID / Host ID
Class A	10.0.0.0 – 10.255.255.255	126	16,777,214	8/24

- Private Network address range
- Non-routable outside the network
- RFC 1918

# Example Regional IP Addressing

10		Region	State / Territory		Host's
00001010	.	<u>0000</u> 0000	.	000	00000001
First Byte	.	Second Byte	.	Third Byte	Fourth Byte

- **APAC: Asia and Pacific (0010)**
- **MID: Middle East Office (0011)**
- **WACAF: Western and Central African Office (0100)**
- **ESAF: Eastern and Southern Africa Office (0101)**
- **EUR/NAT: European and North Atlantic Office (0110)**

# Example Regional IP Addressing

10		Region	State / Territory		Host's			
00001010	.	0000	0000	.	000	00000	.	00000001
First Byte	.	Second Byte	.	Third Byte	.	Fourth Byte		

- State / Territory
- 7 bits from the second octet and third octet
- A maximum 128

# Example Regional IP Addressing

10		Region	State / Territory		Host's
00001010	.	<u>00000000</u>	.	000 00000	00000001
First Byte	.	Second Byte	.	Third Byte	Fourth Byte

- 19 bits of sub-netting
- 11 bits are borrowed from the host
- Networks are divided in 2048 sub networks

# Example Regional IP Addressing

10		Region	State / Territory		Host's
00001010	.	00000000	.	000 <u>00000</u>	. 00000001
First Byte	.	Second Byte	.	Third Byte	. Fourth Byte

- Host's
- 13 bits from the third and fourth octet
- Maximum of 8190 addressable terminal/servers

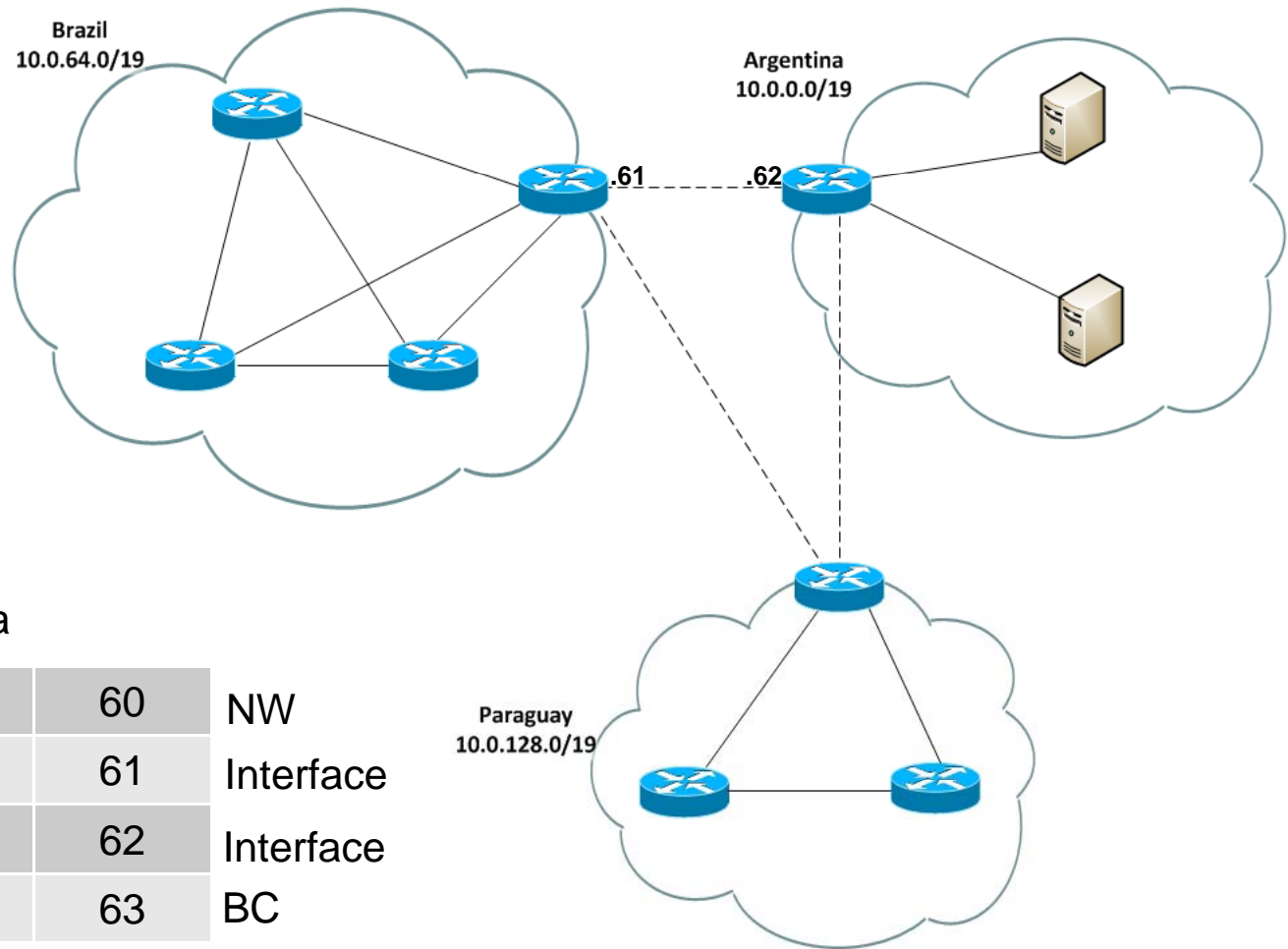
# Intra-Regional IP Addresses

10	Region	State / Territory	Host's
00001010	.	<u>00000000</u> . 00000000	. 000000 01
First Byte	.	Second Byte	. Third Byte . Fourth Byte

State	Network	Addresses	Broadcast
	10.15.224.60		
Brazil		10.15.224.61	
Argentina		10.15.224.62	
			10.15.224.63



# Intra-Regional IP Addresses



Brazil – Argentina

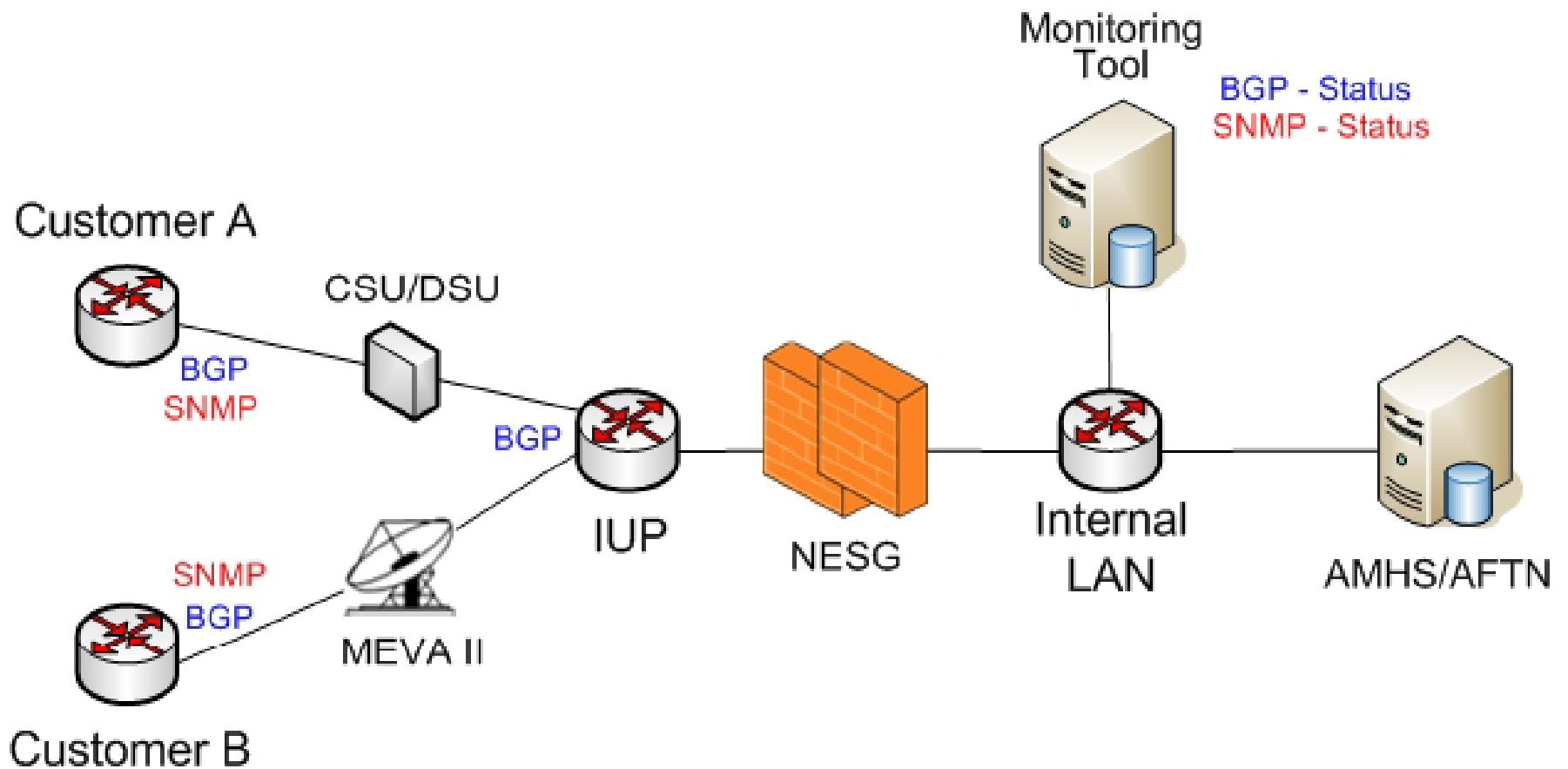
10	15	224	60	NW
10	15	224	61	Interface
10	15	224	62	Interface
10	15	224	63	BC

# Network Monitoring



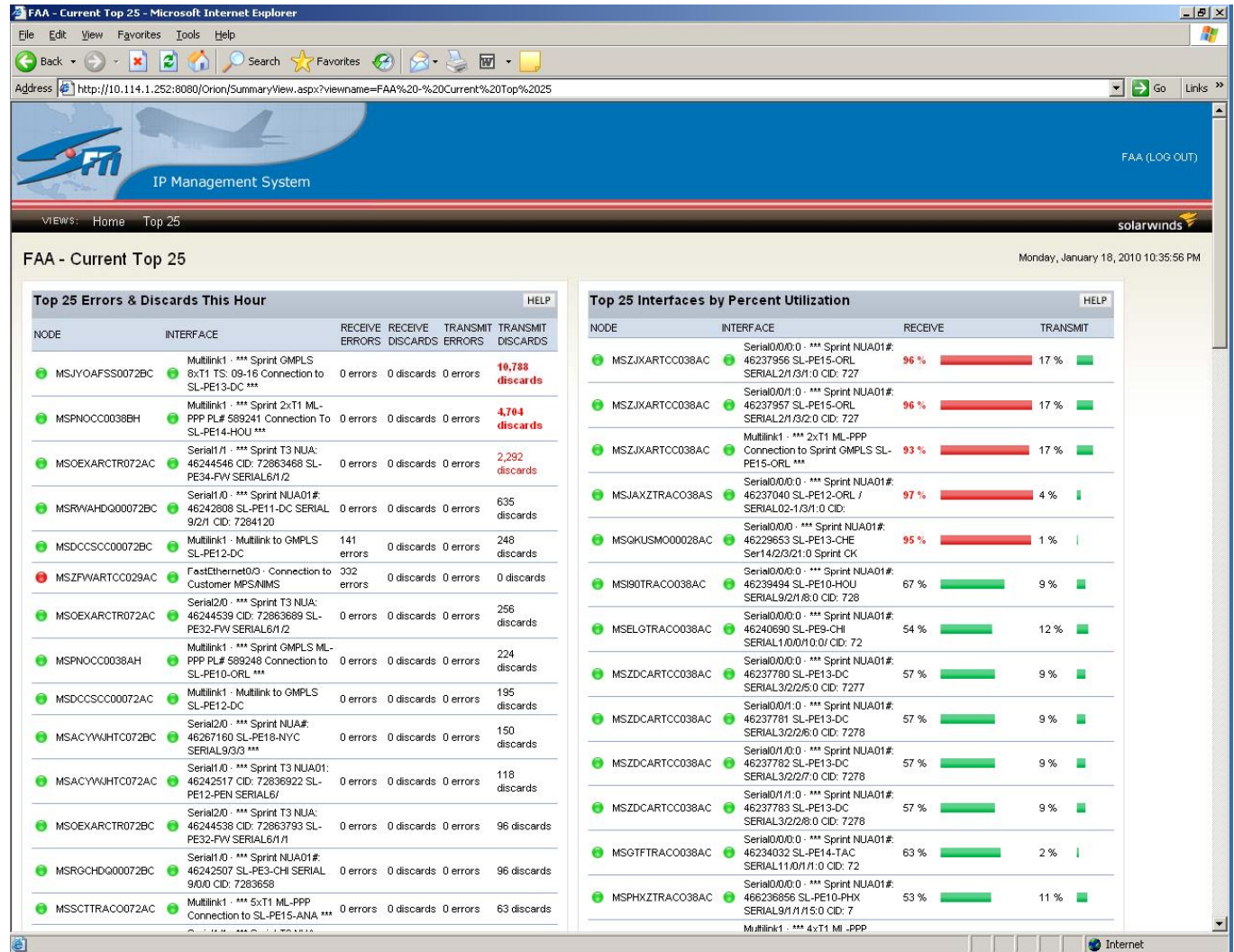


# Future IP Implementations Possibilities



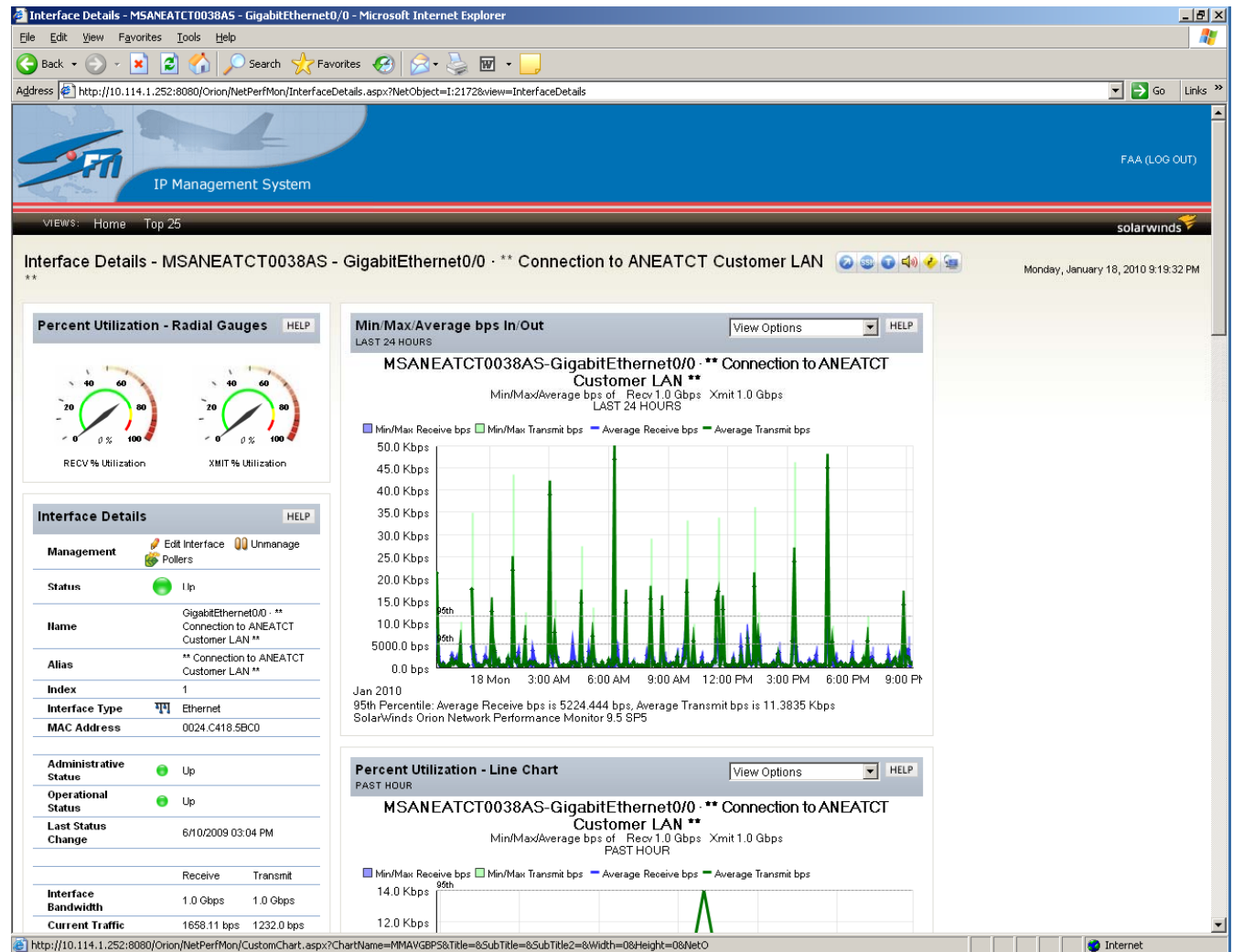
# Top 25 Errors

- Top 25 Errors and Discards
- Top 25 Interfaces by Percent Utilization



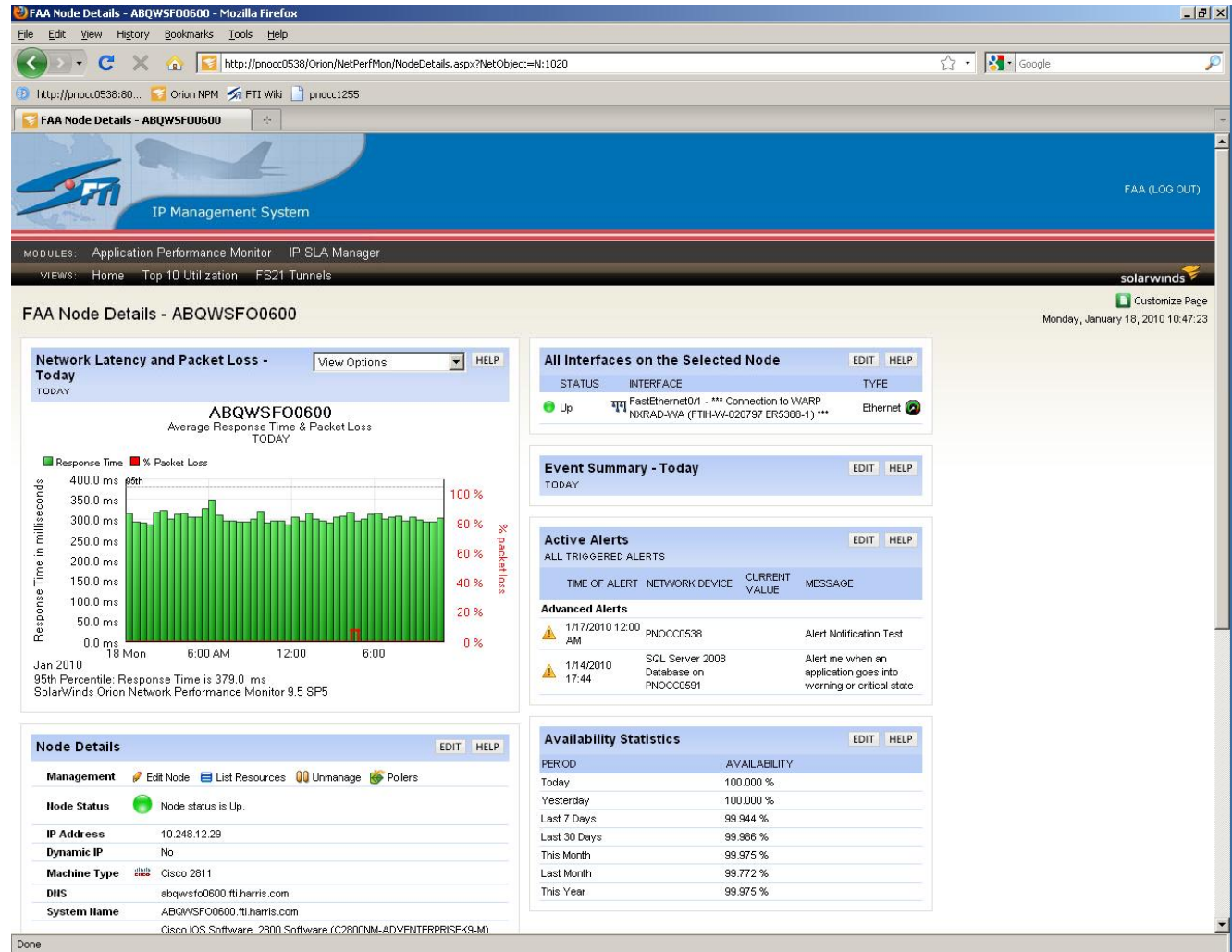
# Interface Details

- Percent Utilization Radial Gauges
- Up/Down Status
- Min/Max/Ave bps In/Out chart
- Percent Utilization Line Chart



# Node Details

- Response Time/Packet Loss chart
- Up/Down Status
- Active Alerts



# NADIN II X.25 Decommissioning







# NADIN-II Decommissioning Strategy

## SLC NEMC Move (completed)

- SLC node consolidation into the ZLC ARTCC node

## Phase 1

- **Reduce the network from 26 to 9 core nodes that support key systems (e.g. Oceanic) to give additional time to formulate a transition plans**
  - NAS users to move to TCP/IP; External users to move to CMHP
  - International users to consolidate to ATL/SLC or move to AMHS
  - Move user connections/circuits to core nodes

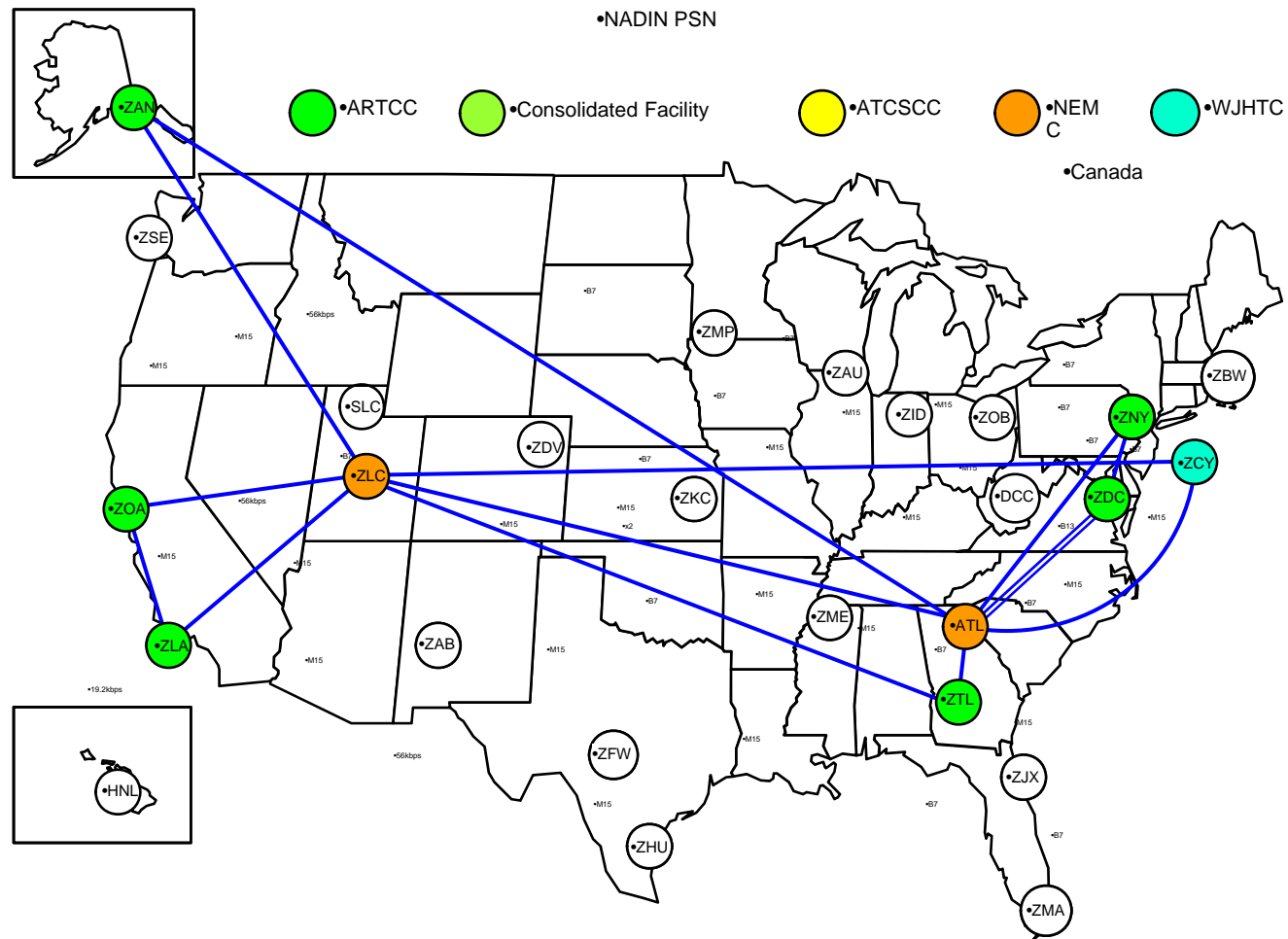
## Phase 2

- **Concentrate residual X.25 links (e.g. International AFTN) on Atlanta (ATL) and Salt Lake City (SLC/ZLC)**
  - Move remaining user connections to ATL and SLC/ZLC

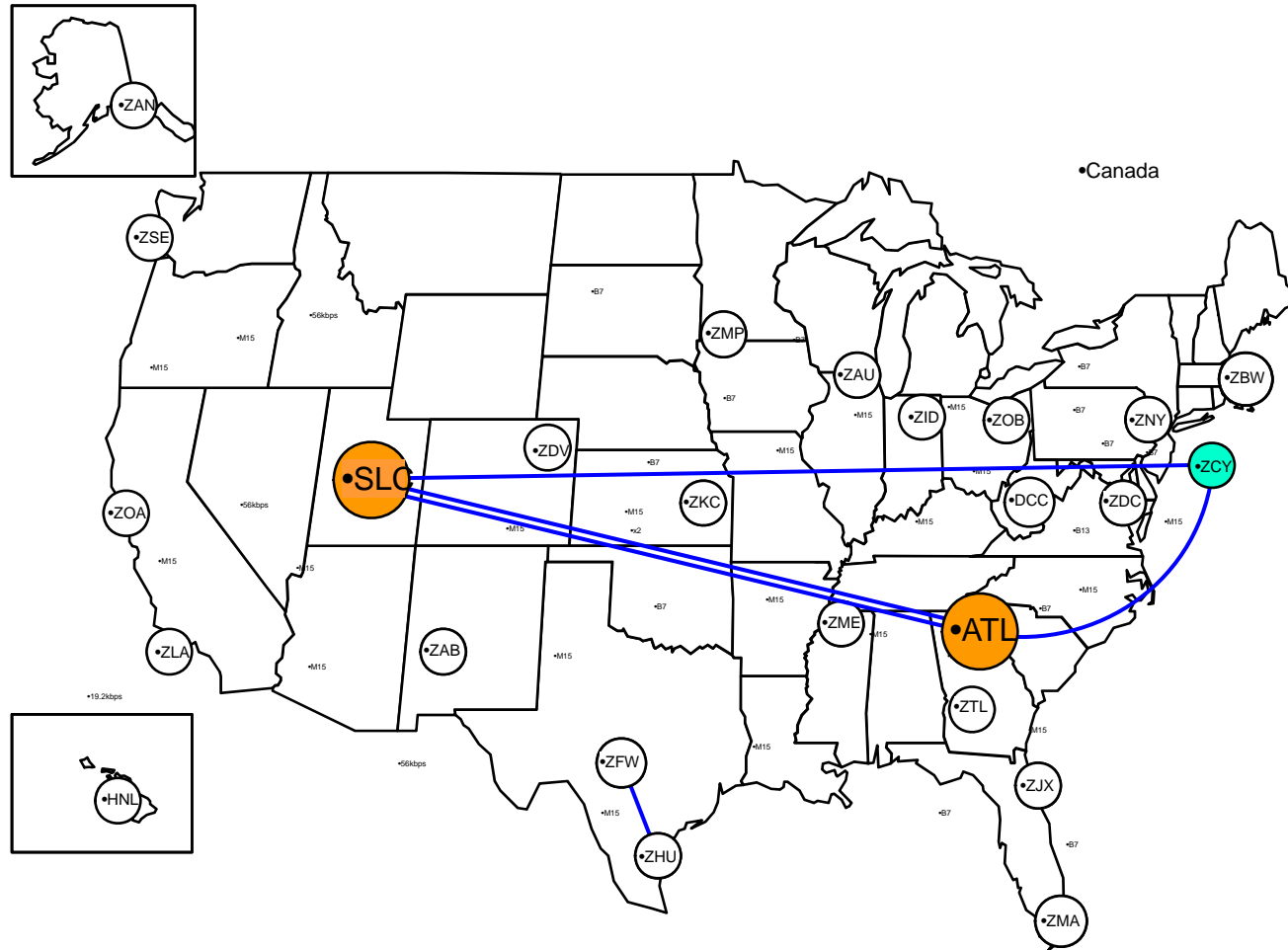
## Phase 3

- **Provide X.25 to CMHP conversion for remaining X.25 traffic**

# Core Network (Phase 1 Goal)



# Residual X.25 (Phase 2 Goal)



# NADIN-II – FY 12 Goals (Dec 2011)

- ARINC IP transition for NADIN and TDLS – **schedule Mar-Jul 2012**
- Concentrate international AFTN at ATL and SLC – **72% complete**
- ADAS rehost deployment - OMO data distribution via WMSCR
  - **Scheduled April-June 2012**
- NAIMES (AISR, USNS, FS21) redeployment
  - ✓ Moving from Herndon VA to OKC (complete)
  - Transition OKC from X.25 to IP (**Apr-Jun 2012**)
  - Establish disaster backup at Herndon (**CY13Q1 Herndon**)
- ATOP/ DOTS/ FDP2000 IP solution for ARINC/ SITA
  - **1370.114 (1/2012) now gives clear path forward**
- Reduce the number of nodes to Phase1 (Core)

# Questions

