

# AMHS Implementation Workshop

**International User  
Connection**

**Miami, Florida, USA  
April 10-12, 2012**



**Federal Aviation  
Administration**



# Agenda

- ✓ Current AFTN Connections
- ✓ Planned International Connectivity
- ✓ FAA IP Access
- ✓ Future AMHS Connections
- ✓ IP Connections to the NESG
- ✓ IP Address Translation
- ✓ Connections for Testing
- ✓ Summary



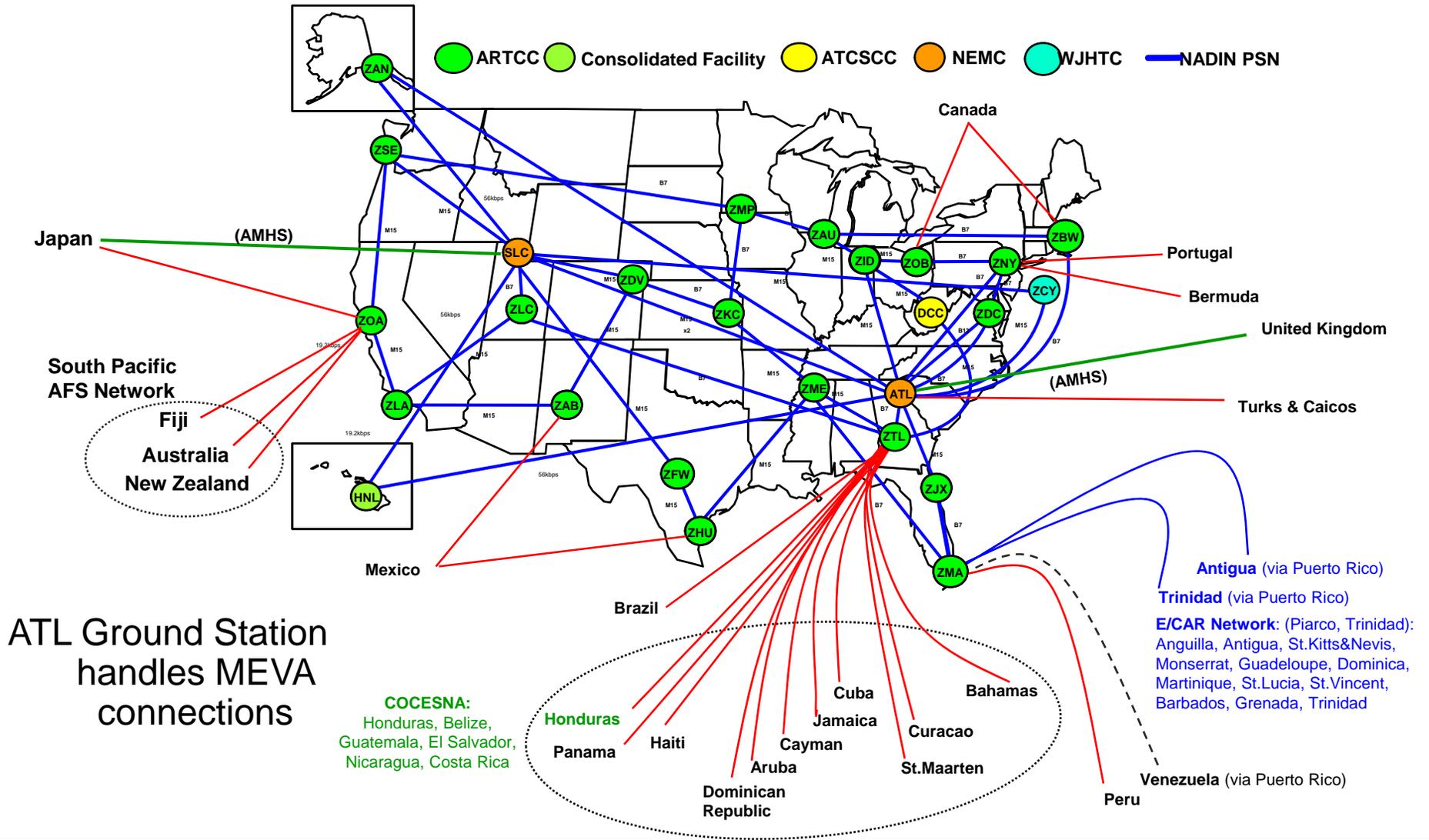
# Current International AFTN Connections

- ✓ FAA has implemented AFTN X.25 connections to international partners using its NADIN-II Packet Switched Network
- ✓ Connections were made the convenient NADIN-II node
- ✓ AFTN centers are Atlanta (ATL) & Salt Lake City (SLC)
- ✓ National Enterprise Management Center (NEMC) locations also at ATL & SLC
- ✓ Connections are being consolidated at ATL & SLC

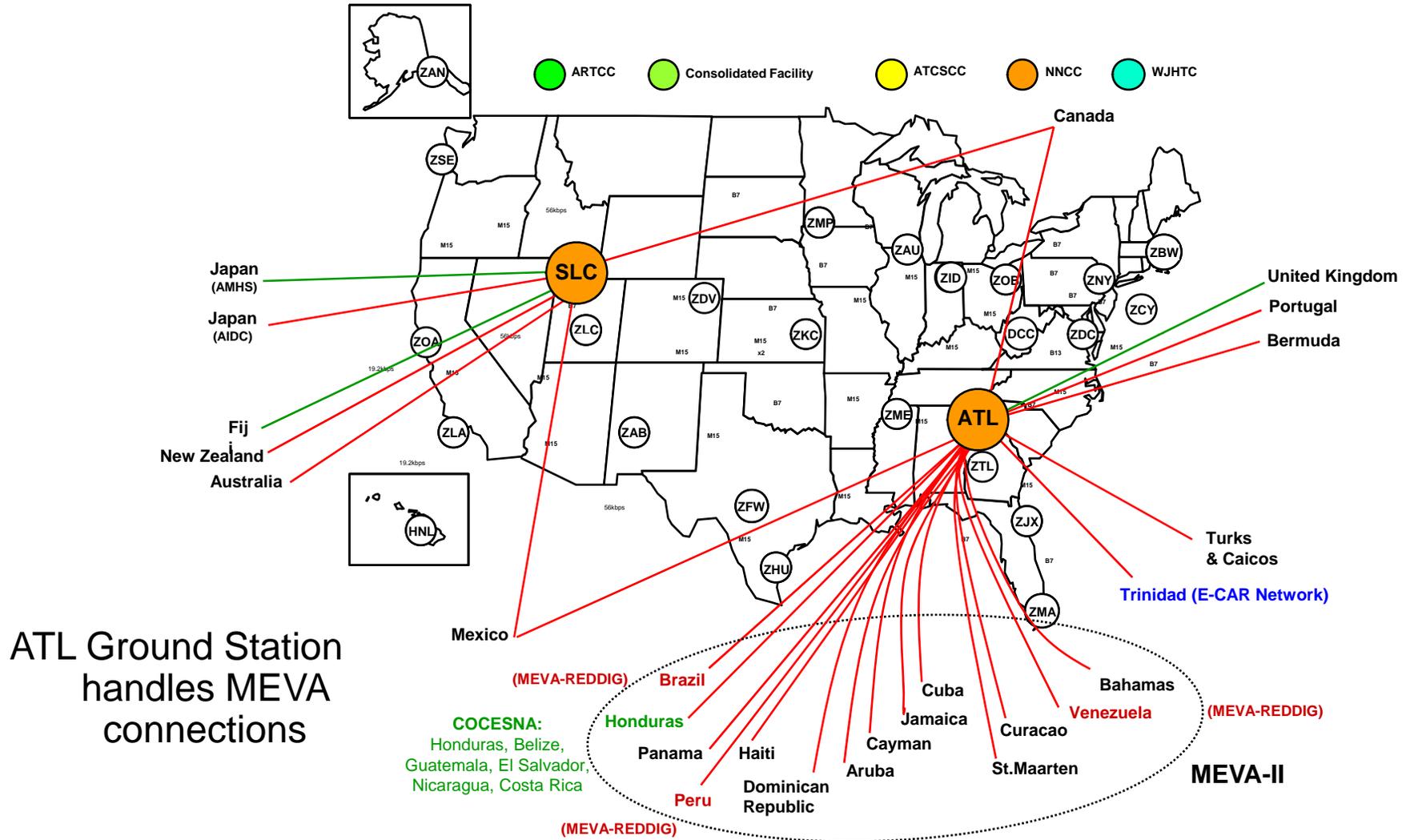




# Current X.25 AFTN Connections



# Planned International Connections

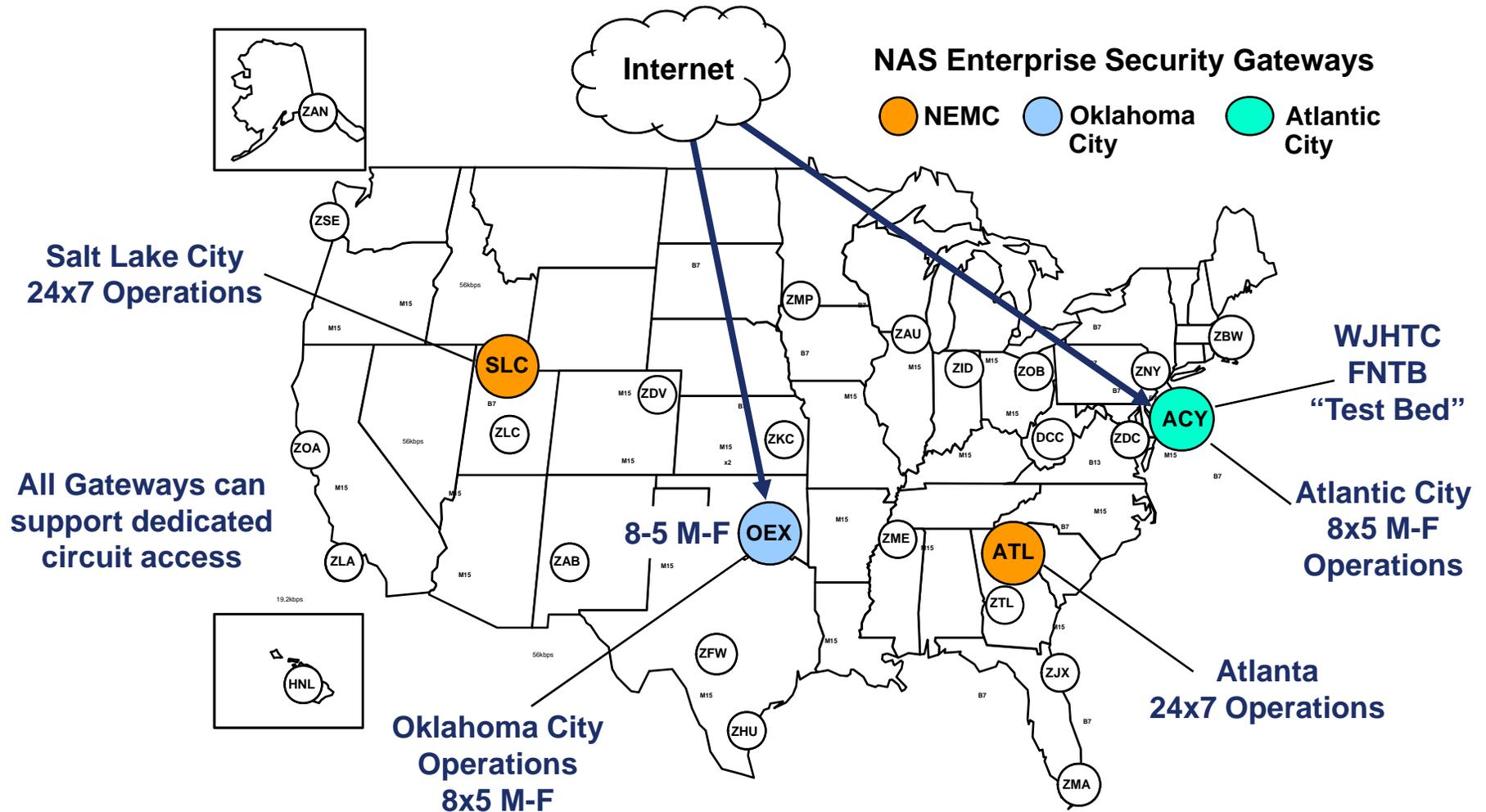


# FAA IP Access

- ✓ AMHS connections will most likely use Internet Protocol (IP) transport for CAR/SAM
- ✓ FAA has a National Airspace System (NAS) IP network
- ✓ FAA has 4 NAS Enterprise Security Gateways (NESG) for boundary protection:
  - Atlanta (ATL) manned 24x7
  - Salt Lake City (SLC) manned 24x7
  - Atlantic City, NJ (ACY) manned 8 hours Monday-Friday
  - Oklahoma City, OK (OEX) manned 8 hours Monday-Friday
- ✓ ACY & OEX have Internet access



# FAA External IP Access Points



# Future AMHS Connections

- ✓ AMHS Gateways & AFTN switches at ATL & SLC
- ✓ ICAO suggests that international connections be made with dedicated circuits (MEVA-II or Telco)
- ✓ FAA recommends that international IP circuits be routed directly to ATL and SLC
- ✓ FAA recommends using BGP-4 routing between States that can be used to monitor links
- ✓ FAA desires to be able to 'ping' States boundary router for troubleshooting

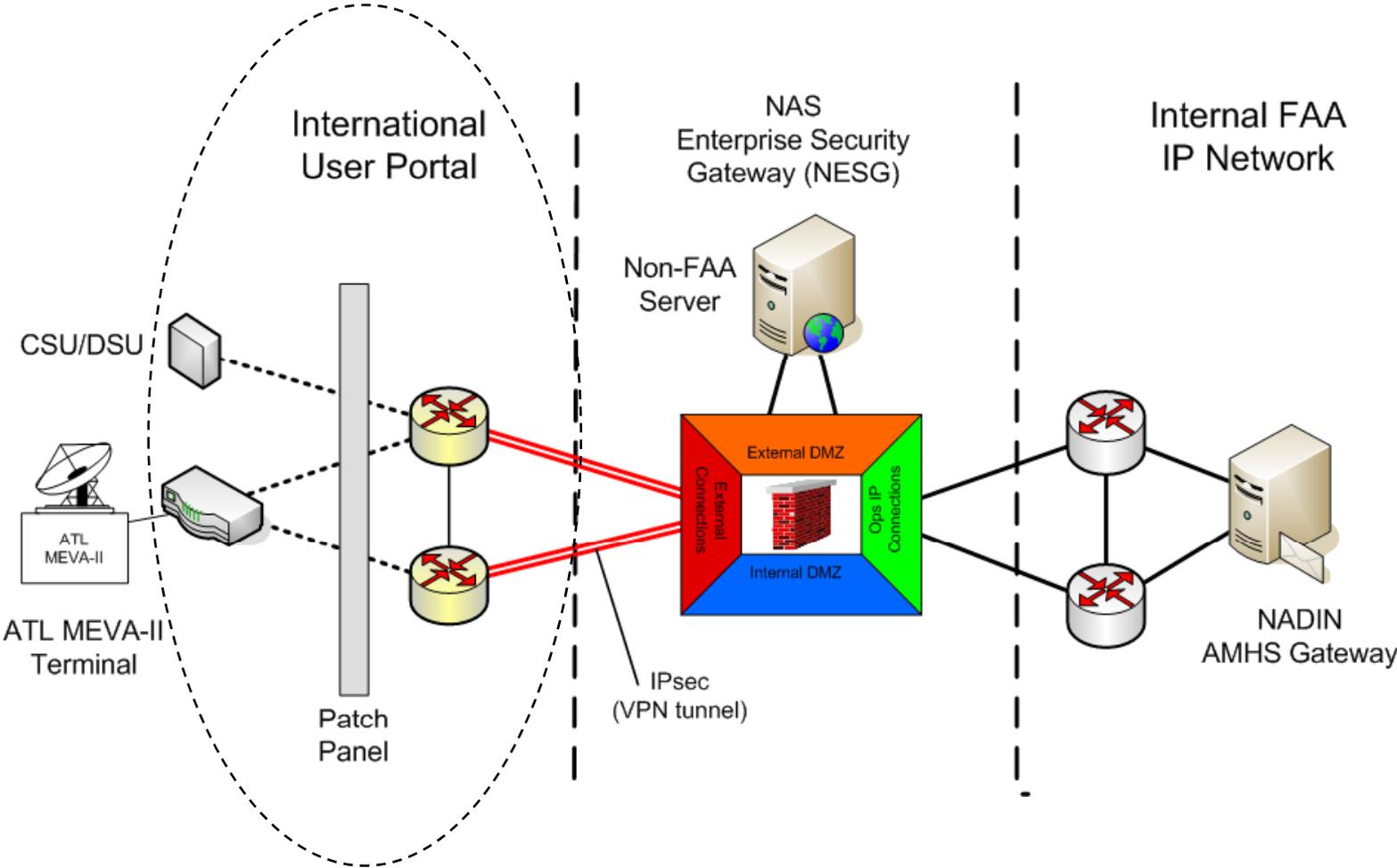


# FAA International User Portal

- ✓ International User Portal is the FAA “touch point” to the Aeronautical Telecommunications Network (ATN)
- ✓ Dedicated routers at ATL & SLC external to the NESG:
  - Support for any custom IP addressing for individual States
  - Support for CAR/SAM “10.” private IPv4 addressing scheme
  - Support for IPv6 inter-regional addressing
  - IPv6 to IPv4 conversion
  - FTI monitoring of IP circuits (through BGP-4 or ICMP ping)
  - Support for legacy X.25 over IP (XOT or STUN)
  - Future transit routing between States
- ✓ Test router at the Atlantic City Technical Center:
  - Easy patching of operational circuits to test facilities
  - Replicated equipment for access to test AMHS facilities



# ATL International User Portal

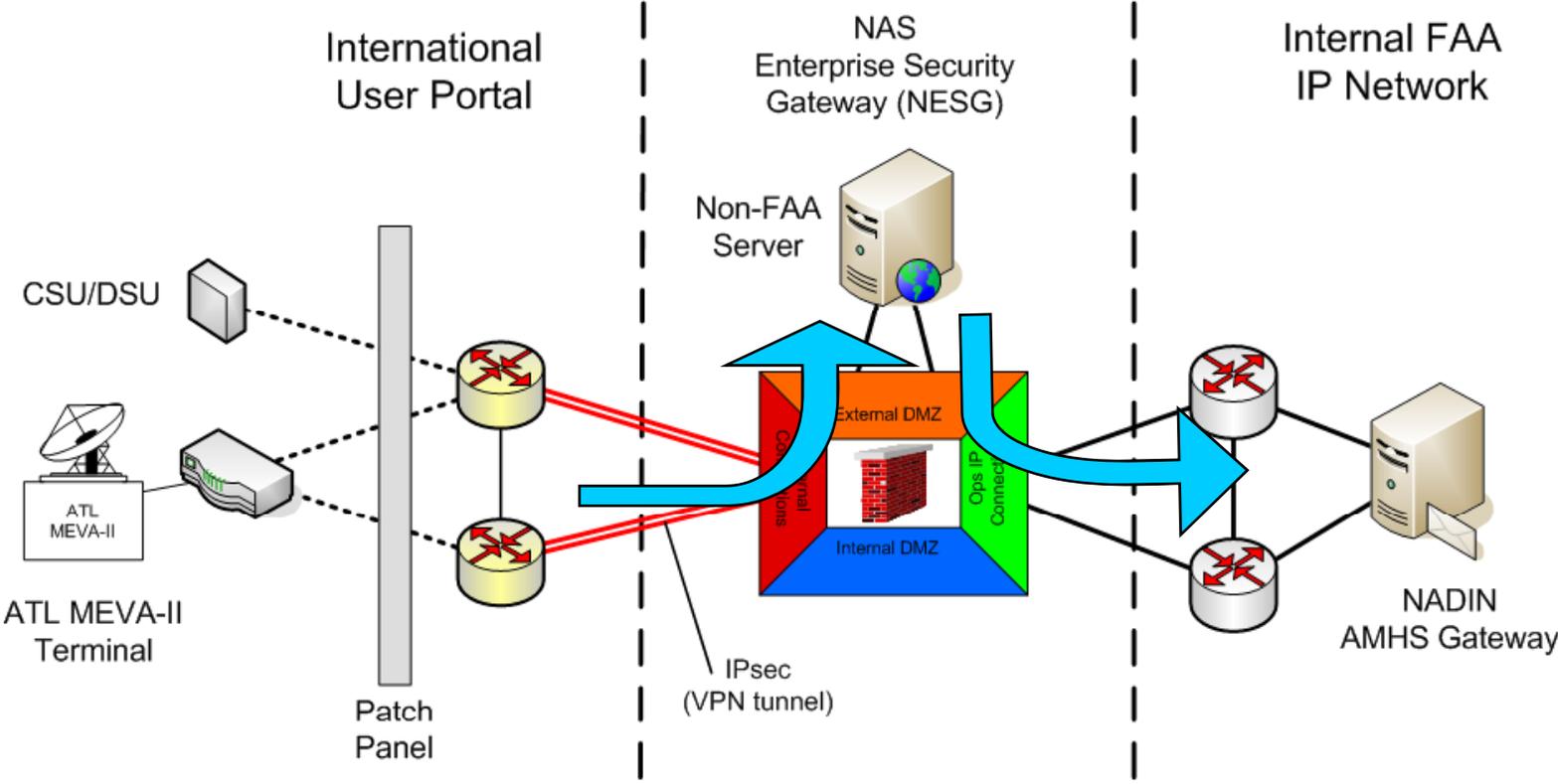


# Connection Security Architecture

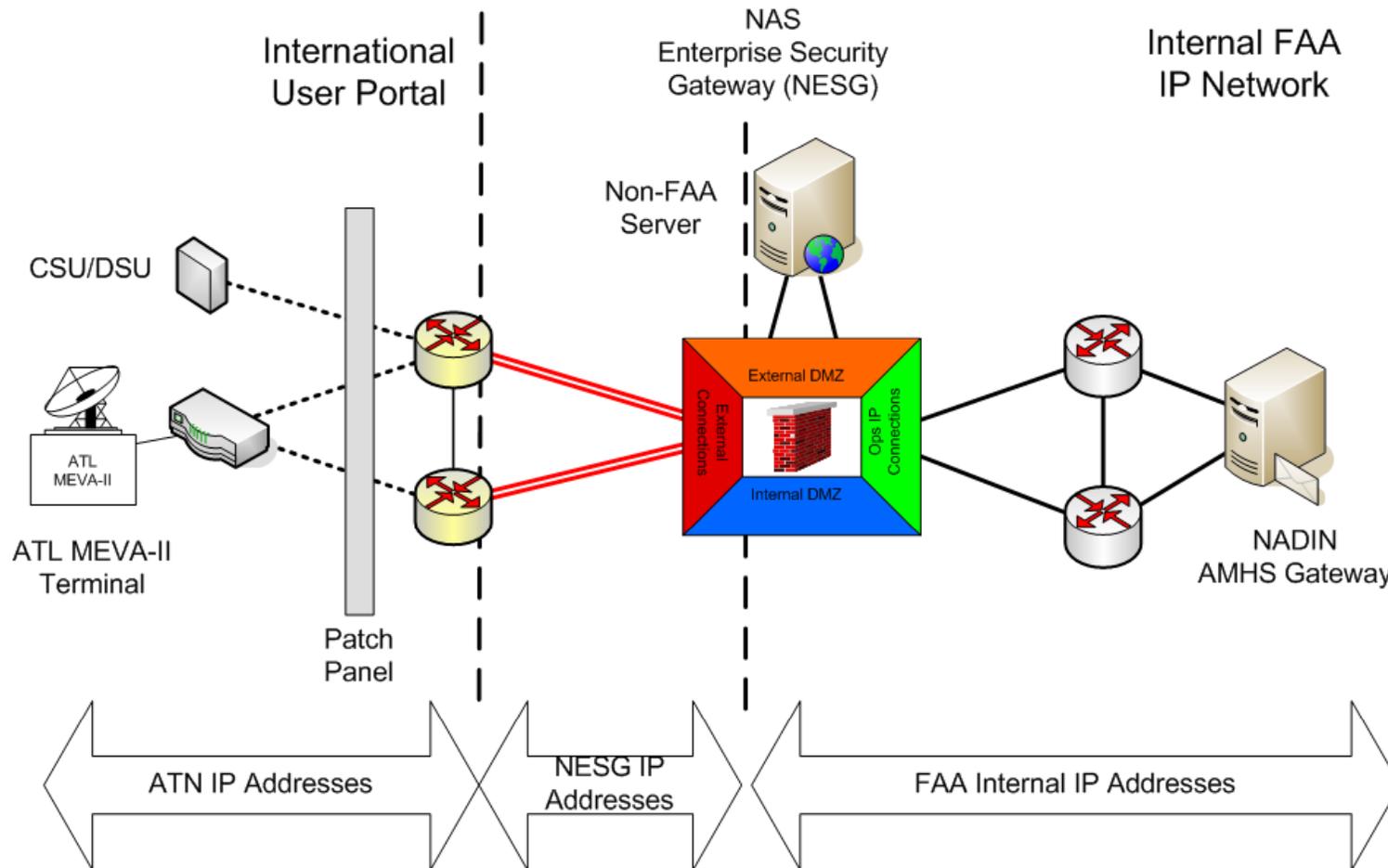
- ✓ External IP sessions are proxied by a non-FAA server
- ✓ The non-FAA server will forward data to the AMHS Gateway
- ✓ International users will each have a dedicated port# on the non-FAA server to access the AMHS Gateway
- ✓ Users will be required to support a port number other than “102”



# IP Connection Architecture



# IP Address Translation

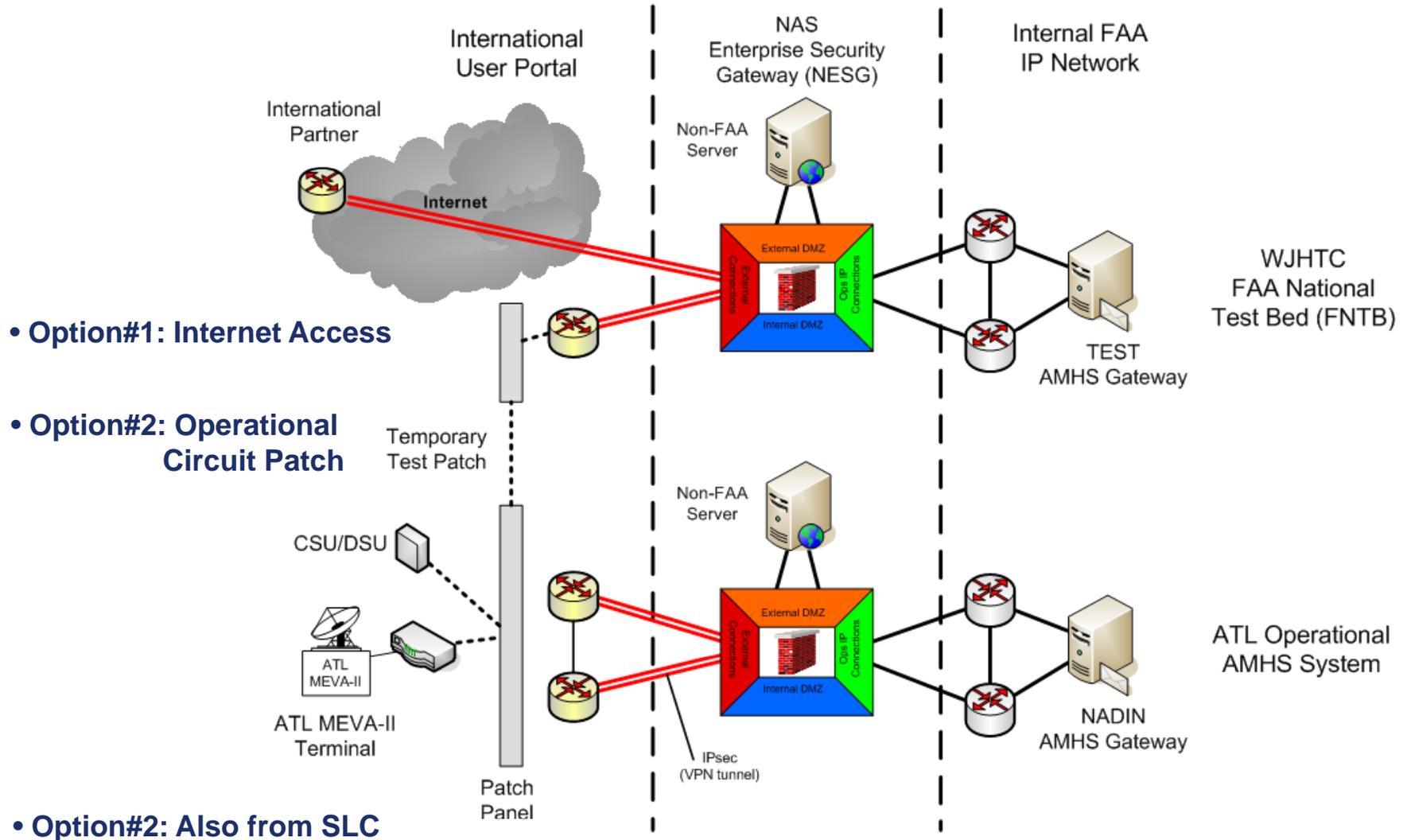


# Test Connectivity

- ✓ FAA performs AMHS testing at the William J Hughes Technical Center (WJHTC) in Atlantic City, NJ
- ✓ WJHTC has an FTI National Test Bed (FNTB) which duplicates the operational IP architecture
- ✓ Test connections to the FNTB AMHS Gateway can be:
  1. Via the Internet – IPsec (VPN tunnel required)
  2. Via patched connections from the International User Portal



# Test Connection Options



# Summary

- ✓ ICAO has mandated that States move to support AMHS/ATN
- ✓ FAA AMHS operational access is by dedicated circuits
- ✓ FAA AMHS Gateways are deployed at Atlanta and Salt Lake City
- ✓ CAR region will use IP transport for AMHS
- ✓ IP Circuits should be routed to Atlanta and Salt Lake City
- ✓ FAA has an International User Portal to support ATN addressing
- ✓ Testing at Atlantic City duplicates the operational IP network

