International Civil Aviation Organization

ATN Seminar and Third ATN Transition Task Force Meeting

Singapore, 26-30 March 2001

Agenda Item 6: Planning and Implementation Considerations

ASIA/PACIFIC REGIONAL ATN TRANSITION PLAN

(Presented by Australia)

Asia / Pacific Regional ATN Transition Plan

ATN Seminar

Singapore, 26th - 27th March 2001

ATNTTF Working Group B

- Established to develop the ATN Ground-Ground Transition Plan for the Asia/Pacific Region
- WG/B Include Representatives from:
  - Australia
  - Hong Kong China
  - Singapore
  - Thailand
  - United States

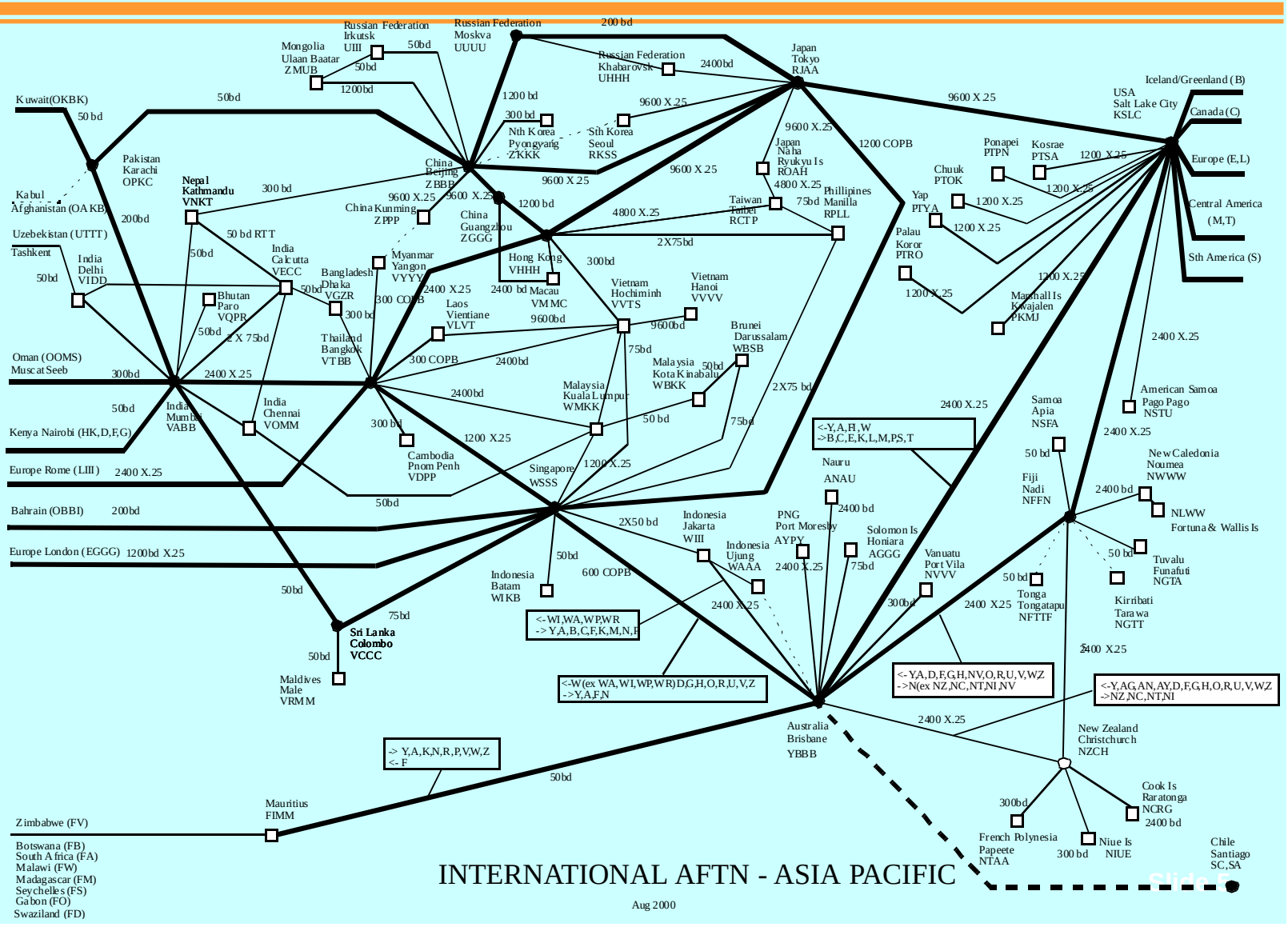
ATN Transition Plan

- Recommendation for a Three Stage ATN Transition:
  - Stage 1 - Upgrade Current/Existing Infrastructure
  - Stage 2 - Establishment of a Ground ATN Backbone Router Network
  - Stage 3 - Connectivity of User ATN Routers to the Backbone

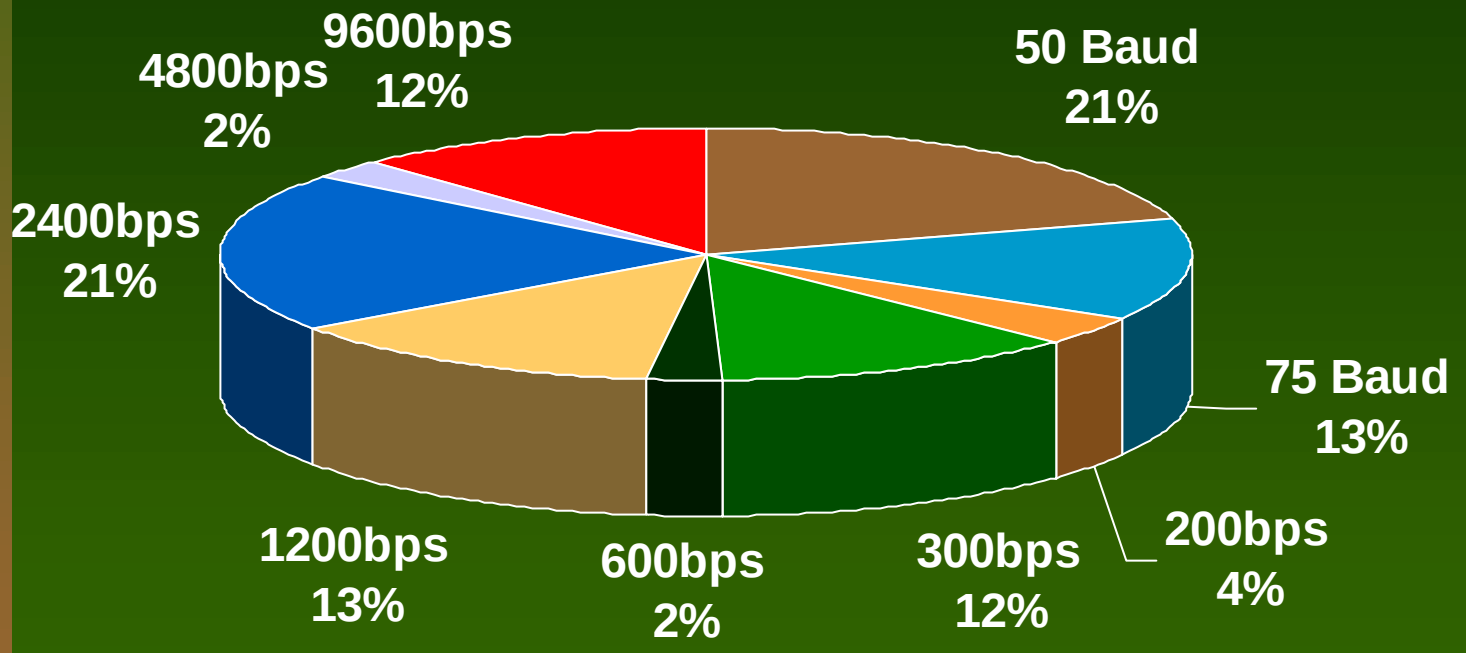
Stage 1 - Existing Infrastructure

- AFTN Infrastructure
  - Based on point to point circuits
  - Majority of Circuits are low speed: 50 baud through to 9600bps
  - Circuit Protocols range from no protocols through to COPB and X.25

Asia / Pacific AFTN Topology

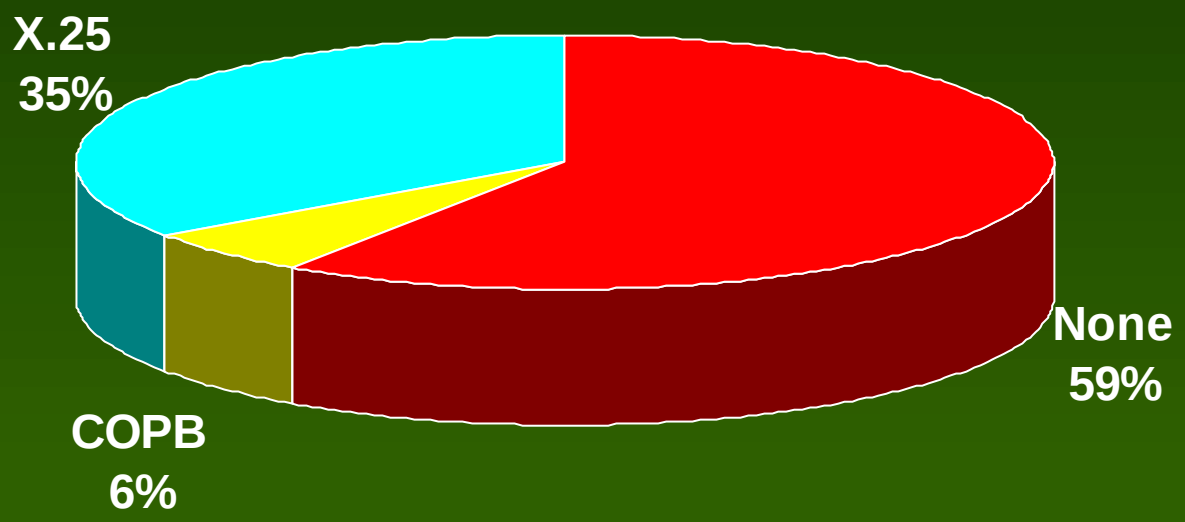


Current Regional Circuit Speeds



50 baud to 1200bps = 65%
50 baud to 4800bps = 88%

Current Regional Protocols



Non ATN Protocols = 65%

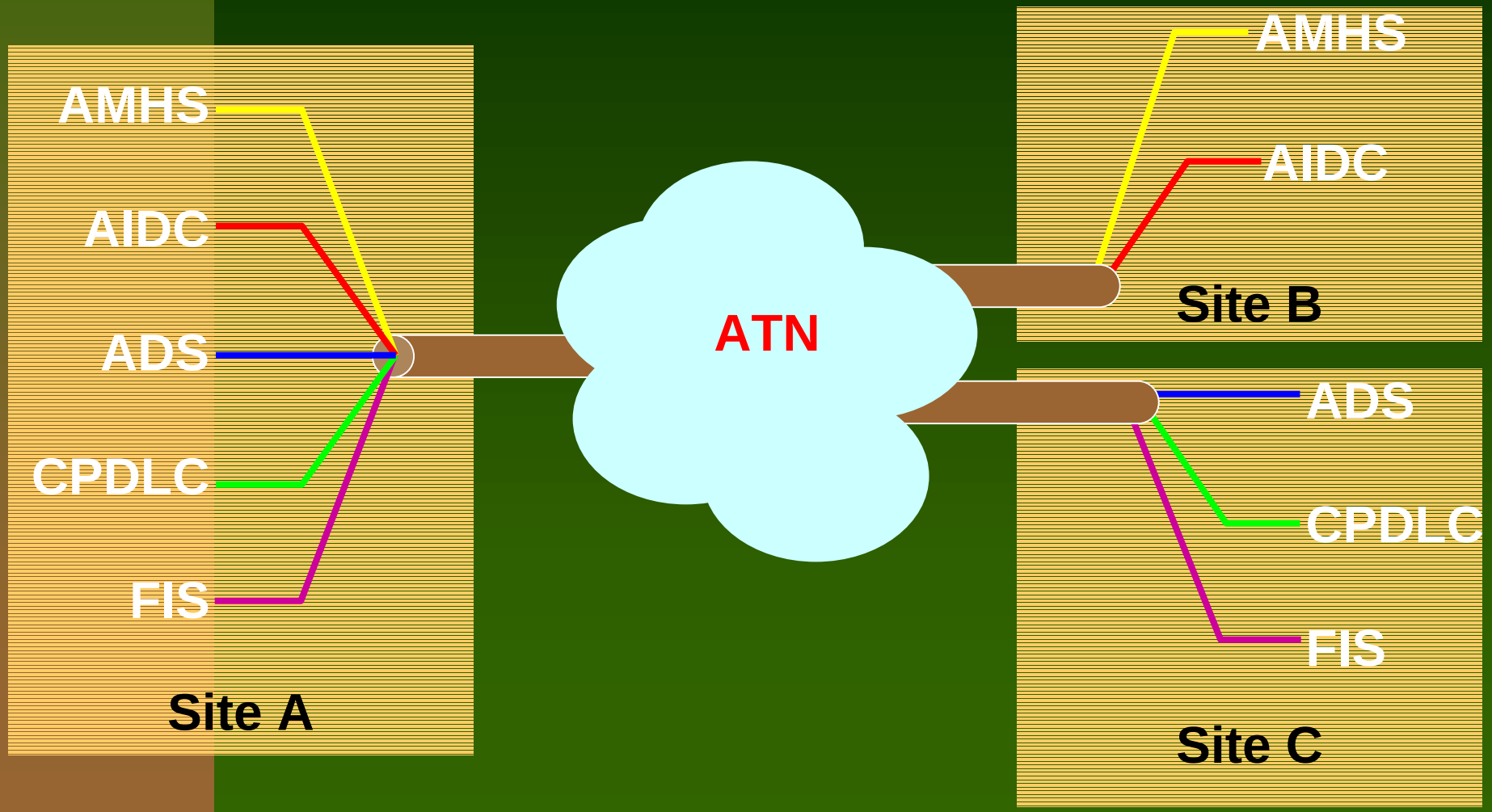
Stage 1 - Upgrade of Circuits

- ATN at present requires Subnetworks to interface at X.25
- Currently the majority of AFTN circuits (88%) will not be suitable for ATN
- This will require new circuits to be implemented or existing circuits to be upgraded

Stage 1 - Bandwidth Issues

- Bandwidth for circuits will need to be increased substantially.
- Speeds from 9.6kbps to 64kbps or higher will need to be considered.
- Overheads from each layer of the OSI stack will increase total message size as much as 94% (standard AFTN message size using AMHS)

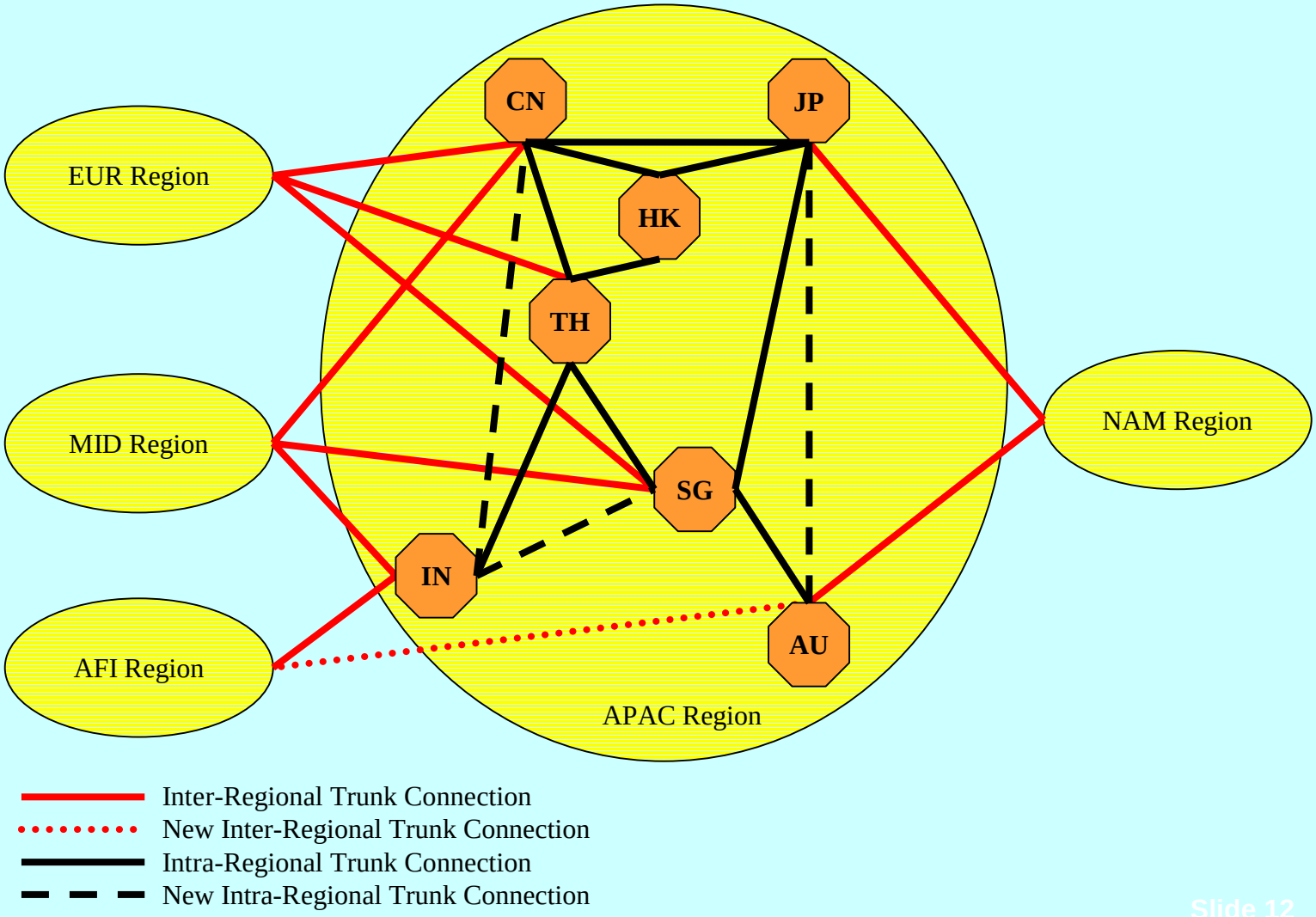
ATN Applications



Stage 2 - ATN Backbone

- Selection of Locations based on Existing Inter-Regional Connections and Main Internal Connections
- Diversity for Backbone Connectivity within the Asia/Pacific Region and Neighbouring Regions
- Min of 56kbps to 64kbps for Backbone Trunk Speeds

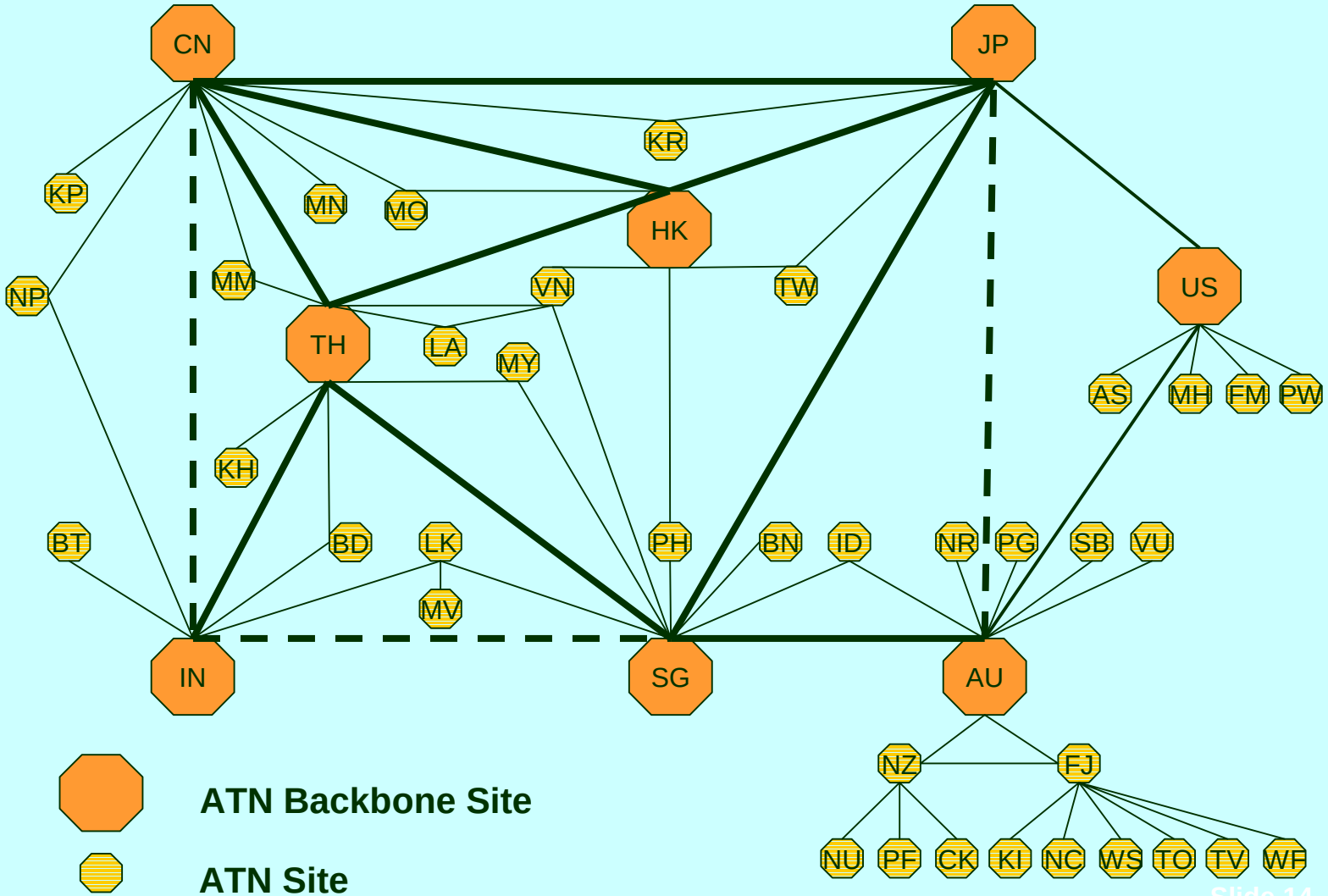
ATN Regional Backbone



Stage 3 - ATN Connectivity

- Generally ATN Routers will connect to the ATN Backbone
- In some cases ATN Routers will connect to other ATN Routers to get to the ATN Backbone

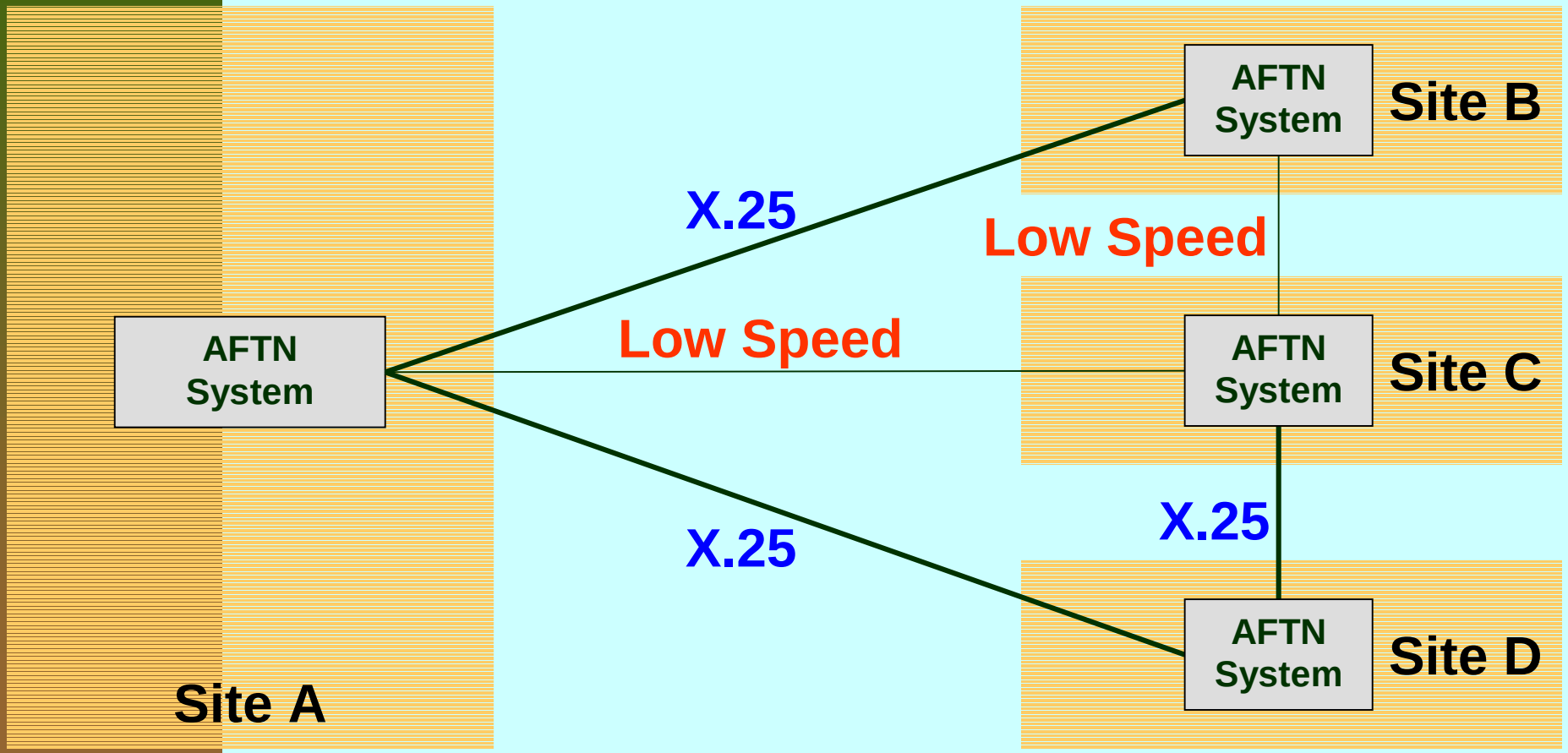
Asia / Pacific ATN Routing



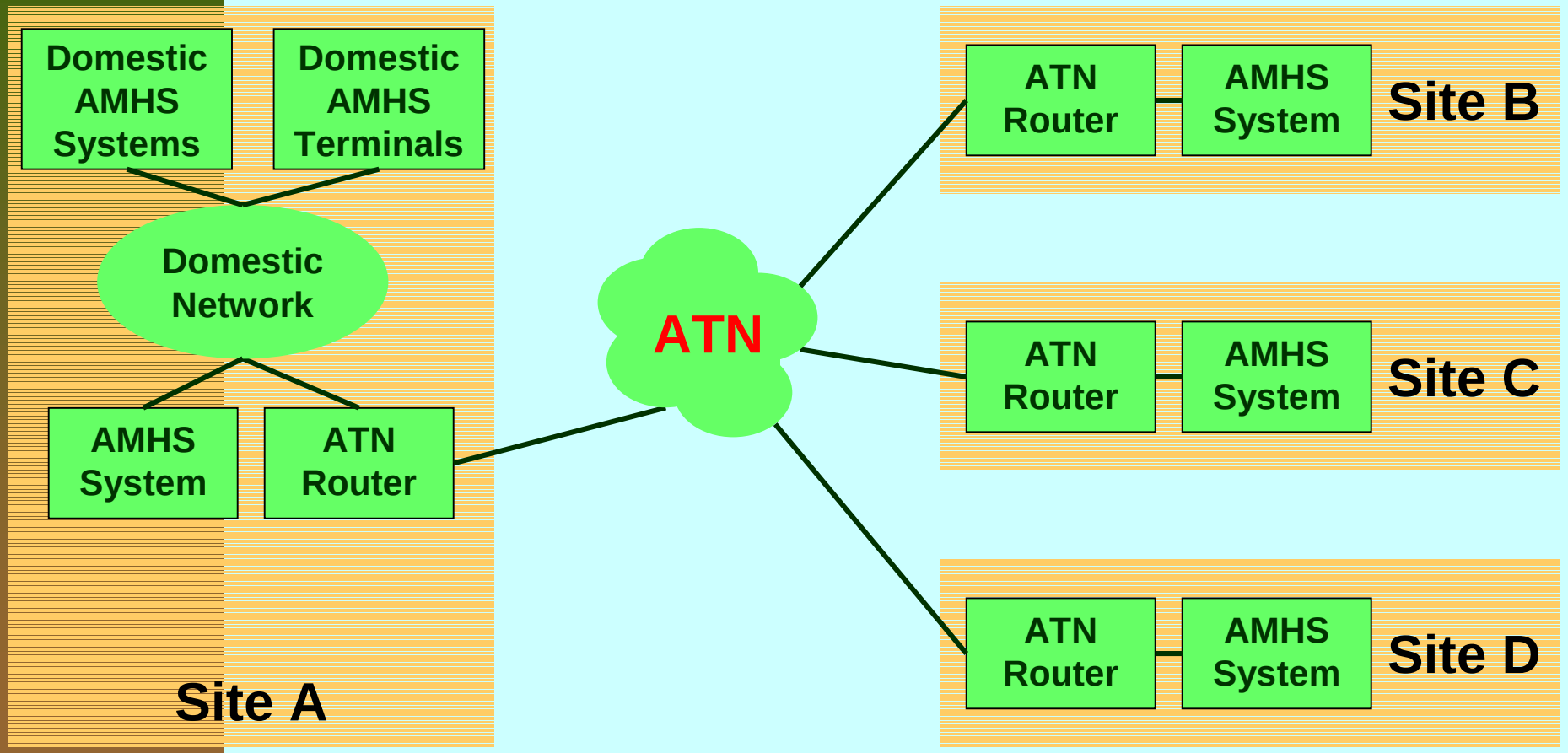
AFTN to AMHS Transition

- For the very first time there is now an alternative to the replacement of an AFTN system - AMHS
- Transition to AMHS can involve a number of steps
  - Introduction of AFTN/AMHS Gateways.
  - To full AMHS Interconnection between States.

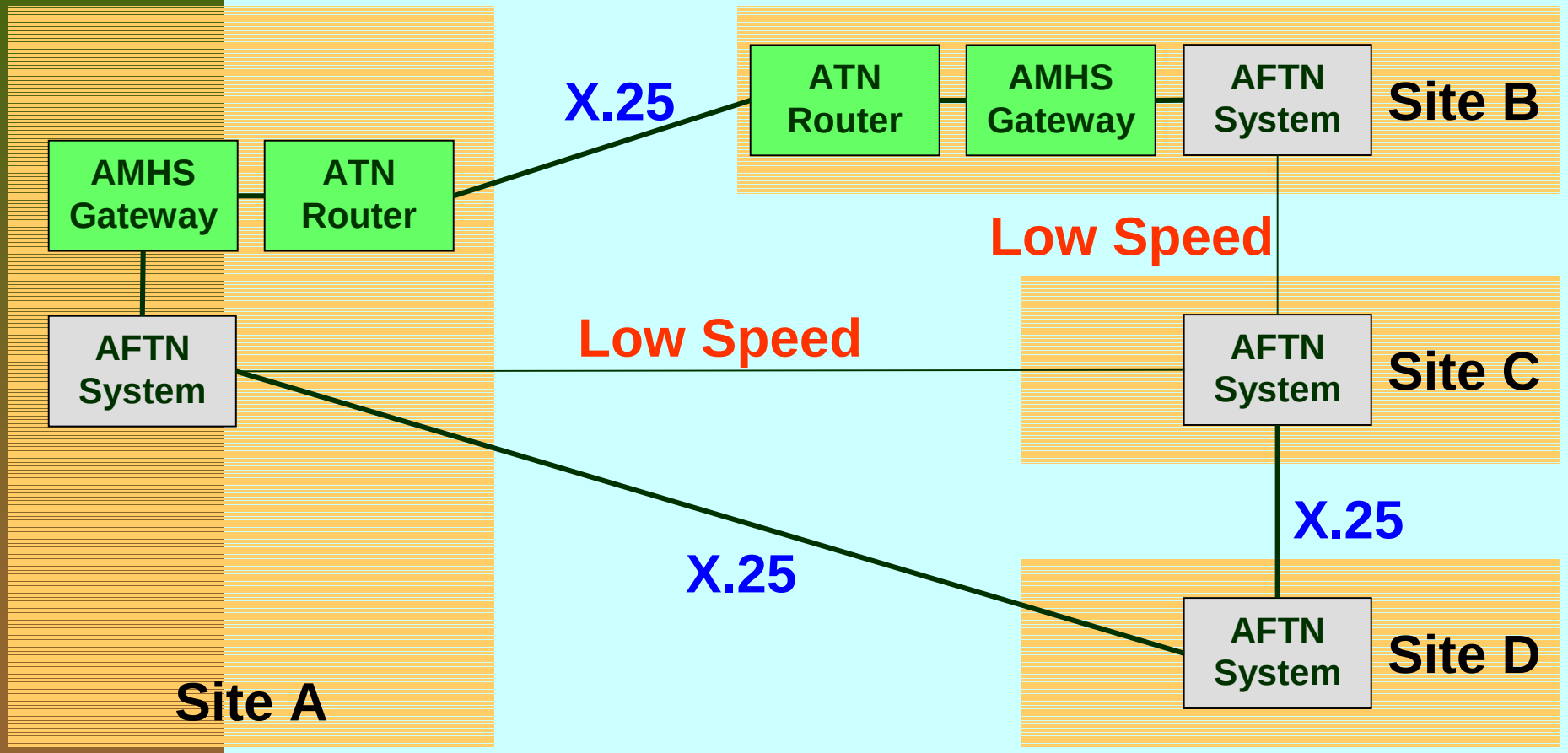
Current AFTN Environment



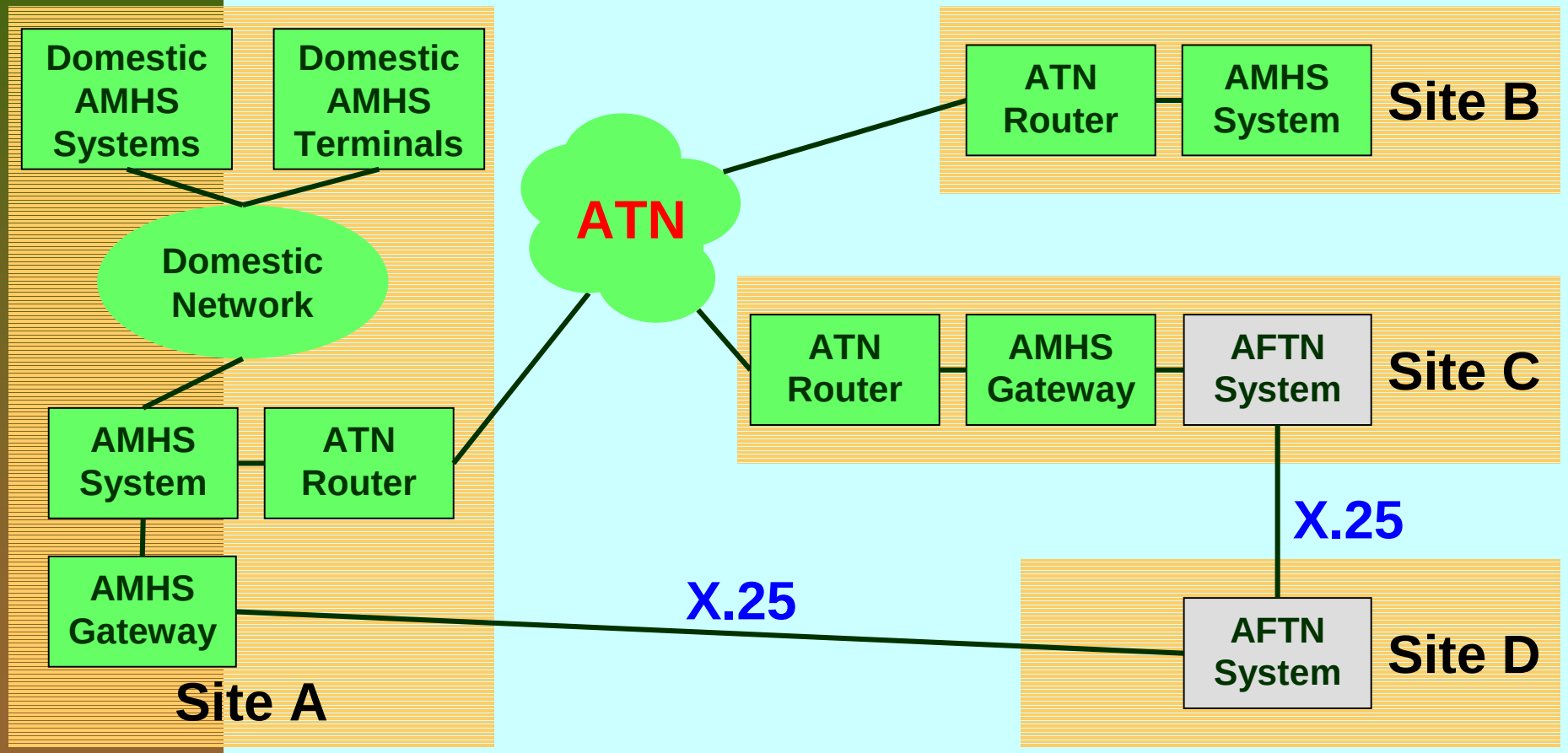
Full Implementation of AMHS



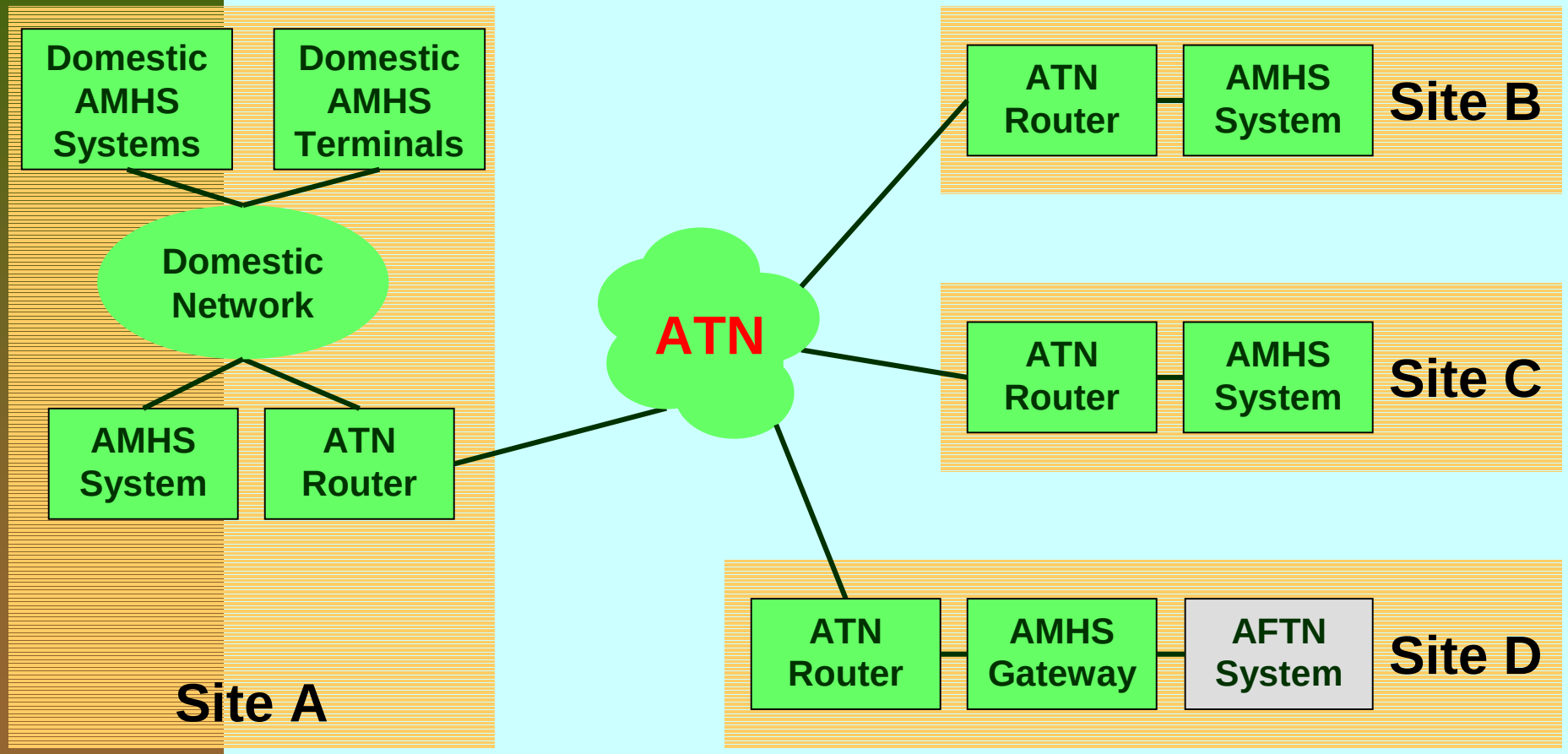
Implementation of AFTN / AMHS Gateways



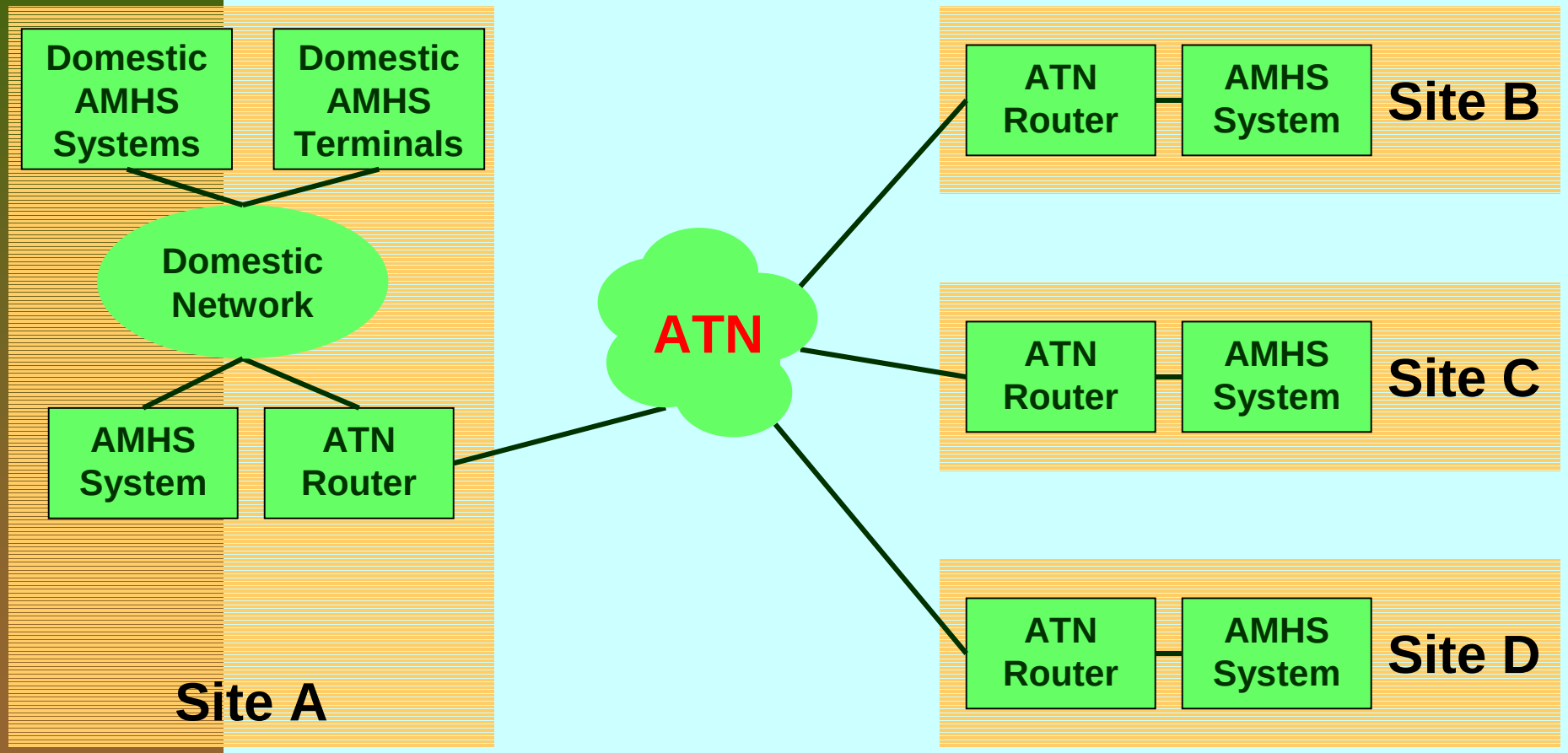
Migration to AMHS - 1



Migration to AMHS - 2



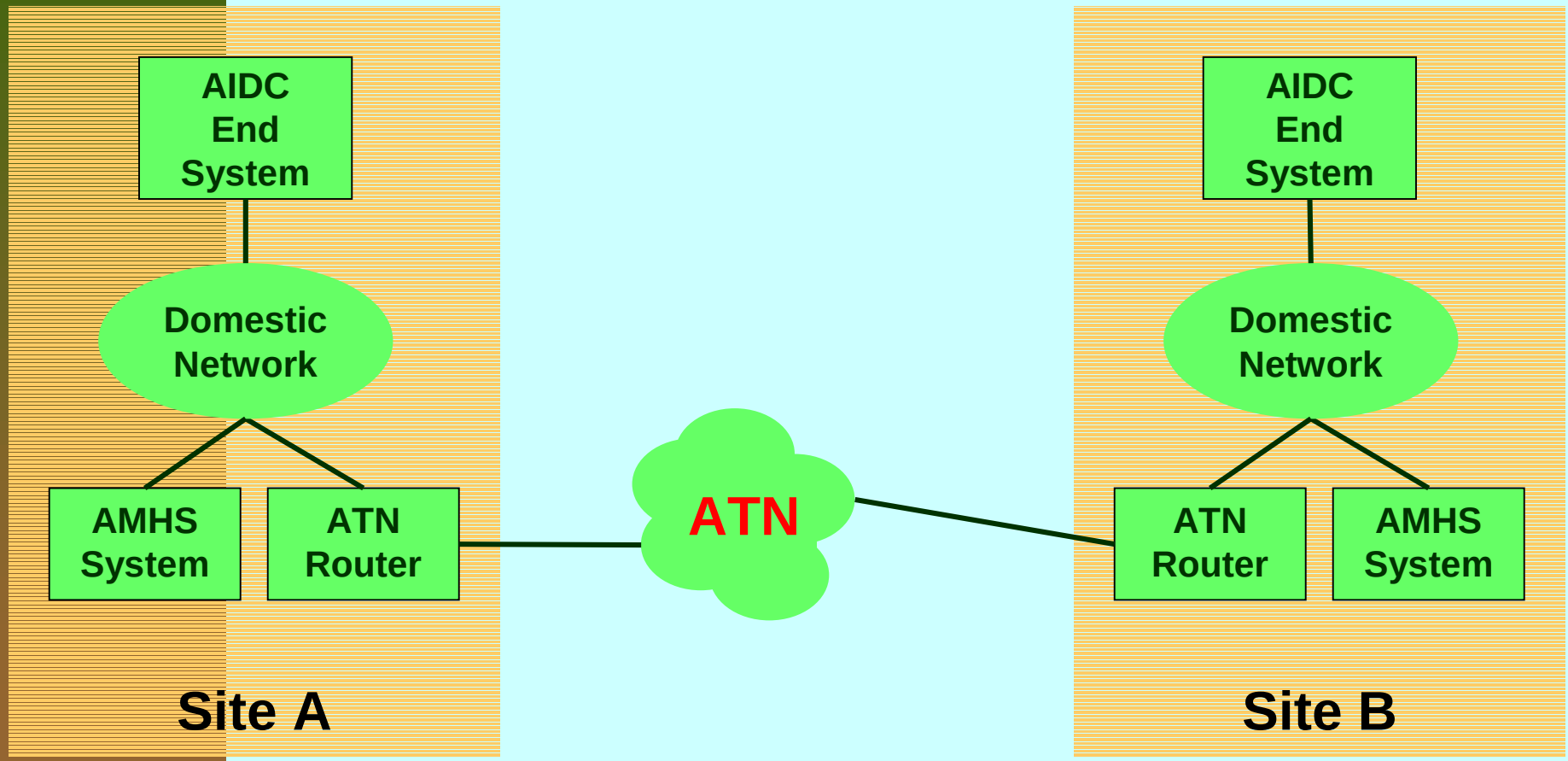
Full AMHS Implementation



AIDC Implementation

- ATN AIDC is not Compatible with AIDC over AFTN.
- Implementation of ATN AIDC will need to be implemented by arrangement between both parties.
- Possible phased implementation can be AIDC over AFTN to AIDC over AMHS.

AIDC Over AMHS



Conclusions

- Implement new links or Upgrade existing AFTN links where appropriate to be compatible with ATN protocols.
- Plan for adequate bandwidth which can be increased without restriction.
- Interim arrangements can be set up between States which have already started their implementation programs.