



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**

**CHECKLIST FOR IMPLEMENTATION OF
GROUND/GROUND ATN NETWORK INFRASTRUCTURE**

Second Edition – March 2004

Checklist for Implementation of Ground/Ground ATN Network Infrastructure ¹
Phase I: Initial Network Deployment for Ground/Ground Applications

<i>No.1</i>	<i>Items to check</i>	<i>References</i>	<i>Remarks</i>
1.	<p>Establish ATN Implementation Team (AIT)</p> <p>Designation of Programme/Project Manager and required staff. Secure funding support.</p>		<p>AIT membership may include representatives from:</p> <ul style="list-style-type: none"> - CAA/ATS Service provider(s); - Operations and engineering units; - Industry; - Airlines; - Aeronautical communication service provider(s); - Telecommunication service providers.
2.	<p>State Plan</p> <p>Develop a phase plan with target date for the implementation of ATN infrastructure based on the regional planning documents and the ATN Standards and Recommended Practices (SARPs) and Guidance Material.</p> <p>Secure budget to support:</p> <ul style="list-style-type: none"> - Trials/demonstrations - Phased implementation - Human resources and training 	<p>ANNEX 10 Vol. III</p> <ul style="list-style-type: none"> - Doc. 9705-AN/956 <i>Manual of Technical Provisions for the ATN</i>; - Doc. 9739-AN/961 <i>Comprehensive Aeronautical Telecommunication Network Manual</i>; <p>Table CNS –1B of ASIA/PAC FASID</p> <p>ASIA/PAC Region ATN Transition Plan.</p>	<p>Third Edition of Doc. 9705.</p>

No.1	Items to check	References	Remarks
3.	<p>Determine network architecture, policy</p> <p>Consider factors such as:</p> <ul style="list-style-type: none"> (a) Redundancy (no single point of failure); (b) Status and position within the regional ATN network; (c) Number and type of intra-State facilities to be connected (ATS, AOC, <i>etc.</i>); (d) Site geographical locations; (e) Security, availability, integrity (Quality of Service) requirements (depending on application type); (f) Projected circuit loadings <i>vs.</i> capacity of existing circuits; (g) Router loading. <p>which will determine:</p> <ul style="list-style-type: none"> - network topology, type and media; - network infrastructure requirements; - intra-State routing domains (AOC, ATS <i>etc.</i>) and routing policies. <p>Develop ATN address allocation plan. Designate responsible agent for administering address allocation and registration of addresses with ICAO.</p>	<p>Interface Control Documents (ICDs) for ATN End Systems.</p> <p>Asia/Pacific Regional ICD: ATN Ground-Ground BIS Router.</p> <p>Asia/Pacific ATN Routing Architecture Plan.</p> <p>Asia/Pacific ATN Addressing Plan</p> <p>Table CNS –1B of ASIA/PAC FASID</p> <p>ASIA/PAC Region ATN Transition Plan.</p>	<ul style="list-style-type: none"> (a) May require multiple routers at each network node and divers connectivity between nodes; (b) Backbone sites have greater requirements for availability and throughput; (c) Will AOCs be permitted access to the ATN backbone through ATS routers; (d) Affects network topology, choice of subnetwork, physical communications medium/media; (e) QoS and Security issues influence use of communications service provider, public network/leased line <i>vs.</i> dedicated private connection, <i>etc.</i>; (f) Determine bandwidth requirement, including growth capacity; (g) Avoid “choke points” that place excessive load on a single node. <p>Local network deployment may use ATN BIS, ATN IS or OSI IS routers. Choice of router type depends on cost, capability, suitability for application requirements (aeronautical grade <i>vs.</i> commercial communications grade) <i>etc.</i></p> <p>Commercial network simulation packages can help analysis of network performance under normal and abnormal conditions</p>

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4.	<p>Equipment Acquisition and Evaluation. Conduct laboratory tests with proposed BIS, IS and ES to ensure connectivity and performance.</p> <p>Begin deployment at different network sites as tests proceed, and pre-operational testing.</p>	ICDs.	<p>Equipment Protocol Implementation Conformance Statements (PICS) can help evaluation of equipment compatibility and can assist in creating ICDs.</p> <p>Verify network performance: throughput, effects of failures etc.</p>
5.	<p>Inter-State ATN router inter-connection. Coordination with States concerned for agreement on implementation of inter/intra regional connections including technical interface, routing policy and target dates.</p> <p>The following aspects should be considered:</p> <ul style="list-style-type: none"> - Applications to be supported; - Capability to support air/ground applications; - Use of existing circuits; - Connectivity and integrity; - Security; - Alternate routing capability; - System reliability; - QoS; <p>Capacity and predicted load demand.</p>	<p>Asia/Pacific Region ATN Transition Plan.</p> <p>Asia/Pacific ATN Routing Architecture Plan.</p> <p>Asia/Pacific ATN Addressing Plan</p> <p>Asia/Pacific Regional BIS Router ICD.</p> <p>Applicable ES ICDs.</p>	<p>For AMHS, there is no need to provide two separate physical lines to support existing AFTN service and to introduce new AMHS circuit, as both requirements can be satisfied using one physical link given adequate capacity and QoS.</p>

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6.	<p>AMHS inter-connection</p> <ul style="list-style-type: none"> - Provide AMHS/AFTN gateway while transitioning between AFTN and AMHS; - Follow the ASIA/PAC AMHS naming convention, detail arrangements for AMHS naming plan for CAAS -Addressing and XF-Addressing Scheme; - Conduct close coordination with States concerned. <p>Establish date for phasing out of AFTN connections, once sufficient route diversity has been established in ATN network.</p>	<p>PRMD value shall be selected as prescribed in Doc. 9705.</p>	<p>Inter- and intra-regional connections should be based on bilateral agreements and in compliance with AMHS SARPs, technical specification and ICD.</p>

List of Abbreviations

AFTN	Aeronautical Fixed Telecommunication Network
AMHS (ATSMHS)	ATS Message Handling System
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Service
BIS	Boundary Intermediate System
ES	End System
FASID	Facilities and Services Implementation Document
ICD	Interface Control Document
IS	Intermediate System
PICS	Protocol Implementation Conformance Statements
SARPs	Standards and Recommended Practices

List of References

- [1] ICAO Annex 10 Volume III, DOC. 9705-AN/956 *Manual of Technical Provisions for the Aeronautical Telecommunications Network* Third Edition of 9705.
- [2] ICAO Annex 10 Volume III, DOC. 9739-AN/961 *Comprehensive Aeronautical Telecommunication Network Manual*
- [3] Asia/Pacific Interface Control Document (ICD) for ATN Router
- [4] Asia/Pacific FASID
- [5] Asia/Pacific Region ATN Transition Plan.
- [6] Asia/Pacific ATN Addressing Plan
- [7] Asia/Pacific ATN Inter Domain Routing Policy
- [8] Asia/Pacific ATN Routing Architecture Plan.
- [9] Asia/Pacific Interface Control Document (ICD) for AMHS

Note 1: This document comprises a checklist for the deployment of an ATN Ground Network to support initial ground-ground ATN applications, notably ATSMHS/AMHS, based on the Standards and Recommended Practices (SARPs) specified by Edition 2 of ICAO Doc. 9705-AN/956.

This checklist was developed by ATN Transition Task Force and adopted by APANPIRG/13 in September 2002 under conclusion 13/16.