International Civil Aviation Organization

Aeronautical Telecommunication Network/Internet Protocol Suite Working Group

Fourth Meeting (ATN/IPS WG/4)
(Cairo, Egypt, 21 - 23 May 2012)

Agenda Item 3: Review and update of MID ATN plans and Implementation issues

IP NETWORK SURVEY

(Presented by the Secretariat)

SUMMARY

This paper presents the results of the analysis of the MID IP Network survey and proposes a new survey in order to progress the MID IP Network.

Action by the meeting is at paragraph 3.

REFERENCES

- ACP reports
- MIDANPIRG/13 report

1. INTRODUCTION

1.1 The Working Group I (IPS) meeting of Aeronautical Communication Panel (ACP WGI-14) was held from 18 to 20 July 2011 in Montreal, Canada. The meeting reviewed and discussed 8 Working and 12 Information papers related to the implementation of AMHS over Internet Protocol Suite.

1.2 The Aeronautical Communication Panel (ACP) Working Group M – Maintenance held its Eighteenth meeting (ACP WGM-18) in Montreal, Canada from 20 to 22 July 2011.

1.3 The MIDANPIRG/13 meeting was held in Abu-Dhabi, UAE 22-26 April 2012. The meeting adopted 71 Conclusions and Decisions of which six (6) Conclusions and two (2) Decisions are considered relevant to the work of the ATN-IPS Working Group.

2. DISCUSSIONS

2.1 The meeting may wish to note that the PAN European Network Service (PENS) implemented in Europe is a common facility that allows ANSPs two different IP interconnection possibilities. In cases where the ANSPs have their own IP networks, they can connect their national IP networks to PENS. However, in other cases where the ANSPs do not have their own IP network, the PENS project can install an access point, consisting of a PENS router, at each location where an IP connection needs to be implemented, in order to provide connectivity with the PENS network. Furthermore, the meeting was informed that other ICAO Regions are planning for implementing IP networks.

2.2 The meeting may wish to note that MIDANPIRG/13 was apprised that the complete implementation of IPv6 will take time and consequently, there will be a long period for both protocols IPv4 and IPv6 to co-exist. The meeting agreed that careful attention to the current implementation of AFTN, CIDIN and ISO/OSI based ATN is required. Accordingly, the provisions for the AFTN, CIDIN, and ISO/OSI should continue to be developed to secure these implementations. Furthermore, the meeting agreed that the MID ATN implementation should take place on the basis of regionally agreed requirements, taking into consideration, the System Wide Information Management (SWIM) concept and any other new developments.

2.3 MIDANPIRG/13 meeting recalled, that MIDANPIRG/12 agreed to the development of the MID IP Network, where it was agreed that an IP Network survey be conducted. MIDANPIRG/13 noted that six MID States replied i.e. (Bahrain, Egypt, Iran, Jordan, Saudi Arabia and UAE). The replies were analyzed as at **Appendix A** to this working paper.

2.4 MIDANPIRG/13 noted that the survey would require amendment to include more details, and further action on the establishment of MID IP Network is dependent on provision of replies to the survey from all MID States. Accordingly, MIDANPIRG/13 meeting agreed to the following Conclusion:

CONCLUSION 13/23: MID IP NETWORK SURVEY

*That, States complete the MID IP Network survey as at Appendix 4.4A to the Report on Agenda Item 4.4 (**Appendix B** to this working paper) and provide feedback to the ATN-IPS WG/4 meeting.*

2.5 MIDANPIRG/13 meeting noted that some MID States had already developed domestic IP networks, while other States are in the process of developing IP network. The meeting was of the view that for harmonization and compatibility purposes these networks be based according to ICAO standards as outlined in Doc 9896. Accordingly, the meeting agreed to the following Conclusion:

CONCLUSION 13/24: DEVELOPMENT OF IP BASED MID NETWORKS

That, States, that have not yet done so, be urged to:

a) develop national plans, in line with the ICAO Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols (Doc 9896), for migration to IPv6 taking the existing IPv4 based aeronautical systems into account;

b) consider the use of IPv4/IPv6 protocol translation devices only as a provisional solution during the migration; and

c) include a requirement for both IPv4 and IPv6 in their ongoing Air Traffic Services (ATS) Message Handling System (AMHS) implementation programmes in order to ensure seamless transition and interoperability.

2.6 The meeting may wish to note that in ASBU concept being introduced by ICAO, SWIM is listed in Block 1 (target timeline for implementation starting from 2018). It has close relation with ASBU module B0-30 which is being introduced starting from 2013. It was considered appropriate for the States to develop a regional approach in planning for the implementation of SWIM. In this respect the meeting may wish to note that other regions are conducting workshop on SWIM and AMHS.

2.7 The meeting may wish to recognize the increasing important role of the public Internet that is played in the provision of MET and digital NOTAM information in lieu of dedicated circuits/links, therefore a need for a study was identified for an appropriate network to support SWIM including possibility of using public internet and/or using a common network service provider.

2.8 Based on the above, it is recommended to consider a study of an IP based network in order to support SWIM as one of the tasks for ATNIPS WG. The initial defined activity which should be performed is to incorporate SWIM into the ATN/AMHS Infrastructure.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) provide feedback as in conclusion 13/23;

b) analyze the feedback of the IP Network Survey;

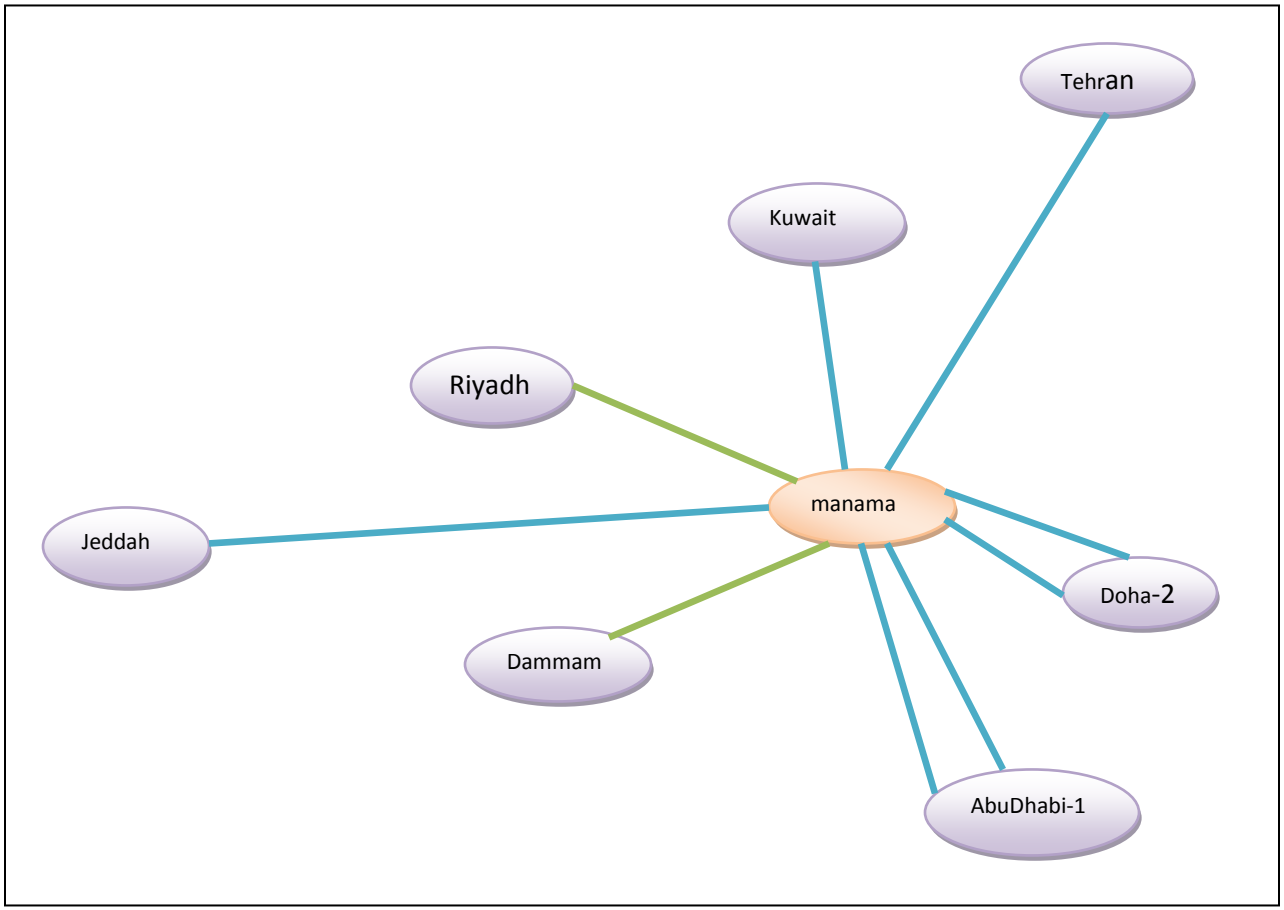
c) recommend further actions for the development of MID IP Network taking into consideration the developments (ASBU, SWIM etc.); and

d) provide suggestion on para 2.8.

APPENDIX A

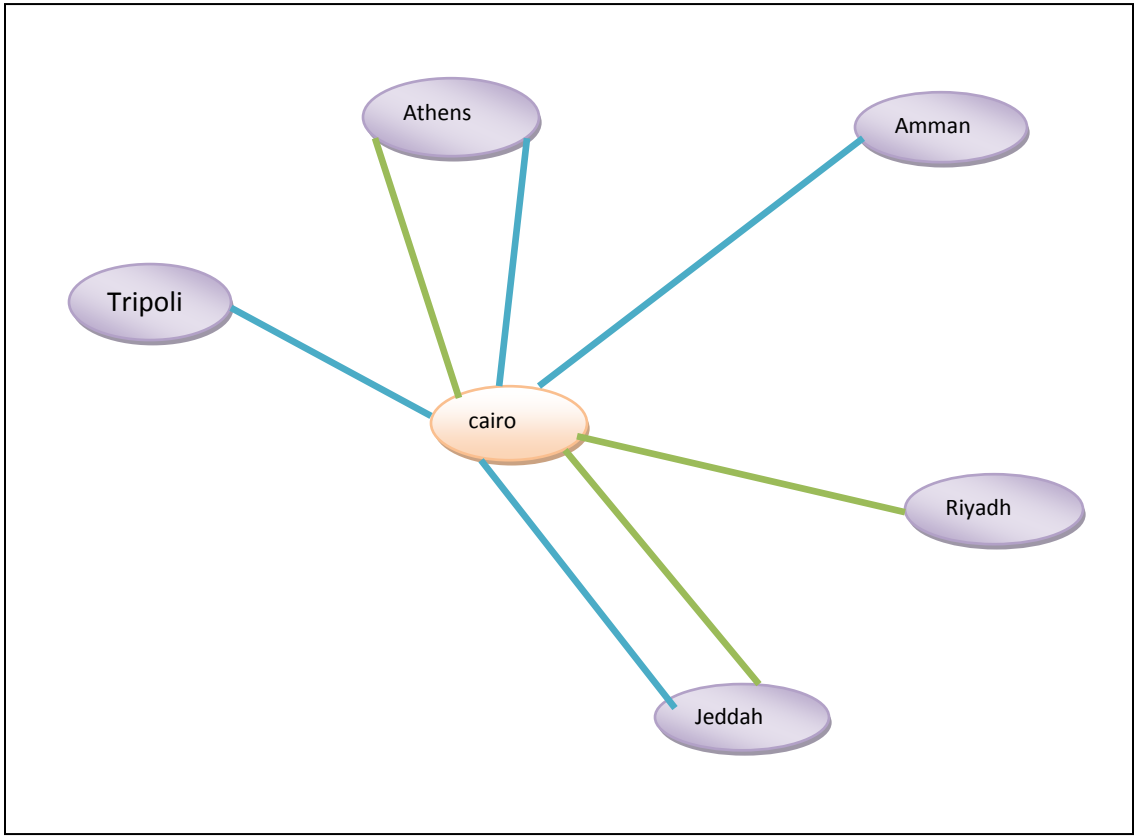
State Bahrain (Manama)

State	Speed	Protocol	IP Address	Net Mask	Router Type	IP.V	
Riyadh	64k	Leased line	10.61.11.12	255.255.255.252	Motorola Vangurd 6435	IPV4	Voice
Tehran	64k	Leased line	172.16.10.2	255.255.255.0	Cisco2800	IPV4	AFTN,Voice
Kuwait	64k	Leased line	10.61.11.8	255.255.255.252	Motorola Vangurd 6435	IPV4	AFTN,Radar, Voice
Jeddah	64k	Leased line	10.61.11.48	255.255.255.252	Motorola Vangurd 6435	IPV4	CIDIN,Voice
Doha-1	64k	Leased line	10.61.11.32	255.255.255.252	Motorola Vangurd 6455	IPV4	Radar,Voice
Doha-2	64k	Leased line	10.61.11.56	255.255.255.252	Motorola Vangurd 6455	IPV4	AFTN,Voice
Dammam	64k	Leased line	10.61.11.44	255.255.255.252	Motorola Vangurd 6435	IPV4	Voice
AbuDhabi-1	64k	Leased line	10.61.11.12	255.255.255.252	Motorola Vangurd 6435	IPV4	Radar,Voice
AbuDhabi-2	64k	Leased line	10.61.11.16	255.255.255.252	Motorola Vangurd 6435	IPV4	CIDIN,Voice


Tehran
Kuwait
Riyadh
manama
Jeddah
Doha-2
Dammam
AbuDhabi-1

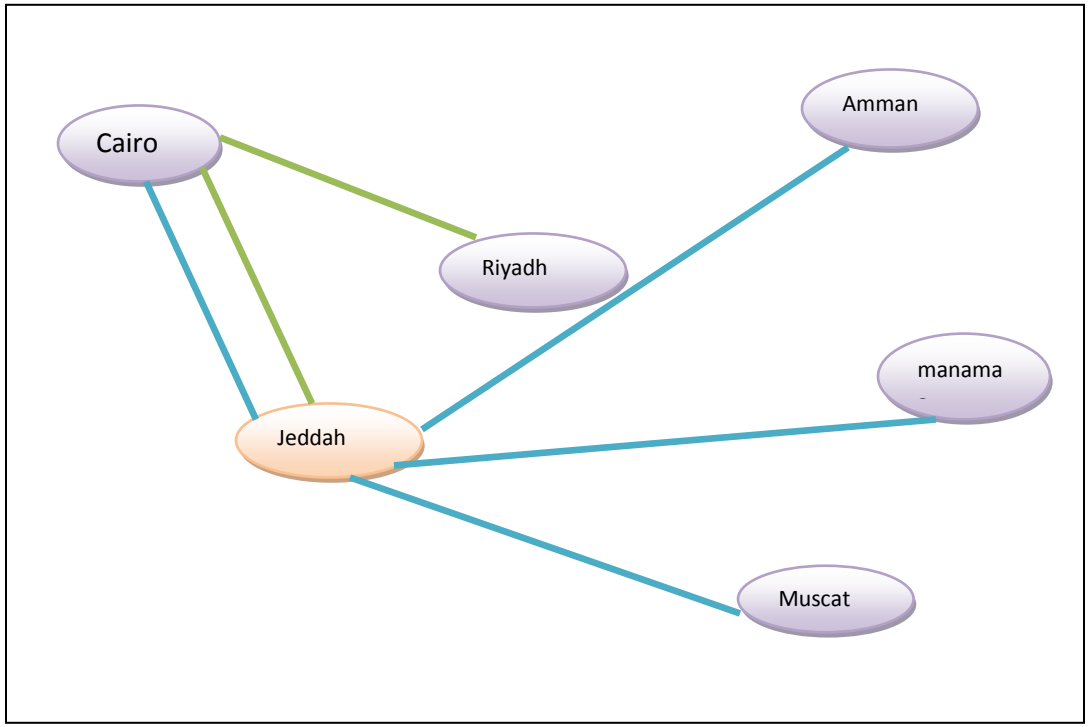
State Egypt (Cairo)

State	Speed		IP Address	Net Mask	Router Type	IP.V	
Amman	64k	Leased line	10.10.10.2 192.168.12.7	255.255.255.0	Motorola Vangurd 6800	IPV4	AMHS, Voice
Athens	64k	Leased line	192.168.80.2	255.255.255.0	Cisco2800	IPV4	Voice
Athens	64k	Leased line	10.10.10.1	255.255.255.0	Cisco2800	IPV4	CIDIN,Voice
Jeddah	64k	Leased line	192.168.80.2	255.255.255.252	Cisco2800	IPV4	Voice
Jeddah	128k	Leased line	192.168.12.244	255.255.255.0	Motorola Vangurd 6455	IPV4	AMHS, Voice
Riyadh	64k	Leased line	192.168.80.2	255.255.255.0	Cisco2800	IPV4	Voice
Tripoli	64k	Leased line	10.10.10.1	255.255.255.0	Cisco1700	IPV4	AFTN



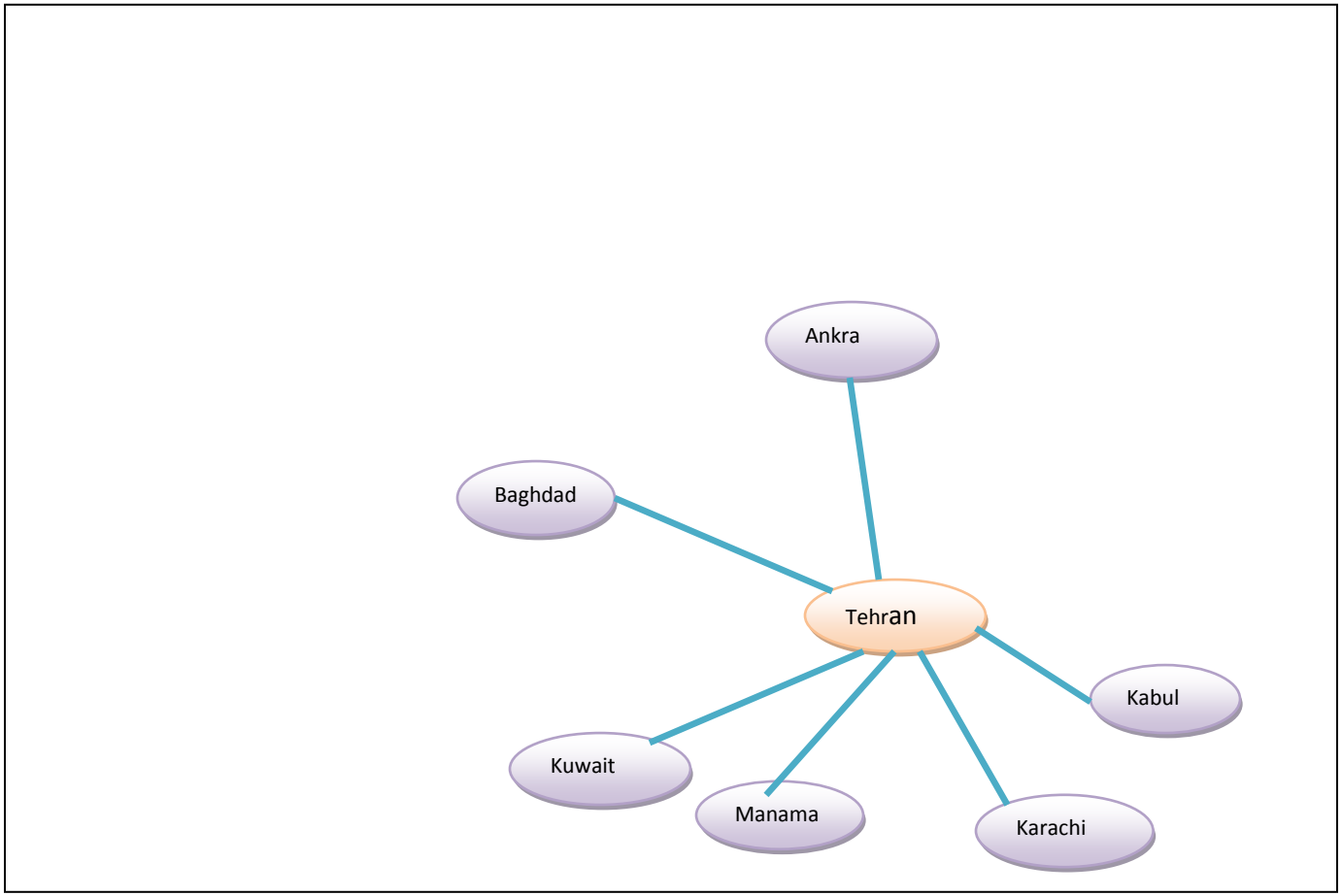
State Saudi Arabia(Jeddah)

State	Speed		IP Address	Net Mask	Router Type	IP.V	
Cairo	128k	Leased line	192.168.12.0	255.255.255.0	Motorola Vangurd 6455	IPV4	AMHS,Voice
Amman	64k	Leased line	192.168.12.0	255.255.255.0	Motorola Vangurd 6455	IPV4	AMHS,Voice
Muscat	64k	Leased line	192.168.12.0	255.255.255.0	Cisco 2811	IPV4	AFTN,Voice
Manama	64k	Leased line	TBD	TBD	Motorola Vangurd 6435	IPV4	CIDIN,Voice



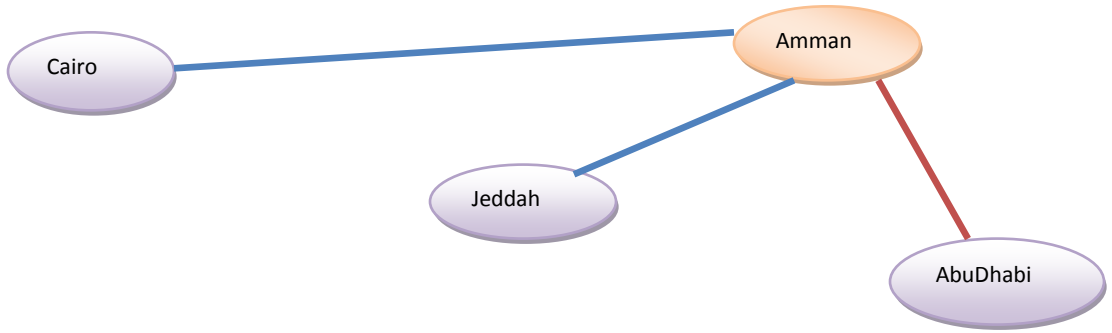
State IRAN(Tehran)

State	Speed		IP Address	Net Mask	Router Type	IP.V	
Manama	64k	MPLS	172.16.10.0	255.255.255.0	Cisco2811	IPV4	AFTN,Voice
Baghdad	32k	V-SAT	TBD	TBD	Cisco2811	IPV4	AFTN,Voice
Ankra	64k	MPLS	172.16.13.0	255.255.255.0	Cisco2811	IPV4	AFTN,Voice
Kabul	32k	V-SAT	TBD	TBD	Cisco2811	IPV4	AFTN,Voice
Karachi	64k	MPLS	172.16.11.0	255.255.255.0	Cisco2811	IPV4	AFTN,Voice
Kuwait	64k	MPLS	172.16.12.0	255.255.255.0	Cisco2811	IPV4	AFTN,Voice



State Jordan(Amman)

State	Speed		IP Address	Net Mask	Router Type	IP.V	
Cairo	64k	Leased line	10.10.10.1	255.255.255.0	Vanguard	IPV4	AMHS,Voice
Jeddah	64k	Leased line	10.10.10.1	255.255.255.0	Vanguard	IPV4	AMHS,Voice
Abu dhabi	2M	Public internet	TBD	TBD	Cisco 5510	IPV4	AMHS



State Iraq

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Iraq did not submit -IP network Survey

State Kuwait

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Kuwait did not submit -IP network Survey

State Oman

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Oman did not submit -IP network Survey

State Qatar

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Qatar did not submit -IP network Survey

State Syria

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Syria did not submit -IP network Survey

State UAE

State	Speed		IP Address	Net Mask	Router Type	IP.V	

UAE did not submit -IP network Survey

State Yemen

State	Speed		IP Address	Net Mask	Router Type	IP.V	

Yemen did not submit -IP network Survey

APPENDIX B

MID IP NETWORK SURVEY

Introduction

This survey has been redeveloped while analyzing the previous version. The purpose is for collecting information about the existing IP infrastructure between the states in-order to come with a unified IP scheme plan for the MID-Region IP network.

General Information:

State:	……..		
Does IP network existing in place?			
❑ Yes ❑ No			
Is Aviation systems connected together over IP?			
❑ Yes ❑ No			
Who to contact if more details or clarification is required?			
Name:	…….		
Title:	…….		
Email:	…….		
Telephone:	……	Fax:	……

Link Specific Information:

Please fill the following form **for each link** between you state and neighboring state within MID-Region:

1	Connection From:	State: ……. Location: ……
2	Connection To:	State: ……. Location: ……
3	Service Provider:	
4	Link Speed:	…… Kbps
5	Link Type:	❑ Leased Circuit ❑ Frame-relay ❑ V-SAT ❑ MPLS ❑ Other ……
6	IP version:	❑ IPv4 ❑ IPv6
7	IP Subnet:	❑ 10.__.__.__ Netmask: ___.___.___.___ ❑ 172.__.__.__ Netmask: ___.___.___.___ ❑ 192.168.__.__ Netmask: ___.___.___.___ ❑ Other: ……. Netmask: ___.___.___.___
8	Router / other	Manufacturer: ……..... Model: …….
9	Router Interfaces Supported*:	❑ Async Serial ❑ Sync Serial ❑ Ethernet ❑ Other: ……
	Router Interfaces Implemented	❑ Async Serial ❑ Sync Serial ❑ Ethernet ❑ Other: ……
10	Supported Routing Protocols*:	❑ RIP ❑ OSPF ❑ BGP ❑ IS-IS ❑ Other: ……..
	Supported Routing Implemented	❑ RIP ❑ OSPF ❑ BGP ❑ IS-IS ❑ Other: ……..
11	Supported Voice	❑ SIP ❑ H.323 ❑ Other: …….

	Signaling on router*:	
	Supported Voice Implemented	❑ SIP ❑ H.323 ❑ Other: …….
12	Data Applications in use*:	❑ AFTN/CIDIN ❑ AMHS ❑ OLDI/AIDC ❑ Other: ……..
13	Voice Applications in use*:	❑ ATC Voice ❑ VHF Voice ❑ Other Voice: ……
14	Data end user interface:	❑ Serial ❑ IP based (Answer Below) ❑ Other: …….
15	Security measures between LAN and WAN*:	❑ Single-firewall (Type: ……) ❑ IPS (Type: ……..) ❑ Dual-firewall (Types: ……..…...)
16	Voice end user interface*:	❑ FXS/FXO ❑ ISDN ❑ VoIP ❑ Other: ……..
	Optional cost in USD	
	Additional Info	

* Choose all that apply

- END -