*International Civil Aviation Organization*

**Middle East Air Navigation Planning and
Implementation Regional Group (MIDANPIRG)**

**Fourteenth Meeting**
*(Jeddah, Saudi Arabia, 15-19 December 2013)*

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**Agenda Item 4:**     **Performance Framework for Regional Air Navigation Planning and
Implementation:**
**4.5        CNS**

GROUND-GROUND INTEGRATION (AIDC/OLDI)

*(Presented by the Secretariat)*

| SUMMARY |
| --- |
| This paper presents the outcome of the ATN/IPS WG/5 and CNS SG/5 meetings regarding the Ground-Ground integration using ATS Interfacility Data Communication/On-Line Data Interchange. (AIDC/OLDI) and the draft plans developed. <br><br> Action by the meeting is at paragraph 3. |

| REFERENCES |
| --- |
| - ASBU Working Document <br> - ATN/IPS WG/4 and 5 Report <br> - CNS SG/5 Report |

**1.        INTRODUCTION**

1.1        The ATN/IPS WG/4 meeting was held at the ICAO MID Regional Office, Cairo, Egypt, 21-23 May 2012.

1.2        The Fifth Meeting of the CNS Sub Group (CNS SG/5) was held at the ICAO MID Regional Office, Cairo, Egypt, 11 – 13 December 2012. The meeting was attended by a total of twenty-seven (27) participants, which included delegates from seven (7) States and one (1) Organization.

1.3        The Fifth Meeting of Aeronautical Telecommunication Network/Internet Protocol Suite Working Group (ATN/IPS WG/5) was held at the ICAO MID Regional Office,  Cairo, Egypt, 11-13 March 2013. The meeting was attended by a total of twenty-three (23) participants, which included delegates from six (6) States.

## 2. DISCUSSION

2.1        The meeting may wish to recall that MIDANPIG/13 reviewed the operational improvements contained in the Aviation System Block Upgrades (ASBU) Working Document and agreed to the need of identification of those operational improvements which are of relevance to the MID Region. MIDANPIRG/13 meeting supported a list of identified operational improvements among them is the "increased interoperability, efficiency and capacity through Ground-Ground integration (AIDC)" and agreed that the MIDANPIRG subsidiary bodies, further review them taking into consideration the outcome of the AN-Conf/12, where the whole concept of ASBU would be finalized.

2.2        The ATN/IPS WG/5 meeting consulted the ASBU document which provides the details for the implementation of module B0-FICE (B0-25) AIDC as defined by the ICAO Manual of Air Traffic Services Data Link Applications (Doc 9694).

2.3        Based on the operational requirements, the meeting considered availability and capacity of the existing regional telecommunication network for the suitability of implementing the Ground-Ground Integration (AIDC/OLDI), and updated the MID ATN TABLE CNS 1C of the MID FASID Doc 9708.

2.4        The ATN/IPS WG/5 meeting concurred with CNS SG/5 recommendation that a review of the AIDC messages defined in the PANS-ATM and the ICD document should be conducted, in order to identify and agree on initial set of messages which would be required in the MID Region.  This will progress the AIDC/OLDI implementation activities.  The meetings also recommended carrying out interface and technical interconnection analysis for the ACCs required to implement AIDC/OLDI.

2.5        The meeting may wish to note that ATN/IPS WG/5 meeting carried basic analysis on AIDC/OLDI implementation and it was noted that the majority of States in the MID Region have either implemented OLDI or are planning to implement OLDI and have no intention of using only AIDC.  Therefore, the meeting agreed that OLDI implementation should be considered and accepted as Regional variation of AIDC implementation as was the case in the other regions. This was presented by UAE to the 38th ICAO Assembly.

2.6        The CNS SG/5 meeting agreed that if both AIDC and OLDI are supported, then it will be a bilateral agreement between States.  However, it was highlighted that some States that are interfacing with other regions may require supporting and implementing dual capabilities (AIDC and OLDI), in order to integrate within the Region and with other Regions.

2.7        The ATN/IPS WG/5 meeting was informed about harmonization efforts between NAT and ASIA-PAC.  Both regions are working on a consolidated AIDC guidance material, where ICAO Inter-Regional AIDC Task Force (IRAIDC TF) was established and held its First Meeting in January 2013 with the objective to review the consolidated draft version 0.4 of the Pan Regional ICD for AIDC.  It was also highlighted that in the Eastern part of the EUR Region AIDC may be selected and this would ease communications along cross-polar and trans-Siberian routes in particular, while the western part of EUROPE will continue to use OLDI.

2.8        The ATN/IPS WG/5 meeting developed the ATS unit capabilities and States readiness and the Draft MID AIDC/OLDI implementation plan as at **Appendices A** and **B** to this working paper. Furthermore, the meeting noted that AIDC/OLDI implementation was not only about systems, as it has impact on operational and technical subjects. The meeting was of the view that all these issues/subjects need to be thoroughly discussed at the AIDC/OLDI Seminar with the presence of both operational and technical experts from States and industry.

2.9        The meeting may recall that a Seminar on implementation of AIDC (ASBU module B0 FICE)) was planned to be held in Cairo, in September 2013. However, the Seminar was postponed to March 2014. Accordingly, the meeting may wish to endorse the following Draft Conclusion emanating from CNS SG/5:

| **Why** | Develop MID AIDC/OLDI Implementation Plan |
|---------|-------------------------------------------|
| **What** | AIDC/OLDI SEMINAR |
| **Who** | ICAO / STATES / INDUSTRY |
| **When** | March 2014 |

*DRAFT CONCLUSION 5/1:        MID AIDC/OLDI IMPLEMENTATION SEMINAR*

*That States,*

a)  *support ICAO in  organizing a Seminar on implementation of AIDC/OLDI;*

b)  *participate actively in the Seminar; and*

c)  *with the support of ICAO develop the MID AIDC/OLDI Implementation Plan.*

2.10        The meeting may recall that MIDANPIRG/13 agreed that the MID ATN implementation and MID IP Network 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, mainly the Aviation System Block Upgrade (ASBU).

2.11        Based on the above MIDANPIRG/13 agreed on Conclusion 13/23 for the conduct of IP Network surveys.  The ATN/IPS WG/5 analyzed the replies to the survey as at **Appendix C** to this working paper, also developed a proposal for an IP address plans for the MID Region as at **Appendix D** to this working paper, which will be further discussed during the AIDC/OLDI Seminar.

2.12        The meeting noted that SWIM is listed in Block 1 (target timeline for implementation starting from 2018), in the ASBU concept introduced by ICAO.  The meeting agreed on the principle of the regional approach in planning for the implementation of any network supporting SWIM, and identified the need for a study on an appropriate network to support SWIM including possibility of using public internet and/or using a common network service provider.  It was also highlighted that SWIM concept is vast as it incorporates multidiscipline (ATM, AIM, AGA, COM, MET etc.).

**3.        ACTION BY THE MEETING**

3.1        The meeting is invited to endorse the Draft Conclusion in para 2.11.


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## MID AIDC/OLDI Readiness

| State | Capability | | Current use | | Planned Use | | Intention of using AIDC only | Reasons and Remarks |
|---|---|---|---|---|---|---|---|---|
| | AIDC | OLDI | AIDC | OLDI | AIDC | OLDI | | |
| Bahrain | ✔ | ✔ | | | | ✔ | No | OLDI to connect to neighbouring ATSUs |
| Egypt | | ✔ | | ✔ | | | No | OLDI in use to connect to EUR (Athens) |
| Iran | | | | | | | | |
| Iraq | | | | | | | | |
| Jordan | ✔ | ✔ | | | | ✔ | No | OLDI to connect to neighbouring ATSUs |
| Kuwait | ✔ | ✔ | | | | ✔ | No | OLDI to connect to Bahrain and Riyadh |
| Lebanon | | ✔ | | | | ✔ | No | OLDI will be in use to connect to EUR |
| Libya | | | | | | | | |
| Oman | | | | | | | | |
| Qatar | | ✔ | | ✔ | | ✔ | | OLDI in use with UAE and planned for use with Bahrain |
| Saudi Arabia | ✔ | ✔ | ✔ | | ✔ | ✔ | No | Both AIDC and OLDI to cater to neighbouring ATSUs request |
| Sudan | ✔ | ✔ | ✔ | | ✔ | ✔ | No | Both AIDC and OLDI to cater to neighbouring units requests |
| Syria | | | | | | | | |
| UAE | | ✔ | | ✔ | | ✔ | No | OLDI already in use with 6 partners and AIDC is not required as all neighbouring ATSUs are OLDI capable. |
| Yemen | | | | | | | | |

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**ATS INTER-FACILITY DATA COMMUNICATION (AIDC)/
On-Line Data Interchange (OLDI) IMPLEMENTATION PLAN**

EXPLANATION OF THE TABLE

*Column*

1       State/Administration – the name of the State/Administration;

2       Location of AIDC end system – the location of the AIDC end system under the supervision of State/Administration identified in column 1;

3       AIDC Pair – the correspondent AIDC end system;

        Location – location of the correspondent AIDC end system

        State/Administration – the name of the State/Administration responsible for management of the correspondent AIDC end system

4       AIDC standard used – the AIDC standard adopted for the AIDC connection between the corresponding AIDC pair, AFTN, AFTN/AMHS or ATN;

5       Target Date of Implementation – date of implementation of the AIDC end system;

6       Remarks – any additional information describing the AIDC end system or the AIDC service between the corresponding AIDC pair.

| State/Administration | Location of AIDC end system | AIDC/OLDI Pair | | AIDC standard used | Target date of Implementation | Remarks |
|---|---|---|---|---|---|---|
| | | Correspondent location | Correspondent State/Administration | | | |
| 1 | 2 | 3 | | 4 | 5 | 6 |
| Egypt | CANC Cairo | Athens | Athens | OLDI | Implemented | |
| | Cairo Air Navigation Center | Jeddah ACC | Saudi Arabia | OLDI | TBD | |
| Bahrain | Bahrain ACC | Kuwait ACC | Kuwait | OLDI | TBD | |
| | | Sheikh Zayed Air Navigation Centre | U.A.E. | OLDI | Q4 2013 | OLDI V4.2 FMTP 2.0 |
| Iran | | | | | | |
| Iraq | | | | | | |
| Jordan | Amman ACC | Jeddah ACC | Saudi Arabia | AIDC/OLDI | TBD | |
| Kuwait | Kuwait ACC | Bahrain ACC | Bahrain | OLDI | TBD | |
| | | Riyadh ACC | Saudi Arabia | OLDI | TBD | |

| State/Administration | Location of AIDC end system | AIDC Pair | | AIDC standard used | Target date of Implementation | Remarks |
|---|---|---|---|---|---|---|
| | | Correspondent location | Correspondent State/Administration | | | |
| 1 | 2 | 3 | | 4 | 5 | 6 |
| Lebanon | Rafic Hariri Int'l Airport - Beirut | Cyprus | Cyprus | OLDI | TBD | Awaiting LOA |
| | | Damascus | Syria | OLDI | TBD | Awaiting LOA |
| | | | | | | |
| | | | | | | |
| Libya | | | | | | |
| Oman | Muscat International Airport | | | | | |
| Qatar | Doha | Sheikh Zayed Air Navigation Centre | U.A.E. | OLDI V4.2 | Implemented Jan 2010 | FMTP 2.0 |
| Saudi Arabia | Riyadh ACC | Jeddah ACC | Saudi Arabia | AIDC | Implemented | |
| | Riyadh ACC | Dammam ACC | Saudi Arabia | AIDC | Implemented | |

| | | Cairo CANC | Egypt | OLDI | TBD | |
|---|---|---|---|---|---|---|
| | Jeddah ACC | Amman ACC | Jordan | OLDI | TBD | OLDI V4.1 |
| | | Khartoum ACC | Sudan | OLDI | TBD | OLDI V4.1 |
| | | Riyadh ACC | Saudi Arabia | AIDC | implemented | |
| | Dammam ACC | Riyadh ACC | Saudi Arabia | AIDC | implemented | |
| **Sudan** | Khartoum ACC | Cairo CANC | Egypt | OLDI | Q1 2014 | |
| | Khartoum ACC | Jeddah ACC | Saudi Arabia | OLDI | Q4 2013 | |
| | Khartoum ACC | Chad | Chad | AIDC | Implemented 2012 | |
| | Khartoum ACC | Congo | Congo | AIDC | Implemented 2012 | |
| **Syria** | | | | | | |
| **UAE** | SZC Abu Dhabi | Abu Dhabi Int'l Airport | ADAC | OLDI V4.2 | Implemented Apr2009 | FMTP 2.0 |
| | SZC Abu Dhabi | Dubai Int'l Airport | DANS | OLDI V4.2 | Implemented Jun 2012 | FMTP 2.0 |
| | SZC Abu Dhabi | Sharjah Int'l Airport | Sharjah DCA | OLDI V4.2 | Implemented Feb 2011 | FMTP 2.0 |
| | SZC Abu Dhabi | Ras al Khaimah Int'l Airport | Ras al Khaimah DCA | OLDI V4.2 | Implemented Mar 2011 | FMTP 2.0 |
| | SZC Abu Dhabi | Al Ain Int'l Airport | ADAC | OLDI V4.2 | Implemented Oct 2010 | FMTP 2.0 |
| | SZC Abu Dhabi | Doha ATC | Qatar CAA | OLDI V4.2 | Implemented Jan 2010 | FMTP 2.0 |
| **Yemen** | | | | | | |
| | | | | | | |
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| Attachment A – Details on ATM systems to support implementation plan | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **State** | ATM System | Protocol and Version used | Number of neighboring ATSUs | Number of neighboring ATSUs connected by AIDC/OLDI and type of connection | ATM System Capability | | Current use | | Planned Use | | Intention of using AIDC only | Reasons and Remarks |
| | | | | | **AIDC** | **OLDI** | **AIDC** | **OLDI** | **AIDC** | **OLDI** | | |
| **Bahrain** | | | | | ✔ | ✔ | | | | ✔ | No | OLDI to connect to neighboring ATSUs |
| **Egypt** | | | | | | ✔ | | ✔ | | | No | OLDI in use to connect to EUR (Athens) |
| **Iran** | | | | | | | | | | | | |
| **Iraq** | | | | | | | | | | | | |
| **Jordan** | | | | | ✔ | ✔ | | | | ✔ | No | OLDI allows for more message types |
| **Kuwait** | | | | | ✔ | ✔ | | | | ✔ | No | OLDI to connect to Bahrain and Riyadh |
| **Lebanon** | | | | | | ✔ | | | | ✔ | No | OLDI in use to connect to EUR |
| **Libya** | | | | | | | | | | | | |
| **Oman** | | | | | | | | | | | | |
| **Qatar** | | | | | | | | ✔ | | ✔ | | OLDI in use with UAE and planned for use with Bahrain |
| **Saudi Arabia** | | | | | ✔ | ✔ | ✔ | | ✔ | ✔ | No | Both AIDC and OLDI to cater to neighboring units requests |
| **Sudan** | | | | | ✔ | ✔ | ✔ | | ✔ | ✔ | No | Both AIDC and OLDI to cater to neighboring units |

| | | | | | | | | | | | | requests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Syria** | | | | | | | | | | | | |
| **UAE** | PRISMA from COMSOFT | OLDI V4.2 FMTP 2.0 | 10 | 3 two-way integrated OLDI connections<br><br>2 two-way standalone OLDI<br><br>1 one-way Standalone OLDI connection<br><br>Total 6 OLDI connections | | ✔ | | ✔ | | ✔ | No | OLDI already in use with 6 partners and all neighboring ATSUs are OLDI capable |
| **Yemen** | | | | | | | | | | | | |

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## State   Bahrain (Manama)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|-----------|----------|-------------|------------------------|---------------------|
| Riyadh | 64k | Batelco | 10.61.11.12 | 255.255.255.252 | Motorola Vangurd 6435 | FXO/FXS | Voice |
| Dammam | 64k | Batelco | 10.61.11.44 | 255.255.255.252 | Motorola Vangurd 6435 | FXO/FXS | Voice |
| Tehran | 64k | Batelco | 172.16.10.2 | 255.255.255.0 | Cisco2800 | Serial | AFTN |
| | | | | | | FXO/FXS | Voice |
| Kuwait | 128k | Batelco | 10.61.11.8 | 255.255.255.252 | Motorola Vangurd 6435 | Serial | AFTN-Radar |
| | | | | | | FXO/FXS | Voice |
| Jeddah | 64k | Batelco | 10.61.11.48 | 255.255.255.252 | Motorola Vangurd 6435 | Serial | CIDIN |
| | | | | | | FXO/FXS | Voice |
| Doha-1 | 64k | Batelco | 10.61.11.32 | 255.255.255.252 | Motorola Vangurd 6455 | Serial | Radar |
| | | | | | | FXO/FXS | Voice |
| Doha-2 | 64k | Batelco | 10.61.11.56 | 255.255.255.252 | Motorola Vangurd 6455 | Serial | AFTN |
| | | | | | | FXO/FXS | Voice |
| AbuDhabi-1 | 64k | Batelco | 10.61.11.12 | 255.255.255.252 | Motorola Vangurd 6435 | Serial | Radar |
| | | | | | | FXO/FXS | Voice |
| AbuDhabi-2 | 64k | Batelco | 10.61.11.16 | 255.255.255.252 | Motorola Vangurd 6435 | Serial | CIDIN |
| | | | | | | FXO/FXS | Voice |

*Figure 1: Bahrain Circuit Diagram*
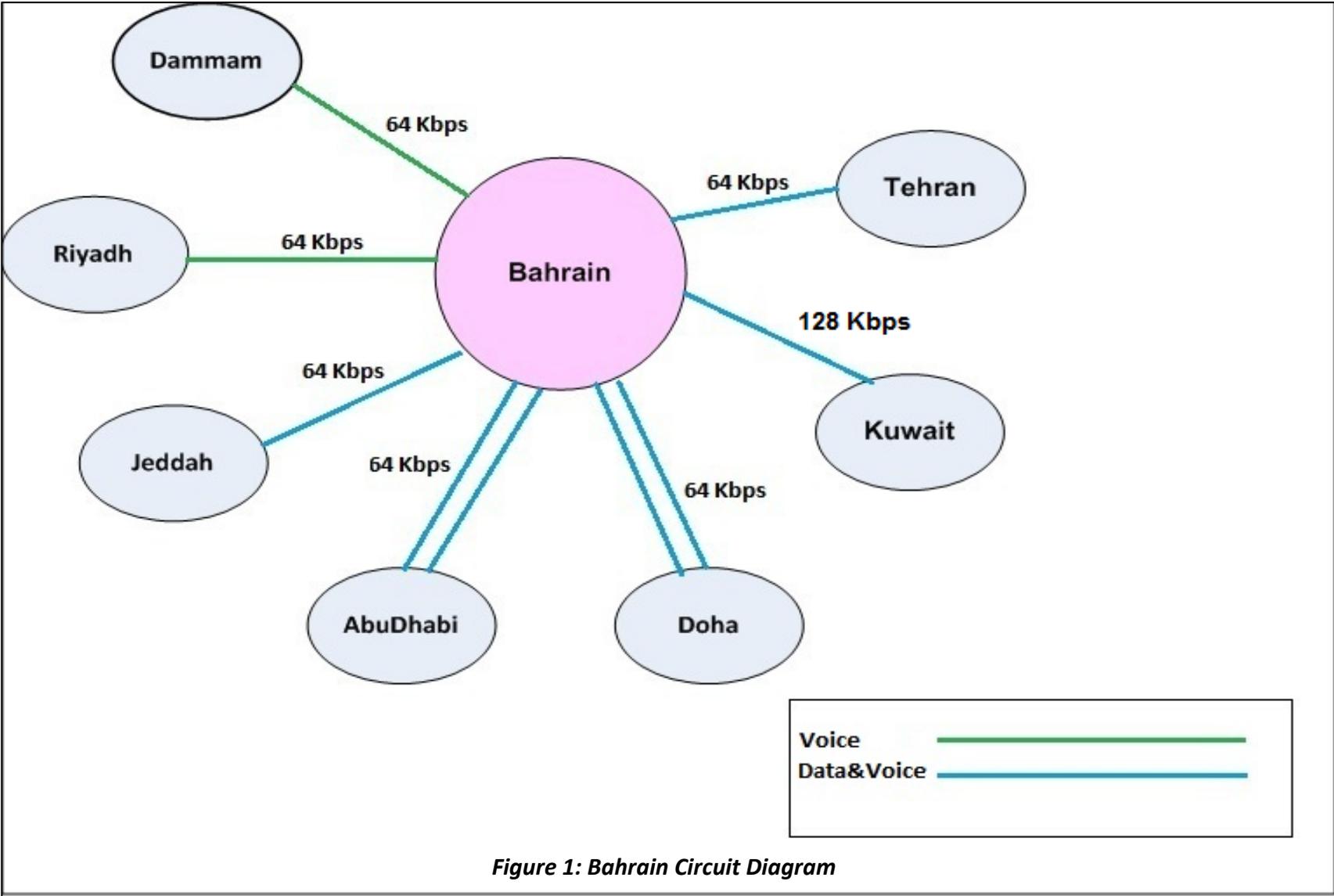
## State    Egypt (Cairo)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|-----------|----------|-------------|-------------------------|---------------------|
| Amman | 64k | Telecom Egypt (ATM) | 10.10.10.2 192.168.12.7 | 255.255.255.0 255.255.255.0 | Motorola Vangurd 6800 | IP | AMHS |
| | | | | | | FXO/FXS | Voice |
| Jeddah1 | 64k | Telecom Egypt (ATM) | 192.168.80.2 | 255.255.255.0 | Cisco2800 | FXO/FXS | Voice |
| | | | | | | IP | OLDI, Radar |
| Jeddah2 | 128k | Telecom Egypt (ATM) | 10.10.10.1 | 255.255.255.0 | Motorola Vangurd 6455 | IP | AMHS |
| | | | | | | FXO/FXS | Voice |
| Riyadh | 64k | Telecom Egypt (ATM) | 192.168.80.2 | 255.255.255.0 | Cisco2800 | FXO/FXS | Voice |
| Tripoli | 64k | Telecom Egypt (ATM) | 10.10.10.1 | 255.255.255.0 | Cisco1700 | Serial | AFTN |
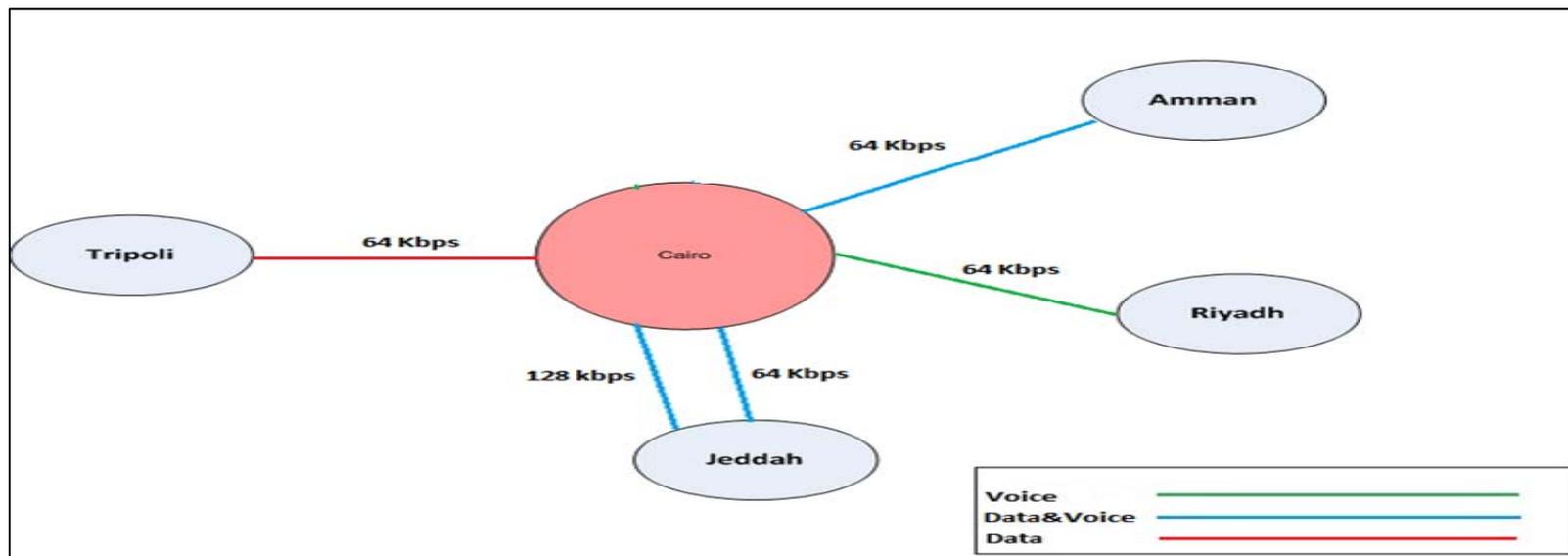


*Figure 2: Cairo Circuit Diagram*

## State    Saudi Arabia (Jeddah)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|------------|----------|-------------|------------------------|---------------------|
| Cairo1 | 128k | N/A | 192.168.12.0 | 255.255.255.0 | Motorola Vangurd 6455 | IP | AHHS |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Cairo2 | 64k | N/A | N/A | N/A | Motorola Vangurd 6455 | IP | AMHS |
|  |  |  |  |  | Motorola Vangurd 6455 | FXO/FXS | Voice |
| Amman | 64k | N/A | 192.168.12.0 | 255.255.255.0 | Motorola Vangurd 6455 | IP | AHHS |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Muscat | 64k | N/A | 192.168.12.0 | 255.255.255.0 | Cisco 2811 | IP | AHHS |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Manama | 64k | N/A | TBD | TBD | Motorola Vangurd 6435 | Serial | CIDIN |
|  |  |  |  |  |  | FXO/FXS | Voice |
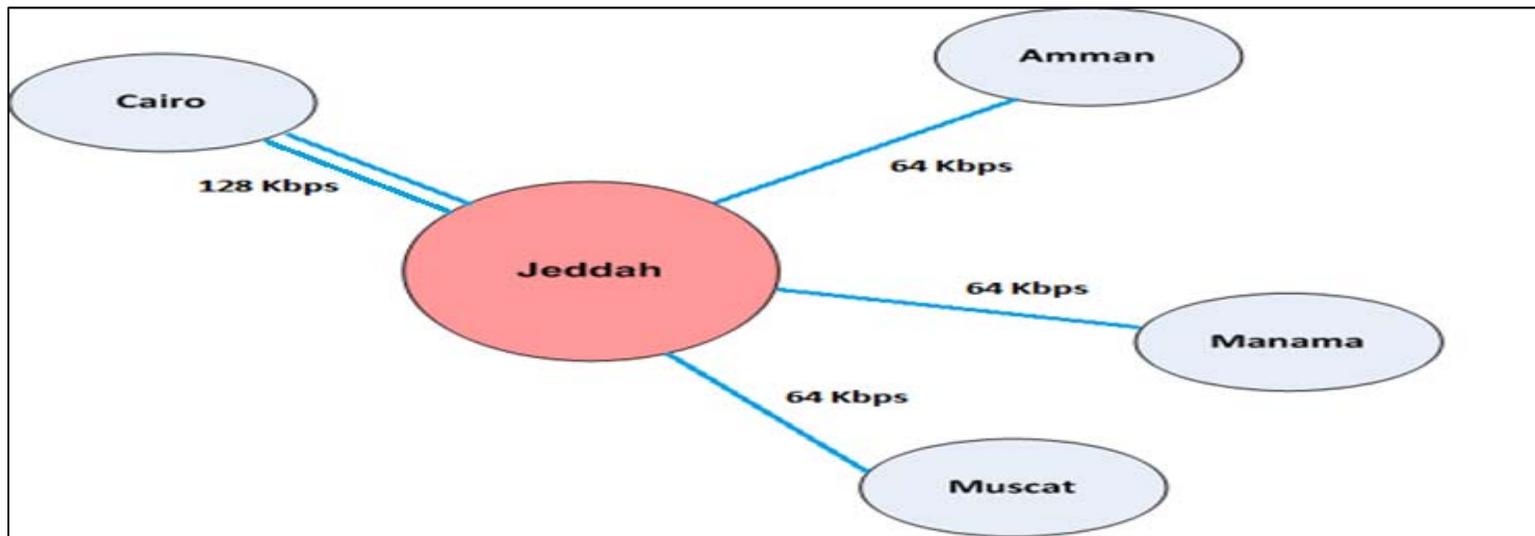


*Figure 3: Jeddah Circuit Diagram*

## State     IRAN(Tehran)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|---|---|---|---|---|---|---|---|
| Manama | 64k | Iran PPT | 172.16.10.2 | 255.255.255.0 | Cisco2811 | Serial | AFTN |
| | | | | | | FXO/FXS | Voice |
| Baghdad | 32k | Iran PPT | 192.168.191.14 | 255.255.255.0 | Cisco2811 | FXO/FXS | Voice |
| Kuwait | 64k | Iran PPT | 172.16.12.0 | 255.255.255.0 | Cisco2811 | Serial | AFTN |
| | | | | | | FXO/FXS | Voice |
| Bahrain | | | | | | Serial | AFTN |
| | 64k | Iran PPT | 172.16.12.0 | 255.255.255.0 | Cisco2811 | FXO/FXS | Voice |
| Abu Dhabi * | | | To be determined | To be determined | Cisco2811 | Serial | AFTN |
| | 64k | Iran PPT | | | | FXO/FXS | Voice |
| Muscat * | | | To be determined | To be determined | Cisco2811 | Serial | AFTN |
| | 64k | Iran PPT | | | | FXO/FXS | Voice |

*Remarks:* * The lines will be established by end of July, 2012
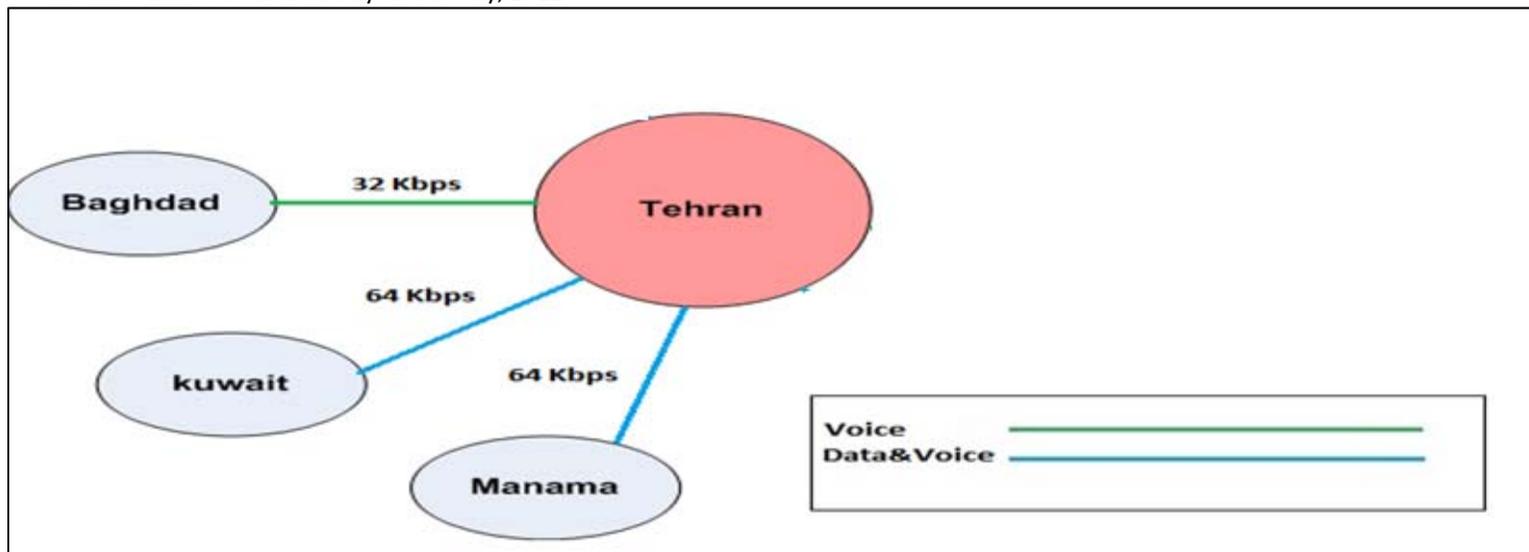


*Figure 4: Tehran Circuit diagram*

State   UAE (Abu Dhabi)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|-----------|----------|-------------|------------------------|---------------------|
| Bahrain1 | 64K | Etisalat | N/A | N/A | Motorola Vangurd 6455 | Serial | Radar |
| | | | | | | FXO/FXS | Voice |
| Bahrain2 | 64K | Etisalat | N/A | N/A | Motorola Vangurd 6455 | Serial | AFTN/CIDIN |
| | | | | | | FXO/FXS | Voice |
| Oman | 64K | Etisalat | 192.168.130.0 | 255.255.255.0 | Motorola Vangurd 6455 | Ethernet | AMHS |
| | | | | | | FXO/FXS | Voice |
| Qatar | 128K | Etisalat | 192.168.131.0 | 255.255.255.0 | Motorola Vangurd 6435 | Ethernet | AMHS/OLDI |
| | | | | | | FXO/FXS | Voice |
| Amman** | N/A | Etisalat | 94.56.192.202 | 255.255.255.0 | Fortigate 110C firewall | Ethernet | AMHS |

*Remarks:*   **\*** The IP addresses for Bahrain links is configured by ISP and not identified on UAE side.

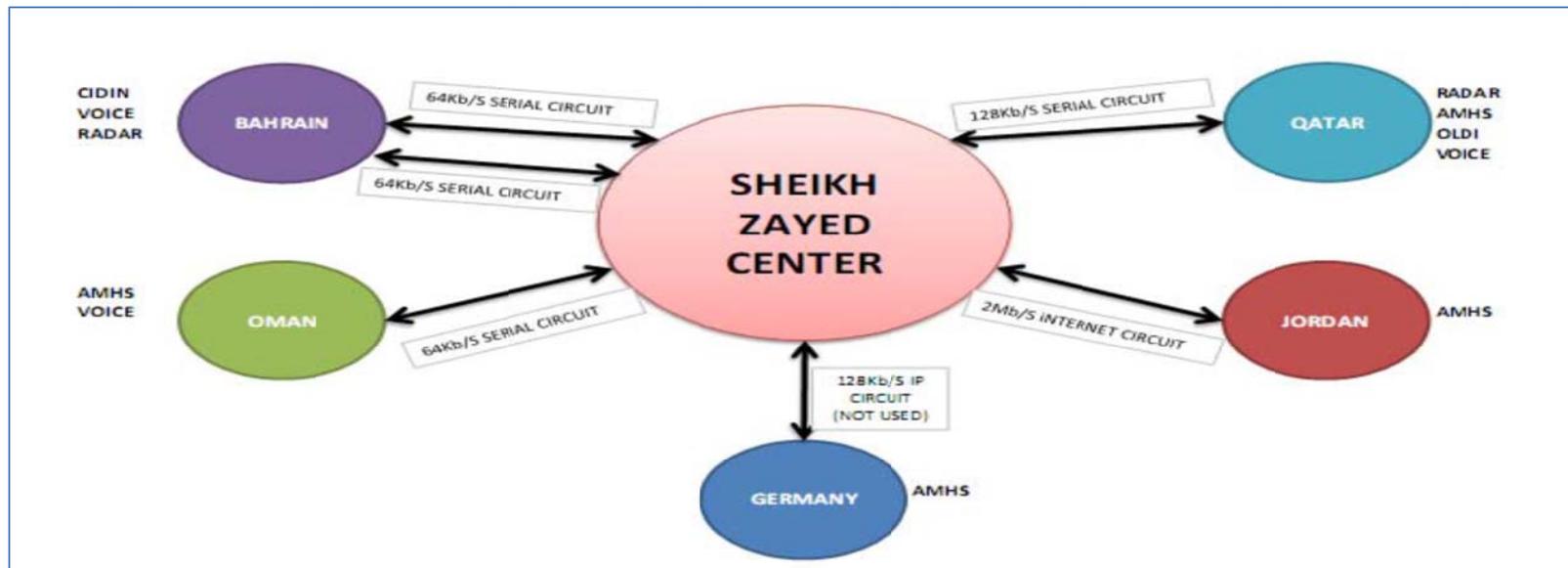**\*\*** The link type between Jordan and Abu Dhabi is over public internet (VPN)



**Figure 5: Abu Dhabi Circuit Diagram**

## State   Kuwait (Kuwait)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|-----------|----------|-------------|------------------------|---------------------|
| Beirut | 64K | Qualitynet | -- | -- | Motorola Modem 3460 | N/A | AFTN |
| Doha | 64K | Qualitynet | -- | -- | Motorola Modem 3460 | N/A | AFTN |
| Tehran | 64K | Qualitynet | 172.16.12.2 | 255.255.255.252 | Cisco 2800 | N/A | AFTN-Voice |
| Damascus | 64K | Qualitynet | -- | -- | Motorola Modem 3460 | N/A | AFTN |
| Bahrain | 128K | Qualitynet | -- | -- | Motorola Vanguard 6455 | N/A | AFTN, Radar |
| | | | | | | | Voice |
| Baghdad | 64K | Qualitynet | 192.168..0.160 | 255.255.255.0 | Motorola Modem 3460 | N/A | AFTN-Voice |

*Remarks:*

- The connectivity for circuits (Beirut, Doha, Damascus, Karachi and Bahrain) is pure layer 2 there is no IP configuration on these circuits.
- For Tehran circuit there is IP configuration on the WAN side 172.16.12.2/30 (between Qualitynet and Tehran provider), but there is no IP configuration between Qualitynet and DGCA Kuwait.
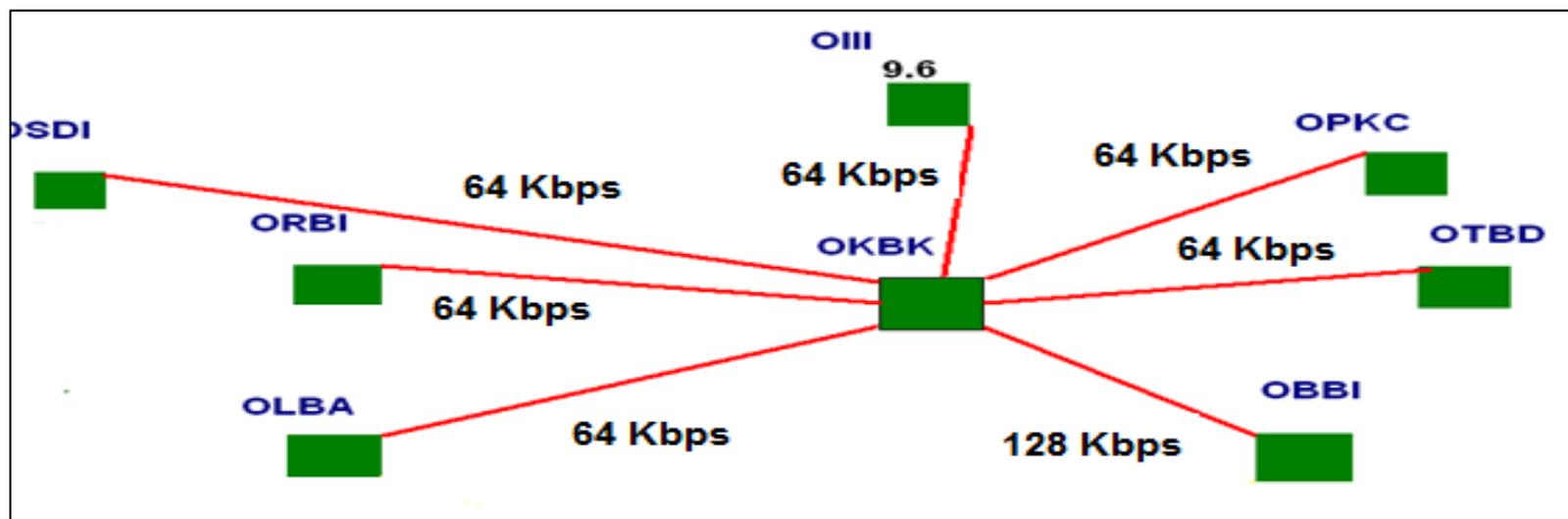


**Figure 6: Kuwait Circuit Diagram**

## State        Jordan (Amman)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|-----------|----------|-------------|-------------------------|---------------------|
| Cairo | 64k | N/A | 10.10.10.1 | 255.255.255.0 | Vanguard | N/A | AMHS |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Jeddah | 64k | N/A | 10.10.10.1 | 255.255.255.0 | Vanguard | N/A | AMHS |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Abu Dhabi* | 2M | NITC | 193.188.93.19 | 255.255.255.0 | Cisco 5510 | N/A | AMHS |

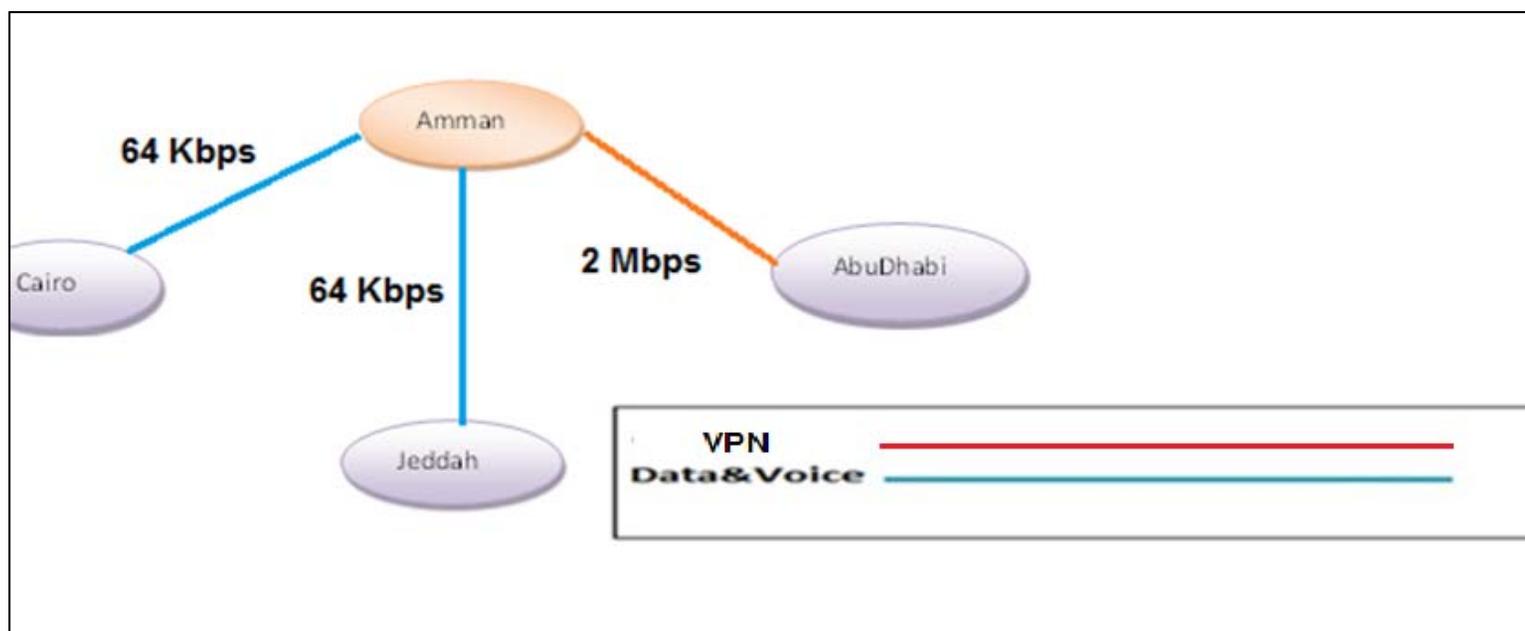* *The* link type between Jordan and Abu Dhabi is over public internet (VPN)



**Figure 7: Jordan Circuit Diagram**

## State     Iraq (Baghdad)

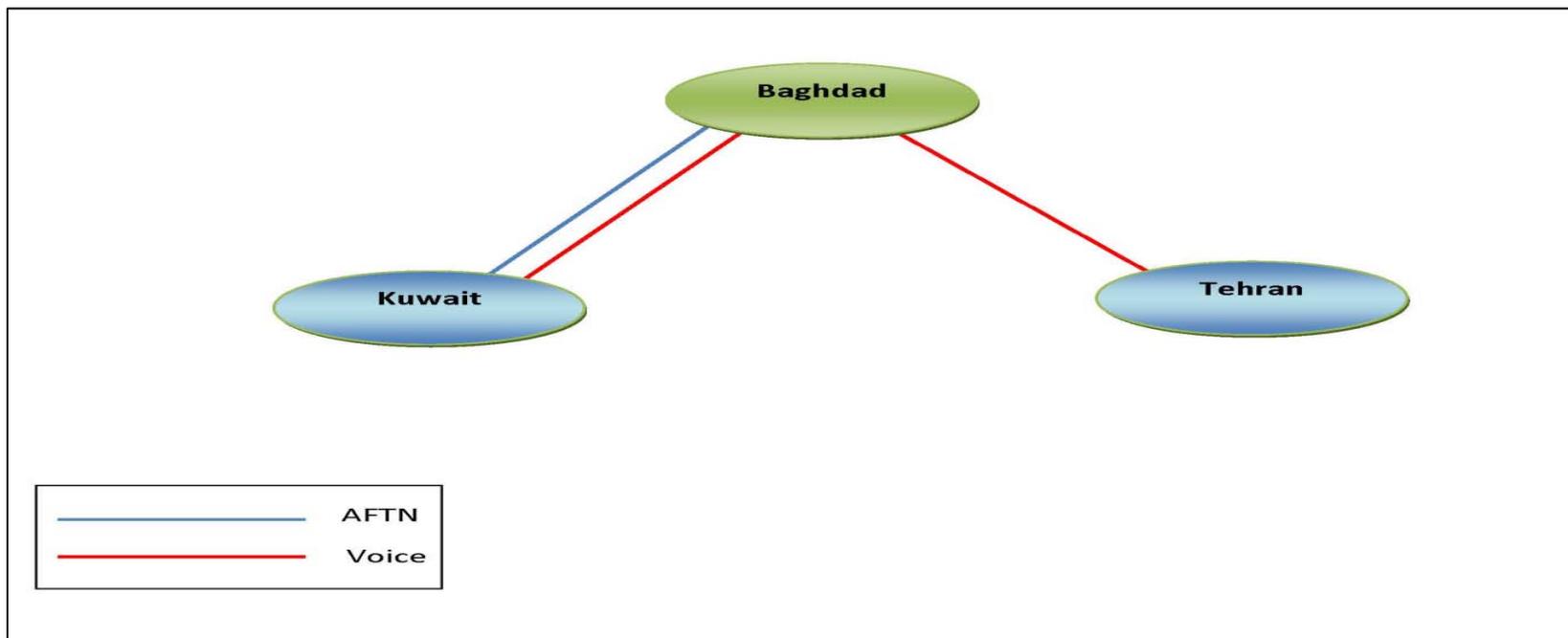| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|------------|----------|-------------|------------------------|---------------------|
| Iran | 32k | Passcom | 192.168.191.10 | 255.255.255.0 | NDsatcom SkyWan 5000 | FXS | Voice |
| Kuwait | 64k | Passcom | 192.168.191.2 | 255.255.255.0 | NDsatcom SkyWan 5000 | FXS | Voice |
|  |  |  | 192.168.0.60 | 255.255.255.0 |  | Ethernet | AFTN |



**Figure 8: Iraq Circuit Diagram**

## State    QATAR (Doha)

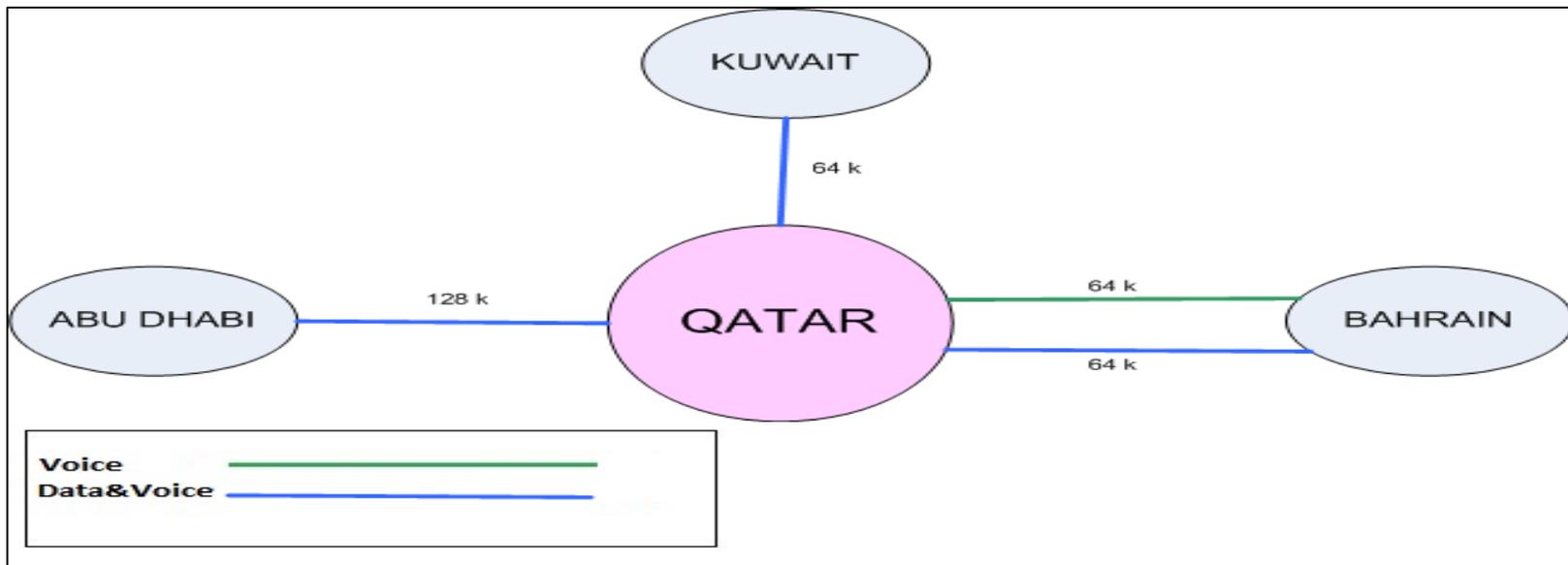| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|-------|-------|-----|------------|----------|-------------|-------------------------|---------------------|
| Abu Dhabi | 128k | QTEL | 200.200.200.x | 255.255.255.252 | Motorola Vanguard 6455 | serial | AFTN, Radar |
|  |  |  |  |  |  | FXO/FXS | Voice |
| Kuwait | 64 k | QTEL | N/A | N/A | New Bridge Modem 2602 | Serial | AFTN |
| Bahrain | 64 k | QTEL | N/A | N/A | Motorola Vanguard 6840 | serial | AFTN, Radar |
|  |  |  |  |  |  | FXO/FXS | AFTN, Radar |
| Bahrain | 64 k | QTEL | N/A | N/A | Motorola Vanguard 6840 | FXO/FXS | Voice |



**Figure 9: Qatar Circuit Diagram**

## State   OMAN (Muscat)

| State | Speed | ISP | IP Address | Net Mask | Router Type | Data end user interface | Applications in use |
|---|---|---|---|---|---|---|---|
| Abu Dhabi | 64 k | OMANTEL | 192.168.12.142 | 255.255.255.0 | Motorola Vanguard 6455 | serial | AFTN, AMHS |
| | | | | | | FXO/FXS | Voice |
| JEDDAH | 64 k | OMANTEL | 10.10.10.1 | 255.255.255.0 | Cisco 2800 | serial | AFTN, AMHS |
| | | | | | | FXO/FXS | Voice |
| Bahrain | 64 k | OMANTEL | 192.168.30.1 | 255.255.255.0 | Cisco 2800 | serial | AFTN, Radar |
| | | | | | | FXO/FXS | AFTN, Radar |
| Iran | 64 k | OMANTEL | 172.16.14.0 | 255.255.255.252 | Cisco 2800 | FXO/FXS | Voice |
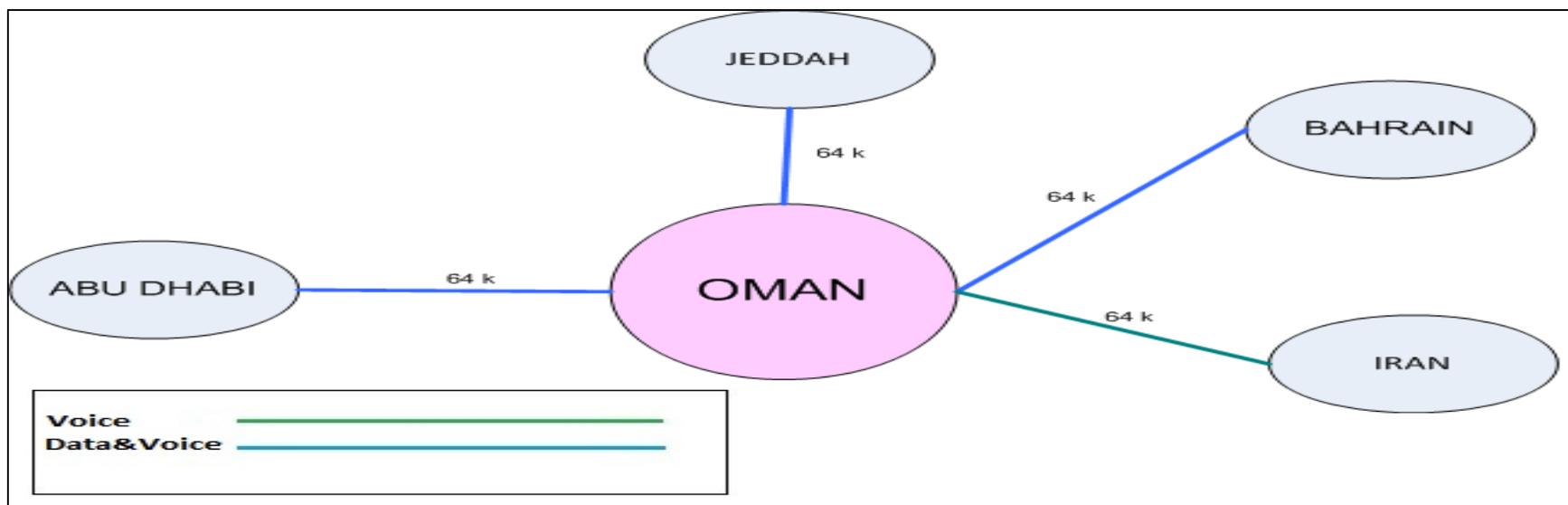


**Figure 10: Oman Circuit Diagram**

Remark:

After conducting the IP network Survey, *Common infrastructure characteristics in all states have been found as follows:*

- *Lebanon is in process of migration three circuits to IP networks (Kuwait, Bahrain, and Jeddah).*
- *Libya, Sudan, Syria and Yemen do not have IP circuits implemented*
- *Security Measure: Not implemented\**
- *Voice interfaces: FXO/FXS*
- *Voice Protocol Supported: SIP,H.323*
- *All IP circuits is using IPv4*
- *Link Type: Leased Line.*
- *Router interfaces:* Async Serial, Sync Serial ,Ethernet
- *\* Jordan has a firewall device CISCO ASA5510 for Abu Dhabi link (VPN)*

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# THE PROPOSED IPv4 ADDRESS PLAN for MID REGION

## Introduction

The IPv4 address scheme is proposed by the Caribbean and South American Regional for its ATN/IPS Network. The MID Region's plan was also part of their global IPv4 addressing assignment. The MID Region is requested to review this proposed IP addressing assignment for consideration and adoption.

## Objectives

This document is meant to describe the addressing plan for IPv4 addresses throughout the MID Region. This document defines the recommended address format for IPv4 addresses. The document lists the addresses allocated to States in the MID Region and the interstate connections IP's. The implementation of the proposed plan will go into stages and should be carefully coordinated between States.

## Acronyms

| ICAO | - | International Civil Aviation Organization |
|------|---|-------------------------------------------|
| AMHS | - | ATN Message Handling System |
| ARP | - | Address Resolution Protocol |
| ATN | - | Aeronautical Telecommunications Network |
| CNS | | Communication Navigation  Surveillance |
| BGP | - | Border Gateway Protocol |
| DNS | - | Domain Name Service |
| IANA | - | Internet Assigned Numbers Authority |
| ICS | - | ATN Internet Communication Service |
| IP | - | ATN Internet Communication Service |
| IPV4 | - | Internet Protocol Version 4 |
| IPV6 | - | Internet Protocol Version 6 |
| IPS | - | Internet Protocol suite |

| LACNIC | - | Latin American and Caribbean Internet Address Registry |
|--------|---|------------------------------------------------------|
| LIR | - | Local Internet Registry |
| OSPF | - | Open Shortest Path First |
| RIR | - | Regional Internet Registry |
| ANSP | - | Air Navigation Service Provider |
| ISP | - | Internet Service Provider |
| APAC | - | Asia and Pacific |
| CAR | - | Caribbean |
| SAM | - | South America |
| MID | - | Middle east |
| WACAF | - | West And Central Africa |
| ESAF | - | East And South Africa |
| PDU | - | Packet Data Unit |
| MTA | - | Message Transfer Agent |
| UA | - | User Agent |
| ACP | - | Aeronautical Communication Panel |
| SWIM | - | System Wide Information Management |
| PENS | - | PAN European Network Service |
| IMS | - | Information Management Service |

**Global IPv4 assignments**

| IPv4 Address | | | |
|---|---|---|---|
| 10 | Region | State / Territory | Host's |
| 0 0 0 0 1 0 1 0 . | 0 0 0 0 0 0 0 0 . | 0 0 0 0 0 0 0 0 . | 0 0 0 0 0 0 0 1 |
| 1st. Byte . | 2nd. Byte . | 3rd. Byte . | 4th. Byte |

- ➢ 0000 => SAM: South American Office.
- ➢ 0001 => NACC: North American, American Power station and Caribbean Office.
- ➢ 0010 => APAC: Asia and Pacific Office.
- ➢ **0011 => MID: Middle East Office.**
- ➢ 0100 => WACAF: Western and Central African Office.
- ➢ 0101 => ESAF: Eastern and Southern African Office.
- ➢ 0110 => EUR/NAT: European and North Atlantic Office.

**IP address Scheme Characteristics:**

The proposed IPv4 address allocation scheme will be able to cover:

- 128 States
- 8190 Hosts for each State.
- 2048 Point-to-Point links.

## Network Assignments

| Issue | State | Network | Direction Used | Decimal Notation | Binary Notation | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1st Byte | Region | State | Host |
| 1 | Bahrain | 10.48.0.0/19 | First | 10.48.0.1 | 00001010. | 0011 | 0000.000 | 00000.00000001 |
| | | | Last | 10.48.31.254 | 00001010. | 0011 | 0000.000 | 11111.11111110 |
| 2 | Egypt | 10.48.32.0/19 | First | 10.48.32.1 | 00001010. | 0011 | 0000.001 | 00000.00000001 |
| | | | Last | 10.48.63.254 | 00001010. | 0011 | 0000.001 | 11111.11111110 |
| 3 | Iran | 10.48.64.0/19 | First | 10.48.64.1 | 00001010. | 0011 | 0000.010 | 00000.00000001 |
| | | | Last | 10.48.95.254 | 00001010. | 0011 | 0000.010 | 11111.11111110 |
| 4 | Iraq | 10.48.96.0/19 | First | 10.48.96.1 | 00001010. | 0011 | 0000.011 | 00000.00000001 |
| | | | Last | 10.48.127.254 | 00001010. | 0011 | 0000.011 | 11111.11111110 |
| 5 | Jordan | 10.48.128.0/19 | First | 10.48.128.1 | 00001010. | 0011 | 0000.100 | 00000.00000001 |
| | | | Last | 10.48.159.254 | 00001010. | 0011 | 0000.100 | 11111.11111110 |
| 6 | Kuwait | 10.48.160.0/19 | First | 10.48.160.1 | 00001010. | 0011 | 0000.101 | 00000.00000001 |
| | | | Last | 10.48.191.254 | 00001010. | 0011 | 0000.101 | 11111.11111110 |
| 7 | Lebanon | 10.48.192.0/19 | First | 10.48.192.1 | 00001010. | 0011 | 0000.110 | 00000.00000001 |
| | | | Last | 10.48.223.254 | 00001010. | 0011 | 0000.110 | 11111.11111110 |
| 8 | Libya | 10.48.224.0/19 | First | 10.48.224.1 | 00001010. | 0011 | 0000.111 | 00000.00000001 |
| | | | Last | 10.48.255.254 | 00001010. | 0011 | 0000.111 | 11111.11111110 |
| 9 | Oman | 10.49.0.0/19 | First | 10.49.0.1 | 00001010. | 0011 | 0001.000 | 00000.00000001 |
| | | | Last | 10.49.31.1 | 00001010. | 0011 | 0001.000 | 11111.11111110 |
| 10 | Qatar | 10.49.32.0/19 | First | 10.49.32.1 | 00001010. | 0011 | 0001.001 | 00000.00000001 |
| | | | Last | 10.49.63.254 | 00001010. | 0011 | 0001.001 | 11111.11111110 |
| 11 | Saudi Arabia | 10.49.64.0/19 | First | 10.49.64.1 | 00001010. | 0011 | 0001.010 | 00000.00000001 |
| | | | Last | 10.49.95.254 | 00001010. | 0011 | 0001.010 | 11111.11111110 |
| 12 | Sudan | 10.49.96.0/19 | First | 10.49.96.1 | 00001010. | 0011 | 0001.011 | 00000.00000001 |
| | | | Last | 10.49.127.254 | 00001010. | 0011 | 0001.011 | 11111.11111110 |
| 13 | Syria | 10.49.128.0/19 | First | 10.49.128.1 | 00001010. | 0011 | 0001.100 | 00000.00000001 |
| | | | Last | 10.49.159.254 | 00001010. | 0011 | 0001.100 | 11111.11111110 |
| 14 | UAE | 10 .49 .160.0 /19 | First | 10 .49 .160.1 | 00001010. | 0011 | 0001.101 | 00000.00000001 |
| | | | Last | 10 .49 .191.254 | 00001010. | 0011 | 0001.101 | 11111.11111110 |
| 15 | Yemen | 10 .49 .192.0 /19 | First | 10 .49 .192.1 | 00001010. | 0011 | 0001.110 | 00000.00000001 |
| | | | Last | 10 .49 .223.254 | 00001010. | 0011 | 0001.110 | 11111.11111110 |

| Range 1 | Range 2 | Range 3 | Range 4 |
|---|---|---|---|
| 10 .48 .0 .0 - 10 .48 .31 .255 | 10 .49 .0 .0 - 10 .49 .31 .255 | 10 .50 .0 .0 - 10 .51 .31 .255 | 10 .51 .0 .0 - 10 .51 .31 .255 |
| 10 .48 .32 .0 - 10 .48 .63 .255 | 10 .49 .32 .0 - 10 .49 .63 .255 | 10 .50 .32 .0 - 10 .51 .63 .255 | 10 .51 .32 .0 - 10 .51 .63 .255 |
| 10 .48 .64 .0 - 10 .48 . 95 .255 | 10 .49 .64 .0 - 10 .49 . 95 .255 | 10 .50 .64 .0 - 10 .51 . 95 .255 | 10 .51 .64 .0 - 10 .51 . 95 .255 |
| 10 .48 .96 . 0 - 10 .48 .127.255 | 10 .49 .96 . 0 - 10 .49 .127.255 | 10 .50 .96 . 0 - 10 .51 .127.255 | 10 .51 .96 . 0 - 10 .51 .127.255 |
| 10 .48 .128.0 - 10 .48 .159 .255 | 10 .49 .128.0 - 10 .49 .159 .255 | 10 .50 .128.0 - 10 .51 .159 .255 | 10 .51 .128.0 - 10 .51 .159 .255 |
| 10 .48 .160.0 - 10 .48 .191 .255 | 10 .49 .160.0 - 10 .49 .191 .255 | 10 .50 .160.0 - 10 .51 .191 .255 | 10 .51 .160.0 - 10 .51 .191 .255 |
| 10 .48 .192.0 - 10 .48 .223 .255 | 10 .49 .192.0 - 10 .49 .223 .255 | 10 .50 .192.0 - 10 .51 .223 .255 | 10 .51 .192.0 - 10 .51 .223 .255 |
| 10 .48.224 .0 - 10 .48 . 225.255 | 10 .49.224 .0 - 10 .49 . 225.255 | 10 .50.224 .0 - 10 .51 . 225.255 | 10 .51.224 .0 - 10 .51 . 225.255 |
| Range 5 | Range 6 | Range 7 | Range 8 |
| 10 .52 .0 .0 - 10 .52 .31 .255 | 10 .53 .0 .0 - 10 .53 .31 .255 | 10 .54 .0 .0 - 10 .54 .31 .255 | 10 .55 .0 .0 - 10 .55 .31 .255 |
| 10 .52 .32 .0 - 10 .52 .63 .255 | 10 .53 .32 .0 - 10 .53 .63 .255 | 10 .54 .32 .0 - 10 .54 .63 .255 | 10 .55 .32 .0 - 10 .55 .63 .255 |
| 10 .52 .64 .0 - 10 .52 . 95 .255 | 10 .53 .64 .0 - 10 .53 . 95 .255 | 10 .54 .64 .0 - 10 .54 . 95 .255 | 10 .55 .64 .0 - 10 .55 . 95 .255 |
| 10 .52 .96 . 0 - 10 .52 .127.255 | 10 .53 .96 . 0 - 10 .53 .127.255 | 10 .54 .96 . 0 - 10 .54 .127.255 | 10 .55 .96 . 0 - 10 .55 .127.255 |
| 10 .52 .128.0 - 10 .52 .159 .255 | 10 .53 .128.0 - 10 .53 .159 .255 | 10 .54 .128.0 - 10 .54 .159 .255 | 10 .55 .128.0 - 10 .55 .159 .255 |
| 10 .52 .160.0 - 10 .52 .191 .255 | 10 .53 .160.0 - 10 .53 .191 .255 | 10 .54 .160.0 - 10 .54 .191 .255 | 10 .55 .160.0 - 10 .55 .191 .255 |
| 10 .52 .192.0 - 10 .52 .223 .255 | 10 .53 .192.0 - 10 .53 .223 .255 | 10 .54 .192.0 - 10 .54 .223 .255 | 10 .55 .192.0 - 10 .55 .223 .255 |
| 10 .52.224 .0 - 10 .52 . 225.255 | 10 .53.224 .0 - 10 .53 . 225.255 | 10 .54.224 .0 - 10 .54 . 225.255 | 10 .55.224 .0 - 10 .55 . 225.255 |
| Range 9 | Range 10 | Range 11 | Range 12 |
| 10 .56 .0 .0 - 10 .56 .31 .255 | 10 .57 .0 .0 - 10 .57 .31 .255 | 10 .58 .0 .0 - 10 .58 .31 .255 | 10 .59 .0 .0 - 10 .59 .31 .255 |
| 10 .56 .32 .0 - 10 .56 .63 .255 | 10 .57 .32 .0 - 10 .57 .63 .255 | 10 .58 .32 .0 - 10 .58 .63 .255 | 10 .59 .32 .0 - 10 .59 .63 .255 |
| 10 .56 .64 .0 - 10 .56 . 95 .255 | 10 .57 .64 .0 - 10 .57 . 95 .255 | 10 .58 .64 .0 - 10 .58 . 95 .255 | 10 .59 .64 .0 - 10 .59 . 95 .255 |
| 10 .56 .96 . 0 - 10 .56 .127.255 | 10 .57 .96 . 0 - 10 .57 .127.255 | 10 .58 .96 . 0 - 10 .58 .127.255 | 10 .59 .96 . 0 - 10 .59 .127.255 |
| 10 .56 .128.0 - 10 .56 .159 .255 | 10 .57 .128.0 - 10 .57 .159 .255 | 10 .58 .128.0 - 10 .58 .159 .255 | 10 .59 .128.0 - 10 .59 .159 .255 |
| 10 .56 .160.0 - 10 .56 .191 .255 | 10 .57 .160.0 - 10 .57 .191 .255 | 10 .58 .160.0 - 10 .58 .191 .255 | 10 .59 .160.0 - 10 .59 .191 .255 |
| 10 .56 .192.0 - 10 .56 .223 .255 | 10 .57 .192.0 - 10 .57 .223 .255 | 10 .58 .192.0 - 10 .58 .223 .255 | 10 .59 .192.0 - 10 .59 .223 .255 |
| 10 .56.224 .0 - 10 .56 . 225.255 | 10 .57.224 .0 - 10 .57 . 225.255 | 10 .58.224 .0 - 10 .58 . 225.255 | 10 .59.224 .0 - 10 .59 . 225.255 |
| Range 13 | Range 14 | Range 15 | Range 16 |
| 10 .60 .0 .0 - 10 .60 .31 .255 | 10 .61 .0 .0 - 10 .61 .31 .255 | 10 .62 .0 .0 - 10 .62 .31 .255 | 10 .63 .0 .0 - 10 .63 .31 .255 |
| 10 .60 .32 .0 - 10 .60 .63 .255 | 10 .61 .32 .0 - 10 .61 .63 .255 | 10 .62 .32 .0 - 10 .62 .63 .255 | 10 .63 .32 .0 - 10 .63 .63 .255 |
| 10 .60 .64 .0 - 10 .60 . 95 .255 | 10 .61 .64 .0 - 10 .61 . 95 .255 | 10 .62 .64 .0 - 10 .62 . 95 .255 | 10 .63 .64 .0 - 10 .63 . 95 .255 |
| 10 .60 .96 . 0 - 10 .60 .127.255 | 10 .61 .96 . 0 - 10 .61 .127.255 | 10 .62 .96 . 0 - 10 .62 .127.255 | 10 .63 .96 . 0 - 10 .63 .127.255 |
| 10 .60 .128.0 - 10 .60 .159 .255 | 10 .61 .128.0 - 10 .61 .159 .255 | 10 .62 .128.0 - 10 .62 .159 .255 | 10 .63 .128.0 - 10 .63 .159 .255 |
| 10 .60 .160.0 - 10 .60 .191 .255 | 10 .61 .160.0 - 10 .61 .191 .255 | 10 .62 .160.0 - 10 .62 .191 .255 | 10 .63 .160.0 - 10 .63 .191 .255 |
| 10 .60 .192.0 - 10 .60 .223 .255 | 10 .61 .192.0 - 10 .61 .223 .255 | 10 .62 .192.0 - 10 .62 .223 .255 | 10 .63 .192.0 - 10 .63 .223 .255 |
| 10 .60.224 .0 - 10 .60 . 225.255 | 10 .61.224 .0 - 10 .61 . 225.255 | 10 .62.224 .0 - 10 .62 . 225.255 | 10 .63.224 .0 - 10 .63 . 225.255 |

**MID REGION SUB-NETWORKS**                    (*Orange=State Range*      *Blue=Vacancy*      *Red= Reserved*)

## MID Region intra-Regional Links (Point to Point)

| No. | Sub-Network | Connected Route | Host / State | IP Address |
|-----|-------------|-----------------|--------------|------------|
| | | | -- | 10.63.224.0 |
| 1 | 10.63.224. 0 /30 | **Bahrain - Riyadh** | Bahrain | 10.63.224.1 |
| | | | Riyadh | 10.63.224.2 |
| | | | -- | 10.63.224.3 |
| | | | -- | 10.63.224.4 |
| 2 | 10.63.224. 4 /30 | **Bahrain - Dammam** | Bahrain | 10.63.224.5 |
| | | | Dammam | 10.63.224.6 |
| | | | -- | 10.63.224.7 |
| | | | -- | 10.63.224.8 |
| 3 | 10.63.224. 8 /30 | **Bahrain - Jeddah** | Bahrain | 10.63.224.9 |
| | | | Jeddah | 10.63.224.10 |
| | | | -- | 10.63.224.11 |
| | | | -- | 10.63.224.12 |
| 4 | 10.63.224. 12 /30 | **Bahrain - Kuwait** | Bahrain | 10.63.224.13 |
| | | | Kuwait | 10.63.224.14 |
| | | | -- | 10.63.224.15 |
| | | | -- | 10.63.224.16 |
| 5 | 10.63.224. 16 /30 | **Bahrain – Doha1** | Bahrain | 10.63.224.17 |
| | | | Doha1 | 10.63.224.18 |
| | | | -- | 10.63.224.19 |
| | | | -- | 10.63.224.20 |
| 6 | 10.63.224. 20 /30 | **Bahrain – Doha2** | Bahrain | 10.63.224.21 |
| | | | Doha2 | 10.63.224.22 |
| | | | -- | 10.63.224.23 |
| | | | -- | 10.63.224.24 |
| 7 | 10.63.224. 24 /30 | **Bahrain – AbuDhabi1** | Bahrain | 10.63.224.25 |
| | | | AbuDhabi1 | 10.63.224.26 |
| | | | -- | 10.63.224.27 |
| | | | -- | 10.63.224.28 |
| 8 | 10.63.224. 28 /30 | **Bahrain – AbuDhabi2** | Bahrain | 10.63.224.29 |
| | | | AbuDhabi2 | 10.63.224.30 |
| | | | -- | 10.63.224.31 |

| No. | Sub-Network | Connected Route | Host / State | IP Address |
|-----|-------------|-----------------|--------------|------------|
| | | | -- | 10.63.224.32 |
| 9 | 10.63.224. 32 /30 | **Bahrain – Tehran** | Bahrain | 10.63.224.33 |
| | | | Tehran | 10.63.224.34 |
| | | | -- | 10.63.224.35 |
| *7 Sub-Networks are reserved for future links (10.63.224.36/30 – 10.63.224.63/30)* | | | |
| | | | -- | 10.63.224.64 |
| 10 | 10.63.224. 64 /30 | **Egypt – Amman** | Egypt | 10.63.224.65 |
| | | | Amman | 10.63.224.66 |
| | | | -- | 10.63.224.67 |
| | | | -- | 10.63.224.68 |
| 11 | 10.63.224. 68 /30 | **Egypt – Jeddah1** | Egypt | 10.63.224.69 |
| | | | Jeddah1 | 10.63.224.70 |
| | | | -- | 10.63.224.71 |
| | | | -- | 10.63.224.72 |
| 12 | 10.63.224. 72 /30 | **Egypt – Jeddah2** | Egypt | 10.63.224.73 |
| | | | Jeddah2 | 10.63.224.74 |
| | | | -- | 10.63.224.75 |
| | | | -- | 10.63.224.76 |
| 13 | 10.63.224. 76 /30 | **Egypt – Riyadh** | Egypt | 10.63.224.77 |
| | | | Riyadh | 10.63.224.78 |
| | | | -- | 10.63.224.79 |
| | *12Sub-Networks are reserved for future links (10.63.224.80/30 – 10.63.224.127/30)* | | | |
| | | | -- | 10.63.224. 128 |
| 14 | 10.63.224. 128 /30 | **Iran - Iraq** | Iran | 10.63.224. 129 |
| | | | Iraq | 10.63.224. 130 |
| | | | -- | 10.63.224. 131 |
| | | | -- | 10.63.224. 132 |
| 15 | 10.63.224. 132 /30 | **Iran - Kuwait** | Iran | 10.63.224. 133 |
| | | | Kuwait | 10.63.224. 134 |
| | | | -- | 10.63.224. 135 |
| | *14 Sub-Networks are reserved for future links (10.63.224.136/30 – 10.63.224.191/30)* | | | |
| | | | -- | 10.63.224. 192 |
| 16 | 10.63.224. 192 /30 | **Jordan - Jeddah** | Jordan | 10.63.224. 193 |
| | | | Jeddah | 10.63.224. 194 |

| No. | Sub-Network | Connected Route | Host / State | IP Address |
|---|---|---|---|---|
| | | | -- | 10.63.224. 195 |
| *15 Sub-Networks are reserved for future links (10.63.224.196/30 − 10.63.224.255/30)* | | | | |
| | | | -- | 10.63.225.0 |
| **17** | 10.63.225. 0 /30 | **Kuwait - Iraq** | Kuwait | 10.63.225.1 |
| | | | Iraq | 10.63.225.2 |
| | | | -- | 10.63.225.3 |
| *15 Sub-Networks are reserved for future links (10.63.225.4/30 − 10.63.225.63/30)* | | | | |
| | | | -- | 10.63.225. 64 |
| **18** | 10.63.225. 64 /30 | **Qatar – Abu Dhabi** | Qatar | 10.63.225. 65 |
| | | | Abu Dhabi | 10.63.225. 66 |
| | | | -- | 10.63.225. 67 |
| *15 Sub-Networks are reserved for future links (10.63.225.68/30 − 10.63.225.127/30)* | | | | |
| | | | -- | 10.63.225.128 |
| **19** | 10.63.225. 128 /30 | **Saudi Arabia (Jeddah) - Muscat** | Jeddah | 10.63.225.129 |
| | | | Muscat | 10.63.225.130 |
| | | | -- | 10.63.225.131 |
| *15 Sub-Networks are reserved for future links (10.63.225.132/30 − 10.63.225.191/30)* | | | | |
| | | | -- | 10.63.225. 192 |
| **20** | 10.63.225. 192 /30 | **UAE (Abu Dhabi) - Muscat** | Abu Dhabi | 10.63.225. 193 |
| | | | Muscat | 10.63.225. 194 |
| | | | -- | 10.63.225. 195 |
| *15 Sub-Networks are reserved for future links (10.63.225.196/30 − 10.63.225.255/30)* | | | | |
| | | | -- | -- |
| **--** | 10.64.226. 0 /30 | **Lebanon** | -- | -- |
| *16 Sub-Networks are reserved for future links (10.63.226.0/30 − 10.63.226.63/30)* | | | | |
| | | | -- | -- |
| -- | 10.63.226. 64 /30 | **Sudan** | -- | -- |
| *16 Sub-Networks are reserved for future links (10.63.226.64/30 − 10.63.226.127/30)* | | | | |

**Remark**: *In case of a new IP link between two states, both States will have to use the next available IP address range as specified in the above table.*

**MID Region intra-Regional Links (Per State)**

| No. | State | Connected Route | Local Interface | Next Hop Interface |
|---|---|---|---|---|
| 1 | Bahrain | Bahrain - Riyadh | 10.63.224.1 | 10.63.224.2 |
| | | Bahrain - Dammam | 10.63.224.5 | 10.63.224.6 |
| | | Bahrain - Jeddah | 10.63.224.9 | 10.63.224.10 |
| | | Bahrain - Kuwait | 10.63.224.13 | 10.63.224.14 |
| | | Bahrain – Doha1 | 10.63.224.17 | 10.63.224.18 |
| | | Bahrain – Doha2 | 10.63.224.21 | 10.63.224.22 |
| | | Bahrain – AbuDhabi1 | 10.63.224.25 | 10.63.224.26 |
| | | Bahrain – AbuDhabi2 | 10.63.224.29 | 10.63.224.30 |
| | | Bahrain – Tehran | 10.63.224.33 | 10.63.224.34 |
| 2 | Egypt | Egypt-Amman | 10.63.224.65 | 10.63.224.66 |
| | | Egypt-Jeddah1 | 10.63.224.69 | 10.63.224.70 |
| | | Egypt-Jeddah2 | 10.63.224.73 | 10.63.224.74 |
| | | Egypt-Riyadh | 10.63.224.77 | 10.63.224.78 |
| 3 | Iran | Iran-Iraq | 10.63.224. 129 | 10.63.224. 130 |
| | | Iran-Kuwait | 10.63.224. 133 | 10.63.224. 134 |
| | | Iran-Bahrain | 10.63.224.34 | 10.63.224.33 |
| 4 | Iraq | Iraq-iran | 10.63.224. 130 | 10.63.224. 129 |
| 5 | Jordan | Jordan - Jeddah | 10.63.224. 193 | 10.63.224. 194 |
| | | Jordan - Cairo | 10.63.224.66 | 10.63.224.65 |
| 6 | Kuwait | Kuwait-Bahrain | 10.63.224.14 | 10.63.224.13 |
| | | Kuwait-Iraq | 10.63.225.1 | 10.63.225.2 |
| | | Kuwait-Iran | 10.63.224. 134 | 10.63.224. 133 |
| 7 | Lebanon | -- | -- | -- |
| 8 | Libya | -- | -- | -- |
| 9 | Oman | -- | -- | -- |

| No. | | Connected Route | Local Interface | Next Hop Interface |
|---|---|---|---|---|
| 10 | **Qatar** | Qatar-AbuDhabi | 10.63.225. 65 | 10.63.225. 66 |
| | | Qatar-Bahrain1 | 10.63.224.18 | 10.63.224.17 |
| | | Qatar-Bahrain2 | 10.63.224.22 | 10.63.224.21 |
| 11 | **Saudi Arabia** | Jeddah - Muscat | 10.63.225.129 | 10.63.225.130 |
| | | Jeddah - Cairo1 | 10.63.224.70 | 10.63.224.69 |
| | | Jeddah - Cairo2 | 10.63.224.74 | 10.63.224.73 |
| | | Jeddah - Amman | 10.63.224. 194 | 10.63.224. 193 |
| | | Jeddah - Bahrain | 10.63.224.10 | 10.63.224.9 |
| 12 | **Sudan** | -- | -- | -- |
| 13 | **Syria** | -- | -- | -- |
| 14 | **UAE** | UAE - Muscat | 10.63.225. 193 | 10.63.225. 194 |
| | | UAE - Bahrain1 | 10.63.224.26 | 10.63.224.25 |
| | | UAE - Bahrain2 | 10.63.224.30 | 10.63.224.29 |
| | | UAE - Qatar | 10.63.225. 66 | 10.63.225. 65 |
| 15 | **Yemen** | -- | -- | -- |

**Impact of Changing Point-to-Point Ip address**

The corresponding point-to-point IP line will be down during IP replacement process

**Tips to Replace IP address**

1- Coordinate with the adjacent State to agree on IPs, Routing, etc.

2- Make a backup of current configuration of the network devices (Routers, Firewalls… etc.)

3- Simulate new configuration on test network devices if possible

4- Advise AFS operators about downtime duration & time (for data line) or the controller(for voice line), the AFS operator should direct TFC to alternative CCT, and controller to use alternative voice means(dialup, Backup voice line,…etc.)

5- Configure network device with new setting

6- Send test data and decide about its reliability

7- Advise about its availability.

**IP Change Schedule**

| No | State | Old IP | New IP | Net Mask | Router Type | Target date to change | State to connect to | Circuit speed | Circuit number | Type of Circuit | ISP | State Contact |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Bahrain | | | | | | | | | | | |
| 2 | Egypt | | | | | | | | | | | |
| 3 | Iran | | | | | | | | | | | |
| 4 | Iraq | | | | | | | | | | | |
| 5 | Jordan | | | | | | | | | | | |
| 6 | Kuwait | | | | | | | | | | | |
| 7 | Lebanon | | | | | | | | | | | |
| 8 | Libya | | | | | | | | | | | |
| 9 | Oman | | | | | | | | | | | |
| 10 | Qatar | | | | | | | | | | | |
| 11 | Saudi Arabia | | | | | | | | | | | |
| 12 | Sudan | | | | | | | | | | | |
| 13 | Syria | | | | | | | | | | | |
| 14 | UAE | | | | | | | | | | | |
| 15 | Yemen | | | | | | | | | | | |

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