



*International Civil Aviation Organization*

**MIDANPIRG Communication, Navigation and Surveillance Sub-Group**

**Eighth Meeting (CNS SG/8)**  
*(Cairo, Egypt, 26 - 28 February 2018)*

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**Agenda Item 4: CNS Planning and Implementation in the MID Region**

**COMMON AERONAUTICAL VIRTUAL PRIVATE NETWORK PROJECT (CRV)**

*(Presented by Secretariat)*

**SUMMARY**

The aim of this paper is to provide an update on the CRV Project and discuss ways and means to expedite the implementation by MID States.

Action by the meeting is at paragraph 3.

**REFERENCES**

- APAC CRV OG/3 Report
- MIDANPIRG/16 Report

**1. INTRODUCTION**

1.1 The Sixteenth meeting of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG/16) was held in Kuwait, From 13 to 16 February 2017. The meeting was attended by a total of Eighty (80) participants, which included experts from thirteen (13) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE and USA) and nine (9) International Organizations/Agencies (AACO, Boeing, CANSO, COSCAP-GS, GCC, IATA, IFAIMA, IFALPA and MIDRMA).

1.2 The Second meeting of the CRV Operation Group (CRV OG/2) was held in Bangkok, Thailand, 15 May 2017. And the Third meeting (CRV OG/3) was held in Bangkok, 18-20 December 2017. CRV OG/3 was attended by 60 participants including three (3) States from the MID Region (Bahrain, Kuwait and Lebanon).

## 2. DISCUSSION

2.1 The CRV aims to help States achieve a safe, secure, reliable and economical backbone network to handle current and anticipated network traffic demand as well as enabling the new features enhancement in the APAC and MID Regions.

2.2 The CRV network will support the exchange of:

- AFTN/AMHS messages to replace the current AFTN/AMHS connections;
- ground-to-ground voice communications between States;
- AIDC messages via the exchange of AFTN/AMHS messages;
- METAR and SPECI (including TREND), TAF and SIGMET data in a GML-compliant format;
- NOTAM and aeronautical data including obstacles, terminal procedures and airport mapping data in a GML-compliant format;
- Data Link Communications;
- AIM information such as eAIP over IP;
- ATFM data flow of meteorological data in the same manner as support for WXXM data flow;
- exchange of ATFM information such as flight schedule, ATFM messages, ATFM daily plan (ADP), etc.;
- ATS messages, Traffic Flow Management, Airport CDM and boundary crossing in a GML-compliant format; and
- other data as necessary.

2.3 The meeting may wish to recall that MIDANPIRG/16 agreed that the procurement framework of the APAC CRV be used for the implementation of the MID IP Network Project and that the CRV procurement includes all ICAO MID States as potential users. Furthermore, Six (6) States (Bahrain, Iran, Jordan, Kuwait, Lebanon and Sudan) confirmed their commitment and three (3) States (Oman, Saudi Arabia and UAE) confirmed provisional commitment to the project. States' focal points and Commitment Status is at **Appendix A**.

2.4 Based on that, MIDANPIRG/16 through Conclusion 16/15 invited States to engage with the recommended supplier to establish individual service contracts.

*CONCLUSION 16/15: MID IP NETWORK PROJECT (CRV)*

*That,*

- a) *States that have already committed to join CRV, are invited to engage with the recommended supplier to establish individual service contracts; and*

- b) *States that have not yet done so, are urged to carry out a comprehensive CBA related to the implementation of an IP Network under the CRV framework; and inform the ICAO MID Office, as soon as possible, about their decision related to the joining of CRV.*

2.5 The meeting may wish to recall that MIDANPIRG/16 reviewed and endorsed the MID IP Network (CRV) Implementation Process developed based on the APAC CRV Implementation Plan, which might be helpful for States in case they decide to join the CRV. The Implementation plan is at **Appendix B**.

2.6 In this regard, States have been notified of the successful outcome of the evaluation process and negotiations with the selected provider (PCCW Global Limited) and provided with the CRV Engineering package.

2.7 During the Third meeting of the CRV OG, it was agreed that the transition period to CRV in the APAC Region from 2018 to 2020 should be harmonized as much as possible between stakeholders in order to achieve the benefits of CRV implementation. The harmonized implementation should be as early as possible. The meeting also reiterated the need for the CRV to support the exchange of digital FIXM, AIXM and IWXXM data, and facilitate the implementation of AIDC applications and emerging SWIM-based applications.

2.8 Moreover, the CRV OG/3 endorsed the Final Review of the CRV Engineering Package based on the outcome of the intermediate review.

2.9 The meeting may wish to note that the CRV pilot project had been slightly delayed. States concerned with the CRV pilot project estimated to sign Contract with PCCW Global in January 2018 and the CRV service readiness will be in March 2018.

2.10 The validity of the CRV project starts from the contract award date on January 1, 2018 for an initial fixed 5 year term, subject to the performance of PCCW Global; the subsequent 5 year term will be granted and ended by 31 December 2027. Therefore, each State signs service contract with PCCW Global for fixed 5 year term from billing start date. After expiry of the initial fixed term, the contract would be automatically renewed year-on-year basis until the end of the CRV project, unless either party gives written termination notice or proposes to renew the contract.

2.11 The meeting may wish to note that during the CRV OG/3, breakout Session took place between MID States (Bahrain, Kuwait and Lebanon) and CRV's service provider (PCCW), where States had the chance to get involved with PCCW. Several issues/concerns related to the data flow, Security, SLA, Bandwidth and Contingency measures were clarified. Furthermore, it was agreed with PCCW to hold one-day Workshop in Cairo on 1 March 2018.

2.12 According to the CRV Concept of Operation, CRV Users will choose to implement CRV through two backbones; one Multiprotocol Label Switching (MPLS), based on a terrestrial, satellite, or both networks, and/or one based on a secured Virtual Private Network over the public internet in their individual service contract. Based on that, the MID IP Addressing scheme has been incorporated to the CRV Implementation Plan. The IP addressing scheme is at **Appendix C**.

2.13 The meeting may wish to note that States should complete the High Level Questionnaire at **Appendix D** with their requirements and selected Service Package(s) as a first step. Based on States inputs, the CRV's Service Provider (PCCW) will produce the System Design Document (SDD) for each State. The CRV documents flow is at **Appendix E**.

2.14 It is worth to mention that the National SDD should be reviewed and endorsed by the CRV Operation Group. Although the membership of APAC CRV OG mentioned in the TOR currently does not include States in MID Region, the APAC CRV agreed that States/Administrations in the MID join the APAC CRV OG for the short term.

2.15 The meeting may wish to note that the Fourth meeting of the CRV OG will be held in Nadi, Fiji, from 18 to 20 April 2018 in conjunction with CRV Workshop which is planned for 16-17 April 2018.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) urge States that have not yet completed the high level Questionnaire, to do so ASAP and touch base with PCCW;
- b) invite States to attend the CRV OG/4 in Nadi, Fiji to discuss and approve their SDD.

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APPENDIX A

MID IP Network Project (CRV) Focal Points and Commitment Status

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
<b>Bahrain</b>	Mohamed Ali Saleh Chief Aeronautical Telecomm	Fax: +973 17329966 Tel: +973 17321187 Email: masaleh@caa.gov.bh	Air Navigation Directorate Building: 353, Road: 2408, Block:224, Muharraq, Bahrain Technical Room coordination point: 2616N 05038E	Y (1)
	Yaseen Hassan AlSayed Head Aeronautical Telecomm Network	Fax: +973 17329966 Tel: +973 17321183 Email: y.alsayed@caa.gov.bh		
<b>Egypt</b>	Mr. Mohamed Ramzy Mohamed Abdallah Director of AFTN/AMHS Technical Department	Tel: +202 22657981 +201007736780 Email: Mrma_eg@yahoo.com	Building Name: Cairo Air Navigation Center (CANC) Address: NANSCEG Company – Cairo 300701.0 N 0312342.4 E	
	Eng. Haitham Mohamed Ahmed Eldosoki Director of AIM Technical Department	Tel: +202 22650781 +201007810781 Email: Haitham.mohamed@nansceg.net		
<b>Iran</b>	Mr. AliAkbar SalehiValojerdi Senior Expert of IRANAFTN/AMHS Training Department	Fax: +98 21 66025101 Tel: +98 21 6102337 Mobile: +989 124 202775 Email: aasalehi@airport.ir		Y (1)
	Mr. Alireza Mahdavisefat Senior Expert of IRANAFTN/AMHS COM Centre	Fax: +98 21 66025101 Tel: +98 21 6314 6432 Mobile: +989 333510320 Email: mahdavi@airport.ir		
<b>Iraq</b>				
<b>Jordan</b>	Ms. Mohammad AlRousan Director of Technical Support (CNS)	Tel: +9626 4881473 +96279 9839194 Email: Mohammad.Rousan@carc.gov.jo		Y (1)
	Mr. Yaser Zayyad Chief of AFS Engineering	Tel: +962 79 5781882 Email: Yasser.zayyad@carc.gov.jo		

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
<b>Kuwait</b>	Mr. Hassan Alattar Communication Engineer	Fax: +965-2 4721 279 Tel: +965-2 4732 530 Mobile: +965 99449454 Email: ha.alattar@dgca.gov.kw		Y (1)
<b>Lebanon</b>	Mr. Mohamad Abdallah Saad Head of Telecommunication Equipment	Fax: +961 1 629 031 Tel: +961 1 628 151 Mobile: +961 3 280 299 Email: msaad@beirutairport.gov.lb		Y (1)
<b>Libya</b>				
<b>Oman</b>	Mr. Nasser Salim Al-Suleimani Chief ATM Systems Mr. Ibrahim Said Al-Hajri ATM Systems Engineer	Email: nassers@paca.gov.om alhajri@paca.gov.om		P-Y (1)
<b>Qatar</b>				
<b>Saudi Arabia</b>	Ibrahim bash Senior Systems Engineer Automation Engineering Branch	Fax: +966 12 671 9041 Tel: +966 12 671 7717 Ext 1119 Mobile: +966 50 567 1231 Email: ibasheikh@gaca.gov.sa		(3 sites) (Riyadh, Jeddah and Dammam)
<b>Sudan</b>	Eng. Yasir Eltayeb Sidahmed	Fax: +249 183 770001 Tel: +249 183 782701 Email: yasirts@gmail.com		Y (1)
<b>Syria</b>				
<b>UAE</b>	Greg Kurten A/Director CNS Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6860 Email: gegkurten@szc.gcaa.ae	The co-ordinates are as follows: 242641.82 N 0543635.46 E The working number at site is: +971 2 5996900	P-Y (1)
	Shahzad Chaudhary Senior CNS Engineer Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6865 Email: shahzad@szc.gcaa.ae		
<b>Yemen</b>				

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**APPENDIX B**

**MID IP Network (CRV) Implementation Process**

	<b>Action Title</b>	<b>Activities</b>	<b>Responsible</b>	<b>Timeline</b>
1	Technical requirements	<ul style="list-style-type: none"> <li>• States/ANSP develop their requirements (specify performance, interface, conversion, operational procedure, acceptance test procedure)</li> <li>• Present to Vendor for comment and response</li> <li>• Finalize requirements</li> </ul>	<ul style="list-style-type: none"> <li>• States/ANSPs (with support of Vendor)</li> <li>• States/ANSPs and Vendor</li> <li>• States/ANSPs</li> </ul>	6 to 9 months
2	Negotiation and agreement between two connecting States/ Administrations	<ul style="list-style-type: none"> <li>• To decide on the type of data or voice to be exchanged via CRV, QoS for each type of applications and the required bandwidth</li> <li>• CRV Contractor to comment and response to the agreed requirements</li> <li>• Agree to implementation schedule</li> </ul>	<ul style="list-style-type: none"> <li>• Two connecting States/ANSPs</li> <li>• Vendor</li> <li>• Two connecting States/ANSPs</li> </ul>	6 to 9 months (concurrent with Action 1)
3	CRV Contractor proposes draft Contract to ANSP/State	<ul style="list-style-type: none"> <li>• Vendor to develop and propose a draft Contract</li> </ul>	<ul style="list-style-type: none"> <li>• Vendor</li> </ul>	3 months
4	Signature of the Contract	<ul style="list-style-type: none"> <li>• Review and finalize the Contract <ul style="list-style-type: none"> <li>➤ Contractual and Legal review</li> <li>➤ Technical and operational review</li> <li>➤ Finalize contract</li> <li>➤ Establish contract and payment system</li> </ul> </li> <li>• Signature of the Contract</li> </ul>	<ul style="list-style-type: none"> <li>• States/ANSPs</li> <li>• States/ANSPs and Vendor</li> </ul>	3 to 6 months
5	Operation, test and evaluation	<ul style="list-style-type: none"> <li>• Implementation and operation</li> <li>• Perform acceptance test with associated applications</li> <li>• Perform acceptance test with respective ANSPs/States</li> </ul>	<ul style="list-style-type: none"> <li>• States/ANSPs and Vendor</li> </ul>	3 to 6 months
6	Service acceptance	<ul style="list-style-type: none"> <li>• Service acceptance</li> </ul>	<ul style="list-style-type: none"> <li>• States/ANSPs</li> </ul>	1 month

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## APPENDIX C

## APPENDIX C

No.	State	Network IP Address	Hosts IP addresses					
			Decimal Notation		Binary Notation			
					1 <sup>st</sup> Byte	Region	State	Hosts
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	10.48.0.0/19	First	10.48.128.1	00001010.	0011	0000.100	00000.00000001
			Last	10.48.159.254	00001010.	0011	0000.100	11111.11111110
6	Kuwait	10.48.0.0/19	First	10.48.160.1	00001010.	0011	0000.101	00000.00000001
			Last	10.48.195.254	00001010.	0011	0000.101	11111.11111110
7	Lebanon	10.48.0.0/19	First	10.48.196.1	00001010.	0011	0000.110	00000.00000001
			Last	10.48.223.254	00001010.	0011	0000.110	11111.11111110
8	Libya	10.48.0.0/19	First	10.48.224.1	00001010.	0011	0000.111	00000.00000001
			Last	10.48.255.254	00001010.	0011	0000.111	11111.11111110
9	Oman	10.48.0.0/19	First	10.49.0.1	00001010.	0011	0001.000	00000.00000001
			Last	10.49.31.254	00001010.	0011	0001.000	11111.11111110
10	Qatar	10.48.0.0/19	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	10.48.0.0/19	First	10.49.64.1	00001010.	0011	0001.010	00000.00000001
			Last	10.49.95.254	00001010.	0011	0001.010	11111.11111110
12	Sudan	10.48.0.0/19	First	10.49.96.1	00001010.	0011	0001.011	00000.00000001
			Last	10.49.127.254	00001010.	0011	0001.011	11111.11111110
13	Syria	10.48.0.0/19	First	10.49.128.1	00001010.	0011	0001.100	00000.00000001
			Last	10.49.159.254	00001010.	0011	0001.100	11111.11111110
14	UAE	10.48.0.0/19	First	10.49.160.1	00001010.	0011	0001.101	00000.00000001
			Last	10.49.127.254	00001010.	0011	0001.101	11111.11111110
15	Yemen	10.48.0.0/19	First	10.49.128.1	00001010.	0011	0001.110	00000.00000001
			Last	10.49.223.254	00001010.	0011	0001.110	11111.11111110

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High Level Individual State Questionnaire v.1a

Thanks for your interests joining the CRV.

Please find the below questionnaire for you and let us know more your particular interests and requirements.

We are glad to further discuss with you on next ICAO meeting in January 2017 at Bangkok again.

• **Number of sites**

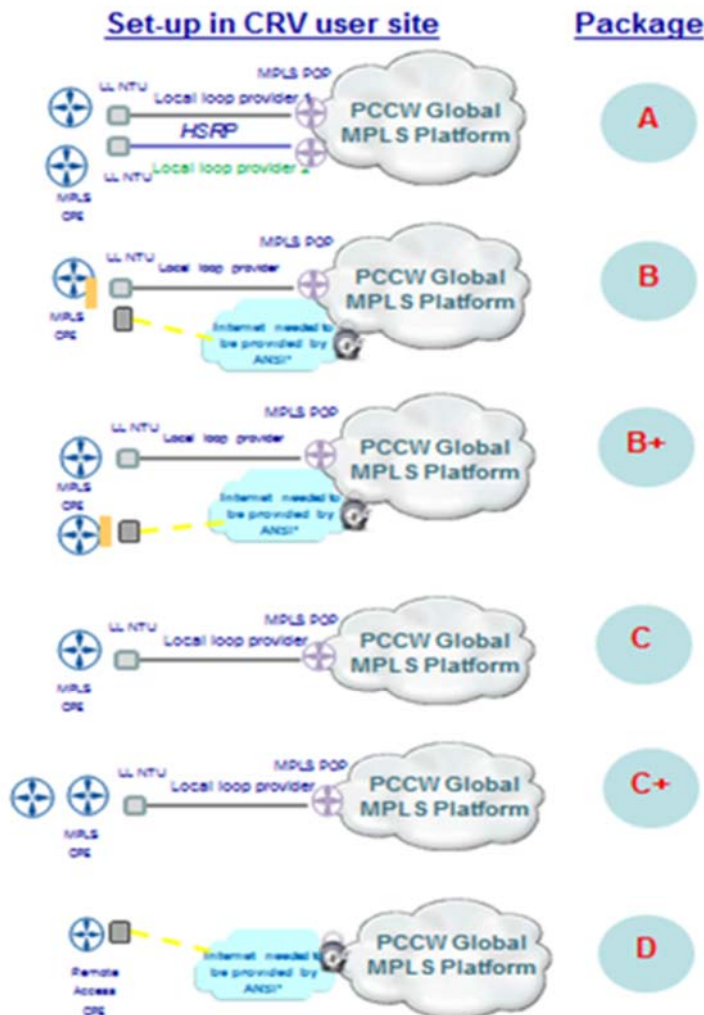
1) How many sites/airports in your state in total? \_\_\_\_\_

2) How many potential sites/airports you are interested to connect to CRV? \_\_\_\_\_

3) Which other countries (sites/airports) you are interested to connect with them particularly?

**Eg. Lebanon, Kuwait.....**

Diagram 1: SDD



• **Core services ( FOR EACH SITE )**

I am interested the core services (transport on IP, managed NID with Ethernet port(s)) for:

<b>Site:</b>	<b>Point of contact:</b>
Phone: _____	Email _____
Full installation address: _____ _____ _____	Local site contact : _____ Phone : _____ Email : _____
I want the services to be delivered at this site on MM/YYYY ____/ 20____	
For this site I prefer the setup of Package procure a dedicated access based on : <i>( please refer to the diagram 1: SDD )</i>	
<input type="checkbox"/> Package A <input type="checkbox"/> Package B+ <input type="checkbox"/> Package B <input type="checkbox"/> Package C+ <input type="checkbox"/> Package C <input type="checkbox"/> Package D	
<b>Voice bandwidth :</b> <input type="checkbox"/> 64 Kbps <input type="checkbox"/> 128 Kbps <input type="checkbox"/> 256 Kbps <input type="checkbox"/> 512 Kbps <input type="checkbox"/> 1024 Kbps <input type="checkbox"/> 2048 Kbps <input type="checkbox"/> 4096 Kbps <input type="checkbox"/> 8192 Kbps	
<b>Data Bandwidth :</b> <input type="checkbox"/> 64 Kbps <input type="checkbox"/> 128 Kbps <input type="checkbox"/> 256 Kbps <input type="checkbox"/> 512 Kbps <input type="checkbox"/> 1024 Kbps <input type="checkbox"/> 2048 Kbps <input type="checkbox"/> 4096 Kbps <input type="checkbox"/> 8192 Kbps	
<b>Total bandwidth : ( Voice bandwidth + Data bandwidth )</b> <input type="checkbox"/> 64 Kbps <input type="checkbox"/> 128 Kbps <input type="checkbox"/> 256 Kbps <input type="checkbox"/> 512 Kbps <input type="checkbox"/> 1024 Kbps <input type="checkbox"/> 2048 Kbps <input type="checkbox"/> 4096 Kbps <input type="checkbox"/> 8192 Kbps	
Any special requirements on your local loop vendors if any : <i>if yes, please provide their contacts</i> _____ _____ _____	

• **Additional services ( for each site )**

In coordination with other user(s), I procure a managed voice and data router with the following interfaces:

- E1: \_\_\_\_\_
- 4-wire E&M Type V (6 wires): \_\_\_\_\_
- 2-wire FXS: \_\_\_\_\_
- 2-wire FXO: \_\_\_\_\_
- Ethernet: \_\_\_\_\_

Remarks:

- 1) Existing Voice equipment: Brand/ Model :
- 2) Connection status : for example : [2-wire E&M to site B](#); [2-wire E&M to site C](#)

- Your existing setup or requirements which you would like to share with us.

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Or you have your existing network diagram or planned new diagram want to share with us.  
*For example: Any Multicast application? If yes, please specify your required bandwidth.*

End

Additional sites ( Please fill in )

• **Core services ( FOR EACH SITE )**

I am interested the core services (transport on IP, managed NID with Ethernet port(s)) for:

<b>Site:</b>	<b>Point of contact:</b>
Phone: _____	Email: _____
Full installation address: _____ _____ _____	Local site contact : _____ Phone : _____ Email : _____
<p>I want the services to be delivered at this site on MM/YYYY <span style="float: right;">.../ 20....</span></p> <p>For this site I prefer the setup of Package procure a dedicated access based on : <i>( please refer to the diagram 1: SDD )</i></p> <p> <input type="checkbox"/> Package A                <input type="checkbox"/> Package B+                <input type="checkbox"/> Package B                <input type="checkbox"/> Package C+                <input type="checkbox"/> Package C                <input type="checkbox"/> Package D         </p> <p><b>Voice bandwidth :</b></p> <p> <input type="checkbox"/> 64 Kbps    <input type="checkbox"/> 128 Kbps    <input type="checkbox"/> 256 Kbps    <input type="checkbox"/> 512 Kbps    <input type="checkbox"/> 1024 Kbps    <input type="checkbox"/> 2048 Kbps  <input type="checkbox"/> 4096 Kbps    <input type="checkbox"/> 8192 Kbps         </p> <p><b>Data Bandwidth :</b></p> <p> <input type="checkbox"/> 64 Kbps    <input type="checkbox"/> 128 Kbps    <input type="checkbox"/> 256 Kbps    <input type="checkbox"/> 512 Kbps    <input type="checkbox"/> 1024 Kbps    <input type="checkbox"/> 2048 Kbps  <input type="checkbox"/> 4096 Kbps    <input type="checkbox"/> 8192 Kbps         </p> <p><b>Total bandwidth : ( Voice bandwidth + Data bandwidth )</b></p> <p> <input type="checkbox"/> 64 Kbps    <input type="checkbox"/> 128 Kbps    <input type="checkbox"/> 256 Kbps    <input type="checkbox"/> 512 Kbps    <input type="checkbox"/> 1024 Kbps    <input type="checkbox"/> 2048 Kbps  <input type="checkbox"/> 4096 Kbps    <input type="checkbox"/> 8192 Kbps         </p> <p>Any special requirements on your local loop vendors if any : <i>if yes, please provide their contacts</i></p> <p>_____</p> <p>_____</p> <p>_____</p>	

• **Additional services ( for each site )**

In coordination with other user(s), I procure a managed voice and data router with the following interfaces:

- E1: \_\_\_\_\_
- 4-wire E&M Type V (6 wires): \_\_\_\_\_
- 2-wire FXS: \_\_\_\_\_
- 2-wire FXO: \_\_\_\_\_
- Ethernet: \_\_\_\_\_

Remarks:

3) Existing Voice equipment: Brand/ Model :

4) Connection status : for example : [2-wire E&M to site B](#); [2-wire E&M to site C](#)

- Your existing setup or requirements which you would like to share with us.

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Or you have your existing network diagram or planned new diagram want to share with us.  
*For example: Any Multicast application? If yes, please specify your required bandwidth.*

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