



**Agenda Item 6: Assessment of operational requirements in order to determine the implementation of communications and surveillance (CNS) capabilities improvement for en-route and terminal area operations**

**REVIEW TO CAR/SAM FASID TABLES CNS 1Ba AND CNS 1Bb**

(Presented by the Secretariat)

SUMMARY	
This working paper presents information on the ATN routers plan (Table CNS 1Ba) and the ATN ground-ground applications plan (Table CNS 1Bb) of the CAR/SAM FASID for their review, in view of the recent implementations and plans scheduled for the ATN and its ground-ground applications in the SAM Region.	
<b>References:</b> <ul style="list-style-type: none"><li>• Fifth meeting of the ATM/CNS Subgroup ATN Task Force (Mexico City, Mexico, 12-13 June 2009);</li><li>• Meeting of the CNS/ATM/SG/1 Subgroup (Lima, Peru, 15-19 March 2010);</li><li>• Coordination meeting of the ICAO CNS/ATM Subgroup ATN ground-ground and ground-air applications project (Lima, Peru, 19-20 May 2010); and</li><li>• Reunión SAMIG/7 meeting (Lima, Peru, 23-27 May 2011).</li></ul>	
<b>ICAO strategic objectives:</b>	<i>C – Environmental Protection and Sustainable Development of Air Transport</i>

**1. Introduction**

1.1 Tables CNS 1Ba – *ATN routers plan*, as well as CNS 1Bb – *ATN ground-ground applications plan*, were reviewed during the fifth meeting of the ATN Task Force of the ATM/CNS Subgroup and the Coordination meeting of the ATN ground-ground and ground-air applications project of the CNS/ATM Subgroup.

**2. Discussion**

2.1 As result of the AMHS implementation, AMHS and automated systems interconnection, including, among other applications, the AIDC as well as the REDDIG II digital network implementation plan to represent the ATN network in the SAM Region, **Appendices A and B** to this working paper present Tables CNS 1Ba and CNS 1Bb duly updated.

**3. Action suggested**

3.1 The Meeting is invited to:

- Take note of the information presented;
- Examine Tables CNS 1Ba and CNS 1Bb shown in Appendices A and B to this working paper; and
- Analyze other aspects related with this item that the Meeting might deem necessary.

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## APPENDIX A / APENDICE A

Table CNS1Ba –ATN Routers Plan of the SAM Region/Plan de encaminadores ATN Region SAM

Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future		Current	Future
1		2	3	4	5		6							7	8	9	
Argentina	Ezeiza	IP	Inter Regional	AFI (Johannesburg)	N/A	TBD	FDMA FR	TBD	N/A	IPv6	N/A	TBD	CAFSAT	CAFSAT	TBD	B	E
				EUR (Canary Is.)	19.2	TBD			IPv6	IPv6	BGP	TBD			2010	D	D
		IP	Intra Regional	Bolivia (La Paz)	N/A	TBD	TDMA FR - ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2012	B	F
				Chile (Santiago)	N/A				N/A		N/A				2011	B	F
				Brazil (Curitiba)	N/A				N/A		N/A				2011	B	F
				Brazil (Manaus)	64k				IPv4		Static				2010	D	N/A
				Paraguay (Asunción)	64K				IPv4		Static				2009	B	F
				Uruguay (Montevideo)	64k				IPv4		Static				2010	C	F
Bolivia	La Paz	IP	Intra Regional	Argentina (Ezeiza)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2012	B	F
				Chile (Santiago)	N/A				N/A		N/A				2012	B	F
				Brazil (Manaus)	N/A				N/A		N/A				2012	B	F
				Brazil (Curitiba)	N/A				N/A		N/A					B	F
				Paraguay (Asunción)	N/A				N/A		N/A					B	F
				Peru (Lima)	N/A				N/A		N/A				2012	B	F

A	AFTN
B	AFTN + ATS speech
C	AFTN + ATS speech + radar
D	AMHS
E	AMHS + AIDC + teleconference
F	AMHS + AIDC + teleconference + radar

Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future		Current	Future
1		2	3	4	5		6							7	8	9	
Brazil	Curitiba	IP	Intra Regional	Argentina (Ezeiza)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2010	B	F
				Uruguay (Montevideo)	N/A				N/A		N/A				2012	B	F
				Paraguay (Asunción)	N/A				N/A		N/A				2012	B	F
				Bolivia (La Paz)	N/A				N/A		N/A				2010	B	F
			Intra Regional	Colombia (Bogota)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2010	B	F
				Guyana (Georgetown)	N/A				N/A		N/A				2012	B	F
				French Guiana (Cayenne)	N/A				N/A		N/A				2012	B	F
				Argentina (Ezeiza)	64k				IPv4		Static				2010	D	D
				Bolivia (La Paz)	N/A				N/A		N/A				2012	B	F
				Venezuela (Caracas)	N/A				N/A		N/A					C	F
				Peru (Lima)	N/A				N/A		N/A				2010	B	F
				Suriname (Paramaribo)	N/A				N/A		N/A				2011	B	F
	Recife	IP	Intra Regional	French Guiana (Cayenne)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II		B	E
				Uruguay (Montevideo)	N/A				N/A		N/A					B	F
			Inter Regional	AFI (Dakar)	N/A	TBD	FDMA FR	TBD	N/A	IPv6	N/A	TBD	CAFSAT	CAFSAT	TBD	B	E
				EUR (Canarias)												A	D

A	AFTN
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C	AFTN + ATS speech + radar
D	AMHS
E	AMHS + AIDC + teleconference
F	AMHS + AIDC + teleconference + radar

Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future		Current	Future
1		2	3	4	5		6							7	8	9	
Chile	Santiago	IP	Inter Regional	PAC (Christchurch)	N/A	TBD	N/A	N/A	N/A	IPv6	N/A	BGP4	PTT	PTT	TBD	A	D
			Intra Regional	Argentina (Ezeiza)	N/A		TDMA FR + ISDN	TBD	N/A	IPv4	N/A		REDDIG	REDDIG II	2010	B	F
				Bolivia (La Paz)	N/A				N/A		N/A					B	F
				Peru (Lima)	N/A				N/A		N/A				2010	B	F
Colombia	Bogota	IP	Inter Regional	NAM (Atlanta)	N/A	TBD	TDMA FR	TBD	N/A	IPv4	N/A	TBD	MEVA II	MEVA II	2010	A	D
				ACC Kigston	N/A				N/A		N/A					B	F
				ACC Curacao	N/A				N/A		N/A					B	F
				ACC Cenamer	N/A				N/A		N/A					B	F
				Panama (Panama)	N/A				N/A		N/A					B	F
		IP	Intra Regional	Ecuador (Guayaquil)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2011	B	F
				Brazil (Manaus)	N/A				N/A		N/A				2010	B	F
				Peru (Lima)	N/A				N/A		N/A				2010	B	F
				Venezuela (Caracas)	N/A				N/A		N/A				2011	B	F
Ecuador	Guayaquil	IP	Intra Regional	Colombia (Bogota)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2011	B	F
				Peru (Lima)	N/A				N/A		N/A				2011	B	F
			Inter Regional	ACC Cenamer	N/A	TBD	TDMA FR	TBD	N/A	IPv4	N/A	TBD	MEVA II	MEVA II		B	F

A	AFTN
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C	AFTN + ATS speech + radar
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E	AMHS + AIDC + teleconference
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Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	
1		2	3	4	5		6							7	8	9	
French Guiana	Cayenne	IP	Inter Regional	ACC Dakar	N/A	TBD	TBD	TBD	N/A	IPv6	N/A	TBD	TBD	TBD		B	F
				ACC Piarco	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II		B	F
			Intra Regional	Brazil (Recife)	N/A				N/A	N/A					B	F	
				Brazil (Manaus)	N/A				N/A	N/A	2012				B	F	
				Suriname (Paramaribo)	N/A				N/A	N/A	2012				B	F	
Guyana	Georgetown	IP	Inter Regional	ACC Piarco	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	TBD	MEVA II	REDDIG II	2012	B	F
		IP	Intra Regional	Brazil (Manaus)	N/A	TBD		TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2012	B	F
				Suriname (Paramaribo)	N/A				N/A	IPv4	N/A				2012	B	F
				Venezuela (Caracas)	N/A				N/A	IPv4	N/A				2012	B	F
Panama	Panama	IP	Intra Regional	Colombia (Bogota)	N/A	TBD	TDMA FR	TBD	N/A	IPv4	N/A	TBD	MEVA II	MEVA II		B	F
			Inter Regional	ACC Cenamer	N/A				N/A		N/A					B	F
				ACC Kigston	N/A				N/A		N/A					B	F
Paraguay	Asunción	IP	Intra Regional	Argentina (Ezeiza)	64K	TBD	TDMA FR + ISDN	TBD	IPv4	IPv4	Static	BGP4	REDDIG	REDDIG II	2009	B	F
				Bolivia (La Paz)	N/A				N/A		N/A					B	F
				Brazil (Curitiba)	N/A				N/A		N/A				2010	B	F

A	AFTN
B	AFTN + ATS speech
C	AFTN + ATS speech + radar
D	AMHS
E	AMHS + AIDC + teleconference
F	AMHS + AIDC + teleconference + radar

Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	
1		2	3	4	5		6							7	8	9	
Peru	Lima	IP	Intra Regional	Bolivia (La Paz)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2012	B	F
				Brazil (Manaus)	N/A				N/A	IPv4	N/A				2010	B	F
				Chile (Santiago)	N/A				N/A	IPv4	N/A				2010	B	F
				Colombia (Bogota)	N/A				N/A	IPv4	N/A				2010	B	F
				Ecuador (Guayaquil)	N/A				N/A	IPv4	N/A				2011	B	F
Suriname	Paramaribo	IP	Intra Regional	Brazil (Manaus)	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II	2012	B	F
				French Guiana (Cayenne)	N/A				N/A		N/A					B	F
				Guyana (Georgetown)	N/A				N/A		N/A					B	F
						Inter Regional	ACC Piarco	N/A	TBD	TDMA FR	TBD	N/A	IPv6	N/A	TBD	MEVA II	MEVA II

A	AFTN
B	AFTN + ATS speech
C	AFTN + ATS speech + radar
D	AMHS
E	AMHS + AIDC + teleconference
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Administration and location		Type of router	Type of interconnection	Connected router	Link rate		Link Protocol						Via		Target date	Remarks	
							Physical layer - link		IP version		Routing protocol						
Admin.	Location				Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	Current	Future	
1		2	3	4	5		6							7	8	9	
Uruguay	Montevideo	IP	Intra Regional	Argentina (Ezeiza)	64K	TBD	TDMA FR + ISDN	TBD	IPv4	IPv4	Static	BGP4	REDDIG	REDDIG II	2011	C	F
				Brazil (Recife)	N/A				N/A		N/A					B	E
				Brazil (Brasilia)	N/A				N/A		N/A				2012	B	F
Venezuela	Maiquetía	IP	Inter Regional	EUR (Madrid)	N/A	TBD	TBD	TBD	N/A	IPv6	N/A	TBD	PTT	PTT	TBD	A	D
				ACC San Juan	N/A	TBD	TDMA FR	TBD	N/A	IPv4	N/A	TBD	MEVA II	MEVA II		B	F
				ACC Curacao	N/A				N/A		N/A					B	F
			Intra Regional	ACC Piarco	N/A	TBD	TDMA FR + ISDN	TBD	N/A	IPv4	N/A	BGP4	REDDIG	REDDIG II		B	F
				Brazil (Manaus)	N/A				N/A		N/A				2011	C	F
				Colombia (Bogota)	N/A				N/A		N/A				2011	B	F
				Guyana (Georgetown)	N/A				N/A		N/A				2012	B	F

A	AFTN
B	AFTN + ATS speech
C	AFTN + ATS speech + radar
D	AMHS
E	AMHS + AIDC + teleconference
F	AMHS + AIDC + teleconference + radar

## APPENDIX B / APENDICE B

**TABLE CNS 1Bb –ATN GROUND-GROUND APPLICATIONS PLAN / TABLA CNS1 Bb – PLAN DE APLICACIONES TIERRA-TIERRA DE LA ATN  
SAM REGION / REGIÓN SAM**

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conncted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Argentina, Buenos Aires	AMHS	Bolivia	IPS	TBD	
		Brasil	IPS	2011	
		Chile	IPS	2011	
		Paraguay	IPS	2011	
		Peru	IPS	2011	
		Uruguay	IPS	TBD/Por determinar	
		AFI	IPS	TBD/Por determinar	
	AIDC	Bolivia	IPS	TBD/Por determinar	
		Brasil	IPS	2012	
		Chile	IPS	2012	
		Paraguay	IPS	TBD/Por terminar	
		Uruguay	IPS	2012	
		AFI	IPS	TBD/Por terminar	
Bolivia , La Paz	AMHS	Argentina	IPS	TBD/Por terminar	
		Brasil	IPS	TBD/Por terminar	
		Peru	IPS	TBD/Por terminar	
	AIDC	Argentina	IPS	TBD/Por terminar	
		Brasil	IPS	TBD/Por terminar	
		Peru	IPS	TBD/Por terminar	



ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conneted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Brazil, Brasilia	AMHS	Argentina	IPS	2011	
		Bolivia	IPS	TBD	
		Paraguay	IPS	2011	
		Uruguay	IPS	TBD/Por determinar	
		NAM	IPS	TBD/Por determinar	
		EUR	IPS	TBD/Por determinar	
		AFI	IPS	TBD/Por determinar	
	AIDC	Argentina	IPS	2012	
		Bolivia	IPS	TBD/Por determinar	
		Paraguay	IPS	2012	
		Uruguay	IPS	2012	
		NAM	IPS	TBD/Por determinar	
		AFI	IPS	TBD/Por determinar	
Brazil, Manaus	AMHS	Colombia	IPS	2011	
		Guyana	IPS	2011	
		Guyana Francesa	IPS	TBD/Por determinar	
		Perú	IPS	2011	
		Surinam	IPS	2012	
		Venezuela	IPS	2012	
	AIDC	Colombia	IPS	TBD/ Por determinar	
		Guyana	IPS	TBD/ Por determinar	
		Guyana Francesa	IPS	TBD/ Por determinar	
		Perú	IPS	2012	
		Surinam	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinaar	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conneted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Chile, Santiago	AMHS	Argentina	IPS	2011	
		Peru	IPS	2012	
		PAC	IPS	TBD	
	AIDC	Argentina	IPS	2012	
		Perú	IPS	2012	
		PAC	IPS	TBD/ Por determinar	
Colombia , Bogotá	AMHS	Brazil	IPS	2011	
		Ecuador	IPS	TBD	
		Panamá	IPS	2011	
		Perú	IPS	2010	
		Venezuela	IPS	2011	
	AIDC	Brazil	IPS	TBD/ Por determinar	
		Ecuador	IPS	TBD/ Por determinar	
		Perú	IPS	TBD/ Por determinar	
Ecuador ,Quito	AMHS	Colombia	IPS	TBD/ Por determinar	
		Perú	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
	AIDC	Colombia	IPS	TBD/ Por determinar	
		Peru	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
French Guiana, Cayenne Guyana Francesa, Cayena	AMHS	Brazil	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
	AIDC	Brazil	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conneted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Guyana, Georgetown	AMHS	Brazil	IPS	2011	
		Suriname	IPS	2011	
		Trinidad Tobago	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
	AIDC	Brazil	IPS	TBD/ Por determinar	
		Trinidad Tobago	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
Panamá, Panamá	AMHS	Colombia	IPS	2011	
		NAM	IPS	TBD/ Por determinar	
	AIDC	Colombia	IPS	TBD/ Por determinar	
Paraguay, Asunción	AMHS	Argentina	IPS	2011	
		Brazil	IPS	2011	
	AIDC	Argentina	IPS	TBD/ Por determinar	
		Brazil	IPS	TBD/ Por determinar	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conneted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Peru, Lima	AMHS	Argentina	IPS	2011	- Fecha suscripción MoU: <b>01/12/10</b> - Fecha estimada de interconexión y uso operacional entre Sistemas AMHS: <b>2011.</b>
		Bolivia	IPS	TBD/ Por determinar	
		Brazil	IPS	2011	- Fecha suscripción MoU: <b>22/10/10</b> - Fecha estimada de interconexión y uso operacional entre Sistemas AMHS: <b>2011.</b>
		Chile	IPS	2012	- Fecha estimada MoU: <b>2011.</b> - Fecha estimada de interconexión y uso operacional entre Sistemas AMHS: <b>2012.</b>
		Colombia	IPS	2010	- Fecha suscripción MoU: <b>25/05/10.</b> - Primera Interconexión y uso operacional entre Sistemas AMHS lograda en Región SAM: <b>08/11/10.</b>
		Ecuador	IPS	TBD/ Por determinar	
		Venezuela	IPS	2012	- Fecha estimada MoU: <b>2011.</b> - Fecha estimada de interconexión y uso operacional entre Sistemas AMHS: <b>2012.</b>
		NAM	IPS	TBD/ Por determinar	
		Bolivia	IPS	TBD/ Por determinar	
		Brazil	IPS	2012	
		Chile	IPS	2012	
		Colombia	IPS	TBD/ Por determinar	
		Ecuador	IPS	TBD/ Por determinar	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Conneted with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
Suriname, Paramaribo	AMHS	Brazil	IPS	2012	
		Guyana	IPS	2011	
		Venezuela	IPS	TBD/ Por determinar	
	AIDC	Brazil	IPS	TBD/ Por determinar	
		French Guyana	IPS	TBD/ Por determinar	
		Venezuela	IPS	TBD/ Por determinar	
Uruguay, Montevideo	AMHS	Argentina	IPS	TBD/ Por determinar	
		Brazil	IPS	TBD/ Por determinar	
	AIDC	Argentina	IPS	2012	
		Brazil	IPS	2012	
Venezuela, Caracas	AMHS	Brazil	IPS	2012	
		Colombia	IPS	2011	
		Ecuador	IPS	TBD/ Por determinar	
		Guyana	IPS	TBD/ Por determinar	
		Guyana Francesa	IPS	TBD/ Por determinar	
		Peru	IPS	2011	
		Suriname	IPS	TBD/ Por determinar	
		NAM	IPS	TBD/ Por determinar	
		CAR	IPS	TBD/ Por determinar	
		EUR	IPS	TBD/ Por determinar	
	AIDC	Brasil	IPS	TBD/ Por determinar	
		Colombia	IPS	TBD/ Por determinar	
		Guyana	IPS	TBD/ Por determinar	
		Surinam	IPS	TBD/ Por determinar	
		CAR	IPS	TBD/ Por determinar	