

SADIS COST RECOVERY ADMINISTRATIVE GROUP (SCRAG)

TENTH MEETING

(Paris, 6 November 2009)

Agenda Item 5: Amendment to Annex II, SADIS Inventory, to the Agreement on the Sharing of Costs of the Satellite Distribution System relating to Air Navigation

AMENDMENT TO ANNEX II, SADIS INVENTORY, TO THE SADIS AGREEMENT

(Presented by the Secretariat)

REFERENCES

SADIS Agreement
SCRAG/10-WP/3
SADISOPSG/14 Executive Summary

1. Introduction

1.1 This paper presents a draft amendment to Annex II, SADIS Inventory, to the SADIS Agreement as a result of conclusions of the SADISOPSG, at its Fourteenth Meeting (SADISOPSG/14, Bangkok, 15-17 July 2009).

2. Discussion

2.1 The SADISOPSG reviewed the SADIS inventory and agreed upon some amendments to ensure that it would continue to meet the approved operational requirements. The amendments were made based on proposals by the SADIS Provider State.

2.2 The SADISOPSG noted with some concern the increase in human resources included in the SADIS inventory; however, based on the information provided by the SADIS Provider State, it concurred that they were in accordance with current and future requirements for the SADIS service and requested the Chairman of the SADISOPSG to inform the SCRAG accordingly.

2.3 The **Attachment** presents the revised text of Annex II, SADIS inventory, to the SADIS Agreement. Additions and deletions to the actual text of Annex II appear in outline and strikeout formats.

2.4 The proposed amendments have received the consent of the United Kingdom as the SADIS provider, in accordance with Article XVII, paragraph 5 of the SADIS Agreement.

3. **Action by the Group**

3.1 The Group is invited to review the proposed amendments to Annex II, SADIS inventory, to the SADIS Agreement.

SADIS INVENTORY

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the SADIS. The inventory includes: hub infrastructure (including all additions following the completion of the hub enhancement project) and communications circuits, ISCS data back-up system, procured services, and staff. It should be noted that some equipment items are under lease and form part of a wider infrastructure. Costs of individual items cannot be separated from the required infrastructure that includes a significant part of the development of the software and technical configuration. The inventory is in accordance with the SADIS User Guide.

1. EQUIPMENT

A. Key components of Hub infrastructure and communications circuits

~~The SADIS 1G hub infrastructure connection to the Met Office message switch (FROST) consists of a number of units developed in conjunction with EADS Astrium and other suppliers. These are installed either at Exeter or at the uplink site at Whitehill, Oxfordshire, UK.~~

~~Additional hub infrastructure has been installed at Exeter and Whitehill to provide resilient SADIS 2G service. This hardware is physically separate from the SADIS 1G infrastructure.~~

The SADIS 2G hub infrastructure connection to the Met Office message switch (Frost) consists of a number of units developed in conjunction with VADOS Systems and other suppliers. These are installed either at Exeter or at the uplink site at Whitehill, Oxfordshire, UK.

The SADIS FTP hub infrastructure connection to the Met Office message switch (Frost) consists of a number of units installed at Exeter.

i) Solely procured for SADIS (major components)

SADIS gateway function software (developed specifically for the gateway as part of the NATS CoreMet system; see items under “Not procured principally for SADIS”).

~~Hewlett Packard L-class~~ Dell Poweredge R900 servers to provide SADIS FTP service (see Section 1 C),

ii) Principally procured for SADIS

a) At the Met Office;

See Section 1 C for itemized components

b) Communications between ~~Whitehill and Met Office~~ Exeter and Whitehill uplink facility;

1) ~~2 Fibre Optic 64 Kbps circuits in support of SADIS 1G service;~~ and

2) 2 Fibre Optic 64 Kbps circuits in support of SADIS 2G service

- c) At the uplink site (Whitehill);
- 1) ~~Units forming part of a totally integrated rack structure to provide SADIS 1G service, with back-up, referred to as Chain A and Chain B (see the list under Section 1 C);~~
 - 2) Units and services leased from Cable and Wireless Communications Ltd. to support SADIS 1G and 2G services:
 - 1 (70 to 140 MHz) convertor;
 - Use of 1 (140 to C band) convertor;
 - Use of satellite hub (lease represents only a very small part of this large aperture) for SADIS 1G and 2G services; and
 - 3) Units forming part of a totally integrated rack structure to provide SADIS 2G service, with back-up (see the list under Section 1 C).
- d) ~~Communication link (SVC) between SADIS Gateway and Met Office in support of SADIS 1G service; and~~
- e) Dual contingent communication links (utilising WMO TCP/IP sockets protocol) between SADIS Gateway and Met Office in support of SADIS 2G service.

iii) **Not procured principally for SADIS**

- a) ~~Message switch (FROST): Total investment £1.34M¹ of which 2.40 per cent is attributable to SADIS usage: switching data to operational (1G) broadcast service and to 1G monitoring system — Corobor Comparitor.~~
- b) **Met Office** Message switch (FROST): Total investment £1.34 **1.26M¹** of which ~~1.25~~ **1.22** per cent is attributable to SADIS FTP service usage: switching data to operational FTP service;

Note. — The percentage attributable to the SADIS FTP service will increase as GRIB 2 WAFS data is routed to the server by FROST before the end of 2009.

- e b) **Met Office** Message switch (FROST): Total investment £1.34 **1.26M¹** of which ~~0.60~~ **0.63** per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service and to 2G monitoring system (Corobor Comparitor);

Note. — The percentage attributable to the SADIS FTP service has increased, in part, due to the provision of the gridded icing/turbulence/CB data on SADIS FTP, and the provision of a contingent FTP feed to supply GRIB and BUFR data during a SADIS FTP service interruption in October 2007.

- ~~d c)~~ Allocated bandwidth (2 Mbps bursting to 4 Mbps) between server and Internet Service Provider (ISP) in support of the SADIS FTP service; ~~and~~
- e d) Message switch (CoreMet System);

Note. — Some elements of the CoreMet System are exclusively for the support of the SADIS gateway function.

¹ budgeted cost for providing FROST service during the fiscal year 2008/2009 ~~10~~.

e) SADIS FTP equipment running costs;

Note. — These costs are applied to all MET Office internet facing services and primarily relate to costs associated with ensuring high levels of IT security.

f) Met Office Service Desk equipment; and

Note. — Equates to 3.5 per cent of the total share of Met Office IT Operations equipment.

g) Met Office Serial Communications.

Note. — Equates to 20 per cent of total share of Met Office Serial Communications. Includes cost of switching serial data from FROST Message Switch to SADIS 2G, comprising staff and equipment costs of supporting serial WAN, TTL Routers, Serial Modems and TTL matrix switches.

B. SADIS data back-up system

ISCS VSAT receiving system, including TCP/IP receiver, and cables, on SADIS Provider (UK Met Office) premises.

Note 1.— This hardware is not currently used in an operational environment.

*Note 2.— The SADIS Gateway (UK NATS) continues to procure ~~an ISCS VSAT receiving system,~~ a dedicated SADIS data backup arrangement with the ISCS Provider State. The backup infrastructure will include an ISDN connection between the NWS Telecommunications Gateway and the SADIS Gateway, and an ~~including ISDN connection to~~ *including ISDN connection between the SADIS Gateway and Whitehill uplink facility,* to provide SADIS data backup.*

C. Hub equipment and services located at Exeter and Whitehill

<i>Item</i>	<i>Description</i>	<i>Quantity</i>
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1. ~~Exeter Equipment to support SADIS 1G~~

1.1	Network Management System (NMS Computer)	1
1.2	MemoTech PAD (for NMS)	1
1.3	Telecoms interface units Megabox	2
1.4	CX1000 Frame Relay Switch (for NMS)	1
1.5	Product display console including software (COROBOR)	1
1.6	Communications rack floor space in IT hall 1 and space in stores to locate spare equipment	1

2. ~~Exeter Equipment (Spares) to support SADIS 1G~~

2.1	Telecoms interface units Megabox	2
2.2	NMS Spare CPU	1
2.3	MemoTech PAD (for NMS)	1
2.4	CX1000 Frame Relay Switch (for NMS)	1

Note. — communication links in support of SADIS 1G service are included in Section 1.1 of the inventory.

3. Whitehill earth station (SADIS 1G uplink equipment)

3.1	Telecoms controller Megapac V rack assembly	2
3.2	Station interface unit (SIU)	2
3.3	8360 Modulator	2
3.4	8471 Receive Demodulators	12
3.5	8550 Modem Switch	1
3.6	140 L band upconverter	2
3.7	X Term NMS simulator	1
3.8	Equipment Rack Assembly (Chain 1)	1
3.9	Equipment Rack Assembly (Chain 2)	1
3.10	Communications rack floor space for two communications racks	2

4. Whitehill earth station SADIS 1G (spares)

4.1	8471 Receive Demodulators	1
4.2	Station interface unit (SIU)	1
4.3	MegaPAC V rack assembly	2
4.4	MegaPAC V Frad units	2
4.5	140 L band upconverter	1
4.6	8360 Modulator	1
4.7	8550 Modem Switch	1

51. Whitehill services (leased from Cable & Wireless)

51.1	70 MHz to 140 MHz converters	21
51.2	140 MHz to C band converter	21
51.3	Satellite Hub leased bandwidth	1 slot

6. Test Rig at Poynton

6.1	Enhanced (SADIS 1G) Simulator	1
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72. ISDN back-up service to Washington (NWSTRG)

72.1	MegaPAC 2003 router (MP-2003)	1
72.2	MegaPAC 2003 router plus expansion (MP-2003-3-B)	1
72.3	ISDN 2e circuit	1
72.4	A/B switch	1
72.5	Interface cables	1

Note. — Hardware listed items under Section 72 are is located at Whitehill.

83. SADIS FTP service

83.1	HP L2000 Dell Poweredge R900 servers with 21Gb RAM	2
83.2	48 26.8Gb internal disk drives	2
83.3	DVD ROM VMW ave Virtual Platform with Red Hat Linux 5.3 OS	2
83.4	Intel Xeon X7350, 2.93 GHz Processors	2
83.5	Licenses, misc. support and maintenance costs	1

Note. — Hardware listed under Section 3 is located at Exeter.

94. Operational SADIS 2G Infrastructure

94.1	Frost port	1
94.2	MegaPAC V System Dual PSU	3*
94.3	MegaPAC 2003 (Exeter)	3*
94.4	Uplink modem (Comtech EF Data SDM-300a)	3*
94.5	Communications cabinet and lease	1
94.6	MegaWatch including Enterprise Reports, and PC	1
4.7	Comtech SDM300L demodulator (NER5 downlink)	1
94.78	Corobor comparator software and PC	1
94.89	X10 Modules	12**
94.910	SIO Modules	3*
94.101	8Mb RAM Modules	3*
94.112	Communications rack floor space at Exeter in IT Hall 1 and IT Hall 2, and at Whitehill	3
94.123	Space in stores at Exeter to locate spare hardware	1
94.134	VadEDGE 4202 – 1U	2
94.145	WAN Module	2
94.156	Comtech EF Data SMS 301 – redundancy switch	2*
94.167	Interface cabling	15

*Note 1. — * Includes one unit/module stored as a cold spare.*

*Note 2. — ** Includes four modules stored as cold spares.*

Note. — Hardware listed under Section 4 is located at Exeter and Whitehill.

2. PROCURED SERVICES

- A. Space segment annual lease: 1.5 MHz wide frequency band of which 57 per cent is utilised to support SADIS 1G and 2G, with ~~minimum data rates at 38.4 Kbps for both services~~ 64 Kbps data rate (less communications overhead);

Note. — SADIS 1G was terminated on 5th January 2009. The percentage of satellite space segment has, however, remained unchanged because the SADIS 1G satellite bandwidth allocation was maintained in 2009 and 2010, as called for by SADISOPSG Decision 13/26..

- B. Annual maintenance of Met Office Exeter and Whitehill uplink site equipment (SADIS 1G, 2G and SADIS FTP server); and
- C. Gateway function:
- i) Communication circuits between Met Office and NATS infrastructure site; and
 - ii) System maintenance.

3. ANNUAL STAFF REQUIREMENTS

A. United Kingdom Met Office

i) Service Desk

Note.— The Service Desk acts as a first point of contact for all inquiries, including those concerning the OPMET Gateway function. Complex inquiries will be passed to a relevant expert. Experts are available either on a 24-hour rota basis, or as a daytime support with limited on-call capability.

Normal working hours 24-hour Weather Desk support	Skill
1. Service desk (first point of contact)	Scientific supervisor
2. Additional Service Desk operator	Systems analyst

Note. — ~~Outside normal working hours, the Service Desk facility is provided by the 24-hour positions below~~ Total support for SADIS provided by the Met Office Service Desk team equates to 0.3 per cent of the total Weather Desk budget.

24-hour IT Operations support	Skill
1. Operations systems analyst (OAS)	Systems analyst
2. Technical Team Leader (TTL)	Computer engineer
3. Networks and systems supervisor (NSS)	Technical supervisor
4. Operations Service Delivery (OSD) Service Assurance	Scientist

Note. — Total support for SADIS provided by the Met Office IT Operations team equates to 3.5 per cent of the total IT Operations budget.

Normal working hours support	Skill
1. Change and problem manager (CPM)	Systems analyst
2. Additional Service Desk operator	Systems analyst

— Note. — The total support for SADIS is considered as 1 per cent of the total support provided by the Service Desk and operational support function. These functions comprise 4 24-hour rosters of six staff each, an additional three-man team (CPM), and one further 5-roster team providing further (normal working hours) Service Desk support.

ii) Additional support

Additional Day support	Skill Resource
1. Systems integration team	30 10 per cent of network computer engineer and 10 per cent of CIDA
2. Message Switching Manager	10 per cent of MSS manager
23. Administrator	75 per cent of executive officer
34. International aviation management	15 per cent of manager
45. Data traffic	5 per cent communications engineer
56. Contract procurement and management	5 per cent of senior procurement officer
67. UNIX support	10 per cent of computer engineer
78. Web team support	10 per cent of website designer

Note 1. — Support by the UNIX team of the SADIS FTP service will incur some additional costs in excess of simple human resources. These costs are applied to all Internet facing services and primarily relate to costs associated with ensuring high levels of IT security.

Note 2. — CIDA is the Co-ordinating Installation Design Authority. The Met Office CIDA Installation Design and Engineering team are technical authorities who work alongside project managers to co-ordinate the efforts of a number of different groups.

B. NATS infrastructure site – CACC (OPMET Gateway function)

Note. — The CACC provides the OPMET Gateway function, which is provided from a single operational site, but with a full capability at an alternative site. Staff are available either on a 24-hour basis, or as a daytime support with on-call capability. The ~~staff is made up of~~ resource demand of 610 days required to provide the SADIS Gateway service comprises 6 watches of 1 ATSA4 (~~air traffic services assistant~~) and 1 ATSA3 each (Operations), 1 ATCE4 (~~air traffic control engineer~~) (Engineering Watchkeeping) and 3 ATCE4 (Engineering Day Support).

<i>24-hour support</i>	<i>Skill Resource</i>
1. Operational staff support	10 per cent of ATSA4 423 man-days per annum
2. Engineering staff support	10 per cent of ATSA3 10 per cent of systems engineer 22 man-days per annum
<i>Day Support</i>	<i>Resource</i>
3. SADIS administration support	40 per cent of ATSC T & SC 50 man-days per annum
4. Engineering (including on-call)	10 per cent of 75 per cent of ATCE4 15 man-days per annum

C. Bought-in services

Additional support and maintenance agreements with third parties are in place to provide third line support of the SADIS 1G and 2G services.