

# **SADIS COST RECOVERY ADMINISTRATIVE GROUP (SCRAG)**

## **ELEVENTH MEETING**

(Paris, 4 November 2010)

**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/11-WP/3  
SADISOPSG/15 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 Fifteenth Meeting (SADISOPSG/15, Paris, 26-28 May 2010).

#### **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 **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.

2.3 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.

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## **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 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”).

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 Met Office Exeter and Whitehill uplink facility;

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

c) At the uplink site (Whitehill);

1) Units and services leased from Cable and Wireless Communications Ltd. to support SADIS 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 2G services; and

2) 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) 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) Met Office Message switch (FROST): Total investment £1.2602M<sup>1</sup> of which 1.2271 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.*

- b) 1) Met Office Message switch (FROST): Total investment £1.2602M<sup>1</sup> of which 0.6386 per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service (excluding GRIB2) and to 2G monitoring system (Corobor Comparitor);

- 2) Met Office Message switch (FROST): Total investment £1.02M<sup>1</sup> of which 1.06 per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service (including GRIB2) and to 2G monitoring system (Corobor Comparitor);

*Note. — Information regarding the cost with (2) and without (1) the WAFS GRIB2 data are provided since delivery of WAFS GRIB2 data over SADIS 2G has yet to be endorsed by the SADISOPSG, and a date of provision decided.*

- c) Allocated bandwidth (24 Mbps bursting to 48 Mbps (as of 31 January 2010) between server and Internet Service Provider (ISP) in support of the SADIS FTP service;

- d) NATS Message switch (CoreMet System);

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

- 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*

<sup>1</sup> budgeted cost for providing FROST service during the fiscal year 2009/10/2010/1.

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) has ~~continues to procure~~ 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 ISDN connection between the SADIS Gateway and Whitehill uplink facility, to provide SADIS data backup. This hardware is currently undergoing final testing of functionality and process before becoming operationally acceptable.*

**C. Hub equipment and services located at Exeter and Whitehill**

Item	Description	Quantity
<b>1.</b>	<b>Whitehill services (leased from Cable &amp; Wireless)</b>	
1.1	70 MHz to 140 MHz converter	1
1.2	140 MHz to C band converter	1
1.3	Satellite Hub leased bandwidth	1 slot
<b>2.</b>	<b>ISDN back-up service to Washington (NWSTG)</b>	
2.1	<del>MegaPAC 2003 router (MP 2003)</del> VadEDGE 4202	<del>1</del> 3*
2.2	<del>MegaPAC 2003 router plus expansion (MP 2003 3-B)</del>	<del>1</del>
<del>2.3</del>	<del>ISDN 2e circuit</del>	<del>1</del>
<del>2.4</del>	<del>A/B switch</del>	<del>1</del>
2.5	Interface cables	2

*Note. — Hardware listed under Section 2 is located at Whitehill.*

**3. SADIS FTP service**

3.1	Dell Poweredge R900 servers with 1 Gb RAM	2
3.2	26.8 Gb internal disk drives	2
3.3	VMWave Virtual Platform with Red Hat Linux 5.3 OS	2
3.4	Intel Xeon X7350, 2.93 GHz Processors	2
3.5	Licenses, misc. support and maintenance costs	1

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

**4. SADIS 2G Infrastructure**

4.1	Frost port	1
4.2	MegaPAC V-IX Base System Dual PSU including Chassis, 1 CP6000, and 1 switch	3*
4.3	CP6000 for use with MegaPAC V-IX 2003 (Exeter)	3*
4.4	VadEDGE 4202	3*

4.45	Uplink modem (Comtech EF Data SDM-300a)	3*
4.56	Communications cabinet and lease	1
4.67	MegaWatch including Enterprise Reports, and PC	1
4.78	Comtech SDM300L demodulator (NER5 downlink)	1
4.89	Corobor comparator software and PC	1
4.9	<del>X10 Modules</del>	<del>12**</del>
4.10	<del>SIO Modules</del>	<del>3*</del>
4.11	<del>8Mb RAM Modules</del>	<del>3*</del>
4.120	Communications rack floor space at Exeter in IT Hall 1 and IT Hall 2, and at Whitehill	3
4.131	Space in stores at Exeter to locate spare hardware	1
4.14	<del>VadEDGE 4202 1U</del>	<del>2</del>
4.152	WAN Module	2
4.163	Comtech EF Data SMS 301 – redundancy switch	2*
4.14	BRI Module for VadEDGE 4202	2
4.175	Interface cabling	158

\* Includes one unit/module stored as a cold spare.

\*\* 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 2G, with 64 Kbps data rate (less communications overhead);

*Note. — SADIS 1G was terminated on 5 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 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.*

*24-hour Weather Desk support*

*Skill*

- |  |                       |
|--|-----------------------|
| 1. Service desk (first point of contact) | Scientific supervisor |
| 2. Additional Service Desk operator      | Systems analyst       |

*Note. — 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. Technical Team Leader (TTL)           | Computer engineer    |
| 2. Networks and Systems Supervisor (NSS) | Technical supervisor |

*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 |
|-------------------------------------|-----------------|

**ii) Additional support**

*Day support*

*Resource*

- |   |  |
|---|--|
| 1. Systems integration team <i>(Note 1)</i>                       | <del>10 per cent</del> 14 staff-days of network computer engineer and <del>10 per cent of CIDA</del>                           |
| 2. Message Switching Manager                                      | <del>10 per cent</del> 15 staff-days of MSS manager  |
| 3. Administrator  | <del>75 per cent</del> 160 staff-days of executive officer   |
| 4. International aviation management                              | <del>15 per cent</del> 30 staff-days of manager  |
| 5. Data traffic   | <del>5 per cent</del> 5 staff-days of communications engineer  |
| 6. Contract procurement and management <i>(Note 2)</i>            | <del>5 per cent</del> 4 staff-days of senior procurement officer   |
| 7. <del>UNIX support</del> Message switching Team <i>(Note 3)</i> | <del>10 per cent</del> 15 staff-days of <del>computer engineer</del> technical officer   |
| 8. <del>Web team support</del> Invoice Administration             | <del>10 per cent</del> 20 staff-days of <del>website designer</del> invoicing officer and 15 staff-days of business accountant |

*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. Due to re-organisation and rationalisation within the Met Office's IT services division, the CIDA role is now included within the Network Computer Engineer's responsibilities. Effort required also significantly reduced since decommissioning of SADIS 1G.*

*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.~~ ~~Reduced effort required since cessation of SADIS 1G.~~

*Note 3. — Responsibility for support and maintenance to the SADIS FTP service transferred from the Web Team to the Message Switching Team during 2009.*

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

*Note 1. — 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.*

*Note 2. — The resource demand of 610 days required to provide the SADIS Gateway service comprises 6 watches of 1 ATSA4 and 1 ATSA3 each (Operations), 1 ATCE4 (Engineering Watchkeeping) and 3 ATCE4 (Engineering Day Support).*

<i>24-hour support</i>	<i>Resource</i>
1. Operational staff support	523 <del>man</del> staff-days per annum
2. Engineering staff support	22 <del>man</del> staff-days per annum
 <i>Day Support</i>	
<i>Resource</i>	
3. SADIS administration support	50 <del>man</del> staff-days per annum
4. Engineering (including on-call)	15 <del>man</del> staff-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 2G service.