



STUDY NOTE

**MEETING OF THE METEOROLOGY PANEL (METP)
WORKING GROUP MOG**

THIRD MEETING

Gatwick, London, United Kingdom, 13 to 16 June 2016

Agenda Item 3.2: Operation of SADIS – for Cost Recovery Purposes

3.2.3: SADIS Inventory - 2016

AMENDMENTS TO THE SADIS INVENTORY

(Presented by the SADIS Provider State)

SUMMARY

This paper presents changes and updates to the SADIS inventory proposed by the SADIS Provider State for review and endorsement by the group.

Action by the METP-WG/MOG is in paragraph 4.

1. INTRODUCTION

1.1 An updated SADIS inventory for the period 2016-2017 is provided in the Appendix to this paper for review and endorsement by the group.

2. NATURE OF THE PROPOSED AMENDMENT TO THE SADIS INVENTORY

2.1 The following changes should be noted by the group in relation to the SADIS Inventory:

- 1) References to withdrawal of equipment relating to SADIS 2G, subsequent to cessation of the satellite based service on 31 July 2016.
- 2) Increase to the individual client connection limit for Secure SADIS FTP users
- 3) Updates to the NATS 24 hour and Day support functions and allocation

2.2 For reference, the CoreMet system underwent a mid-life upgrade during 2015 to enhance its reliability and functionality. The upgrade was finally completed on 6 January 2016 and continues to be referenced in the inventory as 'CoreMet'.

3. CONCLUSION

3.1 The group is invited to review the updated inventory as presented at the Appendix to this paper and endorse the changes as proposed. In this context, the group is invited to formulate the following conclusion:

Conclusion 1/xx — SADIS Inventory 2016-2017

That, the Chair of the METP-WG/MOG be invited to forward the updated SADIS inventory given in **Appendix** to this report to the Chair of SCRAG.

4. ACTION BY THE METP-WG/MOG

4.1 The METP-WG/MOG is invited to:

- a) note the information contained in this paper; and
- b) decide on the draft conclusion proposed for the group's consideration.

SADIS INVENTORY

~~(2015-2016)~~2016-2017)

Note, the SADIS 2G Service will be withdrawn at 1200 UTC on 31 July 2016. As such, a number of items will be decommissioned/withdrawn; and therefore removed from the inventory after that date. These are indicated as appropriate in this amendment.

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 implementation of Secure SADIS FTP) and communications circuits, ISDN 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

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

NOTE: The SADIS 2G ground-hub equipment will be decommissioned during August 2016 following cessation of the SADIS 2G service.

2. The Secure SADIS FTP hub infrastructure connection to the Met Office message switch (MetSwitch) 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 the Secure 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 Kbit/sec circuits in support of SADIS 2G service

NOTE: These communications links will be decommissioned during August 2016 following cessation of the SADIS 2G service.

- c) At the uplink site (Whitehill);
- 1) Units and services leased from Vodafone to support SADIS 2G uplink services:
 - 1 (70 to 140 MHz) converter;
 - Use of 1 (140 to C band) converter;
 - Use of satellite hub (lease represents only a very small part of this large aperture) for SADIS 2G services; and

NOTE: The SADIS 2G ground-hub equipment will be decommissioned during August 2016 following cessation of the SADIS 2G service.

- 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).

NOTE: These units will be decommissioned during August 2016 following cessation of the SADIS 2G service.

- d) Dual contingent communication links (utilising WMO TCP/IP sockets protocol) between SADIS Gateway and Met Office in support of SADIS 2G service.

NOTE: These communications links will be decommissioned during August 2016 following cessation of the SADIS 2G service.

iii) **Not procured principally for SADIS**

- a) Met Office Message switch (MetSwitch): Total investment £738K¹ of which 1.00 per cent is attributable to the Secure SADIS FTP service usage: switching data to operational FTP service;
- b) Met Office Message switch (MetSwitch): Total investment £738K² of which 0.74 per cent is attributable to SADIS 2G usage: switching data to operational (2G) broadcast service and to 2G monitoring system (MetSwitch Dev);
- c) Allocated bandwidth ~~1624~~ Mbit/sec bursting to ~~2442~~ Mbit/sec between server and Internet Service Provider (ISP) in support of the Secure SADIS FTP service. Individual client connections have a maximum throughput of ~~1024~~~~2048~~ Kbit/sec.
- d) NATS Message switch (CoreMet System);

¹ budgeted cost for providing MetSwitch service during the fiscal year ~~2015/2016~~2016/2017.

² budgeted cost for providing MetSwitch service during the fiscal year ~~2015/2016~~2016/2017.

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

- e) Secure SADIS FTP equipment running costs;

Note. — This comprises support and maintenance of the servers underpinning the Secure SADIS FTP services, a share of the cost for the underlying storage capacity on which the Secure SADIS FTP services are reliant, and operational monitoring of the Secure SADIS FTP services by Tivoli ensuring problems can be identified and resolved in a timely manner.

- 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 MetSwitch Message Switch to SADIS 2G, comprising staff and equipment costs of supporting serial WAN, TTL Routers, Serial Modems and TTL matrix switches.

NOTE: Item B will not be required after 31 July 2016 following cessation of the SADIS 2G service.

B. SADIS data back-up system

The SADIS Gateway (UK NATS) has procured a dedicated SADIS data backup arrangement with the WIFS Provider State. The backup infrastructure includes an ISDN connection between the National Weather Service Telecommunications Gateway (NWSTG) and the SADIS Gateway, and an 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>
1.	Whitehill services (leased from Cable & Wireless)	
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

Items 1.1 to 1.3 will be decommissioned during August 2016 following cessation of SADIS 2G.

2. ISDN back-up service to Washington (NWSTG)

2.1	VadEDGE 4200	3*
2.2	ISDN 2e circuit	1
2.3	Interface cables	2

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

Items 2.1 to 2.3 will be decommissioned during August 2016 following cessation of SADIS 2G.

3. Secure SADIS FTP service

3.1	Dell Poweredge R900 servers with 1 Gb RAM	2
3.2	Dell Poweredge R900 (4 core) servers with 32 Gb RAM *	2
3.3	Shared Storage Arrays (analogous to hard disk storage, but with dynamic upper limit)	2
3.4	VMWave Virtual Platform with Red Hat Linux 5.3 OS	2
3.5	Intel Xeon X7350, 2.93 GHz Processors	2
3.6	Licenses, misc. support and maintenance costs	1

Note 1. — Item 3.2 relates to Digital Signing servers.

Note 2. — Items listed under Section 3 are located at Exeter.

4. SADIS 2G Infrastructure

4.1	MetSwitch port	1
4.2	MegaPAC V-IX Base System Dual PSU including Chassis, 1 CP7000, and 1 switch	2*
4.3	CP7000 for use with MegaPAC V-IX	1*
4.4	VadEDGE 4200	4*
4.5	Uplink modem (Comtech EF Data SDM-300a)	3*
4.6	Communications cabinet and lease	1
4.7	MegaWatch including Enterprise Reports, and PC	1
4.8	Comtech SDM300L demodulator (NER5 downlink)	1
4.9	MetSwitch Comparator functions	1
4.10	Communications rack floor space at Exeter in IT Hall 1 and IT Hall 2, and at Whitehill	3
4.11	Space in stores at Exeter to locate spare hardware	1
4.12	WAN Module	2
4.13	Comtech EF Data SMS 301 – redundancy switch	2*
4.14	BRI Module for VadEDGE 4200	2
4.15	Interface cabling	8

* Includes one unit/module stored as a cold spare and one unit as part of downlink that may also be used as a spare for the uplink circuit if necessary.

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

Items 4.1 to 4.15 will be decommissioned during August 2016 following cessation of SADIS 2G.

2. PROCURED SERVICES

- A. Space segment annual lease: Allocated frequency band to SADIS 2G, providing a 64 Kbit/sec data rate (less communications overhead);
- B. Annual maintenance of Met Office Exeter and Whitehill uplink site equipment (SADIS 2G and Secure SADIS FTP server); and

**Item A will no longer be required after 31 July 2016 following cessation of SADIS 2G.
Item B will be reduced following cessation of SADIS 2G**

- 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) | Incident Management |
| 2. Additional Service Desk operator | Customer Enquiries |

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) | Technical Supervisor |
| 2. Networks and Systems Supervisor (NSS) | Service Continuity |

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) | Process Specialist |
|-------------------------------------|--------------------|

ii) Additional support

Day support

Resource

- | | |
|--|---|
| 1. Systems integration team | 14 staff-days of network computer engineer |
| 2. Message Switching Manager | 15 staff-days of MSS manager |
| 3. Administrator | 150 staff-days of executive officer |
| 4. International aviation management | 15 staff-days of manager |
| 5. Data traffic | 5 staff-days of communications engineer |
| 6. Contract procurement and management | 4 staff-days of senior procurement officer |
| 7. Message switching Team | 15 staff-days of technical officer |
| 8. Invoice Administration | 20 staff-days of invoicing officer and 15 staff-days of business accountant |

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 ~~608610~~ 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) and 2 Gateway day support administrative staff.

*24-hour support**Resource*

1. Air Traffic Services Assistant ~~521576~~ staff-days per annum

Note. — Total support for SADIS provided by the 24 hour support for the OPMET Gateway function equates to 18 per cent of the total CACC Helpdesk budget.

2. ~~H24~~ Maintenance Engineering ~~1424~~ staff-days per annum

*Day Support**Resource*

3. Administration- ~~510541~~ staff-days per annum
 4. Meeting Attendance 6 staff days per annum
 5. Staff Training and Documentation 3 staff days per annum

6. Day Support Engineering 10 staff days per annum

Note. — Total support for SADIS provided by the day support for the OPMET Gateway function equates to 5 per cent of the total day support budget.

C. Bought-in services

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

References to SADIS 2G will be removed in 2016 following cessation of SADIS 2G.