

SADIS COST RECOVERY & ADMINISTRATIVE GROUP (SCRAG)

NINETEENTH MEETING

(London, UK, 30th October 2018)

AMENDMENT TO ANNEX II, SADIS INVENTORY TO THE SADIS AGREEMENT

(Presented by the Secretariat)

Agenda Item 6: Amendment to Annexes to the SADIS Agreement

REFERENCES

SADIS Agreement
SCRAG/18-WP/3
METP-WG/MOG/10-Report, Action 10/2

1. Introduction

1.1 This paper presents a draft amendment to Annex II, SADIS Inventory, to the SADIS Agreement as a result of recommendations of the METP-WG/MOG, at its Tenth Meeting (Toulouse, France, 4 to 5 April 2019).

2. Discussion

2.1 The METP-WG/MOG10 agreed on the following changes:

- an update to the bandwidth description, and
- an increase to the RAM used on one of the on-premise servers.

These are shown in Appendix A in the usual format: deletions are shown in ~~strikethrough~~, and additions are highlighted.

2.2 One additional change has been included as it is no longer relevant: in C (Hub Equipment) reference to Whitehill has been removed. Equipment was removed from Whitehill four years ago.

2.3 Subsequently to MOG the SADIS infrastructure received a significant update, and it has been moved from an on-premise system to one which uses Amazon Web Services (AWS) infrastructure. This change was made on 6 November 2020, and along with a restructuring of the SADIS support structure, has a significant impact on Annex II.

2.4 The required changes to cater for the SADIS upgrade are shown in Appendix B for information. This will be taken to MOG in March 2020, after which a short extraordinary SCRAG meeting will be held in April 2020 to expedite publication of the new Annex II.

2.5 The proposed amendments to Annex II shown in Appendix A 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, and to agree the following conclusion:

SCRAG Conclusion 20/X SADIS Agreement Annex II

With the consent of the United Kingdom as the SADIS Provider State, in accordance with Article XVII, paragraph 5, of the SADIS Agreement, Annex II, SADIS Inventory, of the SADIS Agreement is amended as indicated in Appendix A; and

The changes shown in Appendix B are taken to the next METP-WG/MOG (SADIS) meeting in March 2020 for approval prior to holding an extraordinary SCRAG meeting in April 2020.

ANNEX II

SADIS INVENTORY

(2019-2020)

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the Secure Aviation Data Information Service (SADIS). The inventory includes: communications circuits, communications back-up system, procured services, and staff. It should be noted that some equipment items form part of a wider infrastructure. Costs of some 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 SADIS FTP infrastructure and communications circuits

1. The 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 SADIS FTP service (see Section 1 C).

ii) **Principally procured for SADIS**

- a) At the Met Office;
See Section 1 C for itemized components

iii) **Not procured principally for SADIS**

- a) Met Office Message switch (MetSwitch): Total investment £328K¹ of which 1.23 per cent is attributable to the SADIS FTP service usage: switching data to operational FTP service;
- b) ~~Allocated bandwidth 42 Mbit/sec bursting to 60 Mbit/sec between server and Internet Service Provider (ISP) in support of the SADIS FTP service. Individual client connections have a maximum throughput of 4098 Kbit/sec.~~ Share of the total SADIS Providers 3Gbps internet connection, with SADIS traffic packet prioritised above general web traffic (but below some critical traffic).

¹ budgeted cost for providing MetSwitch service during the fiscal year ~~2017~~2018/20182019.

- c) NATS Message switch (CoreMet System);

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

- d) SADIS FTP equipment running costs;

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

- e) Met Office Service Desk equipment; and

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

B. SADIS data back-up system

The recognised back-up to failure if the SADIS FTP service is via the USA administered, WAFS Information File Service (WIFS). SADIS FTP users are encouraged to arrange back-up accounts with the WIFS provider via <https://aviationweather.gov/wifs/>.

Note 1: - Usage restrictions apply. Further information is provided in the SADIS User Guide Part 1 (Administrative)

Note 2: - It is the responsibility of the SADIS FTP user to arrange and test back-up accounts with WIFS.

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

<i>Item</i>	<i>Description</i>	<i>Quantity</i>
1.	SADIS FTP service	
1.1	Dell Poweredge R900 servers with 14 Gb RAM	2
1.2	Dell Poweredge R900 (4 core) servers with 32 Gb RAM *	2
1.3	Shared Storage Arrays (analogous to hard disk storage, but with dynamic upper limit)	2
1.4	VMWave Virtual Platform with Red Hat Linux 5.3 OS	2
1.5	Intel Xeon X7350, 2.93 GHz Processors	2
1.6	Licenses, misc. support and maintenance costs	1

Note 1. — Item 1.2 relates to Digital Signing servers.

Note 2. — Items listed under Section 1 are located at Exeter.

2. PROCURED SERVICES

- A. Annual maintenance of Met Office Exeter on-site equipment (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.

Help Desk

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. Shift Leader (ITCS) | Technical Supervisor |
| 2. Networks Incident Manager (NIM) | 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 | 140 144 staff-days of executive officer |
| 4. International aviation management | 15 14 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~~ Data Services (OPMET Gateway function)

Note 1. — Data Services ~~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 604 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 | 521 staff-days per annum |
|-----------------------------------|--------------------------|

Note. — Total support for SADIS provided by the 24 hour support for the OPMET Gateway function equates to 36 per cent of the Data Services ~~CACC~~ Met Service H24 support and 18 per cent of the total Data Services ~~CACC~~ Helpdesk budget.

- | | |
|--------------------------------|-------------------------|
| 2. H24 Maintenance Engineering | 10 staff-days per annum |
|--------------------------------|-------------------------|

Day Support

Resource

- | | |
|-------------------------------------|-------------------------|
| 3. Administration | 54 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 FTP services.

APPENDIX B – Update to SADIS Agreement Annex II to be proposed at next by METP-WG MOG meeting in March 2020.

Deletions are shown in ~~strikethrough~~, and additions are highlighted

ANNEX II

SADIS INVENTORY

~~(2019-2020)~~

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the Secure Aviation Data Information Service (SADIS). The inventory includes: communications circuits, communications back-up system, procured services, and staff. It should be noted that some equipment items form part of a wider infrastructure. Costs of some 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 SADIS FTP infrastructure and communications circuits

1. ~~The SADIS FTP hub infrastructure connection to the Met Office message switch (MetSwitch)~~ consists of the following: ~~a number of units installed at Exeter.~~

i) Solely procured for SADIS (major components)

~~NIL 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 SADIS FTP service (see Section 1 C).~~

Note: In November 2019 SADIS FTP was migrated to use Amazon Web Services infrastructure (see Section 2A) which is a procured service.

~~ii) Principally procured for SADIS~~

~~a) At the Met Office;~~

~~See Section 1 C for itemized components~~

~~iii)ii) Not procured principally for SADIS~~

a) Met Office Message switch (MetSwitch): Total investment £328K² of which 1.23 per cent is attributable to the SADIS FTP service usage: switching data to operational FTP service;

~~b) Share of the total SADIS Providers 3Gbps internet connection, with SADIS traffic packet prioritised above general web traffic (but below some critical traffic).~~

² budgeted cost for providing MetSwitch service during the fiscal year 2018/2019.

- e)b) ~~NATS Message switch (CoreMet System);~~ NATS SADIS gateway function software (developed specifically for the gateway as part of the NATS CoreMet system)

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

- d)c) ~~SADIS FTP equipment running costs;~~ Met Office operational monitoring software;

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

- e)d) Met Office Service Desk equipment; ~~and~~

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

B. SADIS data back-up system

The recognised back-up ~~to failure if the~~ for SADIS FTP in the event of a failure ~~service~~ is via the USA administered, WAFS Information File Service (WIFS). SADIS FTP users are encouraged to arrange back-up accounts with the WIFS provider via <https://aviationweather.gov/wifs/>.

Note 1: - Usage restrictions apply. Further information is provided in the SADIS User Guide Part 1 (Administrative)

Note 2: - It is the responsibility of the SADIS FTP user to arrange and test back-up accounts with WIFS.

C. ~~Hub equipment and services located at Exeter~~

Item — Description ————— Quantity

1. ~~SADIS FTP service~~

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

~~— Note 1. — Item 1.2 relates to Digital Signing servers.~~

~~— Note 2. — Items listed under Section 1 are located at Exeter.~~

2. PROCURED SERVICES

- A. ~~Annual maintenance of Met Office Exeter on-site equipment (SADIS FTP server); and~~ Amazon Web Services (AWS) elements used by the Met Office in the operation of SADIS FTP:

AWS Service	Specification	Quantity	What the service is used for:
EC2	t3.medium 2* vCPU (Intel Xeon Platinum 8000 series) 4 GiB Memory Network Bandwidth: ≤5Gbps; EBS Bandwidth ≤1.50 Gbps)	3	2* FTP Server and 1 Apps Server
S3	N/A	6	Data Storage : Ingestion; FTP Content; AuthN; Logs & Alerts.
Route53	N/A	1	DNS
Lambda	N/A	N/A	Various Serverless Functions including housekeeping, Log formatting, Alerting Management etc
Cloudwatch	N/A	N/A	Log Aggregation
NAT Gateway	N/A	1	Access
VPC	N/A	1	
Kinesis Data Stream	N/A	1	Log Entry Routing
Kinesis Firehose	N/A	2	Alert Management
DynamoDB	N/A		
Athena	N/A		

- ~~B.~~ NATS 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~~ First Line Support

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.

Help Desk

Skill

1. Service desk (first point of contact)
- ~~2. Additional Service Desk operator~~

Incident Management and customer enquiries
~~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.

ii) Second line support

24-hour IT Operations support

Skill

- | | |
|------------------------------------|---|
| 1. Shift Leader (ITCS) | Technical Supervisor, incident handling |
| 2. Networks Incident Manager (NIM) | Service Continuity, system monitoring |

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~~

iii) Third and fourth line support

Normal working hours support and "best endeavors" Skill

- | | |
|------------------------------|---------------------------------------|
| 1. Message Switching Manager | Incident handling, server adjustments |
| 2. Message Switching Staff | Incident handling and account changes |
| 3. AWS Technical Support | AWS expertise, support and guidance |

ii)iv) 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 |
| 3.1. Administrator | 144 staff-days of executive officer senior stakeholder relationship manager |
| 4.2. International aviation management | 14 staff-days of manager |
| 5. Data traffic | 5 staff days of communications engineer |
| 6.3. Contract procurement and management | 4 staff-days of senior procurement Officer |
| 7. Message switching Team | 15 staff days of technical officer |
| 8.4. Invoice Administration | 20 staff-days of invoicing officer financing assistant and 15 staff-days of business accountant senior finance manager |

B. NATS infrastructure site –Data Services (OPMET Gateway function)

Note 1. — Data Services 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 604 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

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|-----------------------------------|--------------------------|
| 1. Air Traffic Services Assistant | 521 staff-days per annum |
|-----------------------------------|--------------------------|

Note. — Total support for SADIS provided by the 24 hour support for the OPMET Gateway function equates to 36 per cent of the Data Services Met Service H24 support and 18 per cent of the total Data Services Helpdesk budget.

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|--------------------------------|-------------------------|
| 2. H24 Maintenance Engineering | 10 staff-days per annum |
|--------------------------------|-------------------------|

Day Support

Resource

- | | |
|-------------------------------------|-------------------------|
| 3. Administration | 54 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

An ~~Additional support and maintenance~~ agreements is in place ~~with third parties are in place~~ to provide ~~third line~~ AWS support ~~of~~ for the SADIS FTP services.