

Memorandum of Understanding

Concerning Levels of Service

between

The Higher Education Funding Councils for England, Scotland and Wales, the Learning and Skills Council, the Scottish Further Education Funding Council, the National Council for Education and Training for Wales and the Department for Employment and Learning

and

The JNT Association, trading as UKERNA

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1. Purpose

UKERNA will provide a set of computer networking and related services to the UK education and research community. The Higher Education Funding Councils for England, Scotland and Wales, the Learning and Skills Council, the Scottish Further Education Funding Council, the National Council for Education and Training for Wales and the Department for Employment and Learning (the Funding Bodies) will be represented by their Joint Information Systems Committee (JISC), operating through its sub-committee, the JISC Committee for Networking (JCN). The JISC Executive acts on a day-to-day basis to implement the policy established by the JISC. The Higher Education Funding Council for England will make payments, on behalf of all the funding councils, to UKERNA for the provision of the services set out in this Memorandum of Understanding. The performance of UKERNA against the performance indicators and service levels set out in this Memorandum of Understanding will be monitored by the Monitoring Unit of the JISC (MU).

Annexes A - J of this Memorandum of Understanding define the services to be delivered by UKERNA, as follows:

Annex A	Service Level Definitions
Annex B - D	Budget and Operational Plan Reporting Framework
Annex E	Change Control Procedures
Annex F - H	Additional Reporting Requirements
Annex I	Core Access Points
Annex J	Referenced Documents

2. Definitions

In the remainder of this Memorandum of Understanding, “Community” refers to members of the UK education and research institutions which are eligible to receive UKERNA services under the terms of this Memorandum of Understanding. Those institutions, referred to as “eligible institutions”, are listed in the standing document “Institutions sponsored by the JISC”¹ which is to be kept up to date by the MU on behalf of the JISC Executive.

3. Services to be provided by UKERNA

The services to be provided by UKERNA are:

- a) a set of operational services which allow users at eligible institutions to communicate with each other and with users at sites outside the Community;
- b) a set of information services and support services which increase the effectiveness of the use of the basic operational services;
- c) a set of network security services which provide response to network security emergencies and provide information and advice on network security matters.

The Funding Bodies require a basic set of services to be provided to all eligible institutions. The Funding Bodies may also require that charges be applied for all or part of this basic set of services. Other services will be optional; that is to say, they will be

¹ The current version of this document is displayed on the MU web site (ref. Annex J.1)

offered by UKERNA at the request of the JISC, but will only be provided when eligible institutions explicitly request them. Such optional services may be separately chargeable.

The full set of services to be offered or provided by UKERNA is listed in Annex A.

4. Service Levels

Annex A sets out the Service Level Definitions for each of the service categories defined in Section 3 above. Each Service Level Definition is described in the following terms:

- Specification
- Performance Indicators and Service Levels
- Reporting.

UKERNA shall not be required to discharge its commitments under Annex A when any event or series of events beyond its reasonable control prevents it from providing the services defined in Annex A, provided that UKERNA promptly notifies the JISC Head of Services Management of:

- a) the estimated extent and duration of its inability to discharge its commitments;
- b) the resumption of the provision of the service.

If the event or series of events are such as to affect only part of its total commitments, then UKERNA shall continue to discharge those commitments that are not affected.

[Appropriate contact details for JISC staff shall be maintained at (ref Annex J.10).]

UKERNA shall alert the JISC Head of Services Management and the JISC Head of Policy and Corporate Services should they become aware of the likelihood that a supplier may be unable to complete its contractual commitments and shall work with them to prepare a contingency plan.

UKERNA shall maintain a Risk Register identifying the major risks to the JANET service and, as appropriate, the mitigation mechanisms adopted thereto. UKERNA shall review the Register at periodic intervals and take reasonable steps to mitigate the potential effects of the risks so identified.

5. Monitoring and Auditing of Services

The services shall be subject to monitoring and to audit on the following basis:

- a) One of the purposes for which the JISC has established the MU is to monitor the services defined in this Memorandum of Understanding. The MU may appoint independent experts to assist it where necessary. From time to time it shall carry out a technical audit of one or more of the services defined in Annex A. The purposes of any such audit will be to assess the extent to which UKERNA has met the requirements specified for the service or services being audited and to suggest ways in which these services could be improved. Such audits will pay particular attention to the performance of UKERNA with respect to the listed indicators. The

audits will also take account of the budget available for the provision of the services under review;

- b) The JISC may also request an audit of the methods and procedures used by UKERNA to measure the values of the service level parameters defined for the services. The purpose of the audit will be to confirm the accuracy of UKERNA's reports. Eligible institutions may ask the MU to instigate an investigation in cases where they have *prima facie* evidence that the service levels are not being met. UKERNA shall receive at least 10 working days notice of any such audit;
- c) Technical audits will normally be carried out no more frequently than once per year. The auditors shall have access to all reports described in Section 10 below, to any other relevant audit reports commissioned by UKERNA (subject to the agreement of those involved) and to any material provided by UKERNA to eligible institutions as part of UKERNA's service provision. UKERNA will allow the auditors to spend reasonable amounts of time interviewing UKERNA staff. UKERNA will be given the opportunity to make comments to the auditor on a draft of the auditor's report. These comments will be included in the auditors' final report, by way of management response to the audit recommendations. A copy of the auditors' final report shall be made available to UKERNA within one month of its presentation to the JISC;
- d) The costs to the MU of employing technical auditors and of expenses directly incurred by them shall be borne by the JISC.

6. Relationships between UKERNA and Eligible Institutions

All eligible institutions which receive UKERNA services shall have a formal agreement with UKERNA as a condition of service. Aspects of the agreement which are common to all institutions are documented in the "Terms for the Provision of the JANET Service" (ref. Annex J.2) issued by UKERNA.

UKERNA shall establish agreements with each site individually, making their acceptance of the terms explicit and covering site-specific details. UKERNA shall keep records, available to the JISC, of the institutions connected, and, for each institution, shall record in them:

- a) the optional services, if any, selected by the eligible institution;
- b) the financial payments, if any, to be made by the eligible institution, or by UKERNA;
- c) the contact points within the eligible institutions for dealing with fault reports and other communications;
- d) the other institutions, if any, supported by the eligible institution under the licensing procedures, and the responsibilities of the eligible institution for the services provided to those institutions.

An institution's entitlement to UKERNA services under this agreement shall cease immediately if as a result of a merger, or otherwise, an institution is no longer 'eligible'. If appropriate, and on request, UKERNA will continue to support pre-existing access link(s) (i.e. those links in place as at the date of the signing of this SLA) for a period of up to six months following the formal date of merger. For the time

being, UKERNA shall continue to support pre-existing link(s) to institutions in the Further Education sector for a period up to twelve months.

In general, UKERNA will not normally communicate with the end users of the UKERNA services, but with the central computing service (or equivalent organisational unit) in any eligible institution and with the JISC Regional Support Centres. Although UKERNA will take reasonable steps to deal with enquiries and demands from end users, such steps will normally take the form of referring the enquiry or demand to the most appropriate contact point (as defined in c) above) in the end user's or another eligible institution. Exceptions to the general rule are bookings for conference or meeting attendance and other such activities which, by their nature, involve individual end users.

If an institution does not discharge its obligations and provide the necessary information, UKERNA may be unable to provide the defined level of service. In this event UKERNA will alert the JISC Head of Services Management to any such failure on the part of an institution, and agree subsequent actions. In particular, serious breaches of the JANET Acceptable Use Policy (ref. Annex J.3) may lead to suspension of service.

7. Submission of a budget and an operational plan

The budget and the operational plan, taken together, provide a picture of the development of the service over the planning year and provide a monitoring framework for the subsequent operational year.

Annexes B – D cover the arrangements for preparation and monitoring of the budget and the operational plan.

8. Creation of new services

Any proposals to introduce new services will be agreed by the JCN before the services are incorporated into the scope of this agreement. This will enable appropriate policy decisions to be taken as to the requirement for and the prioritisation of the introduction of such services before resources are committed.

New services will normally be incorporated into this agreement as part of the budget/forward look process, although, exceptionally, they may be incorporated under the change control procedures. More speculative developments for which operational services cannot yet be planned will not normally be introduced in this way; the JISC has other programmes under which to manage such developments.

The case for the incorporation of a new service will include as a minimum:

- a) a financial plan indicating: service development costs; service set up costs; annual operating costs; savings or efficiency gains arising from the introduction of the service;
- b) an outline service definition with a preliminary indication of the expected scale and performance of the service; an indication of when definite text for inclusion in Annex A of this Memorandum of Understanding can be defined;

- c) a predicted date for availability of the service, and the level of confidence to be attached to this prediction;
- d) a plan for any commissioning and piloting necessary to establish the service;

9. Termination of Services

Any proposals to terminate services, and a timetable for effecting such termination, will be agreed by the JCN before the services are removed from the scope of this agreement, in order that appropriate policy decisions as to the implications are taken before the services are terminated. The users of the service will normally be consulted and the results of such consultation will be presented as part of the proposal to the JCN. To this end, on a case-by-case basis, UKERNA shall agree with the JISC a process for user consultation that takes account of the complexity of the service, the level of usage and the impact on the user community.

Services will normally be identified for termination as part of the budget/forward look process or the annual review process. Exceptionally, service termination may be considered under change control procedures.

10. Performance Reporting Procedure

UKERNA shall make available the following reports to the MU at the times and the frequency indicated below.

For each of the services, the agreed information relating to the reporting items listed for that service in Annex A (using the formats defined in the document “Formats for performance reports to the MU” (ref. Annex J.4)) shall be delivered according to the following schedules:

- a) by the eighth working day of the following month, for that reporting information that has been agreed shall be delivered each calendar month;
- b) by the eighth working day of the subsequent quarter, for that reporting information that has been agreed shall be delivered on a quarterly basis;
- c) within three months of the operational year end, a report of a quality and content suitable for general publication, including the principal activities and results of UKERNA in relation to the services listed in Annex A;
- d) as agreed between the JISC Head of Services Management and UKERNA on a case-by-case basis, other reports requested from time to time by the JISC Executive.

11. Charging Principles

Other services provided by UKERNA outwith this agreement shall not be subsidised from the funding streams associated with this agreement. Any UKERNA overhead costs shall be clearly apportioned between JISC supported services and other services offered.

Where a charge is made for service defined within this agreement, UKERNA shall collect the agreed charges and report the receipts to the JISC, analysed in terms of the services provided.

12. Sub-Contracts

UKERNA remains responsible for ensuring that the services are provided to the eligible institutions with the agreed levels of quality, even if it chooses to sub-contract for the provision of some or all of the services covered by this Memorandum of Understanding.

13. Annual Review

The JISC Head of Services Management, the MU, UKERNA and representatives of the Regional Network Operators shall review annually the list of services given in Annex A, starting six months before the end of the operational year. Prior to this, starting eight months before the end of the operational year, the JISC Services Management Group shall consult with representative groups of the user community in order to ascertain user feedback on the list of services. The JCN shall be kept informed throughout the review process.

At least two months before the expiry of the existing Memorandum of Understanding, a new Memorandum of Understanding for the subsequent operational year shall be signed between UKERNA and the JISC.

Where the annual review makes significant changes to the set of services or to the service levels, a date during the following operational year on which these changes will come into effect shall be specified.

14. Change Control Procedures

The definition of the services to be provided, and of the schedules, priorities and financial bases for them are normally established during the annual cycle of budget and operational plan approvals. Minor details of these approvals may, through force of circumstance, need to be varied on a shorter timescale.

Changes to the service level definitions may be proposed by the JISC, MU or UKERNA and will be agreed between MU and UKERNA, then submitted to the JISC Head of Services Management for approval. The JISC or its advisory committees, shall be consulted, as appropriate, to obtain support for more significant changes.

A register of agreed changes will be maintained by the MU.

Changes agreed during an operational year will be incorporated into the service level definitions for the subsequent year. If they are not, the agreed changes will be deemed to have lapsed.

The Change Control procedures detailed in Annex E shall apply.

Annex A

Operational Production Services Provided by UKERNA

A1 DEFINITIONS

The definitions of terms in this clause apply to the individual service levels defined in the remainder of this annex.

In addition to the list of eligible institutions identified in clause 2 of this agreement, there are a number of special services listed in Annex H. The term “client institution” shall, for the purposes of this annex, include the JISC funded services listed in Annex H, and individual reports of performance shall be made for them wherever reporting on client institutions is specified.

Performance indicators will be calculated monthly or quarterly, depending on the period the individual data items cover, but satisfactory performance will be assessed on the basis of comparison of the service level with a twelve month rolling average of the calculated values.

Note: Where a service has not yet been in operation for twelve months, or where the definition of the service level has been changed within the previous twelve months, the service cannot be said to have failed to meet the SLA. However, analysis of trends may lead to review and negotiation before 12 months have passed in cases where it becomes clear that failure can be foreseen.

All reports shall be delivered in machine readable form in a format defined in the document “Format for performance reports to the JISC Monitoring Unit” (ref. Annex J.4) which is maintained jointly by UKERNA and the JISC Monitoring Unit.

A1.1 Maintenance Time

All the continuously available services shall be scheduled to be available 365 days a year and 24 hours a day, apart from planned maintenance times. These shall be published at least two weeks in advance to all client institutions, whether directly connected by UKERNA or via a sub-contractor. As far as possible, maintenance times shall be synchronized and shall fall during the “at risk” period from 0700-0900 on Tuesdays. Service availability shall be calculated on the basis of the scheduled service time (which excludes any scheduled maintenance events).

A1.2 Staffed Periods

“Staffed Periods” are the periods from 0800-1700 on weekdays. However, the following weekdays are not staffed periods:

New Year’s Day	Last Monday in May
Good Friday	Christmas Day
First Monday in May	Boxing Day

A1.3 Extended Service Periods

“Extended Service Periods” are the periods from 0800-2200 on weekdays and from 0900-1800 on Saturdays and Sundays. However, the following weekdays are not extended service periods:

New Year’s Day	Last Monday in May
Good Friday	Christmas Day
First Monday in May	Boxing Day

A1.4 Measurement of Availability

Although availability is defined as a fraction here, monthly reporting shall be made in terms of time lost and number of incidents, from which the availability can be calculated directly.

A1.4.1 Availability of Basic Transmission Service

UKERNA shall record the *accessibility* of each client institution from an appropriate point within the network. In this context, accessibility means that it is possible successfully to transfer data in both directions between the client institution and some point on JANET defined in the specific SLD. Whilst accessibility is important, as it is likely to closely reflect the reliability of the service perceived by end users, it cannot be equated to network *availability* for the purposes of this SLA. This is because it includes factors outside UKERNA’s operational control, such as failures at the client institution, or delays in fixing faults due to absence of staff at a client institution.

In particular, investigation of a fault by UKERNA or its agents may be frustrated by their inability to access a client institution. In such circumstances, provided UKERNA have continued to make reasonable efforts (see A2.3.1) to contact the institution and arrange access, the period during which access is denied (the suspended period) may be considered a lack of accessibility, but not of availability.

Network availability shall therefore be determined for each client institution by discounting the following from the observed network accessibility:

- a) All periods of inaccessibility that result from the effects of scheduled service maintenance;
- b) All periods of inaccessibility that result from events local to the client institution, such as site power failures;
- c) All periods of inaccessibility which are designated suspended periods.

Network availability shall thus be calculated for each client institution each calendar month as:

(scheduled service time – total period of unavailability)/(scheduled service time).

A1.4.2 Availability of Other Services

The measurement of availability of services other than the Basic Transmission Service is more straightforward. Availability of the other services is specified as follows:

- a) A service is *available* if it can be accessed via the network and used correctly by at least one client institution that is not involved in the provision of the service. Thus, if a service is operated by one or more client institutions acting on behalf of UKERNA, it is not available if it can be accessed only from those institutions;
- b) Availability is the time that the service was *available* (as defined in (a) above) divided by the time when it was scheduled to be available;
- c) Availability shall be calculated for each service each calendar month.

Note that the availability of many services as perceived by client institutions will be the combination of the availability defined in (a) – (c) above and the network availability defined in section A1.4.1 above. UKERNA will report these two availabilities separately.

A1.5 Mean Time Between Failures

For certain services, it is useful to define Mean Time Between Failures (MTBF) as one of the Service Level parameters. In such cases, a *failure* is defined as any interruption in the operation of the service which causes a period of unavailability according to the definitions in A1.4.1, A1.4.2 and in the definition of the Service Level parameter itself.

Notes

1. UKERNA may opt to have a number of successive failures considered as a single failure for the complete period, so long as the same aggregation is applied both to availability and mean time between failures.
2. Despite the name, the mean time between failures is manipulated for the purposes of aggregation and averaging as a failure rate, in incidents per hour. Thus a target MTBF for the Basic Transmission Service of more than a thousand hours is a rate of less than 0.001 incidents per hour, and is calculated each month by dividing the number of failures by the number of institutions and the number of hours in the month (e.g. 720). The MTBF figure for a twelve-month period is produced by averaging the rates observed in each of the constituent months of the period.

A1.6 Loss of Information

Several services operated by UKERNA accept data submitted by client institutions and then make it available to the same and to other client institutions. UKERNA takes responsibility for the safe keeping of such data once it has been accepted. All procedures by which client institutions submit new data or update previously submitted data shall include a step in which UKERNA acknowledges receipt. UKERNA's responsibility for safekeeping starts when this acknowledgement is issued.

A1.7 Non-Monitored Performance Indicators

In general, UKERNA shall routinely monitor the service categories listed in Annex A to ensure that service delivered meets the defined service levels. However in some circumstances such measurements may not be possible on a routine basis, perhaps due to cost or due to the disruptive nature of the measurements required. Where this is the case, the corresponding performance indicators shall be marked as being not monitored. However, where there is prima facie evidence that the service delivered is failing to meet a non-monitored performance indicator, UKERNA shall agree with the JISC Monitoring Unit a set of specific measurements (including the cost of such measurements) intended to determine whether the service is indeed failing to meet the appropriate service levels.

A2 OPERATIONAL SERVICES

A2.1 Basic IP Transmission Service

Specification for Unicast Transmission:

Each client institution connected by UKERNA, and each of the national services listed in Annex H, shall be entitled to a continuous data communication service, subject to the operational limitations for "at risk" time given in clause A1.1. The basic network service currently provided to all organisations is the transmission of IP data. For the purposes of this SLA, the basic IP transmission service shall be considered to consist of two components for each client organisation:

- an access component between the client organisation and the JANET national backbone (see Annex I);
- a core component providing transit for client organisations across the JANET national backbone, between the points listed in Annex I.

Performance Indicators and Service Levels:

For both the core and access components of the basic IP transmission service, a network path shall be considered to be inaccessible if either:

- a) It is not possible to both transmit and receive between the two ends of the path for a period in excess of 60 seconds. Or;
- b) The performance of the path is severely degraded to an extent that the service is effectively unavailable. Severe degradation occurs where in excess of 60% of the packets transmitted on the path are lost for a period of more than 5 minutes.

Latency is closely related to loading and, if a site or funding body chooses not to upgrade a link that is acknowledged to be overloaded, no guarantee of latency can be given. However, shared components on the access path to the Backbone Access Router might degrade the latency on that access path.

Specification for Multicast Transmission:

Multicast transmission forms an integral part of the basic transmission service. Multicast traffic is supported over the JANET core network and an interface provided at the edges of the core for its distribution through regional networks. Multicast rendezvous points will be configured in each Backbone Access Router. Each regional network will be able to access the multicast service by providing its own rendezvous point within the regional network that supports the necessary protocols to communicate with the appropriate backbone rendezvous point.

UKERNA shall document and publish the technical specification of the interface to its multicast service.

The multicast management interface between JANET and each regional network is positioned at the link between the Backbone Access Router and the regional network router.

Multicast is currently being used across some, but not all, parts of the network. There are significant challenges in making this a general service due to the issues of an end-to-end service running over multiple management domains.

Performance Indicators and Service Levels:

For performance purposes, the transmission of individual multicast packets on a correctly functioning multicast group shall be subject to the same success and latency targets as for Unicast transmission.

Additional service levels for the establishment and management of multicast groups will be added to the SLA in future, based on experience gained in extending multicast coverage to all regional networks.

A2.1.1 Basic IP Transmission Service - Access to Backbone**Specification:**

UKERNA shall provide a basic transmission service supporting the transmission of Unicast and Multicast IP traffic between each client institutions and the JANET national backbone. The service shall be provided to a designated point from the list in Annex I, via a regional network or a direct link.

Performance Indicators and Service Levels:

- a) Over the full 24 hours of operation (excluding scheduled maintenance), UKERNA shall provide network availability of:
 - Availability of 99.7% to more than 90% of client organisations;
 - Availability of 99% to more than 96.5% of client organisations;
 - Availability of 97% to more than 99% of client organisations;
 - Availability of 93% to more than 99.7% of client organisations;each calculated annually from monthly averages over all client organisations sponsored by the JISC (each given equal weighting);
- b) Availability of 99% to all client institutions, calculated annually for each client institution;
- c) Mean time between failure (period of unavailability) of at least 1000 hours provided to client institutions; (See A1.5)
- d) Time to restoration of service (duration of period of unavailability) of less than 10 hours for 90% of failures. This will be calculated as the twelve month rolling average of the percentage of reported failures in each month which are deemed to have taken less than 10 hours to restore;
- e) The target for maximum latency for 128 byte packets between a client institution and the nearest point on the JANET national backbone is 15 ms [not monitored] for:
 - 95% of packets over a 30 minute period
 - 80% of packets over a 2 minute period
 - 50% of packets over a 5 second period

Note: the provision of short-term reports on achieved latency is expected to start on a trial basis by the time this SLA comes into effect, and the trial data will be used to agree a revised Performance Indicator before the next revision of this SLA.

Future targets for Performance Indicators:

The objective is that, for the year 2004-2005, UKERNA shall provide network availability over the full 24 hours of operation (excluding scheduled maintenance) of:

- Availability of 99.8% to more than 90% of client organizations;
- Availability of 99.2% to more than 96.5% of client organizations;

Availability of 97% to more than 99.2% of client organizations;
Availability of 93% to more than 99.8% of client organizations;

each calculated annually from monthly averages over all client organizations supported by the JISC (each given equal weighting).

Reporting:

The following information shall be reported for each client institution, in each calendar month:

- number and duration of each incident when the institution was not accessible;
- number and duration of each incident of network unavailability for the institution;
- number and duration of each period of inaccessibility for the client institution discounted as a result of problems of access to that institution;
- explanatory notes on the cause of any failure to provide at least 90% availability to an institution during the calendar month, or for any period of unavailability for the client institution deemed to have lasted more than 10 hours;
- total traffic, separately in each direction, on the institution's nominated JANET access.

A2.1.2 Basic IP Transmission Service - Core Network

Specification:

UKERNA shall provide a core IP network supporting the transmission of Unicast and Multicast IP traffic between access points on the boundary of the core. This core network is defined in terms of the core access points listed in Annex I.

Performance Indicators and Service Levels:

- a) The availability of the core IP network shall exceed 99.9%.

Availability shall be assessed by weighting each incident of unavailability affecting the core network according to the number of paths disrupted as a proportion of the total number of paths across the core network.

Core availability is thus:

$$\frac{\text{Service time} - \text{SUM}(\text{Outage duration} * \text{Weight associated with each outage})}{\text{Service Time}}$$

- b) The target maximum latency for 128 byte packets between any two access points to the JANET national backbone is 25 ms, for 95% of transmissions over any 30-minute period.

Reporting:

UKERNA shall report the following each calendar month:

- overall core network availability;
- utilisation of the core network taken at the 90th percentile for each link;
- number of and total duration of incidents of network unavailability for each path across the core network;
- by exception, incidents when target latency in Service Level (b) above is not met.

A2.2 External Network Access Provision and Transmission

Specification:

UKERNA shall identify other network services of particular significance to the Community (Peer Networks) and shall aim to negotiate cost effective and resilient arrangements for access to these services with the countries or groups concerned. Such agreements shall be established to support the Community's requirements for access by its members from commercial ISP services, for international and domestic communication, and for communication with significant non-academic groupings within the EU in general and the UK in particular. Such external network services shall interwork with those offered nationally by UKERNA. UKERNA shall use its best endeavours to negotiate Service Level Agreements with the organisations with which it shares responsibility for establishing routes to or from the Community. UKERNA shall not use JISC funds to subsidise the groups with which such agreements are concluded.

Performance Indicators and Service Levels:

- a) If a Service Level Agreement has been established with another service provider, UKERNA shall conform to the terms of the Agreement;
- b) Until such a service level can be established, UKERNA shall use its best endeavours to ensure that the availability of each route shall be the same for the equivalent academic community basic transmission service; the levels defined in A2.1.1 apply to those aspects of the service under UKERNA's control.

Reporting:

UKERNA shall provide monthly reporting on the connections listed in A2.2.1-A2.2.3 and Annex G. This reporting will include the following items:

- list of service providers involved in external network access provision, including number and speed of all links;
- number and total duration of incidents when each link was unavailable;
- total levels of traffic on each link in each direction.

UKERNA shall make available information on the distribution of traffic on the external links.

Copies of new or significantly modified Service Level Agreements with other service providers shall be provided to the JISC Executive and the JISC Monitoring Unit.

Note: In cases where there are difficulties distinguishing between flows over shared links to a number of external networks, aggregate traffic is preferable to failure to report altogether.

A2.2.1 Access to the European Research Network

Specification:

UKERNA shall provide cost effective access to higher and further education and research networks and services in the European Union, via DANTE or otherwise.

Performance Indicators and Service Levels:

Service levels (a) and (b) in 2.2 apply.

Reporting:

Monthly reports as defined in A2.2.

A2.2.2 Access to the Global Internet**Specification:**

UKERNA shall provide cost-effective access to the parts of the Global Internet not covered elsewhere in this Service Level Agreement. This provision shall be in the form of a flexible managed service delivered by a suitable contractor or contractors at agreed access points within the UK.

Performance Indicators and Service Levels:

The service offered by the contractor(s) shall be subject to a Service Level Agreement reported to and agreed by the JISC Executive. Once an SLA has been agreed, it effectively becomes part of this SLA and UKERNA is responsible (via its sub-contractor) for its delivery.

The paths from the point of delivery to the JANET core shall be subject to the performance targets given in A2.1.2, considering, for weighting purposes, those paths to form a separate group, independent of the core.

Reporting:

Monthly reports as defined in A2.2.

A2.2.3 Access to North American Research Internets**Specification**

UKERNA shall provide cost-effective access to the North American Research Internets Abilene and ESnet. This provision shall take account of the needs of the research community. It is accepted that satisfying these needs may result in more special configuration, with associated interruption of service, than would normally be the case.

Performance Indicators and Service Levels:

Service levels (a) and (b) in 2.2 apply.

Reporting:

Monthly reports as defined in A2.2.

A2.3 Fault Handling**A2.3.1 Fault Reporting****Specification:**

UKERNA shall provide a means by which client institutions may report faults on any of UKERNA's Operational Services. UKERNA shall publish procedures for fault reporting and shall organize a sufficient set of mechanisms for call out in response to faults and for escalation in response to continuing problems. These procedures shall take account of the need for users of the network to be kept aware of progress and status during periods of disruption.

Where service is provided via a sub-contractor, UKERNA shall make arrangements for fault reporting and provision of progress and status information, via the sub-contractor, or otherwise.

Wherever possible, UKERNA shall use the measurements it makes of the accessibility of each client institution to initiate fault recovery action proactively, without waiting for fault reports to be made.

Where an obligation is placed on UKERNA to contact the client institution within a given period, this obligation is dependent upon the ability of the client institution to receive such reports. If delivery is not possible because the institution is not staffed at the time, the report shall be made within one hour of the institution's staffed period. If there is no response from the client institution to a call made during a staffed period, UKERNA shall notify the client institution of the apparent inaccessibility by fax.

UKERNA shall attempt to inform the appropriate representative of the client institution within one hour of finding that the client institution is apparently inaccessible.

UKERNA shall keep a record of all communications with client institutions concerning fault reports and return to service indications.

Performance Indicators and Service Levels:

- a) Client institutions shall be able to report faults at any time. (Use by UKERNA of a telephone answering machine is acceptable as long as the other service levels (b) and (c) below continue to be met.);
- b) UKERNA shall respond to any fault report with an initial prognosis:
 - within one hour when reported during a staffed period; or
 - within one hour when there is more than one hour remaining in an extended service period: or
 - otherwise, within one hour of the start of the next period
- c) Where faults are detected by UKERNA, a summary of the fault and of the action taken shall be provided to the institution affected on the same time-scale.

Reporting:

For fault reports referring to the basic transmission (as defined in A2.1 – A2.2), UKERNA shall report the following information on a monthly basis:

- number of fault reports;
- achieved response time for the reports;
- description of any exceptional events;
- breakdown by type of fault reported, into:
 - JANET Access - access line fault reports;
 - external Access - access to hosts and service beyond JANET;
 - JANET service - problem with JANET service use/access.

UKERNA will work during this SLA year to define the Return to Service indicators used throughout the network.

A2.3.2 Network Status Information

Specification:

UKERNA shall provide online web-based information on the status and performance of the basic IP transmission service on network status servers. This information shall include details of the operational status of the core IP network and the external network access provision, presented in a form suitable for end users of the JANET network. Each client institution shall have access to more detailed information for its own connection. This restricted information shall include the availability of the access path between the client institution and the JANET core network, and current and historical traffic figures for the access link to the client institution. This restricted information shall be made available to the JISC Monitoring Unit.

In future, the performance of the multicast service will be monitored by sending multicast traffic over the JANET core network and displaying the results as an additional data item.

Performance Indicators and Service Levels:

- a) Availability of each network status server of 99.5%;
- b) Mean time between failure of 1000 hours;
- c) UKERNA will update the configuration of the network status system to reflect new, modified, removed or otherwise amended nominated network access connections within five working days of each change.

Reporting:

UKERNA shall provide on a monthly basis:

- list of failures, by exception, to update the network status system configuration within five working days.

UKERNA shall provide on a quarterly basis:

- list of outages, including duration and date, for each network status server.

A2.4 Managed Router Service**Specification:**

UKERNA shall provide a managed router service, on request, to eligible institutions connected to JANET. This service will have limited scope, covering initial set-up, hardware and software maintenance, minor changes to configuration and remote analysis of faults.

Where the fault is determined to be with the router, alerts will be raised to the router maintenance provider, UKERNA will monitor progress and ensure that the institution is informed once the router fault has been rectified.

The router shall be deemed to be part of the access path to the JANET national backbone. Availability of the router shall be measured as part of the availability of the Basic IP Transmission Service defined in A2.1.1.

Performance Indicators and Service Levels:

- a) UKERNA will make arrangements for the service to be provided within 2 working days of receipt of request for service and will provide the service within a further 20 working days;

- b) UKERNA will ensure that the maintenance provider is aware of a fault within one hour of a router fault being detected.

Reporting:

UKERNA shall provide on a quarterly basis:

- list of requests received for the MRS, date of request, date effected;
- the number of requests received for changes to configuration with reporting to show a zero value if applicable;
- minimum, maximum and mean time to implement changes.

A2.5 Naming and Addressing

A2.5.1 Naming domain administration

Specification:

UKERNA shall provide co-ordination and administration for the naming domain “ac.uk”. Within this domain, name allocations shall be made in the DNS.

Performance Indicators and Service Levels:

- a) Name registration request forms for new client institutions shall be either approved or rejected within two weeks.

Reporting:

On a quarterly basis, UKERNA shall provide:

- a list of requests for registrations showing the date on which the request was received;
- the date on which the request was decided;
- whether the request was accepted or rejected.

A2.5.2 Domain Name Service

Specification:

UKERNA shall provide a name service for the DNS domain “ac.uk” (the target domain), including the operation of the primary name server and the provision of a secondary name server function. UKERNA shall also carry out such management activities as are necessary to support the Community within this domain and to coordinate the service with appropriate national and international bodies.

Performance Indicators and Service Levels:

- a) UKERNA shall provide by replication a service that is effectively available on a continuous basis at all times;
- b) A response within 5 working days to a request for delegation in the target domain from a client institution connecting to JANET;
- c) Implementation of a request for new and modified delegations in the target domain from a client institution connecting to JANET within 20 working days from the receipt of the necessary information and payment when applicable.

Reporting:

On a monthly basis, UKERNA shall report:

- the number of replicated subsystems involved in providing the service, and the list of locations and basic availabilities of each subsystem. UKERNA shall also report on the nature, date and duration of any exceptional event causing the service provision to be unavailable or to supply incorrect or incomplete information.

On a quarterly basis, UKERNA shall report:

- list of delegation requests, showing the date on which the request was received, the initial response time and the date on which the request was implemented. Explanations of PI (b) and (c) failure should be provided.

A2.5.3 Primary Name Servers for Institutions

Note: Whilst UKERNA is firmly of the view that the primary DNS server for a client institution ought to be on that institution's campus network, nevertheless UKERNA accepts that this service may be required to provide a last-resort service for a small number of client institutions.

Specification:

UKERNA shall provide a primary name server service, on request, to those JANET client institutions with a primary connection who are unable to make provision for such a service themselves. The service will provide a full representation of the client institution's domain.

Performance Indicators and Service Levels:

- a) Overall service availability of 99.95% to clients;
- b) UKERNA will allocate a primary name server for a client institution within 5 working days of receipt of the necessary information from the client;
- c) UKERNA will inform the client institution of the name and IP address of the allocated primary name server within 2 working days of the initial set up of the name server;
- d) UKERNA will action any requests for modification to the entries in the primary server within 5 working days.

Reporting:

On a monthly basis, UKERNA shall report, by exception:

- number of DNS service breaks, with start and end times for each break.

On a quarterly basis, UKERNA shall report:

- list of primary name service requests, showing the date on which the request was received, the date of server allocation, date when addresses sent;
- number of requests received for modification;
- minimum, maximum and mean time to implement changes.

A2.5.4 Secondary Name Servers for Institutions

Specification:

UKERNA shall provide an off-site secondary name server service, on request, to those JANET client institutions with a primary connection. The service will provide for only the top level of a client's domain.

Performance Indicators and Service Levels:

- a) Secondary DNS service availability of 99.5% to all clients;
- b) UKERNA will allocate a secondary name server for a client within 5 working days of receipt of the necessary information from the client institution;
- c) UKERNA will inform the client institution of the names and IP addresses of the allocated secondary name servers within 2 working days of set up of the name server.

Reporting:

On a monthly basis, UKERNA shall report, by exception:

- number of DNS service breaks, with start and end times for each break;

On a quarterly basis, UKERNA shall report:

- list of secondary name service requests, showing the date on which the request was received, the date of server allocation, date when addresses sent.

A2.5.5 Domain Name Service whois service**Specification:**

UKERNA shall provide a 'whois' service giving additional information relating to allocations of names in the ac.uk naming domain.

Performance Indicators and Service Levels:

- a) Changes to the ac.uk domain shall be reflected in the 'whois' database within one calendar month of their publication in the DNS.

Reporting:

On a quarterly basis, UKERNA shall report, by exception:

- details of failures of the 'whois' database to reflect its expected content (i.e. not to have the content expected if the service level (a) is satisfied and no other faults occur).

A2.5.6 IP Address Assignment**Specification:**

UKERNA shall administer procedures for the assignment and approval of IP address allocations, allowing existing and new client institutions to apply for appropriate addresses required for their connectivity to the JANET Network.

Performance Indicators and Service Levels:

- a) Once all information has been assembled, new and existing client institutions shall have their request for IP addresses processed within 10 working days of the receipt of the request.

Reporting:

UKERNA shall provide the following information each quarter, for each request received and processed:

- name of client institution;
- type of connection (Primary or Sponsored);
- date request received;

- date of final response;
- explanations of PI failure.

A2.6 Supporting Infrastructure Services

A2.6.1 NTP Time Service

Specification:

UKERNA shall operate a time reference on behalf of client institutions, in accordance to RFC 1305. This service is intended for use by institutions in constructing their own distributed time services, not for access by end users.

Performance Indicators and Service Levels:

UKERNA shall provide by replication a service that is effectively available on a continuous basis at all times.

Reporting:

On a quarterly basis, UKERNA shall report:

- the number of replicated subsystems involved in providing the service;
- the list of locations and basic availabilities of each subsystem;
- UKERNA shall also report on the nature, date and duration of any exceptional event causing the service provision to be unavailable or to supply incorrect or incomplete information.

A2.6.2 Co-ordination of message handling services

Specification:

UKERNA shall provide assistance, advice and guidance to organisations on the use of Internet mail, and on the configuration and operation of mail systems.

As part of the service, UKERNA operates the Spam-relay Tester And Notification system. It tests a client institution's mail server, and reports any vulnerability to unauthorised relaying it finds. It is available on client institution request, and UKERNA systematically scans certain client institutions' mail systems from time to time.

Performance Indicators and Service Levels:

System availability of 99.95% during Staffed Periods.

Reporting:

On a monthly basis, UKERNA shall provide:

- list of outages including duration and date.

On a quarterly basis, UKERNA shall provide:

- Number of tests requested by client institutions;
- Number of tests scheduled by UKERNA;
- Number of new open relays detected.

A2.6.3 Mail Abuse Prevention System

UKERNA shall provide certain services of the Mail Abuse Prevention System (MAPS) on behalf of all the JANET community to assist mail managers in determining if their mail systems should refuse connections from certain addresses. It is based on DNS style resolution, using *rbl-plus.mail-abuse.ja.net*.

Performance Indicators and Service Levels:

UKERNA shall provide by replication a service that is effectively available on a continuous basis at all times.

Reporting:

On a monthly basis, UKERNA shall report:

- for each day of the month, the daily usage of individual servers:
 - Number of individual hosts that made queries (accepted);
 - Number of queries received (accepted);
 - Number of RBL+ updates used.
- the number of replicated subsystems involved in providing the service and the list of locations and basic availabilities of each subsystem.
- the nature, date and duration of any exceptional event causing the service provision to be unavailable;
- by exception, problems observed with receiving the RBL+ updates..

A2.7 Usenet News Service

UKERNA shall make arrangements for client institutions to be able to both read and submit Usenet News articles. The service will be managed so as to ensure:

- Efficient use of JANET network connections;
- Prompt availability of articles;
- Prompt onward transmission of submitted articles;
- Delivery methods appropriate to a variety of patterns of use;
- Low probability of the availability of illegal material.

A2.7.1 Linking JANET to the Usenet News Service

Specification:

UKERNA shall operate a system of News Servers exchanging News articles with organisations outside JANET and will make arrangements for the exclusion of illegal material from the JANET news backbone, although it is recognized that it is impracticable to make any guarantee of such exclusion.

Performance Indicators and Service Levels:

- a) Service availability of 99.5% to each client institution. Each server is to be available to exchange articles with external organisations and client institutions for no less than 98% of the time measured over any calendar month.
- b) The Mean Time Between Failures for each server, calculated over any period of twelve calendar months, is to be no less than 800 hours.

Reporting:

UKERNA shall report monthly:

- external organisations with which the JANET News backbone exchanges feeds;
- the volume of news entering and leaving the backbone from and to external institutions;
- a list of outages, including duration and date, for each server in the backbone;
- client institutions that experienced a loss of service (client institution name, date, time and duration of each event).

A2.7.2 News Feed Service**Specification:**

UKERNA will operate a continuous News feed with designated client institutions in which they are able to exchange articles and incoming articles are offered to the client institution's system as soon as they are available in the JANET News backbone.

Performance Indicators and Service Levels:

- a) Service availability of 99.5% to each client institution. Each server is to be available to exchange articles with client institutions for no less than 98% of the time measured over any calendar month. [This is reported under PI(a) for section A2.7.1]
- b) The delay between arrival of a news article in the JANET News backbone and its delivery to a client institution shall, on 90% of occasions, be less than 24 hours [not monitored].

Reporting:

UKERNA shall report monthly:

- the volume of data and number of articles delivered to each client institution.

It is an objective for the future to report on achieved values of article delay when it is feasible to measure them.

A2.7.3 News Reader Service**Specification:**

UKERNA shall provide servers from which a client institution can transfer newsgroup details and individual articles on its own initiative.

This shall be available to eligible institutions who do not operate a News Reader Service themselves and where the volume of News Reading is expected to be modest. The News Reader servers shall be updated by the News Feed Service (see A2.7.2).

Each client institution may specify a list of network addresses (netblocks or DNS subtrees) from which its users may gain access. Each client may also specify for each address a range of access control attributes including whether news may be posted, and access limitations for particular news groups.

Each client institution shall be provided with access to its own usage statistics.

Performance Indicators and Service Levels:

- a) Service availability of 99.5% to each client institution. Each News reader server is to be available for authorised systems at client institutions to read and post articles for no less than 98% of the time measured over any calendar month;
- b) The Mean Time Between Failures for each reader server, calculated over any period of twelve calendar months, is to be no less than 800 hours;
- c) Each Newsreader server will respond within 5 seconds to a request for an article known to be available, for 90% of such requests.

Reporting:

UKERNA shall report monthly:

- a list of outages, including duration and date, for each reader server;
- the volume of data delivered to each client institution;
- client institutions that experienced a loss of service (client institution name, date, time and duration of each event).

It is an objective for the future to report on achieved values of the response time when arrangements are in place to measure them. UKERNA will investigate this with a view to its implementation during the period of this Service Level Agreement.

A2.7.4 News Cache Service

[This is a placeholder for a potential new service that is currently in its technical pilot stage.]

UKERNA shall provide each client institution with the software to install on its own machine to enable it to access newsgroups for a few tens of users without the need to run its own news server. The software will include the necessary cache software together with a specially developed web interface for configuration.

The News Cache Servers will request articles from, and post articles to, a News Reader Server.

A2.8 Video Conferencing Services

A2.8.1 Video Conferencing Services

Specification:

UKERNA shall offer a bookable JANET videoconferencing switching service (JVCS). This service shall offer both IP (JVCS-IP) and ISDN (JVCS-ISDN) as transport technologies. JVCS-ISDN will be provided at a range of access classes including 128Kbit/s and 384kbit/s. Access to the ISDN switching service is provided over the multivendor ISDN service. JVCS-IP will be provided at a range of access classes between 128kbit/s and 2Mbit/s. Access to the IP switching service will be provided over JANET.

UKERNA shall provide a common videoconferencing booking system for both ISDN and IP based services.

Performance Indicators and Service Levels

For both services as defined above:

- a) Availability of each Multipoint Control Unit (MCU) 99% calculated over the SLA period;
- b) Availability of the booking system 99% calculated over the SLA period. This PI is subject to review for the SLA year 04/05;
- c) For requests made before noon on a working day, a booking shall be made before the end of the staffed period on that day;
- d) For requests made after noon on a working day, a booking shall be made before noon on the next working day;
- e) Availability of Central JANET Gatekeeper 99% calculated over the SLA period;
- f) Availability of Gatekeeper hierarchy to support the Global Dialling Scheme over JANET 99% calculated over the SLA period.

Reporting:

On a monthly basis, UKERNA shall report:

- the outages, including the duration and date, for each of the systems covered by performance indicators (a), (b), (e) and (f) above.
- items failing performance indicators (c) and (d) reported by exception.
- a summary of the total number of videoconferences, by number of participating end points, for each month.

A2.8.2 Video Technology Advisory Services (VTAS)

Specification:

UKERNA shall provide assistance, advice and guidance to the users and operators of video services and video technologies at individual client institutions, with the aim of obtaining a consistent, well-managed service from the operators of those services.

The focus of the Advisory Services will be a Helpdesk which shall be available through the JANET Customer Service described at A3.2.

The Advisory Service shall undertake product evaluations and conduct studies into aspects of emergent and existing video technologies. During the year, UKERNA will select a number of products for evaluation and topics for study.

Performance Indicators and Service Levels:

- a) The Helpdesk shall be staffed throughout the staffed periods defined in A1.2, except that it will not be available:
 - before 0900;
 - on Easter Bank Holiday Monday;
 - on the last Monday in August
 - 24th-31st December
- b) An initial response to any enquiry shall be given within four working hours, where ‘working hours’ is defined as the period specified in a) above;
- c) Client institutions shall be able to lodge telephone and email enquiries at all times when the VTAS Helpdesk is not staffed;
- d) The Advisory Service will maintain a repository of web based information which will contain information on the use of JANET video services (ref. Annex J.5);
- e) Product evaluation reports shall be placed on the VTAS web pages (ref. Annex J.6) within 20 working days of evaluation completion.

Reporting:

On a quarterly basis, UKERNA shall report:

- number of enquiries received during the reporting period;
- average, minimum and maximum time for initial response to each new query, the number of queries opened and the number of queries resolved;
- the number of accesses made to the VTAS web pages during the reporting period.

On a quarterly basis, UKERNA shall report as part of the reporting of the UKERNA operational plan (see Annex D):

- list of product evaluations with date of testing;
- list and date of publications (either the date of placement on the VTAS web pages or the date of release for other material);
- any further product evaluations or studies in preparation for publication;
- plans for product evaluations and documents in the forthcoming quarter.

A2.9 Administrative Services

A2.9.1 Connection Administration

Specification:

UKERNA shall administer procedures for approval and commissioning of connections, allowing new client institutions to join the JANET network.

Performance Indicators and Service Levels:

- a) New client institutions shall receive service within three months of the request for connection being approved unless start of service is prevented by reasons beyond UKERNA's control.

Reporting:

UKERNA shall provide the following information each quarter, for each request received:

- name of client institution;
- date of request;
- date of approval for connection;
- target service delivery date;
- service delivery date.

Additional Performance Indicators addressing the time between the institution request for connection and connection approval will be added to the SLA in future, based on reporting data collected during this SLA period.

A2.9.2 Peer Networking Agreement Administration**Specification:**

UKERNA shall administer the set of peer networking agreements made as a result of the JISC's peer networking policy.

Performance Indicators and Service Levels:

- a) any additional information required to process a peer networking request shall be notified to the requester within two weeks of receipt of the request;
- b) once all necessary information has been assembled, peer-networking requests shall be either accepted or rejected within four weeks.

Reporting:

- UKERNA shall provide quarterly a list of agreements processed in the period with dates of notification.

A2.9.3 Licence Administration**Specification:**

UKERNA shall administer the sponsored and proxy-licensing scheme defined by the JISC as part of its connection policy.

Performance Indicators and Service Levels:

- a) licence requests shall either be accepted and issued or rejected within four weeks.

Reporting:

UKERNA shall report, on a quarterly basis:

- the number and class of licences issued or rejected per month;
- the date of each licence request and the date of licence issue or rejection. Explanations of PI failure should also be provided.

A2.9.4 Invoicing for Optional Services

Specification:

This item is a placeholder for the definition of future invoicing activities.

A2.10 Operational Support Services

A2.10.1 Management of Maintenance Activities

Specification:

UKERNA shall ensure that client institutions are given advance notice of service changes that affect them and shall also publish warnings of unavoidable losses of service that are planned beforehand according to the timing specified in A1.1. Warnings of changes shall be disseminated by means of electronic mail distribution lists and other appropriate media.

Performance Indicators and Service Levels:

- a) The total service affecting maintenance time for each client institution shall not be more than 0.5% of service time over the SLA period;
- b) The total service affecting maintenance time for each of the following services shall not be more than 0.5% of service time over the SLA period:
 - Global Internet transit;
 - European research network;
 - American research networks;
 - UK public peering at the LINX; and
 - UK public peering at MaNAP.

Reporting:

UKERNA shall report, on a quarterly basis:

- The number and duration of each service affecting maintenance period taken for each client institution for each month of the quarter;
- The number and duration of each service affecting maintenance period taken for each of the services defined in PI b) above.

A2.11 Bandwidth Management Advisory Services (BMAS)

Specification:

UKERNA shall provide advice and guidance to client institutions on issues relating the management of bandwidth.

The focus of the Advisory Service will be the provision of generic advice on a range of relevant issues including technical solutions. Users will access this advice via the services web site and at events organised by the service.

In addition to this, a Helpdesk will be available to answer questions on the advice given. This helpdesk shall deal with enquiries made by telephone, fax and electronic mail.

Performance Indicators and Service Levels:

- a) The Helpdesk shall be staffed throughout the Staffed Periods defined in A1.2, except that it will not be available:
 - before 0900;
 - on Easter Bank Holiday Monday;
 - on the last Monday in August;
 - 24th – 31st December.
- b) An initial acknowledgement to any enquiry shall be given within 1 hour if received before 15:00 or by 10:00 in the next Staffed Period if received after 15:00.
- c) The Advisory Service will maintain a web server which will provide access to generic advice available (ref. Annex J.11).

Reporting:

On a quarterly basis, UKERNA shall report:

- number of enquiries received via telephone, e-mail and fax during the reporting period.
- number of queries outstanding >1 working day, > 5 days, > 20 days.
- the number of accesses made to the Advisory Service web service in total during the reporting period
- list of documents created during the reporting period with date of commencement/completion

Any BMAS activity involved in UKERNA development projects will be reported quarterly in the Developments section of the report on the UKERNA operational plan (see Annex D).

A2.12 Multi-site Connectivity Advisory Service (MCAS)**Specification:**

UKERNA shall provide advice and guidance to client institutions, particularly FE colleges, on multi-site connectivity issues. The advice and guidance for FE colleges shall normally be provided through the JISC Regional Support Centres.

The focus of the Advisory Service shall be the MCAS Helpdesk, which shall be available through the JANET Customer Service described at A3.2.

The Advisory Service shall provide preliminary advice and guidance on wide area communications and shall maintain information about suppliers of specialist expertise to whom enquirers will be directed for more detailed consultancy and services.

In addition, the Advisory Service shall commission and publish documents of interest to client institutions' IT managers such as case studies and technology reviews.

Performance Indicators and Service Levels:

- a) The MCAS Helpdesk shall be staffed throughout the Staffed Periods defined in A1.2, except that it will not be available:
 - before 0900;
 - on Easter Bank Holiday Monday;
 - on the last Monday in August;
 - 24th-31st December.

- b) An initial response to any enquiry shall be given within four working hours, where 'working hours' is defined as the period specified in (a) above.
- c) Client institutions shall be able to lodge telephone and e-mail enquiries at all times when the MCAS Helpdesk is not staffed.
- d) The Advisory Service shall maintain a repository of web based information which will include case studies and technology reviews (ref. Annex J.12).

Reporting:

On a quarterly basis, UKERNA shall report:

- The number of enquiries received during the reporting period;
- The average, minimum and maximum time for initial response to each new query, the number of queries opened, and the number of queries resolved.;
- The number of accesses made to the MCAS web pages during the reporting period.

On a quarterly basis, UKERNA shall report as part of the reporting on the UKERNA operational plan (see Annex D):

- Production of documents for the MCAS web pages during the reporting period, including title, date of commissioning and date of placement on the web.
- Plans for documents in the forthcoming quarter.

A3 INFORMATION AND SUPPORT SERVICES

A3.1 Network Information Services

Specification:

UKERNA shall provide a Web-based information system, including a user interface suitable for end users who are inexperienced or who access the service infrequently, and shall maintain documentation and operational information of interest to network users (ref. Annex J.7).

Performance Indicators and Service Levels:

- a) Availability of 99.5%.
- b) Mean time between failures of 1000 hours.
- c) The service shall support an access rate of 15,000 queries per day, with a response time of no more than 2 seconds. The response time shall be from the transmission of a request from the user's client institution via a basic transmission service operated by UKERNA, to the reception of the first part of the information at that client institution [not monitored].

Reporting:

UKERNA shall provide reports monthly on the following:

- number of breaks;
- total duration of break;
- number of distinct files served;
- total number of requests to the server(s);
- percentage of the accesses to the server(s) which have come from hosts in the ac.uk domain. An access occurs when a connection is made from a host directly to the webserver for the transfer of any type of file (eg. text, graphics).

A3.2 JANET Customer Service

Specification:

UKERNA shall operate a Service Desk to act as the primary point of contact for all reports, enquiries and requests for action and information from the user community concerning UKERNA services. The Service Desk shall deal with reports and enquiries made by telephone, fax, post or electronic mail (ref. Annex J.8). The Service Desk shall operate procedures to route complex queries to the appropriate service provider for resolution.

An "escalation procedure" shall be in place, and published to the Community, to ensure that unresolved queries are progressively brought to the attention of senior management (ref. Annex J.8).

Performance Indicators and Service Levels:

- a) The Service Desk shall be staffed for the full duration of the Staffed Periods (see A1.2).
- b) Client institutions shall be able to lodge telephone and email enquiries at all times when the Service Desk is not staffed.
- c) An initial response to any enquiry shall be given within four working hours, where 'working hours' is defined as the period specified a)
- d) Enquiries shall be completed as follows:
 - 97% within 5 working days.
 - 99% within 20 working days.

Reporting:

UKERNA shall provide reports monthly on the following:

- number of enquiries by primary connected institutions broken down by category type;
- average, minimum and maximum time for initial response to and final resolution of queries by category type;
- number of queries outstanding >5 working days, >20 working days, >40 working days;
- details of invocation of the escalation procedure.

By exception, UKERNA shall provide details of enquiries outstanding after 60 working days.

More detailed information on the source, subject and complexity of queries shall be available in annual reports or when requested by the JISC Monitoring Unit.

Note: The SLD for DNS queries is under A2.5.1 and the SLD for connection requests is under A2.9.1.

A3.3 Documentation

Specification:

UKERNA shall provide comprehensive paper and electronic documentation including appropriate Web pages (ref. Annex J.7) describing the use of the Operational Services

(ref. Section A2), the Support and Information Services (ref. Section A3) and the Security Services (ref. Section A4). This documentation shall be of three types:

- technical and operational information which client institutions need to connect and use their equipment to exploit UKERNA services. This service documentation shall be designed to be used by IT support staff from client institutions and not directly by end users
- publications for immediate issue to end users (UKERNA News, pamphlets, fact sheets, etc)
- a range of technical material for technical readers in JANET connected organisations.

All documentation should encourage feedback on its own quality and helpfulness.

Performance Indicators and Service Levels:

- a) Technical information needed by a client institution to connect its equipment to a new service to be made available one month before the start of service.
- b) Technical information relating to a major change in an existing service to be made available one month before the change takes effect.
- c) Material intended for issue to end-users to be made available to client institutions one month before the start of a new service or a major change in an existing service.
- d) Regular publications for dissemination of news and information to be produced and issued according to an annually agreed and published schedule.
- e) New and updated technical publications to be produced and issued according to an annually agreed and published schedule.
- f) Quality and range of publications satisfactory, measured by formal user feedback.

Reporting:

UKERNA shall provide a 12-month plan for documentation preparation and publication as part of the UKERNA operational plan (ref. Annex D). This plan will include technical documents, regular news and information documents.

UKERNA shall report quarterly, as part of the reporting on the UKERNA operational plan (ref. Annex D) on:

- documentation that has been prepared and published by the due date;
- documentation that has been prepared and published later than the due date;
- documentation that has not been prepared and published in full;
- documentation for which the work programme has not yet commenced;
- documentation identified since the initial plan was published.

In the case of documents that are only available on paper, a copy will be provided to the Monitoring Unit.

A3.4 Technical Updating for the UKERNA Community

A3.4.1 Workshops and Conferences

Specification:

UKERNA shall provide regular technical and other information to the Community by organising workshops and conferences, as agreed with JISC, and by participating in

events organised by other relevant organisations. UKERNA shall take note of feedback from these activities in identifying requirements for specific technical initiatives.

UKERNA shall propose, in its operational plan, a programme of events for the coming year. This will include:

- workshops and conferences to be organised by UKERNA;
- workshops and conferences to be organised by UKERNA in collaboration with other organisations;
- other events in which UKERNA will participate, e.g. exhibitions.

Normally, workshops and conferences will be organised on a cost recovery basis. UKERNA may also undertake other events on the basis of full cost recovery.

Performance Indicators:

- a) Value of events as perceived by users;
- b) Value for money of events.

Reporting:

UKERNA shall provide a 12-month plan for workshops and conferences and other events as part of the UKERNA operational plan (ref. Annex D).

UKERNA shall report quarterly, as part of the reporting on the UKERNA operational plan (ref. Annex D):

- events by the due date;
- events later than the due date;
- events cancelled;
- new events identified since the initial plan was published;
- other events.

Annually, UKERNA shall provide a financial statement of income and expenditure per event.

Copies of feedback sheets from delegates for events shall be provided to the Monitoring Unit when requested.

A3.4.2 Training Courses

Specification:

UKERNA shall provide a regular programme of training courses within its area of competence, to reflect the needs of the community.

UKERNA shall propose, in its operational plan, a programme of training courses for the coming year. Normally, training courses will be organised on a cost recovery basis.

UKERNA may also undertake training courses for individual eligible institutions on a full cost recovery basis.

Performance Indicators:

- a) Value of events as perceived by users;
- b) Value for money of events.

Reporting:

UKERNA shall report quarterly, as part of the reporting on the UKERNA operational plan (ref. Annex D):

- training courses by the due date;
- training courses later than the due date;
- training courses cancelled;
- new training courses identified since the initial plan was published;
- other training events.

Annually, UKERNA shall provide a financial statement of income and expenditure per training course, including training courses for individual institutions.

Copies of feedback sheets from delegates for training courses shall be provided to the Monitoring Unit when requested.

A3.5 Network User Groups**Specification:**

UKERNA shall attend all meetings of the UCISA Network Group, the JANET National User Group and where appropriate, its regional and special interest sub-groups and other FE meetings, in order to provide information on new or changed services as required, and to allow users to give feedback on the Service Levels achieved and provide general input to UKERNA on all matters.

Performance Indicators:

Value of the UKERNA contribution to the meetings as perceived by meeting attendees.
[not monitored]

Reporting:

UKERNA shall provide quarterly:

- list of user group meetings attended;
- number of UKERNA staff members attending each meeting;
- list of any exceptional actions arising out of the meetings.

A4 SECURITY SERVICES

A4.1 CERT Services

Introduction:

UKERNA will apply best current practice in relation to the security of JANET and the networks of JANET customer organisations. UKERNA will regularly review the JANET security policy and will from time to time seek the agreement of the JISC, to implement changes.

The JANET Computer Emergency Response Team (JANET-CERT) is the unit responsible for IT related security on JANET. Their role is protecting the network from both internal and external, deliberate or accidental attacks. The team primarily provide incident response assistance and coordination to its constituents who suffer an IT security breach or event. They are also responsible for providing an up to date knowledge base for computer security related incidents and technical solutions to those enquiries. The team publishes advice to raise awareness and improve the security of computers and networks. It delivers training and workshops; speaks at other events related to computer security; liaises with world wide, European and UK CERTs; liaises with law enforcement organisations and provides a security information base for its constituents.

CERT service periods

CERT full service periods are the staffed periods specified in A1.2.

CERT reduced service periods are the parts of the extended service periods defined in A1.3, which fall outside the staffed periods in A1.2.

A4.1.1 Incident Response and Coordination

Specification:

UKERNA will operate processes to counteract any use of JANET which is unauthorised, unacceptable or both.

UKERNA will maintain a list of contact points and service hours for other network operators, law enforcement agencies and similar bodies.

UKERNA will provide mechanisms and publish procedures to enable customer organisations to report incidents, at all times and seek assistance during CERT service periods.

UKERNA will operate a mechanism to facilitate correspondence with JANET customer organisations and other parties and to monitor progress in resolving each incident. Initial response to a report will normally include the Incident report number

Performance Indicators and Service Levels:

- a) UKERNA will ensure the adequacy of mechanisms and published procedures for incident reporting, as perceived by users at JANET customer organisations (ref. Annex J.9);
- b) UKERNA will respond to requests received according to the published procedures during CERT full service periods within one hour;
- c) UKERNA will respond to requests received according to the published procedures during CERT reduced service periods within two hours;

- d) UKERNA will store requests received at other times and will respond to them within two hours of the start of the next CERT full service period.

Reporting:

UKERNA will provide monthly:

- Number of incidents outstanding at the beginning of the month;
- Number of new incidents;
- Number of incidents closed;
- Number of incidents outstanding at the end of the month;
- The definitions of each type of incident being reported and the number of events in each type;
- Number of incidents and number of incidents where the specified response was achieved:
 - during CERT full service periods;
 - during CERT reduced service periods.

Note: Events affecting a number of organisations may be counted either as a single incident or as a number of separate ones.

UKERNA will also provide quarterly:

- The CERT assessment on reported incidents;
- Actions taken to resolve major incidents.

A4.1.2 Abuse Handling

Specification:

UKERNA will operate processes to enable the Internet community to report misuse allegedly or apparently originating from or involving JANET or JANET customer networks.

Performance Indicators and Service Levels:

- a) UKERNA will ensure the adequacy of mechanisms and published procedures for abuse reporting, as perceived by users at JANET customer organisations (ref. Annex J.9) and other Internet users;
- b) UKERNA will contact any JANET organisation implicated in abuse in a timely manner and ensure appropriate action, as perceived by other network operators, law enforcement agencies and similar bodies;
- c) UKERNA will respond to requests received during CERT full service periods within one hour;
- d) UKERNA will respond to requests received during CERT reduced service periods within two hours;
- e) UKERNA will store requests received at other times and will respond to them within two hours of the start of the next CERT full service period.

Reporting:

UKERNA will provide monthly:

- Number of incidents outstanding at the beginning of the month;
- Number of new incidents;
- Number of incidents closed;
- Number of incidents outstanding at the end of the month;

- The definitions of each type of incident being reported and the number of events in each type;
- Number of incidents and number of incidents where the specified response was achieved:
 - during CERT full service periods;
 - during CERT reduced service periods.

Note: Events affecting a number of organisations may be counted either as a single incident or as a number of separate ones.

UKERNA will also provide quarterly:

- The CERT assessment on reported incidents;
- Actions taken to resolve major abuses.

A4.1.3 Network Monitoring

Specification:

UKERNA will operate processes to detect attempts to use JANET in ways which are unauthorised, unacceptable or both. All attempts will be classified by type.

Performance Indicators and Service Levels:

- a) The adequacy of the monitoring mechanism as perceived by users at JANET customer organisations.

Reporting:

UKERNA will provide monthly:

- The definitions of each type of attempt being monitored.
- The number of attempts monitored by type.

A4.1.4 Intelligence analysis

Specification:

UKERNA will regularly monitor public and private sources of information with a bearing on computer and network security. They will then relay significant changes to JANET customers to enable them to keep the security of their networks up to date.

Performance Indicators and Service Levels:

- a) Value and relevance of the forums and information sources used, as perceived by JANET customer organisations (ref. Annex J.9) and other parties known to UKERNA.

Reporting:

The list of public information sources will be published and maintained as part of the Network Information Service (ref. Annex J.9).

UKERNA will provide monthly:

- Changes to the list of public information sources.

A4.1.5 Distribution of advice to customer organisations

Specification:

UKERNA will provide JANET customer organisations with regular information on general levels of threat and on countermeasures available;

UKERNA will maintain information about current threats to the security of computers and networks and countermeasures to those threats, and will make it publicly available as part of the Network Information Service (ref. Annex J.9);

UKERNA will advise approved contacts at all JANET customer organisations of current threats whose impact on JANET customers is likely to be severe or widespread; UKERNA will advise contacts at individual JANET customer organisations on action to be taken in respect of any apparent or actual security weakness specific to those organisations.

Performance Indicators and Service Levels:

- a) UKERNA will validate and update the list of contacts at intervals of no longer than a year, in addition to interim maintenance;
- b) UKERNA will issue advisory notices about new general threats or countermeasures to the approved contacts at all JANET customer organisations within one working day of the information being confirmed and available for release;
- c) UKERNA will review and update each item of advice and information provided through the Network Information Service at intervals of no longer than six months;
- d) UKERNA will operate a mailing list based on the list of contacts, for informing customers of current threat;
- e) UKERNA will operate a discussion mailing list for security issues, for approved security contacts and other relevant customers.

Reporting:

UKERNA will provide quarterly:

- The number of advisory notices issued to all approved contacts;
- A list of significant changes and additions to the information provided through the Network Information Service.

A4.1.6 Customer Education

Specification:

UKERNA will develop and provide presentations and training on computer and network security as part of the programme of Technical Updating for the JANET Community (ref. Section A3.4), and at other community events as required.

Performance Indicators and Service Levels:

The value of courses and presentations as perceived by the user community.

Reporting:

- Reporting requirements are incorporated in the reporting requirements for A3.4.

UKERNA will provide quarterly:

- A list of events not part of A3.4

A4.1.7 Representing JANET within security related forums

Specification:

UKERNA will arrange for staff with the appropriate experience and knowledge in computer and network security to attend the meetings of, and to take part in the deliberations of, formal and informal forums where such matters are discussed, and to influence decisions in such a way that the interests of JANET and its customers are protected and promoted.

UKERNA will participate in national and international collaborations among computer security and incident response teams for the exchange of information and to improve its response to international incidents.

UKERNA will identify and promote the use of internationally agreed standards in the field of incident response, and take part in the development and deployment of those standards.

Performance Indicators and Service Levels:

The value of UKERNA's part, as perceived by the JANET user community, in promoting the exchange of information between the JANET Community, external bodies concerned with computer security and professional bodies.

Reporting:

UKERNA will provide quarterly:

- A list of meetings attended, presentations given and reports written;
- A list of any actions or other work items arising out of these meetings.

A4.2 Other security services

Specification:

UKERNA will provide information and advice in the area of computer security policy to:

- a) gather information and advise on legal issues to assist the JISC in making its policy in this area;
- b) promote awareness within the senior management of the JANET community on issues of policy related to security; and
- c) commission and manage studies and reports relating to the above from time to time as agreed with the JISC.

Reporting:

UKERNA shall report quarterly, as part of the reporting on the UKERNA operational plan (ref. Annex D):

- an outline of the work carried out in this area.

Annex B

Preparation of the Annual Budget and Operational Plan

B.1 Objective of the documents

The budget and the operational plan, taken together, should present a complete picture of the intended development of the services over the planning period.

B.2 The budget cycle

The process for setting budget to fund services defined by the SLA between the JISC and UKERNA is as follows:

June/July	Initial meeting between JISC Head of Policy and Corporate Services and UKERNA Finance Director to discuss budget recommendations to be submitted to JCN for the next academic year but one
July/Aug	UKERNA Finance Director produces 1 st draft of budget recommendation in discussion with UKERNA colleagues. This provides broad overview of budget required and analysis or reasons for change (increase and decreases) over the current budget.
Aug	1 st draft budget submitted to and discussed with JISC Head of Policy and Corporate Services
September	1 st draft budget submitted to JCN for discussion and agreement
October	1 st draft budget considered by JISC at October meeting who either agree or refer budget back to JISC Executive
Oct/Nov	JISC Head of Policy and Corporate Services discusses any changes that are required with UKERNA Finance Director, who produces 2 nd draft if required
November	2 nd draft budget agreed by JCN
December	2 nd draft budget agreed by the JISC
January	JISC Budget recommendations considered by funding bodies
February	JISC Executive notified by assessors of the overall JISC budget that has been agreed
March	JISC Head of Policy and Corporate Services advises UKERNA Finance Director of the budget to be allocated to UKERNA
April	SLA discussions completed
May	If SLA discussions result in the need for increase in overall budget, proposals submitted to JCN
June/July	UKERNA Finance Director provides detailed budget (broken down by all SLA lines and operating plan) to JISC Executive (Note: this may involve some changes to spread of expenditure across SLA lines but cannot change overall budget approved by funding bodies)
July	This budget is used by JCN Secretary and JISC Finance Officer to set network SLA budget for forthcoming academic year and to monitor expenditure against

B.3 The operational plan cycle

The operational plan shall be prepared by UKERNA after the end of the SLA negotiations so that any changes to the SLA and changes and developments approved by the JCN during the current operational year can be taken into account in the new operational plan. The operational plan shall then be submitted to the JISC Head of Services Management and the JISC Head of Policy and Corporate Services after the SLA has been agreed and before the end of the current financial year.

B.4 Content of the budget

B.4.1

The 1st draft budget shall consist of:

- a) Background information. This will set out the environmental and other contextual framework in which the budget projections have been prepared, together with any other information required to inform the JCN in their consideration of the budget;
- b) Financial summary. This will set out estimated spend (in £M to one decimal place), classified into:
 - Operational services, further differentiating between the basic IP transmission services, external network access provision and transmission and other services;
 - Support and information services;
 - Security services.
- c) Forecast net income. This is deducted from the total of these costs to derive the net programme costs;
- d) Detail of the proposals, distinguishing between the maintenance of the existing core programme and any new initiatives or extensions proposed, for each of the headings set out in B.4.1.b above. New initiatives should be presented, as far as possible, as self-contained options, including any dependencies, to facilitate prioritisation. Financial details of new proposals should be presented as incremental costs or savings against the baseline budget;
- e) UKERNA's internal running costs are included in the total costs as presented. To facilitate a separate review of these, UKERNA shall also provide a breakdown of internal costs included in the budget, together with comparison against the actual budget for the previous year;
- f) UKERNA shall also provide a summary of staffing and details of proposed replacement and new posts in the following format:

Summary of staff costs

	JISC	Budget	Non JISC	Budget	Total	Total Budget
	FTE	Cost £K	FTE	Cost £K	FTE	Cost £K
Existing staff complement						
Network Development						
Production Services						
Customer Support						
Business						
Administration						
TOTAL						
Current vacancies						
Network Development						
Production Services						
Customer Support						
Business						
Administration						
TOTAL						
New posts						
Network Development						
Production Services						
Customer Support						
Business						
Administration						
TOTAL						
Proposed staff complement						
Network Development						
Production Services						
Customer Support						
Business						
Administration						
TOTAL						
Overtime						
Promotions						
Payroll cost						

Replacement and new posts

REPLACEMENT POSTS

	JISC	Non JISC
Network Development	Detail of post	Detail of post
Production Services	Detail of post	Detail of post
Customer Support	Detail of post	Detail of post
Business	Detail of post	Detail of post
Administration	Detail of post	Detail of post

NEW POSTS

	JISC	Non JISC
Network Development	Detail of post	Detail of post
Production Services	Detail of post	Detail of post
Customer Support	Detail of post	Detail of post
Business	Detail of post	Detail of post
Administration	Detail of post	Detail of post

B.4.2

The 1st draft budget will be considered at the next following meeting of the JCN, normally around September. If the JCN raise substantive issues surrounding the indicative budget, UKERNA finance and operational management and the JISC Head of Policy and Corporate Services will consider these and a 2nd draft budget shall be submitted to the November meeting of JCN.

This revised budget submission shall consist of:

- a) A financial summary, in the same format as used in B.4.1.b in respect of the indicative budget.
- b) Commentary on the reason for the changes from the indicative budget, for each of the headings set out in B.4.1.b above.

B.4.3

This budget submission forms part of the total budget submission made by the JCN to the JISC, and subsequently the partner Funding Councils. The approval process for the JCN budget takes place during the first quarter of the calendar year immediately preceding the operational year to which the budget pertains. The UKERNA budget is normally endorsed at the JCN meeting in May. UKERNA shall produce the detailed budget by early July immediately preceding the operational year to which the budget

pertains. Although the total budget amount must remain as reported to the JCN in B.4.1 and B.4.2 above, virement between budget heads may be made at this stage, with the approval of JISC Head of Policy and Corporate Services, who will report any such virement to the JCN at its first meeting in the academic year to which the budget pertains.

B.4.4

The JISC shall release funds to UKERNA on the basis of the final budget. If necessary, UKERNA may submit proposals for changes to the final budget. The JISC or its advisory committees shall be consulted, as appropriate, to obtain support for more significant changes.

B.5 Content of the operational plan

B.5.1

The operational plan shall contain:

- a) The work programme for the next financial year. This shall detail the specific areas of UKERNA's planned activity. It will also include, if appropriate, details of any specific programmes of work to be carried forward from the current operational plan.
- b) Details of each area of activity shall be provided, together with performance or value for money objectives to be achieved and milestones and target dates in support of these objectives.

Annex C

Reporting on the Budget

C.1 Objective

The objectives of the reporting cycle are to inform the JISC of spend against budget, on a monthly and cumulative year to date basis, to provide HEFCE with an estimate of the UKERNA cash requirement for the subsequent month and the total year, to assist HEFCE to monitor UKERNA's cash balances and to ensure that HEFCE is in a position to meet the profiled cash calls.

C.2 Timing of reports

A detailed report shall be provided monthly to the JISC Finance Officer. At less frequent intervals, a summary report shall be provided to the JISC Head of Policy and Corporate Services. The frequency shall normally be approximately quarterly, although the exact timing of submission will vary depending on operational requirements.

- a) The monthly report shall be submitted to the JISC Finance Officer, to a timetable which shall be produced by the JISC Finance Officer annually in advance, and provided to UKERNA in July of each year in respect of the subsequent UKERNA financial year.
- b) The summary report shall be provided to the JISC Head of Policy and Corporate Services on his request.

C.3 Content of the reports

a) The monthly report shall be presented as follows:

SLA	mm/yy	Month Actual (ex VAT)	Month Commitment (ex VAT)	Total Month (ex VAT)	Total YTD (ex VAT)	Total YTD (inc VAT)	Annual Budget (inc VAT)	Budget Remaining (inc VAT)	Next Month Req (inc VAT)
2.1									
2.2									
2.4									
2.5									
2.6									
2.7									
2.8									
2.9									
2.10									
2.11									
2.12									
3.1									
3.2									
3.3									
3.4									
3.5									
4.1									
4.2									
Total programme spend									
Income received excluding grant									
Collections for bandwidth									
Interest received									
Total income									
Total funding									
Total funding received in month									
Total funding received Y T D									
CASH BOOK BALANCE									
<u>Total funding claimed this period</u>									

b) The quarterly report shall be presented as follows:

Period mm/yy	YTD		YTD	estimated	
	Actual		cost	cost	Remaining
	(ex vat)	vat	(incl VAT)	(incl VAT)	Budget (incl VAT)
	£K	£K	£K	£K	£K
Basic transmission					
International connections					
Security services					
Other infrastructure					
Support and information					
Total Cost					

Annex D

Reporting on the Operational Plan

D.1 Objective

The objective of the report is to inform the JISC of progress against target dates and milestones for the achievement of the objectives set out in the operational plan.

D.2 Timing of the report

Reports shall be submitted on a quarterly basis, within one calendar month of the quarter end.

D.3 Content of the report

The report shall address each objective in the operational plan, setting out:

- a) Objectives that have been achieved by the due date.
- b) Objectives that have been achieved by later than the due date. The report shall include details of the reason for the slippage and an assessment of the impact of the slippage on the JANET service.
- c) Objectives which have not been met in full. The report shall include the extent to which the original objectives have been met, the reasons for the slippage, aspects which remain outstanding and when these are now scheduled to be implemented and an assessment of the impact of the slippage on the JANET service.
- d) Objectives for which the work programme has not yet commenced. If the target date for commencement has slipped, the report shall include details of the reason for the slippage, an assessment of the impact of the slippage on the JANET service and the revised target dates for implementation and completion.

Annex E

Change Control Procedures

E.1 Principles

E1.1

Where the JISC or UKERNA see a need to change the Services the JISC may at any time request, and UKERNA may at any time recommend, such a change only in accordance with the Change Control Procedures as set out at section 2 of this annex.

E1.2

Neither the JISC nor UKERNA shall unreasonably withhold its agreement to any change.

E1.3

Until such time as a change is made in accordance with the Change Control Procedure, UKERNA shall, unless otherwise agreed in writing, continue to supply the Services as if the request or recommendation had not been made.

E1.4

Any discussions which may take place between the JISC and UKERNA in connection with a request or recommendation before the authorisation of a resultant change to the Services shall be without prejudice to the rights of either party.

E1.5

Any work undertaken by UKERNA, its sub-contractors or agents, which has not been authorised in advance by a change to the Services and which has not been otherwise agreed in accordance with the provisions of Paragraph 1.3 of this Schedule shall be undertaken entirely at the expense and liability of UKERNA.

E1.6

In general, the MU will act on behalf of the JISC in the conduct of the Procedures.

E2. Procedures

E2.1

Within the JISC, the MU shall create and follow suitable procedures for the administration of Change Control for the SLA.

E2.2

Within UKERNA, the process for the administration of Change Control for the SLA shall be defined in the current version of Flow Chart QS-SLA-101.

E2.3

Usually, proposals for Change Control will be discussed informally between the JISC Services Group, or the MU, and UKERNA before proceeding with the formal procedure. In the event that agreement cannot readily be reached, then the parties involved will undertake to seek wider consultation and reconvene within a reasonable period, aiming to achieve a negotiated outcome.

E2.4

The originator of a request for Change Control, whether acting on behalf of the JISC or UKERNA, shall arrange for completion of Parts 1 and 2 of the form shown at E3 of this Annex E.

E2.5

The originator of the form shall obtain a reference number for the proposal from the Change Control Administrator at UKERNA.

E2.6

The originator will then forward the completed form to the MU, who will endeavour to obtain formal acceptance of the proposal from both the JISC and UKERNA.

E2.7

When formal acceptance has been obtained from both parties, the MU will update the register of changes agreed by Change Control and will make any necessary amendments to the published SLA.

E3 Change Control Request
JISC/UKERNA SLA Change Control Request

Sequential number (to be inserted by the UKERNA Change Control Administrator)	FI/SLA/Amend/03/0
--	-------------------

Part 1 - to be completed by the JISC or UKERNA

Title of Change	
Originator	
Date of this Request or Recommendation	
Reason for Change	
Full Details of Change (detail on separate sheet if necessary)	
Timetable for implementation and, if appropriate, criteria for acceptance (detail on separate sheet if necessary)	

Part 2(a) - to be completed by UKERNA if request is to be rejected

Reason for rejection of request for change (detail on separate sheet if necessary)	
--	--

Part 2(b) - to be completed by UKERNA if request is to be pursued

Costs (ex VAT), in current financial	
--------------------------------------	--

year, of completing the change	
Anticipated costs (ex VAT), in subsequent financial years, of maintaining the change	
Schedule of payments, if appropriate	
Proposed effective date for the change, if accepted	
Impact, if any, on other aspects of the services	
Date of expiry of validity of this information	

Name of Implementing Division:	
GENERAL ANNOUNCEMENT	
Implementation advertised via UKERNA News and JISC Assist if applicable:	
YES: <input type="radio"/> NO: <input type="radio"/>	

Part 3 - Signatures

APPROVED on behalf of JISC Services			
Signed		Position	
Date			

ACCEPTED on behalf of UKERNA			
Signed		Position	
Date			

ACCEPTED on behalf of the JISC			
Signed		Position	
Date			

Annex F

Additional site reporting requirements

In addition to the client institution listed in standing document “Institutions sponsored by the JISC” (ref Annex J.1), the following sites shall be included for reporting purposes. Inclusion of these sites is on the basis of their importance for the operation of the network, or as information providers to the academic community; the addition of sites to this list is subject to the change control procedures, but does not have implications for the operational budget.

- Arts and Humanities Research Board
- British Library (St Pancras)
- British Library (Boston Spa)
- BUFVC
- Cancer Research UK
- DANTE
- Greenmount College of Agriculture and Horticulture
- HESA
- Learndirect
- Macaulay Institute (Shotts)
- NIBSC
- Scottish Further Education Unit
- Scottish UFI Ltd
- UCAS
- UKAEA Culham Divison for the JET facility
- UKe-University
- UKERNA

Annex G

External Connections

In addition to the SLA items A2.2.1 and A2.2.2, UKERNA shall provide details on the following external connections to JANET. The level of reporting is noted in the table below.

Connection	Type	Basic Availability and Traffic reports	Traffic report available on the Web [1]
LINX	Public peering	√	√
MaNAP	Public peering	√	√
CERNET	Private peering	√	√
HEANET	Private peering	√	√
AboveNet	Private peering	√	√
Planet Online	Private peering	√	√
BTnet	Private peering	√	√
BBCnet	Private peering	√	√
Telewest	Private peering	√	√
United Pan Europe	Private peering	√	√

[1] Via the Network Status Information System (see A2.3.2).

UKERNA shall provide the JISC Monitoring Unit with access to the detailed traffic data collected by the Network Status Information System for all connections once equipment and procedures are established to do so.

Annex H

Additional Service Reporting Requirements

The following National Services have dedicated connections not covered in A2.1 against the site responsible. UKERNA will, where technically feasible, provide traffic reports on all these connections.

Note: it is expected that all JISC funded services will either appear in this list or form part of the traffic reported for the site at which they are located.

The UK Mirror Service (at the Reading C-PoP)
JISCPAS plagiarism detection servers (at the Reading C-PoP)

The following National Services have been identified for separate traffic reports. At present traffic reports form part of the traffic reported for the site at which they are located. UKERNA will undertake reasonable endeavours to provide separate reports.

JISCmail (at Rutherford Appleton Laboratory)

The UK Mirror Service (at University of Kent at Canterbury)
The UK Mirror Service (at University of Lancaster)

EDINA (at University of Edinburgh)
MIMAS (at Manchester Computing, University of Manchester)

Annex I

Nodes on the JANET Core IP Network

The basic IP transmission service (A2.1) is provided by a core IP network and a variety of access arrangements. The boundary between the core and access components is associated with either:

- a) one of a set of Backbone Access Routers, and is defined to be at those interfaces of the Backbone Access Routers which carry traffic of the Basic IP Transmission Service and which fall between core and the access mechanisms (i.e. the Backbone Access Routers form part of the core for the purposes of A2.1); or
- b) where there is no Backbone Access Router at the termination of the access line from the core at the site concerned.

The following table lists the sites at which the boundary is located, and indicates which form the boundary takes:

University of Aberdeen	BAR
Queen's University Belfast	BAR
University of Birmingham	BAR
University of Bristol	BAR
University of Cambridge	BAR
Cardiff University	BAR
University of Dundee	BAR
University of Edinburgh	BAR
University of Glasgow	BAR
University of Greenwich, Medway Campus	BAR
Inverness College	BAR
University of Lancaster	BAR
University of Leeds	BAR
University of Manchester	BAR
University of Newcastle	BAR
North East Wales Institute	BAR
University of Nottingham	BAR
University of Oxford	BAR
SSE premises, Portsmouth	BAR
University of Reading	BAR
Rutherford Appleton Laboratory	BAR
ULCC	BAR

At each location, UKERNA shall assess network availability from a point close to the UKERNA core equipment and circuits at the location. The same measurement point shall be used when assessing both A2.1.1 and A2.1.2.

Annex J

The following documents are referenced in the text. The current web address or where the document may be obtained from is indicated below.

Ref	Document title or description	Source
	Current version of this document	See http://www.mu.jisc.ac.uk/slas.html
1	List of eligible institutions	See http://www.mu.jisc.ac.uk/jisc-sites/index.html
2	Terms for the Provision of the JANET Service	See http://www.ja.net/service_terms/
3	JANET Acceptable Use Policy	See http://www.ja.net/documents/use.html
4	Formats for performance reports to the JISC Monitoring Unit	held by the JISC Monitoring Unit
5	Video Technology Advisory Services	See http://www.video.ja.net/
6	Video Products Evaluation Reports	See http://www.video.ja.net/evaluation
7	UKERNA documentation of JANET Services	See http://www.ja.net/services/
8	JANET Customer Service Contact Details and Escalation Procedure	See http://www.ja.net/customer_service/
9	CERT Information	See http://www.ja.net/CERT/
10	JISC Executive contacts	See http://www.jisc.ac.uk/index.cfm?name=people_masterlist
11	Bandwidth Management Advisory Service	See http://www.bmas.ja.net/
12	Multi-site Connectivity Advisory Service	See http://www.ja.net/mcas/index.html

ACCEPTED on behalf of UKERNA by:

ACCEPTED on behalf of the JISC by:

Position:_____

Position:_____

Date_____

Date:_____