

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

Version 8.0 – Final Text for 2002/2003

1 August 2002 – 31 July 2003

Issued: 31st July 2002

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	Financial 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

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

part of this basic set of services. Other services will be optional; that is to say, they will be offered by 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 of:

- a) the estimated extent and duration of its inability to discharge its commitments
- b) the resumption of the provision of the Service Level

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).

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 by 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.

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 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

New services will be discussed in outline by the JCN before a detailed plan is drawn up. This allows decisions as to the requirement for and prioritisation of the introduction of new services to be taken before resources are committed.

New services will normally be introduced as part of the budget/forward look process, although, exceptionally, items may be introduced under the change control procedures to exploit previously unforeseen opportunities or to meet new and urgent needs. 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 definition of a new service involves:

- a) 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 should be given;
- b) a predicted date for availability of the service, and the level of confidence to be attached to this prediction;
- c) a plan for any commissioning and piloting necessary to establish the service;
- d) a business case for the service, a budget for any piloting activity and an indicative budget for the eventual production service, throughout the three-year forward look. The initial budget shall indicate estimates of any sub-contracted development costs and the forward look shall include estimated set-up costs for the initial deployment of the production service. Savings or efficiency gains arising from the introduction of the service shall be clearly indicated.

9. Termination of Services

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.

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.

The termination of any given service and a timetable for effecting such termination shall be approved by the JCN prior to implementation.

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:

- by the eighth working day of the following month, for that reporting information that has been agreed shall be delivered each calendar month
- by the eighth working day of the subsequent quarter, for that reporting information that has been agreed shall be delivered on a quarterly basis
- 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
- as agreed between the JISC Head of Services 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, the MU, UKERNA and representatives from 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 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 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 sites 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 A2.4.1) 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 non-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. UKERNA shall endeavour to monitor the network in sufficient detail to ensure that all breaks in excess of 180 seconds are detected, 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.

It is a future objective to develop performance indicators that reflect the risk of a degraded service where the service is still available but at a poor performance level.

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.

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, for 95% of transmissions over any 30 minute period [Not Monitored].

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 2003-2004, 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 total duration of incidents when the institution was not accessible.
- number and total duration of incidents of network unavailability for the institution.
- number and total duration of any periods 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:

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

- 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 [Not Monitored].

Reporting:

UKERNA shall report the following each calendar month: overall core network availability; number of and total duration of incidents of network unavailability for each path across the core network.

It is an objective for the future to report a traffic matrix for the core network.

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, A2.2.2 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.

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 within Europe

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. In addition:

- c) UKERNA shall manage links to other service providers so that the whole access capacity of the link is made available to the JANET community, without significant additional bottlenecks within UKERNA's area of responsibility [not monitored].

Reporting:

Monthly reports as defined in A2.2.

UKERNA shall make available (via the Web) detailed daily and monthly reports on the distribution of traffic by JANET client institution and by application type.

Details of the total level and distribution of traffic, for each of the service providers with which access agreements have been established shall be provided. Subject to operational feasibility, UKERNA shall provide detailed daily reports on the level and distribution of traffic in the form given in “Format for performance reports to the JISC Monitoring Unit” (ref. Annex J.4).

A2.2.2 Access to the North American Internet

Specification:

UKERNA shall provide cost-effective access to the North American Internet and to other parts of the 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 at agreed access points within the UK.

Performance Indicators and Service Levels:

The service offered by the contractor 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 are responsible (via their 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
 - (i) within one hour in the case of faults reported during, and at least one hour before the end of, an extended service period; and
 - (ii) otherwise, within one hour of the start of the next such period.
- c) within one hour of repair. 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 – A2.3), 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:

- (i) JANET Access - access line fault reports;
- (ii) external Access - access to hosts and service beyond JANET;
- (iii) JANET service - problem with JANET service use/access.

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. This 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. It shall also include more detailed information on the performance of the connection to each client institution itself. 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.

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 Requirements:

List of outages, including duration and date, for each network status server, reported on a quarterly basis.

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;

Number of requests received for changes to configuration;

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 agreed or rejected within two weeks.

Reporting:

On a quarterly basis, UKERNA shall provide a list of registration requests, showing the date on which the request was received, the date on which the request was decided, and 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.

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 date on which the request was implemented.

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 organisations.

Specification:

UKERNA shall provide a primary name server service, on request, to those JANET clients 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'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 within 5 working days of receipt of the necessary information from the client.
- c) UKERNA will inform the client 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 clients with a primary connection. The service will provide for only the top level of a client's domain.

Performance Indicators and Service Levels:

- a) 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.
- c) UKERNA will inform the client 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).

A2.6 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, 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.

A2.6.2 Co-ordination of message handling services

Specification:

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

Note: Messaging services are those supported by protocol(s) approved from time to time in statements of JISC policy (currently SMTP).

UKERNA shall coordinate the collection, dissemination and consistency of routing information in order to facilitate a consistent service. It shall negotiate appropriate interconnection agreements with external service managers in order to maximize the available MHS connectivity for client institutions.

UKERNA shall investigate and resolve interworking problems where these cannot be resolved by individual service operators.

Reporting:

On a quarterly basis, UKERNA shall provide: a list of incidents and corrective action taken, including the date of each incident. Incidents shall be classified into:

- i) provision of information.
- ii) matters relating to bad practice or breach of the JANET AUP.
- iii) investigation and correction, if necessary, of operational faults.

A2.6.3 X.29/Telnet Conversion Services

Note: this service is to be withdrawn from 31st December 2002 and the service definition applies only until that date.

Specification:

UKERNA shall provide conversion services for terminal access in order to meet identified demand for conversion from users of Telnet at client institutions to X.29 host services on external X.25 networks.

Performance Indicators and Service Levels

For each Conversion Service:

- a) Basic Availability of 98%;
- b) mean time between failures of 800 hours.

Reporting:

On a quarterly basis, UKERNA shall report: the monthly utilisation, in terms of calls per month, for each month in the quarter of the report.

A2.6.4 Mail Abuse Prevention System

Note: This is a placeholder, pending final approval of the service.

UKERNA shall provide certain services of Mail Abuse Prevention System (MAPS) on behalf of all the JANET community. It will be based on DNS style resolution, using *rbl-plus.mail-abuse.ja.net*.

Performance Indicators and Service Levels:

This section will be completed following a period of experience with the pilot service.

Reporting:

This section will be completed following a period of experience with the pilot service.

A2.7 Usenet News Service

UKERNA shall make arrangements for JANET connected organizations to be able 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 organizations outside JANET and will make arrangements for the exclusion of illegal material from this 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%; Each server is to be available to exchange articles with JANET connected organizations 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 organizations with which the JANET News backbone exchanges feeds;
- volume of news entering and leaving the backbone;
- list of outages, including duration and date, for each server in the backbone.

A2.7.2 News Feed Service

Specification:

UKERNA will operate continuous News feed with designated JANET organizations in which incoming articles are offered to the customer organization's system as soon as they are available in the JANET News backbone.

Performance Indicators and Service Levels:

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 currently feasible to measure].

Reporting:

UKERNA shall report monthly:

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

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 JANET connected organization can transfer newsgroup details and individual articles on its own initiative and to an agreed schedule.

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 their 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%; Each News reader server is to be available to exchange articles with JANET connected organizations 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:

- list of outages, including duration and date, for each reader server; the volume of data delivered to each client organization.

It is an objective for the future to report on achieved values of the response time when arrangements are in place to measure them.

A2.8 Video Conferencing Services

A2.8.1 Video Conferencing Services

Note: This service is currently being restructured to support videoconferencing over IP on JANET. A new text for this SLD will be prepared when plans for introduction of the new service are complete, and this will be introduced using the change control mechanisms when the plans are approved by the JCN.

Specification:

UKERNA shall offer a bookable videoconferencing switching service. This service shall be provided at a range of access classes including 128Kb/s and 384Kb/s. Access to the switching service is provided over the multivendor ISDN service.

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 are:

- a) Availability of the Multipoint Control Units (MCUs) 98%.
- b) Availability of the booking system 99%.
- 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.

Reporting:

UKERNA shall report, on a quarterly basis, the values for each month of the quarter of the performance indicators (a) and (b) above and a summary of the total number of videoconferences, by number of participants, for that month.

A2.8.2 Video Technology Advisory Services**Specification:**

UKERNA shall provide assistance, advice and guidance to the users of video services 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 Helpdesk shall deal with enquires made by telephone, fax, post, electronic mail or videoconference.

The advisory service shall undertake product evaluations and conduct studies into aspects of emergent and existing video technologies.

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.
- b) An initial response to any enquiry made by telephone or fax shall be given within four hours, except in the case of enquiries received during the last four hours of the period specified in (a) above or outside any such period. In these cases, the initial response shall be given within two hours of the start of the next such period. An initial response to any enquiry made by post or electronic mail shall be transmitted via the same medium within one working day or four hours respectively of receipt of the enquiry.
- c) Client institutions shall be able to lodge telephone enquiries at all times when the Helpdesk is not staffed.
- d) The Advisory Service will maintain a WWW server which will contain information on the use of JANET video services (ref. Annex J.5).
- e) Product evaluation reports shall be placed on the UKERNA web site (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 and final resolution of queries, including number of queries outstanding >1 week, > 1 month, > 2 months.
- The number of accesses made to the Advisory Service WWW service in total during the reporting period.
- List of product evaluations with date of commencement/completion.

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 be given an indication of service date within one month of permission to connect being agreed.
- b) New client institutions shall receive service within three months of the signature of an agreement with UKERNA 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:

- date of request;
- date for initial response;
- date for final response.

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

Reporting:

UKERNA shall report, on a quarterly basis, the values for each month of the quarter of the number and class of licences issued or denied, and the actual value of performance indicators (a) and (b).

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 operate change control procedures which 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. 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 maintenance time shall not be more than 0.5% of service time, averaged over the calendar year.

Reporting:

UKERNA shall report, on a quarterly basis, the number and duration of the maintenance periods taken for each month of the quarter. This report shall indicate the time during which each regional network is affected by the maintenance.

A2.11 Managed Bandwidth Service

This item is included as a placeholder for future service developments.

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 institution via a basic transmission service operated by UKERNA, to the reception of the first part of the information at that 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).

UKERNA shall provide a report annually on range of articles supported, and the number of accesses made by each primary connection.

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. The Service Desk shall operate procedures to route complex queries to the appropriate service provider for resolution (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 enquiries at all times when the Service Desk is not staffed.
- c) An initial response to any enquiry made by telephone or fax shall be given within four hours, except in the case of enquiries received during the last four hours of the period specified in (a) above or outside any such period. In these cases, the initial response shall be given within four hours of the start of the next such period. An initial response to any enquiry made by post or electronic mail shall be

transmitted via the same medium within one working day or four hours respectively of receipt of the enquiry.

- d) Enquiries shall be completed as follows:
 - 97% within 5 working days.
 - 99% within 20 working days.
- e) 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).
- f) 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.

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.

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 (see Annex B). 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 (see 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 (see Annex B).

UKERNA shall report quarterly, as part of the reporting on the UKERNA operational plan (see 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 Study Groups

Specification:

UKERNA shall interact with the community by organising Study Groups, as agreed in its operational plan, and shall report to the JISC on the requirements identified.

Reporting:

UKERNA shall provide, quarterly, lists of study groups, together with the number of attendees.

A3.4.3 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 (see 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 meetings of the UCISA Network Group, the JANET National User Group and of its regional sub-groups (Scotland and Northern Ireland, North East, North West (including North Wales), Midlands, South West (including South and mid-Wales), South East and London, and other FE meetings where appropriate, 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 Security Monitoring and Information Dissemination

A4.1.1 Response

Specification:

UKERNA shall set up procedures to monitor unauthorised use of its own and its clients' services and act in an emergency to counteract unacceptable use of the network.

UKERNA shall operate procedures for rapid assistance to client institutions in order to help them respond to attempted unacceptable use of the network. UKERNA shall provide adequate mechanisms and publish procedures to enable eligible institutions to report incidents at all times and seek assistance during staffed periods

Service Levels:

The full incident response service shall be provided during the staffed periods specified in A1.2 above. A reduced incident response service shall be provided during the extended service periods specified in A1.3 above that are outside the staffed periods specified in A1.2 above. Outside these hours, reports shall be stored and dealt with at the start of the next staffed period.

Performance Indicators:

UKERNA shall respond to all requests for assistance from client institutions:

- a) For requests received during full incident response service periods according to the procedures published by UKERNA: response to serious incidents, defined as those involving actual or potential loss of control of a computer or network, shall be within one hour, and response to minor incidents, defined as those involving misuse of a computer or network, shall be within three hours;
- b) For requests received during reduced incident response service periods according to the procedures published by UKERNA: emergency response shall be within two hours;
- c) For requests for information, response shall be within one working day.

UKERNA shall ensure:

- d) The adequacy of mechanisms and published procedures for incident reporting, as perceived by users at eligible institutions (see ref Annex J.9);
- e) Mechanisms for reporting incidents and seeking assistance published to eligible institutions.

Reporting:

UKERNA shall provide monthly:

- Number of reports outstanding at the beginning of the month;
- Number of new reports;
- Number of reports closed;
- Number of reports outstanding at the end of the month;
- Number of new reports by classification;
- Number of incidents and number of incidents where the specified response was achieved, by response category. The response categories are:
 - full service serious
 - full service minor

reduced service emergency requests for information.

Note: Where a single incident, such as a widespread port scan, affects a number of institutions this will be counted as one report, not a number of separate ones.

UKERNA shall also provide quarterly:

- summary of trends in the incidents reported;
- actions taken to resolve major incidents.

A4.1.2 Awareness

Specification:

UKERNA shall develop and provide presentations and training on computer security as part of the Technical Updating programme for the JANET Community (see A3.4). Feedback from participants in these activities will be used to inform regular reviews of the content and provision of events.

Performance Indicators:

- a) The value of courses and presentations as perceived by the user community;
- b) Publication of an annual review of achievements and objectives for the year ahead.

Reporting:

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

A4.1.3 Liaison

Specification:

UKERNA shall maintain contacts with other national and international organisations working in the fields of computer security and law enforcement, to ensure that the interests of the JANET Community are presented to these organisations and that the community is informed of developments which may affect them. In particular UKERNA shall identify and promote the use of internationally agreed standards.

UKERNA shall 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.

Performance Indicators:

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

Reporting:

UKERNA shall provide quarterly:

- List of meetings attended, reports written and other liaison activities;
- List of any actions or other items arising out of these meetings.

A4.1.4 Information

Specification:

UKERNA shall maintain a list of approved contact points and service hours at client institutions and peer organisations.

UKERNA shall advise approved staff from client institutions on protection mechanisms to be adopted in relation to network access to host machines.

UKERNA shall provide the client institutions with regular information on general levels of threat and countermeasures available.

UKERNA shall maintain publicly available information about computer security threats and countermeasures as part of the Network Information Service (ref. Annex J.9).

Performance Indicators and Service Levels:

- a) The list of contacts shall be verified annually in addition to interim maintenance;
- b) Advisory notices about new threats or countermeasures shall be issued to site contacts within one working day of the information being confirmed and available for release; in particular, public information from trusted sources shall be issued within one working day;
- c) The information provided as part of the Network Information Service shall be reviewed and updated at least every six months and more frequently if appropriate to the nature of the material; information mirrored from other trusted sources shall be updated every 24 hours.

Reporting:

UKERNA shall provide quarterly:

- The number of advisory notices on threats and counter-measures issued to site contacts;
- A list of significant changes and additions to the public information collection.

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 (three years).

B.2 The budget cycle

A preliminary budget (the indicative budget) shall be prepared by UKERNA in August of each year, to cover the subsequent company financial year (1 August to 31 July). Following consideration by the relevant committees of the JISC, a second budget submission (the revised budget) will be submitted in November. The revised budget shall be based on the indicative budget. It shall take account of any changes to the SLA that may have arisen or be under consideration during the intervening period, the views of the various stakeholders and the outcome of any other initiatives that may be in progress at the time of submission of the indicative budget. The revised budget shall normally be approved by the JCN, and become the final budget, in the first quarter of the subsequent calendar year, following the approval of the JISC budget by the funding councils.

B.3 The operational plan cycle

The operational plan shall be prepared by UKERNA in January of each year, and submitted to HEFCE by a date, normally in mid January, to be advised annually by HEFCE.

B.4 Content of the budget

B.4.1 The budget covers the financial year of UKERNA (1 August to 31 July). The budget will be prepared by UKERNA in conjunction with the JISC Head of Services and the JISC Head of Policy and Corporate Services. Prior to the preparation of the indicative budget, the three parties will meet to discuss overall funding constraints, sensitivities and any other issues which would inform the UKERNA submission. A further meeting will be held prior to the preparation of the revised budget submission, at which any further matters raised by the JCN during their review of the indicative budget, and any other relevant developments in the intervening period, will be considered.

B.4.2 The indicative budget, as defined in B.2 above, 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.4.2.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) Forward look. A consideration of issues likely to impact on subsequent years' budgets, quantified in financial terms to the extent practicable.

B.4.3 The revised budget shall consist of:

- a) A financial summary, in the same format as used in B.4.2.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.4.2.b above.

B.4.4 For the purposes of considering the revised budget, UKERNA shall produce a detailed presentation, in rounded £K, in the following format:

SLA	Direct Staff	Capital	Service Charges	Maintenance	Sub Contract Continuing	Sub Contract one-off	Total Cost
Operational Services							
Basic transmission							
	As defined by SLA						
	Sub total						
International							
	As defined by SLA						
	Sub total						
Other							
	As defined by SLA						
	Subtotal						
	Total						
Support and information services							
	As defined by SLA						
	Subtotal						
Security Services							
	As defined by SLA						
	Subtotal						
	Total						
Total programme cost							
UKERNA Income							
Net programme cost							

B.4.5 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.

B.4.6 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 Development						
Administration						
TOTAL						
Current vacancies						
Network Development						
Production Services						
Customer Support						
Business Development						
Administration						
TOTAL						
New posts						
Network Development						
Production Services						
Customer Support						
Business Development						
Administration						
TOTAL						
Proposed staff complement						
Network Development						
Production Services						
Customer Support						
Business Development						
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 Development	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 Development	Detail of post	Detail of post
Administration	Detail of post	Detail of post

B.4.7 The JISC shall release funds to UKERNA on the basis of the agreed budget. If necessary, UKERNA may submit proposals for changes to the agreed 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 plan covers a three-year period. The first year shall be covered in detail and the second and third years set out at a more strategic level. The plan shall incorporate:

- a) A consideration of the strategic framework. This shall address the strategic environment and set UKERNA's specific strategies within the context of this environment.
- b) The work programme for the next financial year. This shall detail the specific areas of UKERNA's planned activity.
- c) 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.
- d) Funding requirement for the next financial year. This will normally be the final budget as defined in B.2 above.
- e) Forward look. This will address forecast changes in the environment and the possible initiatives that will be required of UKERNA to address such changes, both on a proactive and a reactive basis. It will also include, if appropriate, details of any specific programmes of work carried forward from the first year of the plan. Estimated financial projections for the period of the plan will be provided.

Annex C

Reporting on the Budget

C.1 Objective

The objectives of the this 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:

mm/yy

SLA	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								
3								
4								

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

Total funding claimed this period

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:

1. Objectives that have been achieved by the due date.
2. 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.
3. 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.
4. 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, procedures for the administration of Change Control for the SLA shall be defined in the current version of Quality Procedure QS/P13.
- 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/02/0

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

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
DANTE
Greenmount College of Agriculture and Horticulture
HESA
learndirect
Scottish Further Education Unit
Scottish UFI Ltd
UCAS
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	Basic Availability and Traffic reports	Traffic report available on the Web [2]	Detailed daily report on traffic delivered to the MU[1]
LINX	√	√	√
CERNET	√		
HEANET	√		
AboveNet	√		
Planet Online	√		
Worldcom	√		
BTnet	√		
BBCnet	√		

[1] Subject to operational feasibility, UKERNA shall provide detailed daily reports on the level and distribution of traffic in the form given in “Format for performance reports to the JISC Monitoring Unit” (ref. Annex J.4).

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

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 National JANET Web Caching Service (at Manchester)
The National JANET Web Caching Service (at ULCC)
The National JANET Web Caching Service (at Leeds)

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 CLRC

The UK Mirror Service (at Kent)
The UK Mirror Service (at Lancaster)

BIDS (at Bath)
EDINA (at Edinburgh)
MIMAS (at Manchester)

NISS (EduServ)

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
Worldcom C-PoP, 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.jisc-tau.ac.uk/sla.html
1	List of eligible institutions	See http://www.jisc-tau.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/general/exec.html

ACCEPTED on behalf of UKERNA by:

ACCEPTED on behalf of the JISC by:

Position:_____

Position:_____

Date_____

Date:_____