

NETA Interface Standards

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1.0 Related Documents

1. NETA Project EDL Message Interface Specification. CT/24.13.0013 Issue 4, 20-June-2000.
2. NETA Project EDT Interface Specification. CT/24.12.0002 Issue 4, 18-December-2000.

2.0 Definitions

The following working definitions are used for the purposes of this document :-

2.1 Control Point

The point at which a NETA market participant receives balancing market bid and offer acceptances from National Grid. This would normally be a site from which the participant exercises real-time control of demand, or in the case of a power station, the point where this is physically controlled by the Generating Company.

2.2 Trading Point

The point designated by a NETA market participant, from which the participant submits Physical Notifications, Dynamics and Bid & Offer Data to National Grid.

This could be a dedicated trading centre from which the participant conducts their energy trading activities, or the premises of a party acting as a Trading Agent on behalf of the participant

2.3 Trading Party

The owners and/or operators of a Trading Point.

2.4 Authorised Party

The person or persons nominated by a NETA market participant, and agreed by National Grid, for the purpose of operating and maintaining communication circuits between the participant's premises and National Grid premises. This includes persons authorised to receive details of security arrangements relating to such circuits, and to request changes to participant account passwords.

2.5 EDL - Electronic Despatch & Logging

A term used to describe the National Grid application level protocol used on communication links to Control Points. This is also used in a more general sense to refer to the communication circuits between National Grid and Control Points.

2.6 EDT - Electronic Data Transfer

A term used to describe the transfer of NETA submission files between Trading Points and National Grid. This is also used in a general sense to refer to the communication links between Trading Points and National Grid.

3.0 Introduction

This document defines the National Grid standard for connection of NETA market communication links from Trading Points and Control Points to the National Grid NETA Network. The standards cover the physical means of implementing communication circuits and associated routing, protocol and security arrangements.

Compliance with these communication standards is a condition of approval of requests for connections into the National Grid NETA Network. This includes EDL and EDT circuits to participant main sites and participant DR sites.

The scope of this document does not include the server platforms, software applications or workstations which utilise the communication links, although some details of application protocols are included for completeness.

The submission of Bid & Offer acceptances to Control Points is a National Grid activity, and National Grid therefore normally elect to provide and own EDL communication circuits to Control Points. The provision of EDL links is at the discretion of National Grid, being dependent upon the operational need for this facility at the sites in question.

It is a Trading Party responsibility to submit Physical Notifications, Dynamics and Bid & Offer Data to National Grid, and National Grid therefore expect such parties to provide and own circuits from Trading Points to National Grid.

It should be noted that short term redeclarations of Dynamics within Balancing Market timescales are submitted from Control Points, and such submissions will therefore take place over the EDL circuits utilised by National Grid for Bid and Offer Acceptances.

In those cases where National Grid provide and own communication links to a Control Point which is also designated as a Trading Point, the standard arrangement is to have separate circuits for EDL purposes and EDT purposes; ie these services do not share common communication links.

4.0 Registering for Services

Companies wishing to register for new EDL and EDT services, or wishing to undertake modifications to existing services, should send an e-mail précis of their requirements to National Grid at Netacom@uk.ngrid.com.

If the query concerns the registration of new Balancing Market Units (BMUs), details of the procedures involved will be provided via return e-mail.

In the case of requests for new or modified communication links for EDL or EDT purposes, a questionnaire will be sent out in response to e-mail enquiries.

Completing and returning this questionnaire is the first step in the approval process for communication links into the National Grid NETA network. Following receipt of the completed questionnaire, applicants will receive a follow-up telephone call from National Grid to discuss their requirements.

5.0 Service Level Arrangements

Although each of the NETA communication circuits has a designated formal owner, as defined in section 3.0 above, the practical maintenance and operation of these circuits requires the active cooperation of parties at both ends of the circuit.

It is the formal responsibility of each Trading Party to diagnose and resolve faults and problems on the EDT communication services to their Trading Point. This *excludes* responsibility for the core communication routers located at the National Grid end of the links, but *includes* responsibility for the communication circuits between the Trading Party and National Grid and the EDT routers which terminate these services on the Trading Party premises.

National Grid will, however, provide Trading Parties with reasonable assistance in diagnosing and correcting problems on their EDT communication services.

The maintenance of EDL links to Control Points is the formal responsibility of National Grid. This includes the communication circuits to Control Points, and also the EDL communication routers located at each Control Point. The boundary of responsibility in this respect is the Local Area Network (LAN) port on the Control Point routers; ie National Grid responsibility does not extend to any networks or network devices which may be connected to the EDL router at the Control Point.

Control Point operators are expected to provide National Grid with reasonable assistance to resolve faults and problems on EDL communication services.

6.0 Types of Communication Circuit

Two types of circuit are included within this standard:

6.1 Dedicated Circuit

The standard for these is a 64kbit synchronous point-to-point private service, with individual X21 presentation at the Trading Point or Control Point premises.

In the case of those circuits which are provided and owned by Trading Parties, *the form of presentation at the National Grid end of the circuit must be approved in advance by National Grid before any orders are placed for communication circuits.*

National Grid use a variety of means of aggregating individual circuits, and details of the agreed form of presentation are necessary in order for Trading Parties to give correct instructions to their chosen Service Provider. Orders placed without advance approval will require subsequent modification, and this may result in Service Providers rescheduling service installation to the end of their customer queues.

6.2 Dial-Up Circuit

The standard for these is a 64 kbit ISDN service, with Primary Rate ISDN presentation on National Grid premises and Basic Rate ISDN presentation to the Trading Party or Control Point.

As this is a dial-up service, Trading Parties ordering ISDN links for EDT purposes do not have to specify presentation details for the National Grid end of the service. Trading Parties should still notify National Grid in advance of placing orders for ISDN services, however, in order to ensure that capacity is reserved for them on the National Grid primary channels.

7.0 Services to Control Points

National Grid will normally provide a Main Route to each Control Point, and may also elect to provide an Alternate Route depending upon the extent of demand or generation which is controlled from that point. The standard for these is:-

Main Route A 64kbit Dedicated Circuit.

Alternate Route A 64 kbit ISDN Circuit.

Main Routes and Alternate Routes will terminate at geographically separate National Grid premises, with onward linking via the National Grid Wide Area Network.

National Grid will provide, install and configure a Cisco 2600 series router to terminate these services at each Control Point. Maintenance and operation of the routers will be a National Grid responsibility.

The network protocol used over these links is restricted to TCP/IP, with Border Gateway Protocol (BGP) for the exchange of routing information. The use of other routing protocols or Static Routes is not permitted for this purpose.

DECNET is not an approved protocol for services to Control Points.

The application level protocol will be the National Grid specific protocol defined for Electronic Despatch & Logging (EDL). Further details of the application protocol are given in Reference 1.

Where operational telephony is provided to Control Points, this will normally be via separate communication circuits to the services specified above.

ISDN services provided by National Grid at Control Points are reserved exclusively as Alternate EDL routes. These ISDN services must not be used for any other purpose.

National Grid will act as custodian of all NETA network addresses which communicate with the National Grid NETA Network, and will allocate Registered Private IP Addresses to other parties in accordance with the National Grid standard addressing scheme. These are the only addresses which may be used by client EDL servers for communication with the National Grid NETA servers.

8.0 Services From Trading Points

National Grid will expect the Trading Party to implement one of the following options:

- i. A single 64kbit ISDN Circuit as the sole route.
- ii. A single 64kbit Dedicated Circuit as the sole route.
- iii. A 64kbit ISDN Circuit as the Main Route, and a separate 64 kbit ISDN Circuit as the Alternate Route.
- iv. A 64 kbit Dedicated Circuit as the Main Route, and a 64 kbit ISDN Circuit as the Alternate Route.
- v. A 64 kbit Dedicated Circuit as the Main Route, and a 64 kbit Dedicated Circuit as the Alternate Route.

Main Routes and Alternate Routes will terminate on geographically separate National Grid premises, with onward linking via the National Grid Wide Area Network.

It is strongly recommended that participants who do not wish to provide an Alternate Route should utilise an ISDN service as their Main Route, rather than a Dedicated Circuit. An ISDN service, which operates as a dial-up link, may be rapidly reconfigured to communicate with alternative National Grid sites, such as the National Grid DR site. In contrast to this, it would take a period of weeks to establish a new Dedicated Circuit to the National Grid DR site.

Participants who opt for a single communications route are also warned that they will lose the ability to submit data to National Grid if their sole Main Route fails, until such time as the route is returned to service.

The National Grid recommended standard for termination of all routes at the Trading Point premises is a Cisco 2600 series router.

The Trading Party must agree their selected options with National Grid in advance of placing any orders for communication circuits.

The network protocol used over the links will be TCP/IP, with Border Gateway Protocol (BGP) for exchange of routing information. The use of other routing protocols or Static Routes is not permitted for this purpose.

DECNET is not an approved protocol for services from Trading Points.

Exchange of data at application level will utilise FTP. Further details of the FTP file formats are given in Reference 2.

National Grid will act as custodian of all NETA network addresses which communicate with the National Grid NETA Network, and will allocate Registered Private IP Addresses to other parties in accordance with the National Grid standard addressing scheme. These are the only addresses which may be used by client EDT servers for communication with the National Grid NETA servers.

9.0 Data Transmission Security

9.1 Application Level Security

9.1.1 Links to Trading Points

Each link from a Trading Point will have an EDT account on National Grid servers which is dedicated for use by that Trading Party only. The accounts will have the minimum access rights which are necessary for data transfer. Submission accounts will have write-only access to a single directory, and notification accounts will have read-only access to a single directory.

The changing of EDT account passwords is carried out at the discretion of participants, and it is recommended that this be done at minimum intervals of 90 days. Participants wishing to change their passwords should submit an e-mail notification to National Grid at Netacom@uk.ngrid.com.

National Grid will respond to these requests by contacting one of the Authorised Parties nominated by the Participant at the time they registered with National Grid, and agreeing details and timing of the required change.

9.1.2 Links to Control Points

EDL links to Control Points will use direct application-to-application data transfer using National Grid specific Master Message Server and Client Message Server protocol. This protocol has built in security mechanisms, under which client connections are automatically established by National Grid's Master Message Server to the remote EDL Client Server. There are no manual password changes associated with this.

9.2 Router Level Security

9.2.1 IP Addressing

All routed connections will be firewalled at the National Grid end of the circuit, to restrict access rights to designated source and origin IP addresses only, via designated network IP addresses. This applies to both dedicated and ISDN routes.

ISDN routes will have the additional protection of Point-to-Point Protocol (PPP). Under this protocol the routers at both ends of the link are configured with a password, and exchange of passwords is necessary before any data can be passed in either direction. Periodic changes of the PPP passwords will be a requirement.

In order to ensure that participant data can pass through National Grid firewalls participants should only use the Registered IP Address assigned to them by National Grid at the time their communication links are commissioned. A number of options are available to accommodate the Registered IP address within individual participant addressing schemes:-

- i. Use the IP address as a native address where this does not conflict with existing participant addressing schemes
- ii. Use dual-homed servers with two Network Interface Cards to co-reside in two different addressing domains.
- iii. Implement Network Address Translation on the termination router which is located on participant premises.

Option (iii) is the most commonly implemented configuration on participant EDT services, and is used by National Grid on all EDL services to Control Points. Further advice on this topic can be obtained via e-mail to Netacom@uk.ngrid.com

9.2.2 Routing Protocol

The standard routing protocol employed on both EDT circuits and EDL circuits is Border Gateway Protocol (BGP). This is employed for security purposes in order to manage routing information distributed across the circuits.

The use of Static Routes over EDL and EDT circuits is not permitted under National Grid security policy. For further information and advice on this topic contact the National Grid Helpline on Netacom@uk.ngrid.com.

9.3 Security Monitoring

National Grid will carry out routine security monitoring of external communication links to the National Grid NETA Network. In the event that activity upon any external link presents a threat to network integrity, the links may be blocked, and associated access rights suspended until the situation is resolved. The circumstances in which this action may be taken include the following: -

- i. There is reasonable cause to believe that the links are being used for unauthorised purposes, or being accessed by unauthorised parties.
- ii. Breaches of agreed security arrangements on client premises jeopardise the peripheral security of the National Grid network.
- iii. Excessive levels of data traffic are detected upon the links, which is outside normal operational parameters to the extent that the ability of application servers to process the data is put at risk.
- iv. Corrupt or abnormally formatted data is received which presents a risk to application processing.

National Grid will normally make all reasonable efforts to contact the parties concerned before any action is taken to block a communications link. The blocking of links without any warning will only occur in circumstances where there is an immediate and unacceptable risk to NETA network or NETA server integrity.

Access to authorised user accounts on National Grid servers will also be monitored for security purposes. Where three successive failed login attempts are made upon such an account, the account will be frozen until the authorised user of the account contacts National Grid and a new password (and if necessary a new user ID) is issued.

10.0 FTP File Transfers

The standard method used by Trading Parties to transfer NETA submission files to National Grid is via FTP (File Transfer Protocol), with submission files 'pushed' to NETA submission directories and corresponding notification files 'pulled' from notification directories. The following guidelines should be followed in relation to this: -

- i. Participants should only establish FTP connections to National Grid NETA servers when they have data to submit, or notifications to retrieve. FTP connections should not be left 'permanently' open.
- ii. FTP connections should be terminated when submission of data is complete and notification of this has been received. Participants should not rely upon National Grid's inactivity timeout for this purpose.
- ii. National Grid currently support a maximum of 3 concurrent FTP sessions from any single participant.
- iii. Participants should not send rapid sequences of FTP connection requests at short intervals to National Grid. This may be construed as abnormal traffic and could result in the disconnection of the participant's link.
- iv. It is, however, permissible to poll National Grid NETA servers with FTP connection requests at intervals when submissions are due to be sent, or notifications are awaited. The interval between successive connection requests should be no less than 20 seconds.
- v. Once established, a single FTP connection can be used to alternately push submission files and pull notification files.

11.0 Disaster Recovery Sites

11.1 Control Points

National Grid will not normally provide Disaster Recovery communication circuits relating to the loss of Control Points. The loss of a site on which a Control Point is situated would normally imply that the physical plant controlled from there is no longer available to accept bids and offers.

Exceptions to this may be made from time to time at the discretion of National Grid in cases where a Control Point is acting as a Control Agent for a number of geographically dispersed supply or demand blocks. When making such decisions, National Grid will take into account the total amount of supply or demand which is under control, and the operational need to re-establish electronic despatch if the Control Agent site is lost.

11.2 Trading Points

Requests for communication circuits to Trading Party DR sites should be submitted for approval in exactly the same way as requests for connections to Trading Party main sites. If approved, the following standard arrangements will apply:-

- i. The standard provision for a DR site is a single 64 kbit ISDN service.
- ii. In the event that a Trading Party loses their main site, initial operation will be over the ISDN service. If the loss is likely to be very prolonged, National Grid will accept emergency requests for an additional circuit to reinforce the ISDN circuit. The second circuit may either be a leased service or an ISDN service at the discretion of the Trading Party.
- iii. National Grid will assign a specific IP address for use by the Trading Party for their DR servers. This will be a different IP address to that assigned for the main site servers.
- iv. DR circuits should only ever be used for the transfer of data which originates on the Trading Party's DR servers, ie DR routes should not be used as a backup route for the submission of data which originates from servers at the Trading Party's main site.
- v. Conversely, routes from a participants main site should not be used for the transfer of data which originates from their DR site.

National Grid will expect DR circuits to be normally 'quiescent'. Any testing required over these circuits should be notified to National Grid in advance, and the exact arrangements which apply to the tests jointly agreed before any test dates are scheduled.

In the event that participants lose facilities at their main site and need to invoke DR facilities, National Grid should be contacted asap, and requested to enable the transfer of NETA submissions from the participant's DR servers to the online National Grid NETA servers.

12.0 Network Access Tests

All new communication circuits to the National Grid NETA network have to undergo Network Access Tests (NATs) before they can be approved for the transfer of live operational data. These tests are normally conducted using offline NETA servers within National Grid.

If participants are commissioning new EDL or EDT servers, additional tests to confirm the functionality of the application software running upon the servers are also needed. This may also apply when participants make software modifications to their existing servers. Participants should contact National Grid at an early stage in drawing up their programme of work in order to determine the extent of testing required, and to agree any test dates.

Where participants are undertaking development work at the same time as they are running existing production systems, National Grid may assign an additional IP address to the participant to use for development system testing. All tests conducted using this address must be jointly agreed in advance with National Grid.

IP addresses used for development testing will only be enabled on agreed test dates. On completion of testing the development IP address will be disabled.

Amendment Record

Issue	Draft	Date	Author	Description of changes
1	1	28 Jan 2000	Keith Cusson	First draft for internal SM review only.
1	2	16 Feb 2000	" "	2nd draft following 1st SM review. Extensive changes to document.
1.0		18 Feb 2000	" "	Minor changes following SM internal review.
1.2		21 Feb 2000.	Keith Cusson	Changes to section 3.0 and new section 8.4 added.
1.1		21 Feb 2000	" "	Paragraph on National Grid standard address scheme added to section 7.0. Issued for external review on the OFGEM web site.
2.0		31 Mar 2000.	" "	Mods to section 8.4 following external NETA review. Issued for approval.
3.0		28 Mar 2002.	" "	Extensive rework to cover queries raised during NETA operational service, and service developments.

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