

EARN Document

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1.0 Introduction

This document describes the standard configuration of the NJE/OSI software stack on the EARN G-boxes, and describes the particular EARN G-boxes which are accessible over IXI. It should be read in conjunction with the "Outline IXI proposal", EARN Document EARN-IXI DOC90-10.

For each G-box node described, details of its IXI connection and local EARN connections are shown, as well as the progress to date in testing NJE/OSI links over IXI.

This document will be updated to reflect progress in testing IXI by EARN.

2.0 Standard Configuration

The NJE/OSI software stack used on the G-boxes includes VAX PSI, VOTS, OSAK, and Jnet OSINJE. Standard configurations for these products are described in this section.

2.1 VAX PSI and X.25 Subnetwork Configuration

OSI connection-oriented network service is provided by X.25 over IXI and the concatenated subnetworks. VAX PSI allows connection to the local X.25 subnetwork. Operation of VAX PSI with the local subnetwork and with the remote peer process is determined by a number of interface options which must be specified consistently both to VAX PSI and to the subnetwork to which the G-box is connected.

The following options are specified as the standard configuration for connection of a G-box to the local X.25 subnetwork.

Link Level -

Protocol:	LAPB
Window Size:	7
Frame sequence numbering:	modulo 8
Maximum frame size:	517 octets

Packet Level -

Default, Maximum Window Size	2,7
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Default, Maximum Packet Size	128,512
Flow-Control Negotiation	Enabled
Logical Channels (LTC, HTC)	1,20

According to the capabilities of the local subnetwork, it may be necessary to restrict some of these options, for example by using smaller packet and/or window sizes, or by using a different range of logical channels. In any case, logical channel zero shall not be used.

It is strongly recommended that negotiation of flow-control parameters not be disabled, in order to avoid ambiguity caused by different default conventions in the connected subnetworks.

VAX PSI is configured using the NCP utility by first selecting an appropriate configuration profile and then over-riding if necessary the default options specified in that profile to match the requirements.

Digital provides PSI configuration profiles for most public packet-switched data networks, and also for certain private networks. Each such profile is intended to match the PSI software to the target network. For each target network, a profile is established by a formal procedure, known as FCNS, which forms the basis of Digital's support of the use of VAX PSI in the particular target network. In academic networks, the FCNS procedure has usually not been used to establish a PSI profile tailored to the particular network, and it is common to find that the PSI profile of the local public network, or some other PSI profile which is "known to work" is used.

Where a G-box is connected directly to IXI, the JANET profile shall be used. Use of this profile is indicated by the need to present the calling DTE address in the call request packet.

Where a G-box is connected to IXI via a local public or private subnetwork, and this subnetwork offers a range of interface options no narrower than that specified above, a profile shall be identified which is compatible with the local subnetwork, and which offers at least the range of interface options specified above.

Where a G-box is connected to IXI via a local public or private subnetwork, and this subnetwork does not offer a range of interface options as broad as that specified above, a profile shall be identified which is compatible with the local subnetwork, and which offers at least the range of interface options offered by the local subnetwork.

2.2 VOTS Configuration

The OSI transport service is provided by VOTS (VAX OSI Transport Service). VOTS is configured using the OSIT\$CONTROL utility. OSIT\$CONTROL commands for initialization of VOTS at system startup are specified in the file SYS\$MANAGER:OSIT\$STARTUP.COM. This file may be prepared either by hand using an editor, or by means of the OSIT\$CONFIG utility.

VOTS is given access to a subnetwork by defining a Network Access Point (NAP). The minimum information required to define a NAP comprises the NAP name, the local subnetwork name, and the local DTE address. If a subaddress or Call User Data is used to route incoming X.25 calls to the OSI Transport Service, these must also be specified.

Certain default values are used when a NAP is defined, and may be over-ridden by explicit specification. In particular, the maximum TPDU size is 2048, transport service classes available are classes 2 and 4, and the X.25 packet size and window size used in outgoing calls are the same as the default specified in configuring PSI.

When the G-box is connected directly to IXI, the NAP name to be used shall be "X25_IXI".

When the G-box is connected to IXI via an X.25 subnetwork, the NAP name to be used shall be either "X25_IXI" or a name composed by prefixing "X25_" to the name of the local X.25 subnetwork.

The call user data used to route an incoming X.25 call to the OSI Transport Service shall be hexadecimal "03010100", as specified in Annex B to CCITT Recommendation X.224. No subaddress shall be used for routing incoming X.25 calls to the OSI Transport Service.

When the G-box is connected to IXI either directly or via an X.25 subnetwork, Transport Class 0 shall be available for the NAP which is used for access to IXI.

2.3 Jnet Configuration

An NJE link is defined to Jnet using the DEFINE subcommand of the JCP utility. The DEFINE subcommand is used to specify the link name, the driver image, the physical or logical line, and certain management parameters. The link name must match the name of the remote NJE node. Additional configuration options required by a particular driver are specified in a parameter file. The parameter file name is the same as the link name, and the parameter file type is "PAR".

An NJE/OSI link is defined to Jnet by specifying the OSINJE driver image and the logical line name "OSI", in the DEFINE subcommand of JCP. Where for some reason more than one version of this driver is in use on a G-box, different file names are used for each one, and care must be taken to specify the correct one.

The Network Service Access Point of the remote system shall be specified in the parameter file by specifying the name of the NAP used for the connection to the local X.25 subnetwork, qualified by the Cosine address of the remote system, for example:

```
NSAP=X25_IXI%204372590000
```

NJE/OSI system is an E-box, by specifying the following in the parameter file:

```
FLOW_CONTROL=YES
```

This flow-control option is not implemented in versions of the OSINJE driver earlier than v2.01.

It is recommended, but not mandatory, to enable the flow-control option for an NJE/OSI link between G-boxes.

Whenever the remote NJE/OSI system is an E-box, support for use of FMH4's shall be enabled by specifying the following in the parameter file:

```
FMH4=YES
```

Whenever the remote NJE/OSI system is an E-box, the TSAP identifier used at either end shall be "NJE". This differs from the default Jnet TSAP identifier, and so must be specified as follows in the parameter file:

```
TSAP=NJE  
LOCAL_TSAP=NJE
```

3.0 Specific Configurations

For each installed G-box, details of its configuration are summarized in a table, according to the following format.

Node:	EARN node name
Local Address:	DTE number in local network
COSINE Address:	DTE number in Cosine scheme
Local EARN connection(s):	Description of local connections including speed and kind of connection
PSI Configuration:	Ordered list of key interface options, separated by commas, as follows: PSI Profile, Level-2 window size, Maximum frame size in octets, Default/maximum level-3 window size, Default/maximum level-3 packet size, Logical channel range
-- example:	JANET,7,1029,7/7,256/1024,1087-1029
IXI Access Point & Profile:	Ordered list of key interface options, separated by commas, as above, but with the access point name in place of the PSI Profile, and without the channel range
-- example:	UCD2,7,1029,2/7,128/1024

Access Path & Profile: Ordered list of key interface options, separated by commas, as above, but with a meaningful mnemonic in place of the PSI Profile, and without the channel range

-- example: RAL/SEEL,7,1029,2/7,128/1024

Line speed: Ordered list, separated by commas of the data rate at the G-box interface and the lowest data rate at any interface along the access path to IXI

VOTS Configuration: Ordered list, separated by commas, of the following VOTS configuration options:

NAP name,
 CUDF value,
 TPDU size,
 X.25 window size,
 X.25 packet size,
 available TS classes, separated by "/"

-- example: X25_IXI,03010100,2048,4,256,0/2/4

Progress milestone: Brief description of state of testing

3.1 Ireland

Node: IEGBOX
 Local Address: 200023400015
 COSINE Address: 204372590000
 Local EARN connection(s): 9k6 BSC to IRLEARN
 DECnet/Ethernet to CCVAX

PSI Configuration: JANET,7,1029,7/7,256/1024,32-1
 IXI Access Point & Profile: UCD2,7,1029,2/7,128/1024
 Access Path & Profile: Direct
 Line speed: 64k

VOTS Configuration: X25_IXI,0022,2048,4,256,0/2/4
 other NAP configurations also defined

Progress milestone: Phase 1 complete for node
 Phase 1 complete for link to GBGBOX
 Phase 1 complete for link to NLGBOX

IXI connection may be replaced after a time by an indirect connection via a Satelcom X.25 switch. The IEGBOX is also connected to HEANET (CAMTEC X.25 switch). IEGBOX is connected to the local EARN network by a 9k6 BSC link to IRLEARN.

3.2 Great Britain

Node: GBGBOX
Local Address: 000000004617
COSINE Address: 304334505001
Local EARN connection(s): 9k6 BSC to UKACRL

PSI Configuration: PSS,7,1029,2/4,128/256,1087-1029
IXI Access Point & Profile: JANET/ULCC,7,1029,2/7,128/1024
Access Path & Profile: RAL/SEEL,7,1029,2/7,128/1024
Line speed: 64k

VOTS Configuration: several defined

Progress milestone: Phase 1 complete for node
Phase 1 complete for link to IEGBOX
Phase 1 complete for link to NLGBOX

The local EARN connection carries all EARN traffic for UK and Ireland.
This will be replaced by an NJE/IP connection.

3.3 Netherlands

Node: NLGBOX
Local Address: 188020074
COSINE Address: 20430440008
Local EARN connection(s): 64k SNA to HEARN

PSI Configuration: JANET,7,520,2/4,128/256
IXI Access Point & Profile: SURFnet/Nijmegen,7,517,2/7,128/512
Access Path & Profile: SURFnet/DPN-100,7,517,2/7,128/1024
Line speed: 64k

VOTS Configuration: X25_IXI,03010100,2048,2,128,0/4
several others defined

Progress milestone: Phase 1 complete for node
Phase 1 complete for link to IEGBOX
Phase 1 complete for link to GBGBOX

Node: HASEOC
Local Address: 1291090
COSINE Address: 2043043034
Local EARN connection(s): 9.6k NJE/OSI to HASNAS

PSI Configuration: DATANET1,7,133,2/2,128/128,12-1
IXI Access Point & Profile: DATANET1/Amsterdam,unknown
Access Path & Profile: DATANET1,unknown
Line speed: 9.6k

VOTS Configuration: unknown
Progress milestone: Physical connection complete

Node: HASEOC
Local Address: 200020000108
COSINE Address: 2043042901
Local EARN connection(s): 9.6k NJE/OSI to HASNAS

PSI Configuration: JANET,7,520,2/7,128/512,50-1
IXI Access Point & Profile: EARN/Amsterdam,unknown
Access Path & Profile: Direct
Line speed: 64k

VOTS Configuration: unknown -- not yet set up
Progress milestone: Physical connection complete

3.4 France

Node: FRGBOX
Local Address: 9340704660034
COSINE Address: 20430830070034
Local EARN connection(s): 56k SNA to FRMOP22

PSI Configuration: TRANSPAC,7,520,3/3,128/128,16-1
IXI Access Point & Profile: REUNIR/CIRCE,7,unknown,2/2,256/256
Access Path & Profile: REUNIR/CNUSC,unknown
Line speed: 64k

VOTS Configuration: X25_IXI,03010100,2048,4,256,0
several others defined
Progress milestone: Physical connection complete

3.5 CERN

Node: CHGBOX
Local Address: 2284681140575
COSINE Address: 2043284000075
Local EARN connection(s): 9.6k BSC to CEARNV2

PSI Configuration: unknown
IXI Access Point & Profile: CERN,7,1029,2/7,128/1024
Access Path & Profile: CERN/Camtec,unknown
Line speed: 48k

VOTS Configuration: unknown
Progress milestone: Physical connection complete

CHGBOX is also connected to the EARN DPN-100 switch at CERN.
This connection provides an NJE link to GBGBOX at RAL.
This NJE link carries all EARN traffic for UK and Ireland

3.6 Sweden

Node: SEGBOX
Local Address: unknown
COSINE Address: 2043404000210
Local EARN connection(s): 9.6k BSC to SEARN

PSI Configuration: PSS,7,261,7/7,128/256,1113-1024
IXI Access Point & Profile: NORDUnet/KTH,5,4101,7/7,128/4096
Access Path & Profile: KTH/Satelcom,unknown
Line speed: unknown

VOTS Configuration: unknown

Progress milestone: Physical connection complete

SEGBOX is also connected via NORDUnet and EUnet to the EARN DPN-100 switch at CWI Amsterdam. This connection provides an NJE link to HASEOC.

3.7 Norway

Node: NOGBOX
Local Address: unknown
COSINE Address: 2043424000210
Local EARN connection(s): 9.6k BSC to NORUNIT

PSI Configuration: unknown
IXI Access Point & Profile: NORDUnet/KTH,5,4101,7/7,128/4096
Access Path & Profile: RUNIT/Satelcom,unknown
KTH/Satelcom,unknown
Line speed: unknown

VOTS Configuration: unknown

Progress milestone: unknown

NOGBOX is connected over NORDUnet using DECnet to SEGBOX.

3.8 Austria

Node: ATGBOX
Local Address: unknown
COSINE Address: unknown
Local EARN connection(s): 9.6k BSC to AEARN

PSI Configuration: unknown
IXI Access Point & Profile: ACONET/TU-Wien
Access Path & Profile: unknown
Line speed: unknown

VOTS Configuration: unknown

Progress milestone: unknown

The connection to AEARN will be replaced by NJE/IP.

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