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ILN RJE USER'S GUIDE FOR PDP-11/RSX-11M HOSTS

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APPLIED
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DIVISION

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Chapter 1

INTRODUCTION

The Intra-Laboratory Network (ILN) is a general purpose computer communications network located at Argonne National Laboratory. This network provides error-free high-speed communications between computers connected to the network. It supports the concept of a user program running on one computer establishing a 'session' with a user program running on another computer.

In addition to its general purpose capability, the ILN also provides a remote job entry (RJE) system that allows users to:

1. move files from the user's computer system to ANL's Central Computing Facility (CCF) as batch job submissions in card-image format,

2. move files from the CCF to the user's computer system as batch job retrievals in either print line or punched card format, and

3. check on the status of CCF jobs, cancel jobs, etc.

This document describes the use of the ILN RJE system for users who have DEC PDP-11 computer systems running the RSX-11M operating system.

The ILN RJE system consists of three parts. Closest to the user is the ILN RJE utility program that runs on the user's host. (A host is a computer system that is connected to the ILN.) Between the host and the CCF is the ILN which contains, in addition to the network control, an ILN RJE facility that supports the utility program and interfaces to the CCF. The third part is the CCF, which is accessed via the CCF front-end Varian V73 communications processors.

Chapter 2 describes the procedures for running the ILN RJE utility program. Chapter 3 describes the commands that can be used to submit and retrieve jobs, check on job status, etc. Each command description includes the command syntax, a brief description of the function, and one or more examples. Chapter 4 outlines several techniques for transferring files between a host and either the Central Computing Facility or another host. Appendix A summarizes the ILN RJE system commands. This appendix is useful as a quick reference. Appendix B lists the possible error messages with short descriptions. Appendix C provides the ASCII/EBCDIC conversion table that is used in the ILN.

Throughout this User's Guide, examples are enclosed in boxes. User entries are underscored. Lower case words enclosed in greater-than and less-than symbols, e.g., <filespec>, represent a parameter such as a file designation. Upper case symbols enclosed in greater-than and less-than symbols represent non-printable user key strokes, e.g., <CR> means carriage return.

Chapter 2

RUNNING THE ILN RJE UTILITY PROGRAM

The ILN RJE utility program described in this User's Guide runs on a DEC PDP-11 host computer under the control of the RSX-11M operating system. The monitor console routine, MCR, provides the language interface between the user and the RSX-11M operating system.

The ILN RJE utility program may be invoked from MCR by typing ILN<CR>, RJE<CR> or RUN $ILNRJE<CR>. If ILN is entered, the installed task, ILN, is executed; if RJE is entered, the same task is executed with the taskname, RJE, and if RUN $ILNRJE is entered, the same task is executed as task, TTxx, where TTxx is the terminal ID.

```
>ILN<CR>

RSX-11M ILN RJE V1.0  <date>  <time>
ILN RJE SYSTEM OPERATIONAL
ILN>
```

The user may now enter one of the commands described in Chapter 3.

Chapter 3

USER COMMANDS

This chapter gives the syntax and a description of each of the commands. Examples are supplied to illustrate usage. Any keywords may be abbreviated as long as enough characters are provided to uniquely identify the command. For example, SUBMIT can be shortened to SU. In addition, all parameters must be separated by at least one blank. Finally, any necessary parameters not supplied will be prompted for. In response to any prompt, the remainder of the command may be entered.

3.1 BACKLOG

3.1.1 Syntax

```
BACKLOG
```

3.1.2 Command Description

The BACKLOG command enables the user to obtain the CCP batch system backlog by priority.

3.1.3 Example

```
ILN>BACKLOG<CR>
COMMAND ACCEPTED
112739     BACKLOG   OSRDR       MAIN        SETUP
112739     PRTY      NUM TIME    NUM TIME    NUM TIME
112739      N(EXP)     0    0      2    4      0    0
112739      T          1   15      1    9      2   24
112739      H          1    5      2   10      1   15
112739      N          5   31     11  132     24  535
112739      L(H)       1   60      0    0      9  349
112739      S(H)       3  180      0    0      6  220
ILN>
```

3.2 CANCEL

3.2.1 Syntax

CANCEL <jobnumber>

3.2.2 Command Description

The CANCEL command allows the user to cancel, without print, jobs with an origin of ILN01.

3.2.3 Example

```
ILN>CANCEL 0370<CR>
COMMAND ACCEPTED
154149   MD902 JOB RUNDATA  0370 IS BEING CANCELED
ILN>
```

3.3 EXIT

3.3.1 Syntax

```
EXIT
```

3.3.2 Command Description

The EXIT command is used to terminate the ILN RJE utility program.

3.3.3 Example

```
ILN>EXIT<CR>
NORMAL EXIT
>
```

3.4 FETCH

3.4.1 Syntax

```
FETCH PRINT <jobnumber> <filespec>
FETCH PUNCH <jobnumber> <filespec>
```

3.4.2 Command Description

The FETCH command provides the user with the ability to retrieve PRINT and PUNCH files from the CCF. If PRINT is specified, the PRINT file of the designated job is retrieved and written to the filespec provided with CCF-supplied carriage control. If PUNCH is specified, the PUNCH file of the designated job is retrieved and written to the filespec provided without carriage control. If the filespec does not have a filename, a filename of the form, ILNx.DAT, is generated. If no device is specified in the filespec, the default, SY, will be used.

3.4.3 Examples

This example demonstrates the retrieval of the PRINT file for job 9999, written to the file, DB1:PRINT.DAT.

```
ILN>FETCH PRINT 9999 DB1:PRINT.DAT<CR>
ONE * FOR EACH 10 RECORDS: **********

    128 RECORDS FETCHED
ILN>
```

This example illustrates the retrieval of the PUNCH file for job 23, written to the file, MM0:CCFPU.DAT.

```
ILN>FETCH PUNCH 0023 MM0:CCFPU.DAT<CR>
ONE * FOR EACH 10 RECORDS: **********

    213 RECORDS FETCHED
ILN>
```

3.5 HELP

3.5.1 Syntax

HELP

3.5.2 Command Description

The HELP command displays the syntax of the commands supported by the ILN RJE utility program.

3.5.3 Example

```
ILN>HELP<CR>

A RESPONSE OF CTRL/Z WILL RETURN TO COMMAND INPUT

BACKLOG
CANCEL <JOBNUMBER>
EXIT
FETCH PRINT <JOBNUMBER> <FILESPEC>
FETCH PUNCH <JOBNUMBER> <FILESPEC>
HELP
INQUIRE
PRIORITY <JOBNUMBER> <NEW PRIORITY>
PRTY <JOBNUMBER> <NEW PRIORITY>
RESET
STATUS <BADGE>
STATUS <JOBNUMBER>
STATUS <JOBNAME>
SUBMIT <FILESPEC>
ILN>
```

3.6 INQUIRE

3.6.1 Syntax

```
INQUIRE
```

3.6.2 Command Description

The INQUIRE command is used to determine the status of the ILN RJE system.

3.6.3 Example

```
ILN>INQUIRE<CR>
ILN RJE SYSTEM OPERATIONAL
ILN>
```

3.7 PRIORITY

3.7.1 Syntax

```
PRIORITY <jobnumber> <new priority>
PRTY <jobnumber> <new priority>
```

3.7.2 Command Description

The PRIORITY command allows the user to increase the priority of a job with an origin of ILN01. The valid priorities are L, N, H and T.

3.7.3 Example

This example demonstrates how to change the priority of job 9999 from normal priority to high:

```
ILN>PRIORITY 9999 H<CR>
COMMAND ACCEPTED
153420   MD903 JOB RUNDATA  (9999) CHANGED FROM
PRTY 09 TO PRTY 11
ILN>
```

3.8 RESET

3.8.1 Syntax

```
RESET
```

3.8.2 Command Description

The RESET command is used to reset the interface between the PDP-11 and the ILN. This causes the ILN to release all RJE resources allocated for that host.

3.8.3 Example

```
ILN>RESET<CR>
RESET COMPLETE
ILN>
```

3.9 STATUS

3.9.1 Syntax

```
STATUS <badge>
STATUS <jobnumber>
STATUS <jobname>
```

3.9.2 Command Description

The STATUS command provides the user with the ability to obtain status information about jobs by badge number, jobname, or jobnumber. Badge numbers must have 5 digits, jobnumbers must have 4 digits and jobnames may have from 1 to 8 characters.

3.9.3 Examples

Status by jobname is demonstrated in this example:

```
ILN>STATUS RUNDATA<CR>
COMMAND ACCEPTED
162219   IQ906,RUNDATA  (9,N,200K,J,M(89,598)) 299999
G=ILN01 RI(C),MA(Q),PR,PU(C),JNIWR(C)
ILN>
```

This example illustrates status by badge:

```
ILN>STATUS 99999<CR>
COMMAND ACCEPTED
162219   IQ906,RUNDATA  (9,N,200K,J,M(89,598)) 299999
G=ILN01 RI(C),MA(Q),PR,PU(C),JNIWR(C)
162219   IQ906,PRTDATA  (9,N,J) 299999 G=ILN01
HOLD=(T) ACDS(C),PR(R),PU(C),JNIWR(C)
ILN>
```

3.10 SUBMIT

3.10.1 Syntax

```
SUBMIT <filespec>
```

3.10.2 Command Description

The SUBMIT command provides the user with the ability to submit a card-image file to the CCF. If no device is specified in the filespec, the default, SY, will be used.

3.10.3 Examples

This example demonstrates the submission of the file, DB1:DATA1.JOB, as a job:

```
ILN>SUBMIT DB1:DATA1.JOB<CR>
ONE * FOR EACH 10 CARDS: *******

     75 CARDS SUBMITTED
ILN>
```

Chapter 4

TRANSFERRING FILES USING THE ILN RJE SYSTEM

This chapter gives examples of methods that can be used to transfer data between a host computer attached to the ILN and the CCF or between two host computers. All of these methods are based on the ILN RJE capabilities of submitting batch jobs and retrieving the PRINT and PUNCH output of batch jobs. Because all data is transferred either as part of a submitted job, or punched in card-image format from the CCF, only 80-byte records can be handled. Any record sent in that is shorter than 80 bytes will be padded with blanks. The ILN RJE facility performs all necessary ASCII-to-EBCDIC and EBCDIC-to-ASCII translations. The translation table that is used in the ILN RJE facility is listed in Appendix C.

4.1 HOST COMPUTER TO CCF TRANSFERS

To transfer a card-image file from the host computer to an OS dataset, submit the following job using the SUBMIT command:

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
// EXEC CARDSDSK,OUTDSN='Bnnnnn.prg',OUTUNIT=TSPERM
//CARDIN  DD   *

     (card-image data)

/*
```

The printed output of this job can be retrieved through the ILN using the FETCH command, or may be routed to a CCF local printer by adding a FORMAT card after the account card. The FORMAT card should be written as follows:

```
//*FORMAT  PR,DDNAME=,DEST=ANLOS.LOCAL
```

It is also possible to avoid MAIN processing (and get faster turnaround) if it is acceptable to have the OS dataset allocated on one of the TSTEMP volumes in Variable Blocked format. When the following job is submitted it will create a dataset called 'Bnnnnn.jobname.xxxxx.DATA':

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
//*MAIN ACMAIN=S75
//*PROCESS ACDS
//*FORMAT  AC,USER=Bnnnnn,DDNAME=xxxxx
//*DATASET DDNAME=xxxxx

     (user data cards)

//*ENDDATASET
```

To transfer a file from a host computer to CMS the following job should be submitted:

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
//*PROCESS  PUNCH
//*FORMAT   PU,DDNAME=CARDS,DEST=ANLVM.Bnnnnn
//*PROCESS  PRINT  (optional - to print SYSMSG)
//*DATASET  DDNAME=CARDS

     (user data cards)

//*ENDDATASET
```

4.2 CCF TO HOST COMPUTER TRANSFERS

To transfer a file from the CCF requires running a job that punches the file to the CCF remote terminal 'ILN01'. This PUNCH file is then transferred back to the host computer via the ILN. There are several methods in which a PUNCH file can be generated. The following examples show some typical methods that can be used from OS batch, WYLBUR, and CMS.

To PUNCH a card deck to the CCF remote terminal 'ILN01' from OS batch, the following job should be submitted:

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
//*PROCESS PUNCH
//*FORMAT  PU,DDNAME=CARDS,DEST=ANLOS.ILN01
//*DATASET DDNAME=CARDS

     (user data cards)

//*ENDDATASET
```

To PUNCH the contents of a cataloged, sequential dataset to the CCF remote terminal 'ILN01', the following job should be submitted:

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
//*FORMAT PU,DDNAME=,DEST=ANLOS.ILN01
//  EXEC  SDSKCARD,INDSN='Cmmm.Bnnnnn.sample'
```

After either of the above jobs have run, the PUNCH output of the job can be moved to the host computer through the ILN using the FETCH command.

To PUNCH a dataset to the CCF remote terminal 'ILN01' from WYLBUR use the following commands:

```
USE datasetname
PUNCH DEST ANLOS.ILN01
```

This submits a WYLBUR punch job. After the job has run, the PUNCH output of the job can be moved to the host computer through the IIN using the FETCH command. This also produces a printed SYSMSG file that can be fetched through the ILN.

To PUNCH a dataset to the CCF remote terminal 'ILN01' from CMS, the following commands can be used:

```
CP SPOOL PUNCH TO VNET
CP TAG DEV PUNCH ANLOS ILN01
PUNCH myprog fortran
CP SPOOL PUNCH NOHOLD NOCONT CLOSE
```

After the job submitted by this sequence has run, the PUNCH output can be moved to the host computer through the ILN by using the FETCH command.

4.3 HOST COMPUTER TO HOST COMPUTER TRANSFERS

The transfer of data between host computers can be accomplished using the ILN RJE system. The scheme for doing the transfer is for the sending host computer to submit a job using the SUBMIT command that punches the data to be transferred to the CCF remote terminal 'ILN01'. The data transfer is completed when the recieving host computer computer retrieves the data using the FETCH command. For this transfer the following job should be submitted:

```
//jobname JOB (Fnnnnn,2,,2),CLASS=A
     account card
//*PROCESS PUNCH
//*FORMAT  PU,DDNAME=CARDS,DEST=ANLOS.ILN01
//*PROCESS  PRINT  (optional - to print SYSMSG)
//*DATASET DDNAME=CARDS

    (user data cards)

//*ENDDATASET
```

Appendix A

SUMMARY OF COMMANDS

```
BACKLOG

CANCEL <jobnumber>

EXIT

FETCH PRINT <jobnumber> <filespec>
FETCH PUNCH <jobnumber> <filespec>

HELP

INQUIRE

PRIORITY <jobnumber> <new priority>
PRTY <jobnumber> <new priority>

RESET

STATUS <badge>
STATUS <jobnumber>
STATUS <jobname>

SUBMIT <filespec>
```

Appendix B

ERROR MESSAGES

B.1 FROM THE ILN RJE FACILITY

CCF HAS JUST BECOME UNAVAILABLE - CCF or V73 communications processors have become unavailable during user request processing.

CCF UNAVAILABLE - CCF or V73 communications processors are presently unavailable.

DATA OVERFLOW - More data than expected was transferred from the ILN RJE utility program to the ILN RJE facility.

ILN RJE SYSTEM TESTING - Because of system testing, ILN resources for RJE are unavailable.

IMPROPER USE OF RESOURCE - The ILN RJE utility program has attempted to use a V73 communications processor's resource improperly.

INVALID JOB NUMBER/JOB NOT FOUND - Requested job was not found.

INVALID RESOURCE ALLOCATION - A second V73 communications processor's resource has been requested. Only one resource may be allocated for a user request.

INVALID RJE HEADER - The ILN RJE facility has received an invalid RJE header from the ILN RJE utility program.

MULTIPLE USE OF RESOURCE ATTEMPTED - The ILN RJE utility program has made a second attempt to use a V73 communications processor's resource before the first has completed.

NO RESOURCE HAS BEEN ALLOCATED TO SATISFY USER REQUEST - The ILN RJE utility program has requested the use of a V73 communications processor's resource not presently allocated to it.

RESOURCE CANCELLED BECAUSE OF INACTIVITY - The V73 communications processor's resource has been inactive for too long. The resource has been released and the request terminated.

RESOURCE CANCELLED BY USER - User has cancelled user request, and V73 communications processor's resource has been released.

RESOURCE REQUESTED NOT AVAILABLE - The V73 communications processor's resource needed to satisfy user request is already allocated to another user.

RJE RESOURCES BUSY - All ILN resources for RJE are allocated.

RJE RESOURCES UNAVAILABLE - ILN resources for RJE are unavailable.

B.2 FROM THE ILN RJE UTILITY PROGRAM

ERROR DURING DEALLOCATION OF THE ILN DRIVER, ERROR CODES ARE: X Y Z - An error occurred during the deallocation of the IIN driver. X, Y and Z are the RSX-11M QIO error codes.

ERROR RETURNED - The ILN RJE utility program has detected an error during program execution.

FILE CONTAINS NO DATA - The specified input file was empty.

FILE DOES NOT EXIST - The specified input file does not exist.

FILE READ ERROR - An error has occurred reading the input file.

FILE WRITE ERROR - An error has occurred writing to the output file.

FILENAME MISSING, USING "ILNx.DAT" - No filename was specified, and the ILN RJE utility program has generated one.

INQUIRY UNSUCCESSFUL - An INQUIRE command was returned with an error.

INVALID ID IN MESSAGE RECEIVED - The ILN RJE utility program has received an RJE header from the ILN RJE facility with an invalid ID field.

INVALID PROTOCOL NUMBER IN MESSAGE RECEIVED - The ILN RJE utility program has received an RJE header from the ILN RJE facility with an invalid protocol number.

INVALID SEQUENCE NUMBER IN MESSAGE RECEIVED - The ILN RJE utility program has received an RJE header from the ILN RJE facility with an invalid sequence number.

INVALID STATUS CODE IN MESSAGE RECEIVED - The ILN RJE utility program has received an RJE header from the ILN RJE facility with an unkown status code.

INVALID TYPE CODE IN MESSAGE RECEIVED - The ILN RJE utility program has received an RJE header from the ILN RJE facility with an invalid message type.

RESET FAILED - An attempt to reset the interface between the PDP-11 and the ILN failed.

RSX-11M COMMAND LINE FAILURE - The MCR command string entered by the user was greater than 80 characters.

TRANSFER FROM THE ILN FAILED, ERROR CODES ARE: X Y Z - A QIO error occurred while transferring data from the ILN. X, Y and Z are the RSX-11M QIO error codes.

TRANSFER TO THE IIN FAILED, ERROR CODES ARE: X Y Z - A QIO error occurred while transferring data to the ILN. X, Y and Z are the RSX-11M QIO error codes.

UNABLE TO ALLOCATE THE ILN DRIVER, ERROR CODES ARE: X Y Z - The driver is in use or must be loaded. X, Y and Z are the RSX-11M QIO error codes.

UNKNOWN KEYWORD "xxxxxxxx", TYPE HELP FOR LIST - An invalid command has been entered or the abbreviation used is too short.

Appendix C

ASCII-EBCDIC TRANSLATION TABLE

ASC-EBC	ASC-EBC	ASC-EBC	ASC-EBC	ASC-EBC	ASC-EBC
00 00	2B 4E	56 E5	81 21	AC 54	D7 AF
01 01	2C 6B	57 E6	82 31	AD 55	D8 B0
02 02	2D 60	58 E7	83 22	AE 56	D9 B1
03 03	2E 4B	59 E8	84 23	AF 57	DA B2
04 37	2F 61	5A E9	85 24	B0 58	DB B3
05 2D	30 F0	5B 4A	86 15	B1 59	DC B4
06 2E	31 F1	5C E0	87 06	B2 62	DD B5
07 2F	32 F2	5D 5A	88 17	B3 63	DE B6
08 16	33 F3	5E 5F	89 28	B4 64	DF B7
09 05	34 F4	5F 6D	8A 29	B5 65	E0 B8
0A 25	35 F5	60 79	8B 2A	B6 66	E1 B9
0B 0B	36 F6	61 81	8C 2B	B7 67	E2 BA
0C 0C	37 F7	62 82	8D 2C	B8 68	E3 BB
0D 0D	38 F8	63 83	8E 09	B9 69	E4 BC
0E 0E	39 F9	64 84	8F 0A	BA 70	E5 BD
0F 0F	3A 7A	65 85	90 1B	BB 71	E6 BE
10 10	3B 5E	66 86	91 30	BC 72	E7 BF
11 11	3C 4C	67 87	92 1A	BD 73	E8 CA
12 12	3D 7E	68 88	93 33	BE 74	E9 CB
13 13	3E 6E	69 89	94 34	BF 75	EA CC
14 3C	3F 6F	6A 91	95 35	C0 76	EB CD
15 3D	40 7C	6B 92	96 36	C1 77	EC CE
16 32	41 C1	6C 93	97 08	C2 78	ED CF
17 26	42 C2	6D 94	98 38	C3 80	EE DA
18 18	43 C3	6E 95	99 39	C4 8A	EF DB
19 19	44 C4	6F 96	9A 3A	C5 8B	F0 DC
1A 3F	45 C5	70 97	9B 3B	C6 8C	F1 DD
1B 27	46 C6	71 98	9C 04	C7 8D	F2 DE
1C 1C	47 C7	72 99	9D 14	C8 8E	F3 DF
1D 1D	48 C8	73 A2	9E 3E	C9 8F	F4 EA
1E 1E	49 C9	74 A3	9F E1	CA 90	F5 EB
1F 1F	4A D1	75 A4	A0 41	CB 9A	F6 EC
20 40	4B D2	76 A5	A1 42	CC 9B	F7 ED
21 4F	4C D3	77 A6	A2 43	CD 9C	F8 EE
22 7F	4D D4	78 A7	A3 44	CE 9D	F9 EF
23 7B	4E D5	79 A8	A4 45	CF 9E	FA FA
24 5B	4F D6	7A A9	A5 46	D0 9F	FB FB
25 6C	50 D7	7B C0	A6 47	D1 A0	FC FC
26 50	51 D8	7C 6A	A7 48	D2 AA	FD FD
27 7D	52 D9	7D D0	A8 49	D3 AB	FE FE
28 4D	53 E2	7E A1	A9 51	D4 AC	FF FF
29 5D	54 E3	7F 07	AA 52	D5 AD	
2A 5C	55 E4	80 20	AB 53	D6 AE	