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

by

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TABLE OF CONTENTS

Chapter	page
1. INTRODUCTION	1
2. RUNNING THE ILN RJE UTILITY PROGRAM	3
3. USER COMMANDS	4
Backlog	4
Cancel	5
Exit	6
Fetch	7
Help	8
Inquire	9
Priority	10
Reset	11
Status	12
Submit	13
4. TRANSFERRING FILES USING THE ILN RJE SYSTEM	14
Host Computer to CCF Transfers	14
CCF to Host Computer Transfers	16
Host Computer to Host Computer Transfers	18
 Appendix	 page
A. SUMMARY OF COMMANDS	19
B. ERROR MESSAGES	20
From the ILN RJE Facility	20
From the ILN RJE Utility Program	21
C. ASCII-EBCDIC TRANSLATION TABLE	23

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 RT-11 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 RT-11 operating system. The ILN RJE utility program may be run by typing ILNRJE<CR> or SY:ILNRJE<CR>.

```
.RUN ILNRJE<CR>
```

```
RT-11 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.

3.1 BACKLOG

3.1.1 Syntax

BACKLOG

3.1.2 Command Description

The BACKLOG command enables the user to obtain the CCF 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, DK, will be used.

3.4.3 Examples

This example demonstrates the retrieval of the PRINT file for job 9999, written to the file, DX1:PRINT.DAT.

```
ILN>FETCH PRINT 9999 DX1: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>
PTY <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  
PTY 09 TO PTY 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, DK, will be used.

3.10.3 Examples

This example demonstrates the submission of the file, DX1:DATA1.JOB, as a job:

```
ILN>SUBMIT DX1: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=TS PERM
//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 SYMSG)
//*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='Cmm.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 ILN 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 receiving host 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 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 unknown 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.

NO AVAILABLE CHANNELS, ERROR CODE IS: X - An error occurred while allocating a software channel for the DR11-C interface. X is the RT-11 IGETC error code.

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

TRANSFER FROM THE ILN FAILED, ERROR CODE IS: X - An EMT error occurred while transferring data from the ILN. X is the RT-11 EMT error code.

TRANSFER TO THE ILN FAILED, ERROR CODE IS: X - An EMT error occurred while transferring data to the ILN. X is the RT-11 EMT error code.

UNABLE TO OPEN DR11-C, ERROR CODE IS: X - An error occurred while opening the software channel for the DR11-C interface. X is the RT-11 LOOKUP error code.

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

Appendix C

ASCII-EBCDIC TRANSLATION TABLE

<u>ASC-EBC</u>	<u>ASC-EBC</u>	<u>ASC-EBC</u>	<u>ASC-EBC</u>	<u>ASC-EBC</u>	<u>ASC-EBC</u>
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	FC 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	