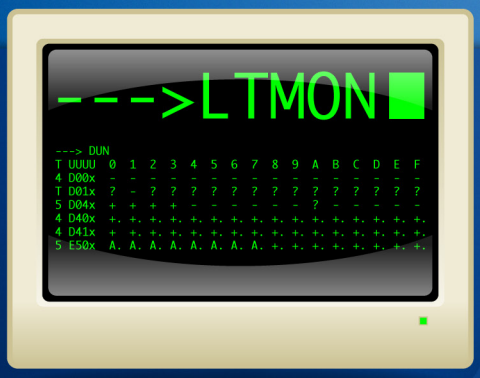
CHANNEL GATEWAY X



LTMon™ User's Guide

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LTMon User’s Guide
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Luminex Software, Inc.
871 Marlborough Avenue
Riverside, CA 92507

Phone: +1 (951) 781-4100
Fax: +1 (951) 781-4105

info@luminex.com
www.luminex.com

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1. Overview

1.1 Channel Gateway

The Luminex Channel Gateway is a rack mounted server that emulates mainframe 3490 and/or 3590 tape drives. It connects to the mainframe via FICON or ESCON channels. The mainframe tape media is identified by VOLSER from the mainframe. Each VOLSER corresponds to a set of open systems files on whatever open systems storage device has been attached to the Channel Gateway server. None of the files related to a VOLSER reside in the Channel Gateway.

The Channel Gateway has a TCP/IP browser interface that allows computer operations personnel to view activity in the Channel Gateway, perform tape operator functions and other functions.

1.2 LTMon

Luminex Tape Monitor (LTMon) is a mainframe z/OS started task that facilitates operator communication with Luminex Channel Gateways. The operator uses the MVS modify command to pass commands to the LTMon started task. Responses are displayed on the console. In addition, LTMon will fetch and display alert messages to the master console from the Channel Gateways. To communicate with a Channel Gateway, LTMon must allocate and open a tape data set via any available drive on that server.

1.3 Batch Utilities

1.3.1 Admin+

Admin Plus is a batch interface to the Luminex Channel Gateways for administrative functions. Commands are passed via a SYSIN file and responses are returned via a SYSPRINT file. To communicate with a channel gateway, the Admin+ program must allocate and open a tape dataset via any available drive on that server.

1.3.2 Scratch Update Utility

The Luminex Scratch Update Utility (LSCRUP) is used to extract a list of scratch VOLSERs from your existing tape management report. A subsequent IEBGENER step then writes that scratch list to the Luminex Channel Gateway server. If the server has been defined as an MTL (manual tape library), then you must also generate IDCAMS ALTER VOLUMEENTRY statements and update the TCDB (tape catalog data base, SYS1. VGENERAL). The list of supported vendors and report formats in the sample JCL provided in “3.2 Scratch Update Utility”.

2. LTMon Commands

Many of the LTMon commands are sent to multiple Channel Gateway servers simultaneously. The response from a server is displayed as soon as that server is done. Since these responses can arrive in no particular order, LTMon will usually precede the response with the following line.

```
LUMSERV: cgname unique-cg-number name-of-requested-command
```

Here is an example of this line followed by the response to the DSP command.

```
---> DSP
LUMSERV: CG1 00003B3C9D09 DSP
Scratch Pool Count Next
scratch.pool 0
3490.pool 2219 X00001 X00002 X00003 X00004 X00005 X00006 X00007 X00008
```

The full syntax is as follows.

F *started-task-name*,*command-and-arguments*

There is a help "H" command that displays a short summary of operator commands. If the name of the Luminex Tape Monitor started task is "LTMON", then the full command would be

```
F LTMON,H
```

In the following descriptions, the "F *started-task-name*," is always omitted (and assumed). If the LTMon program is running within a job instead of a started task PROC, then use the job name instead of *started-task-name*.

Some commands have an optional argument. If optional, that argument is shown in angle braces "<" and ">".

Syntax is shown in COURIER font. Upper-case parts represent literal syntax. Lower-case parts of the syntax represent the kind of an argument that must be inserted at that point. Italicized parts of the syntax represent variables.

2.1 Command: H

Description: Displays a quick reference list of operator modify commands for LTMon.

```
---> H
 DUN             ... Display luminex tape UNits
 DAC             ... Display ACtive  tape units
 DNED dev        ... Display device NED from Memory
 FNED dev        ... Display device NED from device
 DDEV dev        ... Display cg DEVice status
 DCAP            ... Display storage CAPacity
 DSP <dev>       ... Display Scratch Pools
 DAL             ... Display ALert messages CG&DDR
```

```
DALCG           ... Display ALert messages CG
DALDDR          ... Display ALert messages DDR
DCG             ... Display Channel Gateway servers
DDS             ... Display Data Servers
DREP dataserver ... Display REPlication status
DV volser       ... Display Volser info

HDUN            ... Help for DUN symbols
HDAC            ... Help for DAC symbols
HALTALL         ... terminal all monitor subtasks
PSTOP           ... terminate processing and quit

DISC            ... DISCover servers and tape units
LSE             ... List defined SErvers
LDE             ... List defined DEvices (& Servers)
LMO             ... List MOnitor subtask status
```

2.2 Command: DUN

DUN: Display luminex tape UNits

Description: Displays a condensed summary of known Luminex tape devices and their current status. The "T" column refers to the device type: 4=3490, 5=3590, T=unknown tape model. The "UUUU" contains a partial device number with "x" instead of the last hex digit. The remaining columns provide that last hex digit of the device number and a status code at the intersection of row and column. An explanation of the status codes is available through the HDUN command.

```
---> DUN
T UUUU  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
4 D00x  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
T D01x  ?  -  ?  ?  ?  ?  ?  ?  ?  ?  ?  ?  ?  ?  ?  ?
5 D04x  +  +  +  +  -  -  -  -  -  -  ?  -  -  -  -  -
4 D40x  +. +. +. +. +. +. +. +. +. +. +. +. +. +. +. +.
4 D41x  +  +. +. +. +. +. +. +. +. +. +. +. +. +. +. +.
5 E50x  A. A. A. A. A. A. A. A. +. +. +. +. +. +. +. +.
```

2.3 Command: HDUN

HDUN: Help for DUN symbols

Description: Explains the device status codes that are displayed by the DUN command.

```
---> HDUN
DUN DISPLAYS 1 OR 2 CHARS PER LUMINEX DEVICE (UNIT).
CHAR 1:  ?  MEANS NOT ONLINE SINCE IPL
         -  MEANS NOT ONLINE
         +  MEANS     ONLINE
         *  MEANS     ONLINE AND ALLOCATED BY LUMOPR
         A  MEANS ASSIGNED
         S  MEANS IN USE BY SYSTEM FUNCTION
CHAR 2:   . MEANS NOT ALL PATHS ONLINE
          F MEANS PENDING OFFLINE
          X MEANS ASSIGNED ELSEWHERE (OTHER LPAR)
```

"T" Column contains tape model: 4=3490, 5=3590, T=unknown.
"UUUU" Column contains partial device number.
The remaining column contain status codes for each Luminex tape device.

2.4 Command: DAC

DAC: Display ACtive tape units

Description: Displays the current status of each active tape drive. An active tape drive is one that is allocated or in use. An explanation of the status codes is available through the HDAC command.

```
---> DAC
1700 *  ##1700 AS=00AE DYNPATH
D042 *  ##D042 AS=00AE DYNPATH AUTOSW
D41F *  ##D41F AS=00AE NOTRDY INTVNEED DYNPATH
DB03 *  ##DB03 AS=00AE DYNPATH AUTOSW
DB17 *  ##DB17 AS=00AE DYNPATH
E500 A. XE500X AS=0046 DYNPATH
E501 A. XE501X AS=0044 DYNPATH
E502 A. XE502X AS=004B DYNPATH
E50F *. ##E50F AS=00AE DYNPATH
EA00 A. LU9500 AS=0048 DYNPATH
```

2.5 Command: HDAC

HDAC: Help for DAC symbols

Description: Explains most of the device status codes that are displayed by the DAC command. The second column of the DAC response contains unit status codes that are the same as the DUN command and explained by the HDUN command.

```
---> HDAC
 DAC DISPLAYS INFO ABOUT EACH ALLOCATED LUMINEX DEVICE.
 COL1-4  IS DEVICE NUMBER.
 COL6-7  IS THE SAME UNIT STATUS AS SHOW BY DUN COMMAND.
 COL9-14 IS CURRENTLY MOUNTED VOLSER.
 AS= SHOWS ADDRESS SPACE ID THAT ALLOCATED THE DRIVE.
 MNT-NOTREQ BIT:UCBJBNR,UCBMMSGP MOUNT NOT REQUESTED
 VORSN      BIT:UCBWGT,UCBVORSN  OPERATOR REASON FOR VARY
 VHRSN      BIT:UCBWGT,UCBVORSN  HIERARCH REASON FOR VARY
 VLRSN      BIT:UCBWGT,UCBVLRSN  LIBRARY  REASON FOR VARY
 NOTRDY     BIT:UCBFLA,UCBNRY    UNIT IS NOT READY
 PERMERR    BIT:UCBFLA,UCBPERM   SUBCHAN NOT USABLE
 HALT       BIT:UCBFLA,UCBHALT   HALT IN PROGRESS
 CLEAR      BIT:UCBFLA,UCBCLEAR  CLEAR IN PROGRESS
 BOXED      BIT:UCBFLA,UCBBOX    DEVICE IS BOXED
 INTERCEPT  BIT:UCBFLB,UCBINCPT  SPECIAL INTERCEPT PEND
 HOTIO      BIT:UCBFLB,UCBHDET   HOT IO DETECTED
 INTVREQ    BIT:UCBFLC,UCBIVRS   INTERVENTION REQUIRED
 INTVNEED   BIT:UCBFLC,UCBIVRR   INTERVENTION NEEDED
 DDR        BIT:UCBFLC,UCBDDRSW  DDRSWAP WANTED
 DDRSWAP    BIT:UCBFLP1,UCBSWAPF SWAP ALLOWED & WANTED
 SMS        BIT:UCBFL6,UCBSMSMM  UNDER SMS CONTROL
 DYNPATH    BIT:UCBFLP1,UCBDYNPH DYNAMIC PATHING ENABLED
```

```
MULTISYS   BIT:UCBFL7,UCBMASGN  MULTISYS ASSIGN ACTIVE
AUTOSW     BIT:UCBFL7,UCBAUTOS  AUTOSWITCHING ACTIVE
BUSY       BIT:UCBFLA,UCBSTRT   IO IN PROGRESS
REWINDING  BIT:UCBWGT,UCBREW    TAPE REWINDING
UNLOADING  BIT:UCBSTAT,UCBUNLD  TAPE UNLOADING
```

2.6 Command: DNED dev

DNED: Display device NED from memory

Description: Displays the NED that was last fetched from the device. The NED contains information about the equipment model and identity. The DUN command displays the devices that can be used with this command.

```
---> DNED E502
E502 DV NED  CC010200 003590 B10 DWD Ca con13b3c9d09 1002
E502 CU NED  CC020000 003590 A00 DWD Ca con13b3c9d09 1002
E502 NED     EC000000 003590 B10 DWD Ca con13b3c9d09 1002
E502 GNEQ    80800080 00008C8C 00000000 00000000 00000000 00000000 00000000 0000
```

Note: NED means Node Element Descriptor. These are used to uniquely identify each mainframe device and some of the major components of that device.

2.7 Command: FNED dev

FNED: Fetch device NED from device

Description: Fetches the current NED from the device and displays the NED. The NED contains information about the equipment model and identity. The DUN command displays the devices that can be used with this command.

```
---> FNED E501
E501 DV NED  CC010200 003590 B10 DWD Ca con13b3c9d09 1001
E501 CU NED  CC020000 003590 A00 DWD Ca con13b3c9d09 1001
E501 UNK NED 00000000 000000000000 000000 000000 0000 00000000000000000000000000 0
E501 NED     EC000000 003590 B10 DWD Ca con13b3c9d09 1001
E501 GNEQ    80800080 00008C8C 00000000 00000000 00000000 00000000 00000000 0000
```

2.8 Command: DDEV devnum

DDEV: Display channel gateway DEVice status

Description: Displays information about the specified tape device from the perspective of the Luminex Channel Gateway server (LUMSERV below). The DUN command displays the devices that can be used with this command.

```
---> DDEV 0490
LUMSERV: CG1              500034970B8D  DDEV
Device is Ready, No tape loaded
```

2.9 Command: DCAP

DCAP: Display storage CAPacity

Description: Displays capacity information from tape data server(s).

```
---> DCAP
LUMSERV: CG1             00003B3C9D09  DCAP
/var/spool/dd690/spool1
Filesystem            kbytes    used   avail capacity  Mounted on
10.10.10.100:/backup/replicate 5270943744 61673472 5209270272     2%    /var/
spool/dd690/spool1
```

2.10 Command: DSP <dev>

DSP: Display Scratch Pools

Description: Displays information about each defined scratch pool. If a device number is specified, then only the scratch pools accessible from that device are displayed. The DUN command displays the devices that can be used with this command.

```
---> DSP
LUMSERV: CG1             00003B3C9D09  DSP
Scratch Pool       Count  Next
scratch.pool       0
3490.pool          2219   X00001 X00002 X00003 X00004 X00005 X00006 X00007 X00008
X00009 X00010
```

2.11 Command: DAL

DAL: Display ALert messages from channel gateway and ddr

Description: Displays any current ALERT messages from each Luminex Channel Gateway and each data server. This command invokes DALCG and DALDDR.

```
---> DAL
LUM009-CG1     - Server cg1 - Device has been idle for 126 seconds
LUM101-CG1     - Only 52 scratch tapes in /opt/DWexpress/scratch.pool
LUM103-DD890NY2     Tue Sep 14 08:50   Encl 2 (SHU8959001073A8) Disk 15 has
failed and should be replaced
```

2.12 Command: DALCG

DALCG: Display ALert messages from channel gateway

Description: Displays any current ALERT messages from each Luminex Channel Gateway.

```
---> DALCG
LUM009-CG1     - Server cg1 - Device has been idle for 126 seconds
LUM101-CG1     - Only 52 scratch tapes in /opt/DWexpress/scratch.pool
```

2.13 Command: DALDDR

DALDDR: Display ALert messages DDR

Description: Displays any current ALERT messages from each data server.

```
---> DALDDR
LUM103-DD890NY2     Tue Sep 14 08:50   Encl 2 (SHU8959001073A8) Disk 15 has
failed and should be replaced
```

2.14 Command: DCG

DCG: Display Channel Gateway servers

Description: Displays identifying information about each Channel Gateway server. A command is sent to each Channel Gateway to obtain the information. As each Channel Gateway responds, the gathered information is displayed.

```
---> DCG
LUMSERV: CG1               00003B3C9D09  IP: 10.211.1.11
LUMSERV: CG2               000034970B8D  IP: 10.211.1.21
LUMSERV: CG4               000034975A2E  IP: 10.211.1.31
LUMSERV: CG3               000034971192  IP: 10.211.1.41
```

2.15 Command: DDS

DDS: Display Data Servers

Description: Displays identifying information about each Data Server.

```
---> DDS
LUMSERV: CG1             00003B3C9D09  DDS
DD890NY1 NFS DDR 10.10.10.110
DD890NY2 NFS DDR 10.10.10.120
```

2.16 Command: DREP dataserver

DREP: Display REPlication status

Description: Displays a report about the current replication status. Due to the large amount of output from this command, the use of Admin+ is advised. A list of valid dataserver names can be obtained from the DDS command.

```
---> DREP DD890NY1
LUMSERV: CG1             00003B3C9D09  DREP
DD890NY1 Replication Configuration
CTX        : 1
Source     : dir://dd690.luminex.com/backup/replicate
Dest       : dir://dd510.luminex.com/backup/replicate
Connection : dd690.luminex.com* (default)*
Status     : yes
DD890NY1 Replication status
CTX:                       1
Mode:                      destination
Destination:               dir://dd510.luminex.com/backup/replicate
Enabled:                   yes
Local filesystem status:   enabled
Connection:                connected since Thu Sep  2 06:19:24
State:                     normal
Error:                     no error
```

```
Sync ed-as-of time:        Mon Sep 13 01:32
Current throttle:          unlimited
DD890NY1 Replication Statistics
CTX        : 1
Dest       : dir://dd690.luminex.com/backup/replicate
Post-Comp Bytes Sent     : dir://dd510.luminex.com/backup/replicate
Pre-Comp Bytes Sent      : dd690.luminex.com*
Pre-Comp Bytes Recieved  : (default)*
Sync ed as of Time       : yes
Pre-Comp Bytes Remaining :
```

2.17 Command: `DV volser`

DV: Display Volser info

Description: Displays information about the specified tape VOLSER. Since there is no LTMon facility for listing all VOLSERs within the care of the Luminex Channel Gateway, the VOLSER argument would have to come from some other external list or report such as a tape management system inventory report.

```
---> DV 507262
LUMSERV: CG1             00003B3C9D09  DV
Volser - 507262
Scratch - N
Location - /var/spool/dd880mf1/spool1
Size - 0.88K
Dataset - GJS1.MAINT.ZOS11A
Date Written - Sat Aug 11 13:54:29 2010
```

Note: Dataset display only includes the last 17 characters.

2.18 Command: `HALTALL`

HALTALL: terminate all monitor subtasks

Description: Deallocates all tape drives currently allocated to LTMon, and terminates the corresponding subtasks. This command should be issued prior to taking Luminex devices offline.

```
---> HALTALL
HALTING ALL ACTIVE MONITOR TASKS (STOP IMMEDIATE)
IEF234E K E50F,ZZE50D,PVT,LTMON,LTMON
IEF234E K D06F,ZZD06D,PVT,LTMON,LTMON
IEF234E K D05F,ZZD05D,PVT,LTMON,LTMON
LUMOPR IS NOW IDLE -- NO MONITOR DEVICES
```

2.19 Command: `PSTOP`

PSTOP: terminate processing and quit

Description: Terminates the LTMon program. The program can also be terminated via the MVS PSTOP command "`P` *`started-task-name`*", by "`CANCEL` *`started-task-name`*" or by "`F` *`started-task-name`*`,PSTOP`".

```
---> PSTOP
NO ACTIVE MONITOR TASKS
MXLUMOPR EXITING PROGRAM
IEF404I LTMON - ENDED - TIME=00.25.38
$HASP395 LTMON    ENDED
```

2.20 Command: DISC

DISC: DISCover servers and tape units

Description: Augments the list of servers and devices that may have been defined in the config file by scanning all UCB's and looking for Luminex Channel Gateways. This command also corrects the TAG and MT values that are displayed by the LDE command.

```
---> DISC
SERVER/DEVICE DISCOVERY COMPLETED
```

2.21 Command: LSE

LSE: List defined SErvers

Description: Lists all servers that are currently known to LTMon.

```
---> LSE
CG1       SERVER IP=10.33.10.101    SER=00003B3C9D09
```

2.22 Command: LDE

LDE: List defined DEvices and servers

Description: Lists all servers and corresponding devices that are currently known to LTMon. Note: the values for TAG and MT values are refreshed by the DISC command for all Channel Gateway devices that have NED information.

```
---> LSE
CG1       SERVER IP=10.33.10.101    SER=00003B3C9D09
           DEV=E500 TAG=2000 MT=003490C22
           DEV=E501 TAG=2001 MT=003490C22
           DEV=E502 TAG=2002 MT=003490C22
           DEV=E503 TAG=2003 MT=003490C22
           DEV=E504 TAG=2004 MT=003490C22
           DEV=E505 TAG=2005 MT=003490C22
           DEV=E506 TAG=2006 MT=003490C22
           DEV=E507 TAG=2007 MT=003490C22
           DEV=E508 TAG=2008 MT=003490C22
           DEV=E509 TAG=2009 MT=003490C22
           DEV=E50A TAG=200A MT=003490C22
           DEV=E50B TAG=200B MT=003490C22
           DEV=E50C TAG=200C MT=003490C22
           DEV=E50D TAG=200D MT=003490C22
           DEV=E50E TAG=200E MT=003490C22
           DEV=E50F TAG=200F MT=003490C22
```

DEV=device number, TAG=internal Channel Gateway device session number, MT=device type and model.

2.23 Command: LMO

LMO: List MOnitor subtask status

Description: Lists each LTMon subtask, information about its status, and any commands that are in progress or that have not been fully processed.

The DAL, DALCG, and DALDDR commands are not deleted until they have been superseded by a newer display of alerts. This is so that LTMon can keep track of what alerts have been displayed on the master console. Other commands may also be retained in DONE status for the purpose of eliminating duplicate responses. These will be deleted when all Channel Gateways have responded to that particular command.

For each Channel Gateway, the following is displayed on one line: Channel Gateway name, device number that is being used to monitor the Channel Gateway, number of active commands, current status of the Channel Gateway monitor subtask, and status time. Subsequent lines for that Channel Gateway contain: command name, request status, message id, and status time. The request status can be: WAIT=initiated, ERROR=command failed, TIMEOUT=never completed, or DONE=command finished normally. The MSGID is assigned when a command is started and is used to pick up the command response. The status time is updated whenever the command request changes status. Supplemental information about the command may be displayed to the right of the time.

```
---> LMO
CGSERVER MDEV ACTV STATUS      TIME=232527
CG1     E50F 0    WAITING FOR WORK 232527
 DALDDR   DONE    MSGID=100F0002    232222
 DALDDR   DONE    MSGID=100F0004    232223
 DALDDR   DONE    MSGID=100F0005    232222
 DALCG    DONE    MSGID=100F0001    232226
CG2     D05F 1    WAITING FOR WORK 232527
 DALDDR   DONE    MSGID=210F0045    232222
 DALDDR   TIMEOUT MSGID=210F0046    232436
 DALDDR   DONE    MSGID=210F0047    232222
 DALCG    DONE    MSGID=210F0043    232240
CG3     D06F 1    WAITING FOR WORK 232527
 DALDDR   DONE    MSGID=310F0043    232222
 DALDDR   DONE    MSGID=310F0044    232223
 DALDDR   DONE    MSGID=310F0045    232222
 DALCG    DONE    MSGID=310F0041    232240
```

2.24 Command: HH

Description: Lists diagnostic commands that are usually not needed by operators and config statements that are prepared during LTMon install and configuration. The commands may be needed by a systems programmer in unusual situations. The config statements are used in the configuration parameter file and documented in “LTMon Installation and Configuration Guide.”

```
---> HH
 DVER            ... Display program VERsion
 LRQ             ... List ReQuest blocks
 LBT             ... List BaTch   blocks
 LMB             ... List Monitor Blocks
 LCB             ... List Control Blocks
 LHIST           ... List script HISTory
 D xaddr.xlen    ... Display storage

CONFIG STATEMENTS
 CHKALERT=
 IDALSECS=
 IDALFEAT=
 CMDWAITWNG=
 CMDWAITMAX=

 TLABEL=
 TDISP=
 TDPRE=
 TDSUFUUUX=
 SERVER= NAME= IP= V=
 DEV= TAG= MT= V=
 DDR=
```

2.25 Command: DVER

DVER: Display program VERsion

Description: Displays the current version of the LTMon programs. Use to check that the correct version of LTMon has been installed.

```
---> DVER
    PGM=MXLUMOPR VER=01.01.12 UPD=(2010-09-13 08:12:35)
    PGM=MXLUMOPT VER=01.01.12 UPD=(2010-09-13 07:17:37)
```

2.26 Command: LRQ

LRQ: List ReQuest blocks

Description: Lists all command requests that have not been fully processed. Use to gather diagnostic information for support.

```
---> LRQ
RQ=00062080 LISTN=00062178 BATNEXT=00062178 HNEXT=00000000 SNEXT=00000000
   E50F DONE     BT=00061380 CG=119030C0 TCBA=00000000 FRE=N DON=Y
RQ=00062178 LISTN=00062270 BATNEXT=00062270 HNEXT=00000000 SNEXT=00000000
   D05F WAIT     BT=00061380 CG=11903180 TCBA=00000000 FRE=N DON=N
RQ=00062270 LISTN=00062368 BATNEXT=00000000 HNEXT=00000000 SNEXT=00000000
   D06F WAIT     BT=00061380 CG=11903240 TCBA=00000000 FRE=N DON=N
```

2.27 Command: LBT

LBT: List BaTch   blocks

Description: Lists all batches of command requests that have not been fully processed. Use to gather diagnostic information for support.

```
---> LBT
BT=00061380 PG=00032FC4 CT=3    DN=3     FRQ=00062080   LBT
            SCRIPT=SERVERGETALERT
            E50F RQ=00062080 DONE     ID=100F0001 TRY=14   BUF A=00063000 L=0077
            D05F RQ=00062178 DONE     ID=210F0043 TRY=23   BUF A=00064000 L=004B
            D06F RQ=00062270 DONE     ID=310F0041 TRY=23   BUF A=00065000 L=004B
```

2.28 Command: LMB

LMB: List Monitor Blocks

Description: Lists all monitor control blocks. Use to gather diagnostic information for support.

```
---> LMB
MB=11906000 NEXT=11907000 TCBA=008E0BB8 CWAKE=808FC5F8
   E50F RQHOLD=00000000 RQNEW=00000000 STOP=  TERM=  ST=WAITING FOR WORK
MB=11907000 NEXT=11908000 TCBA=008E08E8 CWAKE=808DE198
   D05F RQHOLD=00000000 RQNEW=00000000 STOP=  TERM=  ST=WAITING FOR WORK
MB=11908000 NEXT=00000000 TCBA=008E0618 CWAKE=808DE110
   D06F RQHOLD=00000000 RQNEW=00000000 STOP=  TERM=  ST=WAITING FOR WORK
```

2.29 Command: LCB

LCB: List Control Blocks

Description: Lists other LTMon control blocks. Use to gather diagnostic information for support.

```
---> LCB
000380A8-000396D7 = LUMOPR WORKAREA
000396D8-0004AFFF = LUMOPR BUFFERS
     CGANCHOR=11903000 USEDBT=00061380  TOPRQ=00062080
     CURR CG=11903180 DEV=11905DC8 BT=00000000 RQ=00062178 MB=11907000
```

2.30 Command: LHIST

LHIST: List script HISTory

Description: Lists the most recent scripts for each monitor device. Use to gather diagnostic information for support.

```
---> LHIST
CG1     E50F  WAITING FOR WORK   LHIST
   00:26:22 SERVERGETCAP
   00:43:40 SERVERGETDDRREPSTATUS DD890NY1
   00:45:09 SERVERGETVOLINFO ZZCG1
   01:01:10 SERVERGETCAP
   01:01:17 SERVERGETALERT
```

2.31 Command: `D xaddr,xlen`

D: Display storage

Description: Displays storage contents. Warning: this command can cause LTMon to abend if an invalid storage address is displayed. Use as directed to gather diagnostic information for support.

```
---> D 999999.10
IEA995I SYMPTOM DUMP OUTPUT  128
SYSTEM COMPLETION CODE=0C4  REASON CODE=00000011
```

3. Batch Utilities

Luminex provides two batch utility programs for use with the Channel Gateway. Admin+ executes server scripts and puts the responses to a report DD. The Scratch Update batch utility reads selected tape inventory reports from other vendors and updates the scratch list on the Channel Gateway.

3.1 Admin+

Admin+ is a batch program for z/OS that sends commands to the Channel Gateway and retrieves responses to those commands. It uses an in-channel method for communicating to the server via an open tape data set.

New Admin+ commands can be implemented as needed without requiring any changes to the mainframe program other than placing the new command into the JCL that invokes Admin+.

Some of these functions are also available via LTMon. For a list of corresponding commands, see “Appendix A. LTMon Command to Admin+ Script Cross Reference”.

Here is sample JCL for the Admin+ program.

```
//ADMPLUS EXEC PGM=LUMADM
//TAPECTL  DD  DSN=VENDOR.LUM.ADMPLUS.&VOLF,DISP=(NEW,KEEP),
//             DCB=(RECFM=FB,LRECL=4096,BLKSIZE=32768),
//             UNIT=&DEVF,VOL=(PRIVATE,,,1,SER=&VOLF)
//REPORT   DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//STEPLIB  DD DSN=VENDOR.LUM.LOADLIB,DISP=SHR     (NO APF AUTH)
//SYSUT1   DD *       ADMIN+ FUNCTION(S) TO BE PERFORMED
TIMESET
GET UNAME-a
GET CAP
/*
```

Output from the program shows each command that was requested, immediately followed by the corresponding output.

```
================================================================================
 ADMIN+    TIMESET
   (the Channel Gateway server environment will appear here)
   Fri Jul 30 10:56:03 PDT 2010
   Fri Jul 30 10:56:03 PDT 2010
   Fri Jul 30 10:56:03 PDT 2010
 ================================================================================
 ADMIN+    GET UNAME-a
   (the Channel Gateway server environment will appear here)
   Fri Jul 30 10:56:03 PDT 2010
 ================================================================================
 ADMIN+    GET CAP
   10.10.10.100:/backup/replicate SIZE: 4.9T  USED: 441G  CAPACITY: 9%
```

3.2 Scratch Update Utility

The LSCRUP program is used to extract a list of scratch VOLSERs from your existing tape management report. A subsequent IEBGENER step them writes that scratch list to the Luminex Channel Gateway server. If the server has been defined as an MTL (manual tape library), then you must also generate IDCAMS ALTER VOLUMEENTRY statements and update the TCDB (tape catalog data base, SYS1.VGENERAL).

Both of the provided sample jobs have an EOJ statement (//) that prevents the actual update steps (ALTERVOL, SERVRUPD) from executing. You must remove this EOJ after you have finished testing the EXTRACT step, or else the scratch list will not be updated.

The Luminex Channel Gateway default configuration is for a single scratch pool. This scratch pool is updated whenever a list of scratch VOLSERs is written to a special tape VOLSER that is assigned to that scratch pool. This special tape VOLSER is usually SCRTAP. If there are multiple scratch pools or if a particular VOLSER range is assigned to the Channel Gateway, then SCRTAP is not appropriate.

One possible convention is to use the lowest VOLSER in the range of scratch VOLSERs as the scratch update special VOLSER. For example, if VOLSERs 500000 through 699999 were assigned to the Luminex Channel Gateway, then it would make sense for VOLSER 500000 to be designated as the special scratch update VOLSER. This means that VOLSER 500000 would have to be set aside with a data set that never expires so that the VOLSER never goes scratch. This data set name would then be specified in the SERVRUPD SYSUT2 DD statement with a disposition of OLD, KEEP.

If you have a disaster recovery plan that has a separate set of output VOLSERs for the DR site, then you might want to set up a separate LSCRUP job for those VOLSERs.

The following is a copy of the sample job for updating the scratch list if the Channel Gateway has been installed as a manual tape library (MTL).

```
//LSCRMTL  JOB 0,0,PRTY=3,
//         CLASS=A,MSGCLASS=E,NOTIFY=&SYSUID
//*****************************************************************
//*
//* LUMINEX SCRATCH LIST UPDATE
//*   EXTRACTS SCRATCH VOLSERS FROM TAPE MANAGEMENT REPORT.
//*   ACCEPTS TLMS REPORTS: 003 018 043
//*   ACCEPTS TMS  REPORTS: 05  49  TMEVSNM
//*   ACCEPTS RMM  REPORTS: EDGRPT01
//*   IGNORES ALL OTHER REPORTS THAT MIGHT BE INCLUDED IN TAPERPT.
//*
//*   THE REPORT FILE CAN BE USE FIXED OR VARIABLE BLOCKS.
//*   MOST IMPORTANT: THE FILE MUST HAVE ASA OR MACH CARRIAGE CONTROL.
//*
//*  USE THIS SAMPLE JOB IF THE LUMINEX GATEWAY IS DEFINED AS AN MTL.
//*
//*  AN MTL IS DEFINED AS MTL=YES WITH A LIBRARY ID IN THE HCD/IODF.
//*  VOLSERS IN AN MTL MUST BE DEFINED IN THE TCDB (IE: SYS1.VGENERAL).
```

```
//*  WHEN A VOLSER CHANGES TO SCRATCH STATUS, THE TCDB VOLUMEENTRY
//*  FOR THIS VOLSER MUST ALSO BE ALTERED TO SCRATCH STATUS.
//*
//*  THE ALTERVOL STEP CHANGES THE VOLUMEENTRIES IN TCDB TO SCRATCH.
//*  THE SERVRUPD STEP WRITES THE SCR VOLSER LIST TO LUMINEX SERVER.
//*  YOU MAY WANT TO SKIP THESE TWO STEPS DURING PRELIMINARY TESTING.
//*
//*******************************************************************
//* REPLACE THE FOLLOWING WITH SITE-SPECIFIC VALUES.
//*
// SET  LOADLIB=VENDOR.LUMINEX.LOADLIB
// SET     IDSN=VENDOR.LUMINEX.TAPE.REPORT    INPUT TAPE REPORT DSN
// SET     OPRE=VENDOR.LUMINEX.LSCRUP         OUTPUT DSN PREFIX
// SET SCRPOOL1=SCRUPD                   SCRATCH POOL (1-6 ALPHANUM)
// SET DASDALOC='UNIT=SYSDA'             OR SMS CLASS(ES)
// SET  LUMUNIT=LUMVTL       ESOTERIC FOR DRIVES USING THIS SCR POOL
// SET  LUMUPDV=SCRUPD       SPECIAL TAPE VOLSER ON SERVER FOR SCR UPDT
//*******************************************************************
//OUT     EXEC PGM=IEFBR14
//SP1      DD DSN=&OPRE..SP&SCRPOOL1,
//            DISP=(MOD,DELETE),SPACE=(TRK,(1,1)),UNIT=SYSALLDA
//TUPD     DD DSN=&OPRE..TCDBUPD,
//            DISP=(MOD,DELETE),SPACE=(TRK,(1,1)),UNIT=SYSALLDA
//*******************************************************************
//* THESE COMMA-DELIMITED PARMS MUST APPEAR IN THIS ORDER IF SPECIFIED.
//* HIDESKIP  ... CAUSES THE SKIPPED VOLSER MSGS TO BE SUPPRESSED.
//* SP= SCRATCH POOL NAME (1-6 CHARS) AND SP DD NAME SUFFIX.
//* V=  VOL PREFIX OR VOLSER-VOLSER RANGE.
//* SG= STORAGE GROUP NAME TO BE INSERTED INTO ALTER VOLUMEENTRY STMTS.
//* W=  SCRATCH WARNING THRESHOLD FOR WARNING MSG AND RETCODE=4.
//* THE FOLLOWING PARMS ARE REQUIRED: SP= V=
//* EXAMPLE: PARM='HIDESKIP,SP=1,V=555,SG=LUMVTL,W=1000'
//* EXAMPLE: PARM='SP=1,V=375000-549999'
//*
// SET P='SP=1,V=375000-549999,SG=LUMVTL,W=1000'     <-- MODIFY THIS
//*******************************************************************
//EXTRACT  EXEC PGM=LSCRUP,REGION=300K,PARM='&P'
//STEPLIB  DD DISP=SHR,DSN=&LOADLIB                    (NO APF AUTH)
//DATAIN   DD DISP=SHR,DSN=&IDSN                                    IN
//SP1      DD DSN=*.OUT.SP1,                                        OUT
//            DISP=(NEW,CATLG),SPACE=(TRK,(15,30)),
//            DCB=(BLKSIZE=6000,LRECL=6),&DASDALOC
//TCDBUPD  DD DSN=*.OUT.TUPD,                                       OUT
//            DISP=(NEW,CATLG),SPACE=(TRK,(30,300)),
//            DCB=(BLKSIZE=8000,LRECL=80),&DASDALOC
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//*******************************************************************
//
//*******************************************************************
//ALTERVOL EXEC PGM=IDCAMS         SKIP THIS IF JUST TESTING EXTRACT
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  DISP=SHR,DSN=*.EXTRACT.TCDBUPD                       IN
//*******************************************************************
//SERVRUPD EXEC PGM=IEBGENER       SKIP THIS IF JUST TESTING EXTRACT
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
//SYSUT1   DD DISP=SHR,DSN=*.EXTRACT.SP1                            IN
//SYSUT2   DD VOL=SER=&LUMUPDV,UNIT=(&LUMUNIT,1,DEFER),  TO SERVER  OUT
```

```
//            DISP=(NEW,DELETE)  ,DSN=WHATEVER
//*******************************************************************
```

The following is a copy of the sample job for updating the scratch list if the Channel Gateway has been installed as a virtual tape library (VTL). This means that the library is not controlled by IBM SMS and ISMF panels.

```
//LSCRVTL  JOB 0,0,PRTY=3,
//         CLASS=A,MSGCLASS=E,NOTIFY=&SYSUID
//*******************************************************************
//*
//* LUMINEX SCRATCH LIST UPDATE
//*   EXTRACTS SCRATCH VOLSERS FROM TAPE MANAGEMENT REPORT.
//*   ACCEPTS TLMS REPORTS: 003 018 043
//*   ACCEPTS TMS  REPORTS: 05  49  TMEVSNM
//*   ACCEPTS RMM  REPORTS: EDGRPT01
//*   IGNORES ALL OTHER REPORTS THAT MIGHT BE INCLUDED IN TAPERPT.
//*
//*   THE REPORT FILE CAN BE USE FIXED OR VARIABLE BLOCKS.
//*   MOST IMPORTANT: THE FILE MUST HAVE ASA OR MACH CARRIAGE CONTROL.
//*
//*  USE THIS SAMPLE JOB IF THE LUMINEX GATEWAY IS NOT AN MTL.
//*
//*  AN MTL IS DEFINED AS MTL=YES WITH A LIBRARY ID IN THE HCD/IODF.
//*
//*  THE SERVRUPD STEP WRITES THE SCR VOLSER LIST TO LUMINEX SERVER.
//*  YOU MAY WANT TO SKIP THIS      STEP  DURING PRELIMINARY TESTING.
//*
//*******************************************************************
//* REPLACE THE FOLLOWING WITH SITE-SPECIFIC VALUES.
//*
// SET  LOADLIB=VENDOR.LUMINEX.LOADLIB
// SET     IDSN=VENDOR.LUMINEX.TAPE.REPORT    INPUT TAPE REPORT DSN
// SET     OPRE=VENDOR.LUMINEX.LSCRUP         OUTPUT DSN PREFIX
// SET SCRPOOL1=SCRUPD                    SCRATCH POOL (1-6 ALPHANUM)
// SET DASDALOC='UNIT=SYSDA'              OR SMS CLASS(ES)
// SET  LUMUNIT=LUMVTL       ESOTERIC FOR DRIVES USING THIS SCR POOL
// SET  LUMUPDV=SCRUPD       SPECIAL TAPE VOLSER ON SERVER FOR SCR UPDT
//*******************************************************************
//OUT     EXEC PGM=IEFBR14
//SP1      DD DSN=&OPRE..SP&SCRPOOL1,
//            DISP=(MOD,DELETE),SPACE=(TRK,(1,1)),UNIT=SYSALLDA
//*******************************************************************
//* THESE COMMA-DELIMITED PARMS MUST APPEAR IN THIS ORDER IF SPECIFIED.
//* HIDESKIP  ... CAUSES THE SKIPPED VOLSER MSGS TO BE SUPPRESSED.
//* SP= SCRATCH POOL NAME (1-6 CHARS) AND SP DD NAME SUFFIX.
//* V=  VOL PREFIX OR VOLSER-VOLSER RANGE.
//* W=  SCRATCH WARNING THRESHOLD FOR WARNING MSG AND RETCODE=4.
//* THE FOLLOWING PARMS ARE REQUIRED: SP= V=
//* EXAMPLE: PARM='HIDESKIP,SP=1,V=555,W=1000'
//* EXAMPLE: PARM='SP=1,V=375000-549999'
//*
// SET P='SP=1,V=375000-549999,W=1000'              <-- MODIFY THIS
//*******************************************************************
//EXTRACT  EXEC PGM=LSCRUP,REGION=300K,PARM='&P'
//STEPLIB  DD DISP=SHR,DSN=&LOADLIB                   (NO APF AUTH)
//DATAIN   DD DISP=SHR,DSN=&IDSN                                  IN
//SP1      DD DSN=*.OUT.SP1,                                      OUT
```

```
//            DISP=(NEW,CATLG),SPACE=(TRK,(15,30)),
//            DCB=(BLKSIZE=6000,LRECL=6),&DASDALOC
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//*******************************************************************
//
//*******************************************************************
//SERVRUPD EXEC PGM=IEBGENER       SKIP THIS IF JUST TESTING EXTRACT
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
//SYSUT1   DD DISP=SHR,DSN=*.EXTRACT.SP1                            IN
//SYSUT2   DD VOL=SER=&LUMUPDV,UNIT=(&LUMUNIT,1,DEFER),  TO SERVER  OUT
//            DISP=(NEW,DELETE)  ,DSN=WHATEVER
//*******************************************************************
```

Appendix A. LTMon Command to Admin+ Script Cross Reference

LTMon Command	Admin+ Script
DALCG	GETALERT
DALDDR	GETDDRALERT: dataserver
DCAP	GETCAP
DCG	GETCGINFO
DDEV dev	GETDEVSTAT: tag
DDS	GETSTORAGELIST
DREP dataserver	GETDDRREPSTATUS: dataserver
DSP	GETALLSCRCNT
DSP dev	GETDEVSCRCNT: tag
DV volser	GETVOLINFO: volser

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871 Marlborough Avenue
Riverside, CA 92507

1.888.LUMINEX
1.951.781.4100

www.luminex.com