

RCL Message Categories

Client Originated Messages

The RCL Protocol messages originating from a client are in [Table 7](#).

Note The Chop (CH) and the Take Monitor (TM) commands are not implemented for Encore Software Version 1.6.5, which is the current software release at the time of this manual's revision. Also, the Protect (PR) and Unprotect (UP) commands are implemented for All Level Protects but not specified levels. The Query Names (QN) command will not return TieLine parameters. Check the Encore Release Notes for software versions released after Version 1.6.5 for the announcement of RCL command implementation.

Table 7. Client Originated Messages

Command	Description	Expected Server Response
BK - Background Activities (page 36)	Query system configuration and flags	KB
CH - Request Chop (page 38)	Initiates chopping between specified sources.	ER, 00
GT - Get Current VITC Time (page 39)	Get the current VITC time from the server in HHMMSSFF format as ASCII characters.	TG
PR - Protect (page 40)	Protects a specific destination from other control points	ER, 00
QC - Query Combined Destination Status (page 40)	Queries source status on combined levels of the destination. The combined levels are interpreted with respect to the first level on which the destination is present. The status returned back will have the source taken to the destination on the first level on which the destination is present. This will also specify the other levels on this source has been taken to.	CQ
QD - Query Destination Status (page 42)	Queries sources assigned to destinations by destination name.	DQ
QE - Query Error Definition (page 43)	Queries text describing a particular error code.	EQ
QI - Query Destination Status on a Specific Level by Index (page 44)	Queries sources assigned to destinations by Destination index and Level Index.	IQ
QJ - Query Destination Status by Index (page 45)	Queries sources assigned to destinations by Destination Index for all levels.	JQ
QN - Query Names (page 46)	Checks names associated with Sources, Destinations, Levels, Salvos, Areas or TieLines.	NQ
QV - Query Salvo Elements (page 50)	Queries sources, destinations, and levels associated with a specified Salvo.	VQ
RC - RCL Connect (page 51)	Request RCL connect to the server.	RA
RD - RCL Disconnect (page 51)	Request RCL Disconnect.	ER, 00
TA - Take (Breakaway) (page 52)	Takes Sources (on specified levels) to specified destination, by name.	ER, 00
TD - Take (Single Source) (page 53)	Takes a single source to all or specified levels.	ER, 00
TI - Take by Level Index (page 53)	Takes same source (on all or specified level) to specified destination, by index.	ER, 00
TJ - Take by Level Bitmap (page 54)	Takes Sources (on specified levels) to specified destination by level bit map. Allows Breakaways. More than one source can be specified to be taken on to the destination on different levels.	ER, 00
TM - Take Monitor (page 55)	Takes Destination (on specified levels) to the Monitor.	ER, 00
TS - Take Salvo (page 56)	Executes the specified Salvo.	ER, 00
UP - Request Unprotect (page 56)	Removes previously applied Protect from specified Destination.	ER, 00

Client Subscription Messages

The Subscription messages originated from the client are in [Table 8](#).

Table 8. Client Subscription Messages

Command	Description	Expected Server Response
SB – Subscribe (page 57)	Subscribe for status/configuration changes.	ER, 00
UB – Unsubscribe Request (page 57)	Unsubscribe for already subscribed status/configuration information	ER, 00

Server Originated Messages

The RCL Protocol messages originated from the server are in [Table 9](#).

Table 9. Server Originated Messages

Command	Description	Expected Client Response
NY – Notification (page 58)	An asynchronous Notification sent whenever the subscribed status/configuration information changes	ER, 00
RD - RCL Disconnect (page 58)	Request RCL Disconnect.	ER, 00
RN - RCL Announce (page 59)	Server announce at start up to facilitate clients to refresh subscription requests.	None.

RCL Message Specifications

The following specifications apply to all the RCL message commands.

Note Leading zeros are used if necessary so as to keep the area index length to 2 digits and destination/source index length to four digits.

`fullqual_dest_name` Specifies the fully qualified destination name.
This is of the form
`area_name:destination_name`.

Example, for a destination called GRAFIX in area NEWS, the `fullqual_dest_name` is `NEWS:GRAFIX`.

`fullqual_src_name` Specifies the fully qualified source name.
This is of the form
`area_name:source_name`.

Example, for a source called VTR2 in area SPORTS, the fullqual_src_name is SPORTS:VTR2.

fullqual_dest_index Specifies the fully qualified destination index. This is of the form
area_index:destination_index.

Example, for a destination with index 127 in area with index 2, the fullqual_dest_index is 02:007F. (Use the hexadecimal values for index 127 which is 00F7 and index 2 which is 02.)

fullqual_src_index Specifies the fully qualified source index. This is of the form
area_index:source_index.

Example, for a source with index 64 in area with index 1, the fullqual_dest_index is 01:0040. (Use the hexadecimal values for index 64 which is 0040 and index1 which is 01.)

Every RCL Client may configure a default area through the client configuration screen of the OUI. If the field 'area_name:' / 'area_index:' is omitted in the fully qualified name, then the default configured area is used by the RCL Server to qualify the Source/Destination name/index.

time_stamp – VITC Time stamp to be provided by the clients for deterministic operations. The time stamp is specified as part of the commands in HHMMSSFF format.

Figure 2.

In case of non time stamped operations this field can be left blank. The time stamp field is used to specify the VITC time at which the operation (take, chop or protect) should be performed on the router. The operation will be carried out exactly on the specified frame. This time should at least be 6 frames more than the time at which the command is received by the RCL Server. Thus the client should take into account the transit time (Via Ethernet or serial medium) while setting this time stamp value. There is also an upper limit on the time that can be specified by the client. The time specified should not be more than 100 frames from the time at which the RCL Server receives the request.

Client Originated Message Descriptions

BK - Background Activities

The BK command can be sent to query system configuration and flags

Command

BK[,parameter [,mask]]

One parameter can be specified per BK call. Each parameter consists of a single, case sensitive character, defined in [Table 10](#).

Table 10. BK Command Parameters

Parameter	Description
N	Queries System Name
R	Reserved
T	Queries the software version
t	Reserved
F	Queries the configuration flags. Refer to Table 12 for the meaning of these flags.
f	Clears the configuration flags specified in the mask. Refer to Table 12 for bit definition of the mask.
D	Clears the flags associated with the QD command. After BK, D is sent, the next QD command will result in the server sending all destination statuses.
P	Queries the client specific configuration parameters specified on the graphical user interface.
E	Returns whether to send the positive responses for operations. The client can also use this command to set/stop the positive responses for operations by sending BK, E, ON or BK, E, OFF respectively.
d	Returns the name of the client specified on the graphical user interface.
2	This command is used by the serial client to ensure that the RCL server is running. The server will respond back with a level 2 acknowledgement. This command is for the serial interface only.
	No parameter, no side effects. Can be used to refresh Protects and Subscriptions

Response

For the BK command the response is dependent on the parameter specified. For some parameters the response will be an ER, 00 to signify that the request has been executed successfully.

For other parameters response with returned data is of form:

KB,parameter,data

Parameter consists of a single, case sensitive character, defined in [Table 11](#).

Table 11. KB Response Parameters

Parameter	Data
N	system_name_string
T	Software version string.
E	Echo = ON OFF. A value will be returned for both set and query requests.
d	Client Name.
P	QueryOnly=<ON OFF> ^a , ChopLck=<ON OFF>, SalvoLock=<ON OFF>, ProtectOverride=<ON OFF>, MonitorControl=<ON OFF>, Controlla-bleLevels=lv1BitMap
D	This will get an ER, 00 response on success and an ER, nn (nn>0) on failure indicating the reason of failure.
2	No level 4 response for this command.
F	Four ASCII characters representing four HEX digits (16 bits). These bits indicate changes of corresponding parameters since last cleared by BK, F command. Refer to Table 12 to associate the bits with configuration parameter. If the parameter has changed the bit is set. Most significant hex digit is sent first (that is, b15...b12). Area bitmap information will be returned indicating the areas in which source and destination name changes have occurred. This facilitates the router to reload the names only in those areas which have changed. The area bitmap is a 64 bit quantity coded as 16 Hex bytes to indicate the area 1-64. Thus the response for this parameter will be KB, F, mask, Name change area bitmap.
	No parameter will return an ER, 00

^a When a client is set as a query only device, it cannot perform any operation (Take, Protect, etc.,). It can query status and configuration information.

For F response with the returned data is of form:

KB, F

For a KB, F response, the data is defined in [Table 12](#).

Table 12. KB, F Command Response Bits

Bit #	Meaning
0 (lsb)	Reserved
1	Any protect initiated by this client was dropped.
2	Destination changes
3	Reserved
4	Source changes
5	Level changes
6	Salvo changes
7	Reserved
8	Area changes
9	Client Name changes
10 - 14	Reserved
15	Reserved
f, mask	This will get an ER, 00 response on success and an ER, nn (nn>0) on failure indicating the reason of failure.

Example of the Use of Flag Bits

The user queries RCL using BK, F. They receive a reply with parameter bit #4 set to indicate that there has been a change (addition, or modification, or deletion) to the system source name table. The server will also send the source change area bit map (as part of the KB, F response) indicating the areas on which the source information has changed. The client should now issue a QN, S, source_area_bitmap command to get the new source information. The source change area bit map returned with KB, F can be used by the client as part of the QN, S command. The client next uses the BK, f, mask (where mask bit #4 = 1) command to clear bit #4 from the mask. The client again queries using BK, F. The reply shows that bit #4 = 0, indicating that the source name list just downloaded is current.

Do not confuse the flags discussed with the f & F options with those discussed with the D option. The QD command allows the user to download incremental changes in the Destination Status tables. The D option of the BK command clears the bit arrays that keep track of these incremental changes. This re-synchronizes the router data base (for Destination Status) if the external device resets.

CH - Request Chop

Note The CH command is not implemented for Encore Software Version 1.6.5, which is the current software release at the time of this manual's revision. Check the Encore Release Notes for software versions released after Version 1.6.5 for the announcement of RCL command implementation.

Chop command allows chop operations to be performed on a specified destination on the router. The command allows chop source to be specified on a level by level basis allowing more than one source to be specified on different levels.

Command

```
CH, fullqual_dest_name, nbr_sources, src_name_entry1
[, ..., src_name_entryn]
```

(<seq_flag='0000'> for the last sequence sent.)

However, the specified source names to be taken to the destination specify the chop source names and levels. The other source for the chop operation is the already taken source on the destination. To stop chopping, issue a take on the required levels.

To specify a chop operation, first Take sources on levels to the destination, then Chop to the same destination with the chop sources on the required levels.

Response

This will get an ER, 00 response on success and an ER, nn (nn>0) on failure, indicating the reason of failure.

dest_name Destination to be taken to.

nbr_sources Number of following entries (must be at least one).

src_name_entryn is defined as:

fullqual_src_name, level_bitmap

Example

The following command will chop a source named VTR_W_2 in area NEWS on levels with indices 2 and 3 and source VTR_M_2 in area NEWS on level index 1 to the destination VTR_B_1 in area NEWS.

```
CH,NEWS: VTR_B_1,2,NEWS: VTR_W_2,0000000C,
NEWS: VTR_M_2,00000002
```

GT – Get Current VITC Time

Get the current VITC time from the server in HHMMSSFF format as ASCII characters

Command

GT

Response

TG, HHMMSSFF

HH = Hours 00 ... 23

MM = Minutes 00 ... 59

SS = Seconds 00 ... 59

FF = Frames 00 ... 30 for NTSC
 00 ... 25 for PAL

PR - Protect

Note Only an All Level Protect is implemented for Encore Software Version 1.6.5, which is the current software release at the time of this manual's revision. Check the Encore Release Notes for software versions released after Version 1.6.5 for the announcement of RCL command implementation.

Protect command allows the specified destination to be protected from any source changes on the specified level. The command requires a `level_bitmap` to be specified on which protect should be performed.

Command

```
PR,fullqual_dest_name,level_bitmap
```

Response

This will get an `ER, 00` response on success and an `ER, nn (nn>0)` on failure indicating the reason of failure.

Example

To protect a destination named `PDR2` in area `POSTPRD` on levels with indices 3 and 4 the client should issue the following command

```
PR, POSTPRD: PDR2, 00000018
```

QC - Query Combined Destination Status

Query the status on combined levels of the destination. The combined levels is interpreted with respect to the first level on which the destination is present. The status returned back will have the source taken to the destination on the first level on which the destination is present. This will also specify information of the other levels on which this source has been taken to.

Command

The `QC` command can have different command syntaxes.

`QC`

In this case, destination status is returned for all destinations for which status has changed since the last time status was sent. Destination status is returned for all levels (for the changed as well as unchanged levels) which have status. The `BK, D` command can be sent before this request to force return of all destination status.