CenTran™ 2
(Cencon 2 Transaction System)

Programming Guide
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Who Should Read This Manual

This manual is for programmers who must modify their dispatching systems to communicate with the CENTRAN System to support the CENCON SYSTEM 2000® for Windows. This book describes the communication mechanism between the customer dispatching system and the CENCON Transaction System. It is assumed that you are already familiar with the workings of the CENCON locks and the CENCON for Windows software.

Overview

The CENTRAN System is a supplement to the CENCON Dispatcher System that provides a subset of dispatcher and file maintenance functions to customers who want to keep their current dispatching system but use the facilities of the CENCON ATM lock. This system allows you to post transactions from your dispatching system into uniquely named shared files on a Windows NT compatible network. These files are then read by a CENTRAN System having access to those files. The Transaction System reads the transaction, performs the appropriate task, and posts a return transaction with the requested information in another shared file. This system provides you with access to the record keeping and adapter interface provided by the CENCON Dispatch System, while allowing you to continue to use your current dispatching system.

The CENTRAN System is not designed to be a complete replacement for the CENCON Dispatcher System, but to allow you to modify your existing dispatching system to use the CENCON ATM lock. Therefore, only dispatching functions are provided via transaction. The CENCON Dispatching System must be used for other functions such as lock activation and shelving, obtaining reports, updating user information, etc. However, the CENTRAN System fully supports Windows NT network file sharing and can share CENCON files with the CENCON Dispatching System. Any number and combination of CENTRAN systems and CENCON Dispatching Systems can be running at the same time sharing the same files. The only files that must be unique to each system are the CENCON configuration file (used by CENCON and CENTRAN) that defines the access paths to the data files, and the CENTRAN configuration file (used only by CENTRAN) that defines the location of the transaction files and transaction file extensions. Although it is not recommended, if more than one user dispatching system is communicating to the same CENTRAN processor, it is the user’s responsibility to implement a file naming convention to ensure unique transaction file names.
System Requirements

To use the CenTran 2 program, the following minimum hardware and software requirements must be met:

- IBM compatible PC that is capable of running Windows and has an available PCI slot for the Kaba Mas Cencon Adapter Card
- 1 GB RAM
- CD-ROM Drive
- Hard Disk Drive with at least 15 megabytes disk space free
- Windows XP Professional (Service Pack 2)

**Important Note: Windows Vista is not supported in this release.**

USING THE TRANSACTION SYSTEM

Database Settings & File Settings

Before you can use the CENTRAN System, you must modify the Database Settings and File Settings for your environment. Some of these settings define information about the names and paths of the various files required to support Cencon 2. Some of the File Settings are unique to the CENTRAN System and provide the following information:

- the extension to be used for transaction files created by your dispatching system
- the extension to be used for response transaction files created by the Transaction System
- the path to these files (usually a network drive and directory)

When the Transaction System is started, you are given the opportunity to modify the CENTRAN Database Settings and File Settings prior to starting the transaction process.

Communicating with the CENTRAN System

The Transaction System is started from a PC containing a CENCON adapter card and having access to the CENCON database. The PC on which CenTran is running must have an ODBC connection configured to connect to the CENCON database. The CENTRAN PC must also have access to transaction files created by your dispatching system.

The initial menu presented when the system is started allows you to modify the Database Settings and File Settings. Once the settings are configured, you may select the option to begin monitoring for transactions. CENTRAN will begin running and look for transaction files with the extension that indicates they were built by the customer dispatching system.

Transactions are exchanged between the customer's program and the CENTRAN System via shared files. These files are created in a specific directory with a certain extension, as defined by the CENTRAN File Settings. The customer's system creates transactions in files with one extension, while a different extension is used for files containing response transactions created by the CENTRAN System. The customer's system may create files with any name as long as the specified extension is used. When creating the transaction file, the customer's system must obtain an exclusive lock on the file and only release the lock on the file when all transaction records have been written and the file has been closed. This is necessary to ensure the complete set of transaction records are built before CENTRAN begins reading the file. CENTRAN creates the response transaction in a file with the same name but with the CENTRAN response extension. All files contain a single transaction consisting of 1 or more records, and are deleted after being read by the respective system that received the transaction.
To illustrate this process, a file named T0000005.TO might be created by the customer dispatching system containing a transaction requesting the combination for a certain lock. This assumes that all files created by the customer dispatching system must contain the “.TO” extension. The CENTRAN System would then do the following:

- read the transaction in this file
- delete the file T0000005.TO
- build a transaction containing the lock combination(s) and a return code
- perform the necessary updates to any CENCON files to indicate a combination has been issued for a lock
- create a file named T0000005.TI (assuming “.TI” is the extension for use by the transaction system)

The customer’s dispatching system then reads this file to obtain the combination and deletes the file.

A transaction consists of one or more records in the file that communicates the information necessary for the specified transaction to be completed (the record layout appears in Appendix A of this document). Usually, the information in the transaction consists of:

- a transaction code identifying the operation required
- a dispatcher ID responsible for creating the transaction. This ID does not need to be an ID that is defined to CENCON or CENTRAN but will be used when logging the activity in the System Activity Log.
- a user id that will perform the requested function (for example, an FLM id for someone opening a lock). This ID must exist in the CENCON ID file.
- specific information required to perform the operation (i.e. lock name, route name, close seal number, etc.)

When the transaction is complete, the response transaction file contains the original transaction code, the requested information, and a return code indicating the success or failure of the transaction. Assuming the transaction is successful, the CENCON Dispatch System files have also been updated based on the request. Remember, however, that it is the customer system’s responsibility to delete the response transaction file.

**Delay Before Reading Next Input Transaction**

The “delay before reading next input transaction” file setting is defined from the CenTran 2 program and is intended to allow a delay after detecting a file and before reading it. It is possible for an error in reading the input file to occur if it has not been completely written to the input directory yet. This delay allows the write of the input file to complete before the CenTran 2 program reads the file. This delay begins when a transaction file is detected in the input directory by CenTran 2.
The delay time is initialized to 0 and may be changed in increments of 10 milliseconds. In the above screen example, the time delay of 10 results in a 100 millisecond delay. A value of 100 would result in a 1 second delay.

Technical Note: CenTran also uses a default Microsoft polling rate (event trigger) before using the delay setting for pickup. Microsoft Event = MsgWaitForMultipleObjects

Categories of Transactions

There are two main categories of transactions: single record transactions and multiple record transactions. All transactions are single record transactions except those that convey information about routes and the locks in those routes. For example, dispatching a single lock (i.e., “Dispatch a Call”) would only require a transaction containing a single record since we are dealing with a single lock and all of the information for the transaction could be contained in the record. However, closing a route requires information to be conveyed about several locks at once. In this case, a multiple record transaction is required. The first record of the transaction would contain information about the route (i.e., route name, RSPs dispatched, etc.) while subsequent records in the file would contain information about each specific lock in the route (i.e., the name and close seal for each lock, etc.). A multiple record return transaction would be posted by CENTRAN with each lock record containing a return code indicating if that lock was successfully closed. In some cases single record transactions result in multiple record transaction responses. For example, one of the transactions enables you to request all of the open locks for a route. A single record transaction would be sent by the customer's system containing the route name whose open locks are desired, and CENTRAN would respond with a multiple record transaction that contains the original transaction response, plus a record for each open lock in the route.
The Transaction Record

The transaction record, shown in Appendix A, contains fields for all of the information that may need to be exchanged between a customer program and the CENTRAN System. The individual function descriptions describe what information must be supplied by the customer's dispatching system and what information will be returned by the CENTRAN System. Fields in the structure that are not supplied by the customer's system should be initialized to hex 00. All character information must be supplied in NULL terminated (00h) ASCII character form. SHORT fields are 16 bit binary numbers in INTEL integer format (i.e. byte reversed). LONG fields are 32 bit binary numbers in INTEL format. The TIME_T field is never required, but the response transaction will contain the time of the transaction in 'C' format (i.e. the number of seconds since 1/1/1980). When sending a multiple record transaction, the first record contains the appropriate transaction code for the transaction, while subsequent records contain the “Lock Record” transaction code indicating they contain information about locks in the route described by the first record.

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**Note:** The fields defined as “flmid” and “flm2id” in the transaction record can contain either the names of FLMs or the names of RSPs depending on what transaction type is being issued and/or what lock mode is being affected by the transaction.

The following example illustrates how you would use the transaction processor to obtain the combination to open a single lock. This single record transaction would be the same as choosing the “Dispatch a Call” option on the CENCON Dispatching System. The example places the lock name, Dispatcher ID, FLM or RSP ID, and the “Open Lock” transaction code in the transaction record. Upon return, the response transaction will have the lock's combination in the COMBO field of the transaction. If the lock is operating in dual mode, the second combination to be issued to the second FLM or RSP ID would be in COMBO2.

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**Note:** The “flmid” field name in this example represents an FLM ID since the lock mode is defined as FLM Single Mode. If the mode was a Route Mode, the same flmid field name would represent the RSP ID.

---

/* Open a lock example */

```c
CENCON_TRANSACTION  transrec;
int tcount = 1;        /* Used to make unique file name */
memset(&transrec, 0, sizeof(CENCON_TRANSACTION));
transrec.trans_code = 1;    /* Open lock transaction */
strcpy(transrec.lockname, "Mylock");
transrec.lmode = FLMMODE;    /* FLM single mode lock */
transrec.calltype = 1;      /* 1st line call */
strcpy(transrec.id, "Dispatch1");/* Dispatcher */
```
The next example illustrates how you might close a dispatched route. In this example, a transaction is posted requesting a list of all the open locks in a route. These names are then displayed to the operator and the appropriate close seals are entered and placed in the transaction record. A multiple record close transaction is then sent to CENTRAN to close the open locks for the route. Note that you do not have to query the open locks in the system in order to try to close them. You may keep track of what locks are open and simply post the close route transaction supplying the lock records yourself.

---

**Note:** The “flmid” field name in this example represents an RSP ID since this is a Route transaction type.

```c
/* Close a route example */
CENCON_TRANSACTION transrec, transtab[100];
int tcount = 1; /* Used to make unique file name */
memset(&transrec, 0, sizeof(CENCON_TRANSACTION));
transrec.trans_code = 6; /* Get route open locks */
strcpy(transrec.routename, "Route1");
strcpy(transrec.id, "Dispatch1"); /* Dispatcher */
strcpy(transrec.flmid, "Rman"); /* Route FLM */
```
fread(&transtab[i], sizeof(CENCON_TRANSACTION), 1, infile);
while (!feof(infile)) {
    i++;
    fread(&transtab[i], sizeof(CENCON_TRANSACTION), 1, infile);
} /* endwhile */
maxtrans = i;
fclose(infile);

/*Show the locks to the operator, get close seals, and
fill in transtab with seals */
.
.
i = 0;
transtab[i].trans_code = 5; /* Close route */
sprintf(outfn, "\trandir\t%07d.TO", tcount);
tcount = tcount + 1;
outfile = _fsopen(outfn, "wb", _SH_DENYRW);
for (i = 0; i < maxtrans; i++)
    fwrite(&transtab[i], sizeof(CENCON_TRANSACTION), 1, outfile);
fclose(outfile);
.
.
/*Wait here for new file to appear
 */
.
.
infile = _fsopen(infn, "rb", _SH_DENYRW);
i = 0;
fread(&transrec, sizeof(CENCON_TRANSACTION), 1, infile);
/* Check transaction return code here */
while (!feof(infile)) {
    if (transrec.rc != 0)
        print_error_message(&transrec);
    i++;
    fread(&transrec, sizeof(CENCON_TRANSACTION), 1, infile);
} /* endwhile */
fclose(infile);
CENCON TRANSACTION CODES

The following pages describe the types of transactions for use in communicating with the CENTRAN System. An integer return code is always returned in the output structure that indicates the success or failure of the operation. Most return codes are documented as part of the documentation for each transaction. However, there is a class of return codes (all those greater than 1000) that indicate there was a physical error communicating with the CENCON adapter card. These codes mean that something has happened to the adapter. The most common things that can happen are:

- The adapter has become loose in the machine.
- A power surge or similar event has damaged the adapter.

These occurrences are rare and can usually be solved by installing a new CENCON adapter card, changing the base address of the card, or removing a conflicting adapter card. These “physical error” return codes are not documented in this document. Any return code received 1000 or greater should be considered an adapter communication error code. If the above remedies do not fix the problem, call Kaba Mas Customer Service.

Return codes are returned in each record of a response transaction. The return code in the first record of the response indicates if the transaction as a whole was successful. For single record transactions, this is the only return code you are interested in. However, for multiple record transactions, there is also a return code in each lock record returned. In these cases, some of the lock return codes may be nonzero even when the transaction record (i.e. first record) return code is zero. For example, you may dispatch a route where one of the locks in the route has been shelved and inadvertently left as part of the route. The return code in the transaction record might be 0 indicating the DISPATCH_ROUTE transaction was processed successfully, but the return code in the lock record for the shelved lock would have a return code of 12. If you study the return codes for multiple record transactions, you will find that usually a nonzero return code in the transaction record means that none of the locks were processed (i.e. dispatched, closed, etc.) while a zero return codes means you should check the return codes for each of the lock records.

One final comment about return codes. You will find that some transactions contain different return codes that seem to mean the same thing. For example, return codes 24 and 88 in the OPEN_LOCK transaction both indicate that the FLM ID is not in the ID file. This occurs because the CENTRAN system often obtains information about FLMs and locks more than once in the course of processing a transaction. The different return codes indicate where in the processing the error occurred and is useful at times for Kaba Mas troubleshooting. One might assume that an FLM that is found with the first file “lookup” for a transaction will also be found with a second file “lookup”, but it may not be true. In a networking environment it is possible that another system could have deleted the user in between lookups. As far as the customer’s system is concerned, these similar return codes may be treated in the same way.

The following section describes the transactions supported by the CENTRAN System.
OPEN A LOCK (OBTAIN THE COMBINATION)

Transaction Code = 01 (OPEN_LOCK)

This transaction obtains the combination for a given lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The FLM ID(s) supplied here must be of the same type as the lock mode being dispatched. That is, if dispatching a call for an “F” lock mode, the ID(s) would be for FLM(s). If dispatching a call for an “R” lock mode, the ID(s) would be for RSPs. Also, if dispatching an “F” lock mode, you may specify that this is a second line maintenance call by placing a 2 in the CALLTYPE field of the transaction. A 0 or 1 in this field indicates a first line maintenance call.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

Number of records in transaction:
Send single record, single record response

Transaction information required:
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the lock being opened
ID - the ID of the dispatcher
FLMID (& FLM2ID if dual mode) - the ID(s) of the FLM(s) or RSP(s)
CALLTYPE - specifies first or second line maintenance call
SUB_AUTH - Cencon master lock and sublock authorization flags

Transaction information returned:
COMBO (& COMBO2 if dual mode) - the next combination(s) for the lock

Transaction return codes:
0 - Combo(s) returned in transaction
8 - Lock not found
12 - Lock currently shelved
16 - Possible return code meanings:
  • Lock already open (in single mode)
  • Lock open in dispatch sequence
  • Invalid sequence on dispatch route
18 - Attempted to dispatch a sublock that is not defined
20 - FLMID has a lock open
22 - FLM2ID has a lock open

23 - Possible return code meanings:
   • Group ID mismatch - FLMID not authorized to open the lock
   • Group ID mismatch - FLM2ID not authorized to open the lock
   • Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
   • Lock regions for the route do not all match
   • Route region does not match lock region

24 - Possible return code meanings:
   • FLMID not found
   • Both FLMID and FLM2ID not found

26 - FLM2ID not found

32 - Failed to insert log entry

36 - Possible return code meanings:
   • Unable to update database for FLMID
   • Unable to update database for FLM2ID

44 - Lock is a dual mode lock but only 1 FLM or RSP entered

64 - Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified

80 - Lock is pending shelve

92 - FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

94 - Dual mode - user time window mismatch (one user has time windows, one user does not)

96 - Possible return code meanings:
   • FLMID & FLM2ID are the same
   • FLMID & FLM2ID are both blank

100 - Possible return code meanings:
   • FLMID does not match lock mode
   • Both FLMID and FLM2ID do not match lock mode

104 - PCIO Card error

112 - FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

120 - FLM2ID does not match lock mode
CLOSE A LOCK

Transaction code = 02 (CLOSE_LOCK)

This transaction is used to enter a close seal to close a lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The return transaction indicates whether or not the lock has been closed.

Number of records in transaction:
Send single record, single record response

Transaction information required:
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the lock being closed
SEAL - the close seal number for the lock

Transaction information returned:
Return code - indicates success or failure of lock closing

Transaction information returned (lock records):
SUB_AUTH - Cencon master lock and sublock authorization flags
SUB_CLOSE - Cencon master lock and sublock close flags.

Note: For a given lock or sublock, if the SUB_CLOSE flag is set, this means the respective lock was opened and closed.

SUB_OPEN - Cencon master lock open and sublock open/unsupported attempt flags.

Note: To determine the meaning of this flag for sublocks, look at the SUB_AUTH authorization flag. If the sublock was authorized, and the SUB_OPEN flag is set for this sublock, this means the sublock was opened. If the sublock was not authorized and the SUB_OPEN flag is set for this sublock, then there was an unauthorized attempt to open the sublock.

Note: The SUB_AUTH, SUB_CLOSE, and SUB_OPEN are each 5 bytes. Byte 0 represents a flag for the Cencon master lock, while Bytes 1-4 represent flags for sublocks #1 - #4. A value of 0x10, i.e. hex 10, indicates the respective flag is set. See Appendix A.
Transaction return codes

0 - Lock closed in system
2 - Three attempts have been made to close the lock and no Supervisor key is present
8 - Lock not found
12 - Lock currently shelved
16 - Lock not open
24 - Possible return code meanings:
   • FLMID not found
   • Both FLMID and FLM2ID not found
26 - FLM2ID not found
27 - Possible return code meanings:
   • Close seal is incorrect for lock
   • No close seal
28 - No log record found for close (should not happen)
32 - Possible return code meanings:
   • Failed to insert log entry
   • Failed to update log entry
   • Failed to delete log entry
   • Failed to insert entry in log history
36 - Possible return code meanings:
   • Unable to update database for FLMID
   • Unable to update database for FLM2ID
   • Lock open but unassigned
64 - Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified
104 - PCIO Card error
GET THE LAST COMBINATION

Transaction Code = 03 (LAST_COMBO)

This transaction gets the last combination(s) issued for a lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The combination(s) will only work with the FLM or RSP keys to which they were originally issued. The sequence of the combination issued for route locks dispatched as part of a route may be requested by specifying either the sequence number of the lock in the route, or the route name.

Number of records in transaction:
Send single record, single record response

Transaction information required:
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the lock
SEQ - the sequence number of the lock if in route, or 0
ROUTE - the name of the route containing the lock if a route lock (optional, ignored if SEQ is specified)

Transaction information returned:
AUDIT - the audit count
FLMID (& FLM2ID) - the id(s) of the FLM or route service individual(s) to whom the combination(s) were issued
COMBO (& COMBO2) - the last combination(s) issued
SUB_AUTH - Cencon master lock and sublock authorization flags

Transaction return codes:
0 - Last combination returned and the lock is open
1 - Last combination returned and the lock is closed (i.e., combination has been used)
8 - Lock not found
DISPATCH A ROUTE OF LOCKS

Transaction Code = 04 (DISPATCH_ROUTE)

This transaction dispatches a route of locks.

The Lock Region for all the locks identified in the Route must match.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

A transaction record for each of the locks in the route is returned containing the combination of each lock or a return code indicating why a combination wasn't issued.

Note: This transaction will only dispatch a route of locks having no sublock authorization. To dispatch a route with locks that have sublock authorization, use transaction code 17, DISPATCH_ROUTE_SUBLOCKS.

Number of records in transaction:
Send single record, multiple record response

Transaction information required:
ROUTENAME - the name of the route
ID - the id of the dispatcher
FLMID (& FLM2ID) - the id(s) of the route service individual(s) who will run the route

Transaction information returned:
COMBO (& COMBO2) - the combination(s) for each lock in the route are returned in individual lock records.

Transaction return codes:
0 - Combos returned in transaction
1 - Possible return code meanings:
   • Route dispatch failed - some locks had errors
   • Route dispatch failed - all locks had errors
   • Attempt to fill route lock list - all locks failed
   • Dispatch route failed. Error encountered while reading locks for route.

(Continued on next page)
4 - Possible return code meanings:
   - Error reading Route file
   - Route not found
   - Attempted to read route - database is closed
   - No locks assigned to Route

5 - Route has lock(s) with sublock(s). Use transaction 17.

24 - Possible return code meanings:
   - FLMID not found
     - Both FLMID and FLM2ID not found

26 - FLM2ID not found

36 - Possible return code meanings:
   - Attempted to read users - database is closed
   - Other errors - not specified

76 - Possible return code meanings:
   - FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

78 - Dual mode - user time windows mismatch (one user has time windows, one user does not)

80 - Possible return code meanings:
   - FLMID & FLM2ID are the same
   - FLMID & FLM2ID are both blank

84 - Possible return code meanings:
   - FLMID does not match lock mode
   - FLM2ID does not match lock mode
   - Both FLMID and FLM2ID do not match lock mode
   - FLMID region does not match lock region
   - Dispatched route name already exists and has been dispatched for a different region
   - Lock regions for the route do not all match
   - Route region does not match lock region

104 - PCIO Card error
Lock return codes:
0 - Combination(s) returned in record
8 - Possible return code meanings:
  • Lock not found
  • Invalid sequence on close route
  • Invalid sequence on dispatch route
  • Log entry not found
12 - Lock currently shelved
16 - Possible return code meanings:
  • Lock already open (in single mode)
  • Lock open in dispatch sequence
  • Lock open but unassigned
18 - Attempted to dispatch a sublock that is not defined
20 - Possible return code meanings:
  • FLMID does not match lock mode
  • FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
  • Group ID mismatch - FLMID not authorized to open the lock
  • FLMID and FLM2ID are the same
  • FLM2ID does not match lock mode
  • FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
  • Group ID mismatch - FLM2ID not authorized to open the lock
  • Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
  • Both FLMID and FLM2ID do not match lock mode
  • Dual mode - user time window mismatch (one user has time windows, one user does not)
  • Both FLMID and FLM2ID are blank
  • Both NEW_FLMID and NEW_FLM2ID are blank (for reassign)
  • Route region does not match lock region
  • FLMID region does not match lock region
  • Failed to dispatch route - region assigned to route does not match one or more lock regions
  • Dispatched route name already exists and has been dispatched for a different region
  • Lock regions for the route do not all match

(Continued on next page)
32 - Possible return code meanings:
   • FLMID not found
   • Unable to update database for FLMID
   • FLM2ID not found
   • Unable to update database for FLM2ID
   • Failed to delete log entry
   • Failed to insert entry in log history
44 - Lock is a dual mode lock but only 1 FLM entered
64 - Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified
80 - Lock pending shelving
104 - PCIO Card error
CLOSE LOCKS IN A ROUTE

Transaction Code = 05 (CLOSE_ROUTE)

This transaction closes some or all of the locks in a route.

This is a multi-record transaction where the first record contains the name of the route and the RSP IDs to be used in closing the route.

The remaining records contain information about each lock in the route to be closed. This information includes the identity of the lock and the close seal. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

Any locks that you include in the transaction that are not open will be ignored and not included in the response transaction.

Number of records in transaction:
Send multiple records, multiple record response

Transaction information required (first record):
ROUTENAME - the name of the route
ID - the ID of the dispatcher
FLMID (& FLM2ID) - the ID(s) of the route service individual(s) assigned to the route

Transaction information required (lock records):
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
SEQ - the sequence of the lock combination being closed (1-3)
SEAL - the close seal for the lock

Transaction information returned:
Return codes indicating success or failure for each lock close

Transaction information returned (lock records):
SUB_AUTH - Cencon master lock and sublock authorization flags
SUB_CLOSE - Cencon master lock and sublock close flags.

Note: For a given lock or sublock, if the SUB_CLOSE flag is set, this means the respective lock was opened and closed.

SUB_OPEN - Cencon master lock open and sublock open/Unauthorized attempt flags.
Note: To determine the meaning of this flag for sublocks, look at the SUB_AUTH authorization flag. If the sublock was authorized, and the SUB_OPEN flag is set for this sublock, this means the sublock was opened. If the sublock was not authorized and the SUB_OPEN flag is set for this sublock, then there was an unauthorized attempt to open the sublock.

Note: The SUB_AUTH, SUB_CLOSE, and SUB_OPEN are each 5 bytes. Byte 0 represents a flag for the Cencon master lock, while Bytes 1-4 represent flags for sublocks #1 - #4. A value of 0x10, i.e. hex 10, indicates the respective flag is set. See Appendix A.

Transaction return codes:
0 - No transaction errors, check lock return codes
8 - No locks found in transaction file for route
12 - Invalid force close found in transaction file for route. Force close cannot be done on last sequence of lock dispatch on route. No locks closed.
32 - Possible return code meanings:
   • Database is closed
   • Other errors - not specified
100 - Not all locks closed in route. Check lock records for specific lock return codes.
104 - PCIO Card busy

Lock return codes:
0 - Lock closed
8 - Possible return code meanings:
   • Lock not found
   • Invalid sequence on close route
   • Log entry not found
16 - Possible return code meanings:
   • Lock not open
   • Lock not active
   • Lock open but unassigned
27 - Possible return code meanings:
   • Close seal is incorrect for lock
   • No close seal
   • Invalid force close. Force close cannot be done on last sequence of lock dispatch on route.

32 - Possible return code meanings:
   • FLMID not found
   • Unable to update database for FLMID
   • FLM2ID not found
   • Unable to update database for FLM2ID
   • Failed to delete log entry
   • Failed to insert entry in log history

64- Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified

104 - PCIO Card error
RETRIEVE LOCKS OPEN FOR A ROUTE

Transaction Code = 06 (GET_ROUTE_OPENLOCKS)

This transaction retrieves information about all of the locks that are still open and belong to a specific route. A single record transaction is posted with the name of a route and a multiple record transaction is returned with a lock record for each of the locks that are still open for that route. This function is analogous to the menu of open locks presented during “Close Locks Using Menu” in the CENCON Dispatching System close route processing.

Number of records in transaction:
Send single record, multiple record response

Transaction information required:
ROUTENAME - the name of the route
FLMID (& FLM2ID) - the ID(s) of the route service individual(s) assigned to the route

Transaction information returned:
A lock record for each open lock for the route requested including the sublocks authorized for each lock.

Transaction return codes:
0 - Lock records retrieved
8 - No open locks for route and FLMID in active log table
32 - Unable to query log records for route from database

Lock return codes:
0 - Lock record OK
RETRIEVE LOCKS FOR A ROUTE

Transaction Code = 07 (GET_ROUTE_LOCKS)

This transaction retrieves information about all of the locks for a route. It is analogous to listing a route in the CENCON Dispatching System. A single record transaction is posted with the name of a route and a multiple record transaction is returned with a lock record for each of the locks (open or closed) that make up that route.

Number of records in transaction:
Send single record, multiple record response

Transaction information required:
ROUTENAME - the name of the route

Transaction information returned:
A lock record for each lock in the route requested

Transaction return codes:
0 - Lock records retrieved for route
4 - Possible return code meanings:
  • Route file does not exist
  • No locks assigned to route
32 - Possible return code meanings:
  • Route file busy
  • Other errors - not specified

Lock return codes:
0 - Lock record OK
LOCK RECORD

Transaction Code = 08 (LOCK_IN_ROUTE)

This is the transaction code present in all lock records. You should place this code in the lock records of all multi-record transactions you post. All multi-record transactions returned will have this in the TRANS_CODE field of the lock records.
REASSIGN A CALL

Transaction Code = 09 (REASSIGN_LOCK)

This function reassigns an outstanding call on a single lock to a different FLM or RSP. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

This transaction corresponds to the “Reassign Call” option on the FLM and Route Service menus of the CENCON Dispatching System. It is used when an FLM or RSP has a combination to open a lock but cannot make the call for some reason. A new combination will be issued to the new FLM or RSP. It is recommended that you specify the FLM(s) or RSP(s) that have the lock open. However, if these fields are empty, then the FLM(s) or RSP(s) currently assigned to the call are determined by CENTRAN.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

Number of records in transaction:
Send single record, single record response

Transaction information required:
- LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
- LMODE - the mode of the lock being reassigned
- FLMID (& FLM2ID) - the original FLM(s) or RSP(s) assigned to the call (optional)
- NEW_FLMID (& NEW_FLM2ID) - the FLM(s) or RSP(s) to whom the call will be reassigned

Transaction information returned:
- COMBO (& COMBO2) - the new combination(s) for use by the new FLM(s)
- SUB_AUTH - Cencon master lock and sublock authorization flags. *(Note: This information is in the response part of the transaction. The sublock authorization cannot be changed when reassigning a service call.)*

Transaction return codes:
- 0 - Call reassigned and new combination(s) issued
- 8 - Lock not found
- 12 - Lock not active
- 16 - Lock not open
- 20 - NEW_FLMID currently dispatched to another lock
- 22 - NEW_FLM2ID currently dispatched to another lock

(Continued on next page)
23 - Possible return code meanings:
   - Group ID mismatch - FLMID not authorized to open the lock
   - Group ID mismatch - FLM2ID not authorized to open the lock
   - Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
   - Route region does not match lock region
   - FLMID region does not match lock region

24 - Possible return code meanings:
   - FLMID not found
   - NEW_FLMID not found
   - Both FLMID and FLM2ID not found
   - NEW_FLMID & NEW_FLM2ID not found

26 - Possible return code meanings:
   - FLM2ID not found
   - NEW_FLM2ID not found

28 - Log record not found for lock and FLM or RSP

32 - Unable to update log entry in database

52 - FLMID does not have this lock open

64 - Possible return code meanings:
   - Unable to update lock entry in database
   - Other errors - not specified

76 - Possible return code meanings:
   - NEW_FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - NEW_FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

78 - Dual mode - user time windows mismatch (one user has time windows, one user does not)

80 - Possible return code meanings:
   - NEW_FLMID & NEW_FLM2ID are the same
   - NEW_FLMID & NEW_FLM2ID are both blank
   - Lock is a dual mode lock but only 1 FLM entered

84 - Possible return code meanings:
   - NEW_FLMID does not match lock mode
   - NEW_FLM2ID does not match lock mode
   - Both NEW_FLMID & NEW_FLM2ID do not match lock mode
96 - Possible return code meanings:
   • Unable to update database for FLMID
   • Unable to update database for NEW_FLMID
   • Unable to update database for FLM2ID
   • Unable to update database for NEW_FLM2ID

104 - PCIO Card error
**REASSIGN A ROUTE**

**Transaction Code = 10 (REASSIGN_ROUTE)**

This transaction reassigns the open locks for a route and RSP to a new RSP.

This transaction corresponds to the “Reassign Route” option on the Route Services menu of the CENCON Dispatching System. It is used when an RSP servicing a route cannot make some or all of the locks on a route for some reason.

This is a multi-record transaction where you post a transaction with a lock record for each of the locks you want reassigned to a new RSP. New combinations will be issued to the new RSP for each of the locks. You may obtain a list of the open locks for a route using transaction code 6 (GET_ROUTE_OPEN_LOCKS). The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

Any locks that you include in the transaction that are not open in the route will be ignored and not included in the response transaction.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

**Number of records in transaction:**
Send multiple records, multiple record response

**Transaction information required (first record):**
ROUTENAME - the name of the route
FLMID (& FLM2ID) - the original RSP(s) assigned to the route
NEW_FLMID (& NEW_FLM2ID) - the RSP(s) to whom the route will be reassigned

**Transaction information required (lock records):**
SEQ - sequence of lock
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock

**Transaction information returned (lock records):**
COMBO (& COMBO2) - a lock record for each of the reassigned locks containing the new combination(s) for use by the new RSP(s)
SUB_AUTH - Cencon master lock and sublock authorization flags. *(Note: This information is in the response part of the transaction. The sublock authorization cannot be changed when reassigning a service call.)*
**Transaction return codes:**

0 - Route reassigned
4 - No locks found in transaction file to reassign
24 - FLMID not found
26 - FLM2ID not found
32 - Database is closed
36 - Other errors - not specified
72 - Possible return code meanings:
   - NEW_FLMID not found
   - FLM2ID not found
   - NEW_FLMID & NEW_FLM2ID not found
76 - Possible return code meanings:
   - NEW_FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - NEW_FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
78 - Dual mode - user time window mismatch (one user has time windows, one user does not)
80 - Possible return code meanings:
   - NEW_FLMID & NEW_FLM2ID are the same
   - NEW_FLMID & NEW_FLM2ID are both blank
84 - Possible return code meanings:
   - NEW_FLMID does not match lock mode
   - NEW_FLM2ID does not match lock mode
   - Both NEW_FLMID & NEW_FLM2ID do not match lock mode
   - FLMID region does not match lock region
   - Dispatched route name already exists and has been dispatched for a different region
   - Lock regions for the route do not all match
   - Failed to dispatch route - region assigned to route does not match one or more lock regions
104 - PCIO Card error

**Lock return codes:**

0 - Combination(s) returned in record
(Continued on next page)
8 - Possible return code meanings:
   - Lock not found
   - Invalid sequence on close route
   - Invalid sequence on dispatch route
   - Log entry not found

12 - Lock currently shelved

16 - Possible return code meanings:
   - Lock already open (in single mode)
   - Lock open in dispatch sequence
   - Lock open but unassigned

18 - Attempted to dispatch a sublock that is not defined

20 - Possible return code meanings:
   - FLMID does not match lock mode
   - FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - Group ID mismatch - FLMID not authorized to open the lock
   - FLMID and FLM2ID are the same
   - FLM2ID does not match lock mode
   - FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - Group ID mismatch - FLM2ID not authorized to open the lock
   - Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
   - Both FLMID and FLM2ID do not match lock mode
   - Dual mode - user time window mismatch (one user has time windows, one user does not)
   - Both FLMID and FLM2ID are blank
   - Both NEW_FLMID and NEW_FLM2ID are blank (for reassign)
   - Route region does not match lock region
   - FLMID region does not match lock region
   - Failed to dispatch route - region assigned to route does not match one or more lock regions
   - Dispatched route name already exists and has been dispatched for a different region
   - Lock regions for the route do not all match
32 - Possible return code meanings:
   - FLMID not found
   - Unable to update database for FLMID
   - FLM2ID not found
   - Unable to update database for FLM2ID
   - Failed to delete log entry
   - Failed to insert entry in log history

44 - Lock is a dual mode lock but only 1 FLM entered

64 - Possible return code meanings:
   - Unable to update lock entry in database
   - Other errors - not specified

80 - Lock pending shelving

104 - PCIO Card error
CONDITIONALLY DISPATCH A ROUTE OF LOCKS

Transaction Code = 11 (DISPATCH_ROUTE_CONDITIONAL)

Dispatch a route of locks as long as none of the locks being dispatched has any errors.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

If no errors occur, transaction record(s) for the lock(s) in the route are returned containing the combination(s) for the lock(s). Locks that could have been dispatched will have a return code of 0 (but no combination) and the locks with errors will have an error return code. In a networking environment with shared CENCON files, you should realize that this is not foolproof and a lock's condition may change between the time you issue one transaction and the next. For example, you may receive a bad return code on a lock indicating it is open. However, before you send your next transaction (possibly a close), another terminal may close the lock without your knowledge.

Note: This transaction will only dispatch a route of locks with no sublock authorization. To conditionally dispatch a route with sublock authorization, see transaction code 18, DISPATCH_ROUTE_CONDITIONAL_SUBLOCKS.

Number of records in transaction:
Send single record, multiple record response

Transaction information required:
ROUTENAME - the name of the route
ID - the ID of the dispatcher
FLMID (& FLM2ID) - the ID(s) of the route service individual(s) who will run the route

Transaction Information returned:
COMBO (& COMBO2) - the combination(s) issued for each lock in the route; returned in individual lock records.

Transaction return codes:
0 - Combos returned in transaction
1 - Possible return code meanings:
   • Route dispatch failed - some locks had errors
   • Route dispatch failed - all locks had errors
   • Attempt to fill route lock list - all locks failed
   • Dispatch route failed. Error encountered while reading locks for route.

4 - Possible return code meanings:
   • Error reading Route file
   • Route not found
   • Attempted to read route - database is closed
   • No locks assigned to Route

5 - Route has lock(s) with sublock(s). Use transaction 18.

24 - Possible return code meanings:
   • FLMID not found
   • Both FLMID and FLM2ID not found

26 - FLM2ID not found

36 - Possible return code meanings:
   • Attempted to read users - database is closed
   • Other errors - not specified

76 - Possible return code meanings:
   • FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   • FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

78 - Dual mode - user time windows mismatch (one user has time windows, one user does not)

80 - Possible return code meanings:
   • FLMID & FLM2ID are the same
   • FLMID & FLM2ID are both blank

(Continued on next page)
84 - Possible return code meanings:
- FLMID does not match lock mode
- FLM2ID does not match lock mode
- Both FLMID and FLM2ID do not match lock mode
- FLMID region does not match lock region
- Dispatched route name already exists and has been dispatched for a different region
- Lock regions for the route do not all match
- Route region does not match lock region

104 - PCIO Card error

**Lock return codes:**
0 - Combination(s) returned in record
8 - Possible return code meanings:
  - Lock not found
  - Invalid sequence on close route
  - Invalid sequence on dispatch route
  - Log entry not found
12 - Lock currently shelved
16 - Possible return code meanings:
  - Lock already open (in single mode)
  - Lock open in dispatch sequence
  - Lock open but unassigned
18 - Attempted to dispatch a sublock that is not defined
20 - Possible return code meanings:

- FLMID does not match lock mode
- FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
- Group ID mismatch - FLMID not authorized to open the lock
- FLMID and FLM2ID are the same
- FLM2ID does not match lock mode
- FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
- Group ID mismatch - FLM2ID not authorized to open the lock
- Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
- Both FLMID and FLM2ID do not match lock mode
- Dual mode - user time window mismatch (one user has time windows, one user does not)
- Both FLMID and FLM2ID are blank
- Both NEW_FLMID and NEW_FLM2ID are blank (for reassign)
- Route region does not match lock region
- FLMID region does not match lock region
- Failed to dispatch route - region assigned to route does not match one or more lock regions
- Dispatched route name already exists and has been dispatched for a different region
- Lock regions for the route do not all match

32 - Possible return code meanings:

- FLMID not found
- Unable to update database for FLMID
- FLM2ID not found
- Unable to update database for FLM2ID
- Failed to delete log entry
- Failed to insert entry in log history

44 - Lock is a dual mode lock but only 1 FLM entered

64 - Possible return code meanings:

- Unable to update lock entry in database
- Other errors - not specified

80 - Lock pending shelving

104 - PCIO Card error
CLOSE LOCKS IN A ROUTE USING KEY

Transaction Code = 12 (CLOSE_ROUTE_WITH_KEY)

Close some or all of the locks in a route by using the close seals in the service personnel's route key. This is a single record transaction where the record contains the name of the route and the RSP IDs to be used in closing the route. The user's key containing some or all of the close seals for the locks on the route must be in port 3 of the key reader attached to the CENTRAN system prior to issuing this transaction. The user's key will be read and any close seals for open locks in this route will be used to close those locks. The multi-record transaction returned will contain a lock record for each lock that was closed. It is the user's responsibility to determine if all of the open locks for the route were closed by this transaction. This is especially important for dual mode locks where some of the close seals may be in each of the user keys.

Number of records in transaction:
Send single record, multiple record response

Transaction information required (first record):
ROUTENAME - the name of the route
ID - the ID of the dispatcher
FLMID (& FLM2ID) - the ID(s) of the route service individual(s) assigned to the route

NOTE: A route key must be in place in the CENTRAN key reader’s port 3.

Transaction information returned (lock records):
A lock record for each lock that was closed for the route
SUB_AUTH - Cencon master lock and sublock authorization flags
SUB_CLOSE - Cencon master lock and sublock close flags. (Note: For a given lock or sublock, if the SUB_CLOSE flag is set, this means the respective lock was opened and closed.)
SUB_OPEN - Cencon master lock open and sublock open/unauthorized attempt flags.
(Note: To determine the meaning of this flag for sublocks, look at the SUB_AUTH authorization flag. If the sublock was authorized, and the SUB_OPEN flag is set for this sublock, this means the sublock was opened. If the sublock was not authorized and the SUB_OPEN flag is set for this sublock, then there was an unauthorized attempt to open the sublock.)
Note: The SUB_AUTH, SUB_CLOSE, and SUB_OPEN are each 5 bytes. Byte 0 represents a flag for the Cencon master lock, while Bytes 1-4 represent flags for sublocks #1 - #4. A value of 0x10, i.e. hex 10, indicates the respective flag is set. See Appendix A.

Transaction return codes:
0 - No transaction errors, check lock return codes
4 - Key is not a field key
8 - No open locks for route and FLMID in active log table
12 - Key is not valid for this system
16 - Key doesn't match user
24 - FLMID not found
26 - FLM2ID not found
32 - Possible return code meanings:
   • Database is closed
   • Unable to query log records for route from database
100 - Not all locks closed in route. This return code can be combined with RSP and ID errors to indicate a combination of errors (see next return codes). However, because the RSPs have already been checked earlier in the process, the following errors can only occur when an RSP is deleted by another CENCON system (that is sharing the files with CENTRAN) after this process is started. Check lock records for specific lock return codes
104 - PCIO Card busy
124 - Not all locks closed and FLMID not in ID file
126 - Not all locks closed and FLM2ID not in ID file
136 - Not all locks closed and ID file busy

Lock return codes:
0 - Lock closed
8 - Possible return code meanings:
   • Lock not found
   • Invalid sequence on close route
   • Log entry not found
(Continued on next page)
16 - Possible return code meanings:
  • Lock not open
  • Lock not active
  • Lock open but unassigned

27 - Possible return code meanings:
  • Close seal is incorrect for lock
  • No close seal

32 - Possible return code meanings:
  • FLM1 not found
  • Unable to update database for FLM1
  • FLM2 not found
  • Unable to update database for FLM2
  • Failed to delete log entry
  • Failed to insert entry in log history

64 - Possible return code meanings:
  • Unable to update lock entry in database
  • Other errors - not specified

104 - PCIO Card error
OBTAIN A USER’S NICKNAME

Transaction Code = 13 (GET_NICKNAME)

Obtain the nickname for an FLM or RSP ID. This transaction can be used to determine if a nickname has expired if nickname expiration is turned on.

Number of records in transaction:
Send single record, single record response

Transaction information required:
FLMID - the ID of the user (FLM or RSP) whose nickname is to be obtained

Transaction information returned:
NICKNAME - the nickname of the user

Transaction return codes:
0 - Nickname returned OK
1 - Nickname returned but it has expired (if nickname expiration is turned on)
8 - FLMID not found
12 - FLMID has no nickname
CHANGE A USER’S NICKNAME

Transaction Code = 14 (CHANGE_NICKNAME)

Change the nickname for an FLM or RSP ID.

Number of records in transaction:
Send single record, single record response

Transaction information required:
FLMID - the ID of the user (FLM or RSP) whose nickname is to be obtained
NICKNAME - the new nickname for the user

Transaction information returned:
None

Transaction return codes:
0 - Nickname changed successfully
8 - FLMID not found
32 - Possible return code meanings:
  • Unable to update database for FLMID
  • Other errors - not specified
OBTAIN A LOCK DESCRIPTION

Transaction Code = 15 (GET_LOCK_DESCRIPTION)

Obtain the description for a lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The first transaction record returned contains the return code for the operation. If the return code is 0, four additional transaction records of the type described by CENCON_ALTERNATE_TRANSACTION (see Appendix A) are returned, each containing a single line of the description. Four additional records are always returned even if the description is less than four lines long.

**Number of records in transaction:**
Send single record, multiple record response (single record on error)

**Transaction information required:**
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the lock

**Transaction information returned:**
DESCRIPTION - the description of the lock in four records

**Transaction return codes:**
0 - Description returned OK
8 - Possible return code meanings:
  • Invalid lock mode passed in transaction
  • Lock not found
ADD OR CHANGE A LOCK DESCRIPTION

Transaction Code = 16 (CHANGE_LOCK_DESCRIPTION)

Add or change the description for a lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

This is a multi-record transaction where the first record contains the name and mode of the lock, and the additional records (up to four) each contain a transaction code of 8 and a line of the lock description (see the CENCON_ALTERNATE_TRANSACTION defined in Appendix A). A single record transaction is returned with the result of the operation. If the specified lock already has a description, it is replaced by the new description, otherwise the description is added.

Number of records in transaction:
Send multiple records, single record response

Transaction information required:
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the lock
DESCRIPTION - the new lock description

Transaction information returned:
None

Transaction return codes:
0 - Lock description changed
8 - Lock not found
32 - Possible return code meanings:
  • Unable to update database for lock entry
  • Other errors - not specified
DISPATCH A ROUTE WITH SUBBLOCKS

Transaction Code = 17 (DISPATCH_ROUTE_SUBLOCKS)

Dispatch a route of locks with sublock authorization.

This is a multi-record transaction where the first record contains the name of the route and the RSP IDs to be used in dispatching the route.

The remaining records contain the identity of the lock, sequence and sublock authorization information. To obtain a list of the locks for a route, use transaction code 7 (GET_ROUTE_LOCKS). The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The Lock Region for all the locks identified in the Route must match.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

A transaction record for each of the locks in the route sent to CenTran is returned containing the combination of each lock or a return code indicating why a combination was not issued.

Number of records in transaction:
Send multiple records, multiple record response

Transaction information required (first record):
ROUTENAME - the name of the route
ID - the ID of the dispatcher
FLMID (& FLM2ID) - the RSP(s) who will run the route

Transaction information required (lock records):
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
SEQ - the sequence of the lock combination being dispatched (1-3)
SUB_AUTH - Cencon master lock and sublock authorization flags

Transaction information returned:
COMBO (& COMBO2) - the combination(s) issued for each lock in the route sent to CenTran, returned in individual lock records.

(Continued on next page)
Transaction return codes:
0 - Possible return code meanings:
   • Route dispatch OK - Combinations returned in lock records
   • Route dispatch - some locks had errors
   • Route dispatch - all locks had errors
1 - Possible return code meanings:
   • Attempt to fill route lock list - all locks failed
   • Dispatch route failed. Error encountered while reading locks for route.
8 - No locks found in transaction file
24 - FLMID not found
26 - FLM2ID not found
36 - Possible return code meanings:
   • Attempted to read users - database is closed
   • Other errors - not specified
76 - Possible return code meanings:
   • FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   • FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
78 - Dual mode - user time windows mismatch (one user has time windows, one user does not)
80 - Possible return code meanings:
   • FLMID & FLM2ID are the same
   • FLMID & FLM2ID are both blank
84 - Possible return code meanings:
   • FLMID does not match lock mode
   • FLM2ID does not match lock mode
   • Both FLMID and FLM2ID do not match lock mode
   • FLMID region does not match lock region
   • Dispatched route name already exists and has been dispatched for a different region
   • Lock regions for the route do not all match
   • Route region does not match lock region
104 - PCIO Card error

Lock return codes:
0 - Combination(s) returned in record
8 - Possible return code meanings:
  - Lock not found
  - Invalid sequence on close route
  - Invalid sequence on dispatch route
  - Log entry not found

12 - Lock currently shelved

16 - Possible return code meanings:
  - Lock already open (in single mode)
  - Lock open in dispatch sequence
  - Lock open but unassigned

18 - Attempted to dispatch a sublock that is not defined

20 - Possible return code meanings:
  - FLMID does not match lock mode
  - FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
  - Group ID mismatch - FLMID not authorized to open the lock
  - FLMID and FLM2ID are the same
  - FLM2ID does not match lock mode
  - FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
  - Group ID mismatch - FLM2ID not authorized to open the lock
  - Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
  - Both FLMID and FLM2ID do not match lock mode
  - Dual mode - user time window mismatch (one user has time windows, one user does not)
  - Both FLMID and FLM2ID are blank
  - Both NEW_FLMID and NEW_FLM2ID are blank (for reassign)
  - Route region does not match lock region
  - FLMID region does not match lock region
  - Failed to dispatch route - region assigned to route does not match one or more lock regions
  - Dispatched route name already exists and has been dispatched for a different region
  - Lock regions for the route do not all match

(Continued on next page)
32 - Possible return code meanings:
   • FLMID not found
   • Unable to update database for FLMID
   • FLM2ID not found
   • Unable to update database for FLM2ID
   • Failed to delete log entry
   • Failed to insert entry in log history

44 - Lock is a dual mode lock but only 1 FLM entered

64 - Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified

80 - Lock pending shelving

104 - PCIO Card error
CONDITIONALLY DISPATCH A ROUTE WITH SUBLOCKS

Transaction Code = 18
(DISPATCH_ROUTE_CONDITIONAL_SUBLOCKS)

This function dispatches a route of locks with sublock authorization as long as none of the locks being dispatched has any errors.

This is a multi-record transaction where the first record contains the name of the route and the RSP IDs to be used in dispatching the route. The remaining records contain the identity of the lock, sequence and sublock authorization information. To obtain a list of the locks for a route, use transaction code 7, GET_ROUTE_LOCKS. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

The Lock Region for all the locks identified in the Route must match.

The User Region for the FLM ID(s) supplied here must also match the Lock Region for the lock specified in the LOCKNAME field.

If no errors occur, a transaction record for each of the locks in the route sent to CenTran is returned containing the combination of each lock dispatched. If errors occur, no locks will be dispatched. The return code of the other locks indicates why the lock (and therefore the route) could not be dispatched.

Number of records in transaction:
Send multiple records, multiple record response

Transaction information required (first record):
ROUTENAME- the name of the route
ID - the ID of the dispatcher
FLMID (& FLM2ID) - the RSP(s) who will run the route

Transaction information required (lock records):
LOCKNAME - the name of the lock, or LOCKSER - the serial number of the lock
SEQ - the sequence of the lock (1-3)
SUB_AUTH - Cencon master lock and sublock authorization flags

Transaction information returned:
COMBO (& COMBO2) - the combination(s) issued for each lock in the route sent to Centran, returned in individual lock records
**Transaction return codes:**

0 - Possible return code meanings:
- Route dispatch OK - Combinations returned in lock records
- Route dispatch - some locks had errors
- Route dispatch - all locks had errors

1 - Possible return code meanings:
- Attempt to fill route lock list - all locks failed
- Dispatch route failed. Error encountered while reading locks for route.

8 - No locks found in transaction file

24 - FLMID not found

26 - FLM2ID not found

36 - Possible return code meanings:
- Attempted to read users - database is closed
- Other errors - not specified

76 - Possible return code meanings:
- FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
- FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)

78 - Dual mode - user time windows mismatch (one user has time windows, one user does not)

80 - Possible return code meanings:
- FLMID & FLM2ID are the same
- FLMID & FLM2ID are both blank

84 - Possible return code meanings:
- FLMID does not match lock mode
- FLM2ID does not match lock mode
- Both FLMID and FLM2ID do not match lock mode
- FLMID region does not match lock region
- Dispatched route name already exists and has been dispatched for a different region
- Lock regions for the route do not all match
- Route region does not match lock region

104 - PCIO Card error
**Lock return codes:**

0 - Combination(s) returned in record

8 - Possible return code meanings:
   - Lock not found
   - Invalid sequence on close route
   - Invalid sequence on dispatch route
   - Log entry not found

12 - Lock currently shelved

16 - Possible return code meanings:
   - Lock already open (in single mode)
   - Lock open in dispatch sequence
   - Lock open but unassigned

18 - Attempted to dispatch a sublock that is not defined

20 - Possible return code meanings:
   - FLMID does not match lock mode
   - FLMID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - Group ID mismatch - FLMID not authorized to open the lock
   - FLMID and FLM2ID are the same
   - FLM2ID does not match lock mode
   - FLM2ID is not a field ID (i.e. ID is a Dispatcher, Supervisor, etc.)
   - Group ID mismatch - FLM2ID not authorized to open the lock
   - Group ID mismatch - Both FLMID and FLM2ID are not authorized to open the lock
   - Both FLMID and FLM2ID do not match lock mode
   - Dual mode - user time window mismatch (one user has time windows, one user does not)
   - Both FLMID and FLM2ID are blank
   - Both NEW_FLMID and NEW_FLM2ID are blank (for reassign)
   - Route region does not match lock region
   - FLMID region does not match lock region
   - Failed to dispatch route - region assigned to route does not match one or more lock regions
   - Dispatched route name already exists and has been dispatched for a different region
   - Lock regions for the route do not all match

*(Continued on next page)*
32 - Possible return code meanings:
   • FLMID not found
   • Unable to update database for FLMID
   • FLM2ID not found
   • Unable to update database for FLM2ID
   • Failed to delete log entry
   • Failed to insert entry in log history
44 - Lock is a dual mode lock but only 1 FLM entered
64 - Possible return code meanings:
   • Unable to update lock entry in database
   • Other errors - not specified
80 - Lock pending shelving
104 - PCIO Card error
OBTAIN THE NUMBER OF SUBLOCKS FOR A LOCK

Transaction Code = 19 (GET_NUMBER_SUBLOCKS)

This function obtains the number of sublocks supported by the specified lock. The lock can be identified by either Lock Name in the LOCKNAME field or by Lock Serial Number in the LOCKSER field. The LOCKNAME field is always used first in an attempt to look up the lock. If the LOCKNAME field is blank, then the LOCKSER field is used.

Number of records in transaction:
Send single record, single record response

Transaction information required:
LOCKNAME - the name of the Cencon master lock, or LOCKSER - the serial number of the lock
LMODE - the mode of the Cencon master lock
ID - the ID of the dispatcher

Transaction information returned:
NUM_SUB - the number of sublocks supported by the lock specified

Transaction return codes:
0 - Number of sublocks returned OK
8 - Possible return code meanings:
  • Invalid lock mode passed in transaction
  • Lock not found
OBTAIN THE LOCK NAME FROM LOCK SERIAL NUMBER

Transaction Code = 20 (GET_LOCK_NAME)

This function obtains the name of a lock based on the lock serial number and the lock mode.

**Number of records in transaction:**
Send single record, single record response

**Transaction information required:**
- LOCKSER - the serial number of the locks
- LMODE - the mode of the lock
- ID - the ID of the dispatcher

**Transaction information returned:**
- LOCKNAME - the name of the lock

**Transaction return codes:**
- 0 - Lock name returned OK
- 8 - Possible return code meanings:
  - Invalid lock mode passed in transaction
  - Lock not found
APPENDIX A - CENTRAN TRANSACTION

The following is an example of the CENTRAN transaction record as it would be defined in C. Remember that all strings contain an extra byte for the NULL termination character (00h). For example, "char ID[21]" means the ID can be 20 characters in length (20 characters of ID + 1 NULL character). The transaction record is 211 bytes long with all strings NULL terminated.

Note: The fields defined as “flmid” and “flm2id” in the transaction record can contain either the names of FLMs or the names of RSPs depending on what transaction type is being issued and/or what lock mode is being affected by the transaction.

/* Transaction code defines */
#define OPEN_LOCK                    1
#define CLOSE_LOCK                   2
#define LAST_COMBO                   3
#define DISPATCH_ROUTE               4
#define CLOSE_ROUTE                  5
#define GET_ROUTE_OPEN_LOCKS         6
#define GET_ROUTE_LOCKS              7
#define LOCK_IN_ROUTE                8
#define REASSIGN_LOCK                9
#define REASSIGN_ROUTE              10
#define DISPATCH_ROUTE_CONDITIONAL  11
#define CLOSE_ROUTE_WITH_KEYS       12
#define GET_NICKNAME                13
#define CHANGE_NICKNAME             14
#define GET_LOCK_DESCRIPTION    15
#define CHANGE_LOCK_DESCRIPTION    16
#define DISPATCH_ROUTE_SUBLOCKS 17
#define DISPATCH_ROUTE_CONDITIONAL_SUBLOCKS 18
#define GET_NUMBER_SUBLOCKS 19
#define GET_LOCK_NAME 20
#define FLMMODE           1
#define ROUTEMODE         2
#define FLMDUAL        0x10
#define ROUTEDUAL      0x20

/* CALLTYPE, 2nd line call = 2, 1st line call = 0 or 1 */
#define SECOND_LINE_FLM_CALL 2
/* CENCON TRANSACTION */
/* Transaction structure */
/* All char fields are NULL terminated */
type def struct {
    short trans_code; /* The transaction code */
    short rc; /* Return code in response */
    time_t posted; /* Date and time transaction */
    short lmode; /* Mode of lock being used */
    short seq; /* Sequence num if route */
    short calltype; /* 2 = 2nd line FLM call */
    short audit; /* Lock Audit Count */
    char lockname[11]; /* Lock name */
    char route[9]; /* Route name if using routes */
    char reserved; /* Reserved Field - Not in Use */
    char lockser[7]; /* Lock serial */
    char id[21]; /* Dispatcher ID */
    char flm_id[21]; /* FLM ID */
    char flm2id[21]; /* Second FLM ID (dual lock) */
    char combo[7]; /* Lock combination for FLM1 */
    char combo2[7]; /* Lock combination for FLM2 */
    char seal[3]; /* Lock close seal number */
    char new_flm_id[21]; /* FLM ID */
    char new_flm2id[21]; /* Second FLM ID (dual lock) */
    char nickname[11]; /* User nickname */
    char sub_auth[5]; /* Sublock authorization = 0x10 if authorized */
    char sub_open[5]; /* Lock opened = 0x10 if opened */
    char sub_closed[5]; /* Lock closed/bad attempted = 0x10 if closed/bad attempted */
    char num_sub; /* Number of sublocks controlled by Cencon lock specified */
    char seal_expansion[3]; /* Expansion of close seal to 4 digits-4th digit followed by NULL */
    char expand[15]; /* Expansion for future function */
} CENCON_TRANSACTION;
typedef struct {
    short trans_code;    /* The transaction code */
    short rc;            /* Return code in response */
    time_t posted;       /* Date and time transaction */
    short lmode;         /* Mode of lock being used */
    short nas1;          /* Reserved */
    short nas2;          /* Reserved */
    short reserved1;     /* Reserved */
    char lockname[11];   /* Lock name */
    char nal[17];        /* Reserved */
    char id[21];         /* Dispatcher ID */
    char na2[59];        /* Reserved */
    char description[40];/* A line of lock description */
    char na3[47];        /* Reserved */
} CENCON_ALTERNATE_TRANSACTION;
**GLOSSARY**

**Bank Mode** - A special lock operating mode, not activated from Cencon, normally used by Bank employees. The lock will open repeatedly on a unique combination and close seals are not issued.

**CCW** - Counterclockwise rotation to the left. This is used in referring to the direction that the lock dial should be turned at certain times when performing lock operations.

**Change Key** - A two pronged, non programmable, key that is inserted into the back of the lock for activating and shelving locks.

**CW** - Clockwise rotation to the right. This is used in referring to the direction that the lock dial should be turned at certain times when performing lock operations.

**Dispatcher** - The dispatcher is the person who works directly with the Cencon computer system to direct the operations of the First Line Maintenance and Route Personnel. As a part of this process, the dispatcher uses the computer system to generate lock combinations for issue to First Line Maintenance and Route Personnel so that they may access the locks at the ATM's that they are servicing or replenishing.

**D Key** - A black Smart Key that is used by the Dispatchers to allow access to the FLM and Route Service Menus in the Cencon program.

**Dual Mode** - An operating mode that requires two users and two combinations to open a lock.

**Electronic Key** - This is an electronic chip imbedded in a fob.

**Electronic Key Reader** - This is the key reader that is attached to the PC as a peripheral item. It is used to write and read data to and from, respectively, the Smart Keys.

**F Key** - A blue Smart Key that is programmed at the PC to authorize an FLM to open locks using the supplied One Time Combination.

**First Line Maintenance (FLM) Personnel** - Those personnel who will be accessing ATM's on a call by call basis. An FLM person can only have one lock combination issued at a time.

**Fob** - A plastic molding into which an electronic chip can be imbedded to form a Smart Key.

**GMT** - The acronym for Greenwich Mean Time. This is the zero line for all time zones. Each time zone is offset from the zero line by a specific number of hours. The number of hours to be used for offset correlates to the number of time zones that you are away from the zero line. With the induction of daylight savings time, this offset decreases by one hour.
**iButton** - The trademarked Dallas Semiconductor name for the electronic keys used with the Cencon System.

**One Time Combination (OTC)** - A unique combination that will allow a lock to opened one time by an authorized user with the correct Smart Key.

**R Key** - A yellow Smart Key that is programmed at the PC to authorize a Route user to open locks using the supplied One Time Combination.

**Route Service Personnel (RSP)** - Those personnel who will be accessing specified ATM's on a given route, usually to replenish currency. They can have combinations issued for multiple locks at one time. Route personnel can also be dispatched by the Dispatcher on a one time basis to perform service at an ATM/Lock.

**Shelved Mode** - This is the default mode of a Cencon 2000 lock when it is shipped from the factory. It is also the mode that a Cencon lock is put in when it is not actively being used; i.e., “shelved from service”. The combination for a lock in shelved mode is 50-25-50.

**S Key** - A black Smart Key that is used by the Supervisor to access the Supervisor Menu of the Cencon program.

**SA Key** - A red Smart Key that is initialized at the PC with information needed to activate or shelve locks. It is also used to retrieve audit records from locks.

**Single Mode** - An operating mode that requires one combination and Smart Key to open a lock.

**Smart Key** - This is an electronic chip imbedded in a fob.

**Smart Key Reader** - This is the key reader that is attached to the PC as a peripheral item. It is used to write and read data to and from, respectively, the Smart Keys.

**SS Key** - A black Smart Key that is used by the Special Supervisor to access the Supervisor and Special Supervisor menus in the Cencon program.

**Sublocking System** - A Cencon software defined operational lock structure where a Cencon 2000S lock serves as a master lock and has Subordinate Locks (Sublocks) associated with it.

**Subordinate Locks** (Sublocks) - Locks that operate in a Sublocking System where subordinate locks are associated with a Cencon 2000S lock that serves as a master lock. At this time there are 2 types of sublocks - **Sublock 138** and **Sublock 139**.

**Two Person Integrity (TPI)** - When a Special Supervisor is performing advanced functions in the Cencon software, the Supervisor’s key is required in the key reader in addition to the Special Supervisor’s key. This provides a higher level of security and is called Two Person Integrity (TPI). Two person integrity can also apply at the lock level if a lock is set up for Dual Mode. Once again, two electronic keys would be required to perform certain lock operations.