

ControlMatrix

TAPC Protocol Definition

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1. General Description

TAPC (Telnet Access Paging Control) is the remote control mechanism for ControlMatrix paging systems. It allows access to many of the functions of a ControlMatrix system. This document describes the protocol used to communicate with the host system.

2. Connection Details

To communicate with a TAPC interface, connect a TCP socket to port 802 on the active Q-host. In a redundant system, take care as to which host you actually connect to, as the inactive host will not provide the required service.

3. Basic Protocol Format

The interaction with the TAPC service is via an ASCII, line based protocol. This makes it simple to debug and experiment without using dedicated tools. Commands are entered as a single command letter, a string of arguments relevant to the command, and followed by a newline to terminate and execute the command. Commands are case-insensitive, and commands and arguments are separated by whitespace (space, TAB, etc). There are no timeouts or checksums associated with the protocol operation, as the protocol relies on the underlying security of the TCP/IP link for data integrity.

Also note that the interface does not echo back characters it receives. An appropriate terminal emulation package should be used that implements auto-echo.

4. Typical sequence

A standard TAPC session may proceed as follows:

- Connection to the socket
- Request client seat if required
- Authorize the Courtesy user if required
- Sending of a license key if required
- Send a list of zones
- Send a display configuration
- Optionally define elements for a sequence/courtesy page.
- Execute a sequence/courtesy page/ Execute a live page
- Cycle back to a higher point and repeat if desired
- Terminate session

During an active page, indications of status may be supplied to allow the client to track paging system activity against other systems if required.

5. The commands

5.1 ? – Help

Displays an abbreviated description of the available commands. Only useful for interactive sessions.

5.2 D – Display

5.2.1 D C nn

Set active display colour. nn = 1 - Red, 2 - Green, 3 – Amber

5.2.2 D M nn

Set active display mode. nn = 0 – fixed, 1 – scrolling

5.3 E n – Element definition for element number n

n is in the range 0-24 inclusive.

5.3.1 E n a filename length <CR>data

Element n is audio data in the form of a wavefile, it has name *filename* (enclose in double-quotes if the filename, or pathname contains spaces. The length of the file is *length* bytes. The contents of the file is *data*.

The TAPC server checks whether it already has a file by that name of the right length. If it does, it replies with an 'X', and no data need be sent. Otherwise it replies with an 'S' and the data should be sent.

Once the line (ending in the <CR>) has been read, the TAPC server then reads length bytes of data from the socket and saves it in the file. This file is then used as the element in the paging request.

5.3.2 E n e filename

Element n should use existing wave file *filename*. This wavefilename is presumed to exist already on the ControlMatrix system, otherwise an error will occur when the page is executed. The filename should not be quoted, even if it contains spaces.

5.3.3 – E n t filename length <CR>data

Element *n* should have text “*data*” associated with it. The string will be stored in file *filename* and has *length* bytes. Following the <CR>, the TAPC server checks whether it already has a file by that name of the right length. If it does, it replies with an ‘X’, and no data need be sent. Otherwise it replies with an ‘S’ and the data should be sent, and then there must follow *length* bytes of data. This is similar in concept to the audio data above.

This string will be displayed on any signage associated with the page while the page is in progress. The attributes used to display the message are those given for the D command above. Individual attributes for message elements are not supported.

5.3.4 E n s type fontID <CR> arbitrary text string

Element *n* is text which should be converted using the text-to-speech engine with voice font *fontID* before use as audio for the paging system. The parameter *type* indicates whether the following text string should be interpreted as ASCII (*type*='A') or as Unicode (*type*='U'). The correct Unicode format to use may be determined from the Realspeak voice font documentation.

5.3.5 E n z

This element (and by inference, those following as well) are not used. The end-of-sequence marker. There is no need to send this command if all elements (0->7) have been defined.

5.4 G – Grant access to a client seat

Issue this command to request a Courtesy client seat. The Courtesy service will determine the number of client instances already running and grant access to a client seat if number of Courtesy client licenses permit it. If there are sufficient seats available it will respond with “SUCCESS” otherwise it will respond with “FAILURE”.

5.5 I - Interactive Mode

Interactive mode defines whether informative messages are sent back out the socket. It is offered to make the system more user-friendly to human operators, perhaps when testing specific function using a telnet interface. When interactive mode is ON, feedback confirms commands have been successfully accepted and processed by the system. These responses may confuse a computer-based controller, and so are disabled by default.

5.5.1 I

Toggles interactive mode. If interactive mode has been toggled on by this command, a message stating that fact is issued.

5.5.2 I ON

Sets interactive mode on. A response is issued.

5.5.3 I OFF

Sets interactive mode off.

5.6 U *username*

Provide the username as a string of ASCII characters.

5.7 P *password*

Provide the password as a string of ASCII characters.

5.8 V

Request validation of the username/password pair previously provided. If the pair is valid the Courtesy service responds with "SUCCESS" otherwise it will respond with "FAILURE".

5.9 N *pin*

Request validation of the PIN "*pin*" provided. The Courtesy service will scan the user database. If it finds a valid PIN it will respond will "SUCCESS" otherwise it will respond with "FAILURE".

5.10 K – License key

5.10.1 K *valid_nsi_license* <SPACE> *seed*

Prior to any network system interlinking session a key must be exchanged. The key consists of the nsi license followed by a single space character then the seed (location string for the particular system). If the license can be validated using the seed, then network system interlinking will be enabled until the session is closed.

5.11 L – Lock PCU station

Prevents paging from a specified PCU when lock is active (ON). The PCU is identified by the MediaMatrix DAB channel it uses for paging. This number may be obtained either from the MediaMatrix view file or the System Inputs dialog in the Setup GUI.

5.11.1 L ON *nnn*

Lock the PCU specified by the MediaMatrix DAB channel *nnn*. Paging is disabled from this PCU.

5.11.2 L OFF *nnn*

Unlock the PCU specified by the MediaMatrix DAB channel *nnn*. Paging is enabled for this PCU.

5.12 T – Text for a live page

5.12.1 T N

There will be no text associated with subsequent live pages.

5.12.2 T Y *textstring*

The text string ***textstring*** will be displayed on any associated signage for the duration of subsequent live pages. The attributes used to display the message are those given for the D command above. The text string must be no more than 1000 characters long.

5.13 X – Execute page

5.13.1 X E *id*

Terminate the currently active page identified by ***id***.

5.13.2 X L *pre prio dab id*

Execute a live page with the following parameters.

pre = Y Page will be preceded by preamble bells

pre = P Page will be preceded by preamble bells (same as above)

pre = N Page will not be preceded by preamble bells

prio = *n* where *n* is the priority of the page (used for resolution of access to zones) and is in the range 1 – 4 inclusive, with 1 being the lowest priority

dab = *nnn* where *nnn* is the DAB channel in the MediaMatrix that the audio for this page will appear on. This will depend on how you have wired your audio into the MediaMatrix, and then setup the audio parameters in ControlMatrix setup.

id = *nnn* Is an id number provided by the client which the system may use to identify individual page requests when informing the client of progress of an individual page.

5.13.3 X S pre prio id

Execute a sequence page with the currently defined elements as the sequence.

pre = Y Page will be preceded by preamble bells

pre = P Page will be preceded by preamble bells (same as above)

pre = N Page will not be preceded by preamble bells

prio = *n* where *n* is the priority of the page (used for resolution of access to zones) and is in the range 1 – 4 inclusive, with 1 being the lowest priority

id = *nnn* Is an id number provided by the client which the system may use to identify individual page requests when informing the client of progress of an individual page.

5.14 Z – Zonelist definition

The system will store a list of zones to be used with subsequent page requests. This list of zones remains current for all future page requests until overridden by a future zonelist definition. All zones are zone numbers in the system to which you are connected. Remote zones of interlinked systems cannot be accessed via this method – access to remote systems must be made to the tapc interface of those systems directly.

5.14.1 Z *n1 n2 ...*

Where *n1 n2 ...* is a list of zones as decimal numbers each separated by a space.

5.15 C *n* – Check licensing

Where *n* corresponds to the type of license required to be checked. The valid values for *n* are as follows:

<i>N</i>	License type
0	Number of paging stations
1	Number of messagenet cards
2	Redundancy
3	External Alarms
4	Telephone interfaces
5	Courtesy seats
6	Signage
7	FIDS
8	Courtesy voices
9	Generic signage
10	Network System Interlinking

The system will respond with a number (in ASCII) indicating the number of the particular license type that have been allowed, or 0 if unlicensed for that feature.

5.16 . Terminate Session

A full-stop will terminate the tapc session and close the socket.

6. The Responses

If licensed, the tapc interface will also supply information on the progress of pages through the paging system. Responses will be of the form

S id state

Where

id is the id number associated with the page when it was executed

state is one of the following paging states. Not all states may be returned for any given page, and some states may not be relevant for the TAPC interface.

State	Description
PAGE_IDLE	Request slot is idle
PAGE_NEW_REQ	New incoming request
PAGE_AWAIT_XZL	Page held pending rx of extended zone list
PAGE_AWAITING_ZONES	Awaiting zones only if no S&F
PAGE_AWAITING_TPU_RES	Awaiting reservation of TPU channels
PAGE_TPU_RESERVED	Awaiting reservation of TPU channels
PAGE_TPU_PROMPTING	Playing a prompt to the TPU
PAGE_TPU_PLAYING_PAGE	Actually playing the page
PAGE_PREAMBLING	Preamble is playing
PAGE_ACTIVE	Page is active - speak now!
PAGE_STORING	Page is going to S&F for active later when playing out as PAGE_PLAY type
PAGE_STORED	Compulsory S&F completed
PAGE_TPU_PREREC_REQ	TPU requesting a pre-recorded sequence
PAGE_TIMEDOUT	Page completed because it timed out
PAGE_COMPLETE	Page completed normally
PAGE_NSI_DISTRIBUTE	Page pending distribution to linked systems

7. Sample Session

A sample TAPC session may proceed as follows:

```
telnet 192.168.0.1 802
    Trying 192.168.0.1...
    Connected to 192.168.0.1.
    Escape character is '^]'.
    OK                               GA here indicates the Q-host is not active
e 0 e /cm/waves/intro.wav
                               intro.wav is the first element in the list – existing
                               wavefile
e 1 s A 5534<CR> name for conversion
                               The second element is ascii, “name for conversion” via
                               text-to-speech
e 2 e /cm/waves/gotodesk.wav
                               The third element is an existing wavefile called
                               gotodesk.wav
e 3 z                               Terminate the list
Z 1 2 3                          Destination zones 1, 2 and 3
x s y 2 101
                               Execute the page, adding a preamble, priority two, and
                               assign it handle 101 for identification in the system
S 101 PAGE_NEW_REQ
                               Status for ID 101 -Page has been accepted by the
                               system
S 101 PAGE_PREAMBLING
                               Status for ID 101 -Page is playing preamble
S 101 PAGE_ACTIVE
                               Status for ID 101 -Page is active. In this case playing
                               the listed messages
S 101 PAGE_IDLE
                               Status for ID 101 -Page is complete
.
                               Terminate the session
Connection closed by foreign host
```