Revision 2

Updated per 2/26 conference call, removed Hold Point and made resultant changes.

Revision 1

Updated per discussion at Portland meeting, modified to be normative rather than informative, expand examples.

Revision 0

Proposal was informative example only.

Introduction

This document is a follow-up to T10/02-257r1 that presents a state diagram example showing the values of the fields in the Very High Frequency polling frame. Discussion of that document resulted in an action item to show the *In Transition* field in the table, as well as develop narrative text to present the information suitable for inclusion in ADC. This proposal addresses that action item by creating both normative and informative tables and corresponding text.

The proposed text would be placed in the *Automation drive interface overview* section (4.2.1) of the current ADC draft (revision 1).

Proposed changes to ADC

4.2.1.1 Load and unload normative states

Table 1 defines the valid states that may be reported in the Very High Frequency data during load operations. Automation devices rely on this information to coordinate handling of the media into the DTE, as well as to provide activity status back to users of the system.

Load Sequence State	InXtn	RAA	MPrsnt	MStd	MThrd	DAcc	
a) DTE initialized, no media present	0	1	0	0	0	0	
b) Early detection of media placement by DTE	0	1	1	0	0	0	
c) Acknowledgement of media control by DTE	0	0	1	0	0	0	
d) Media seating	1	0	1	0	0	0	
e) Media seated	0	0	1	1	0	0	
f) Media threading	1	0	1	1	0	0	
g) Media threaded	0	0	1	1	1	0	
h) Preparing for data access	1	0	1	1	1	0	
i) Load complete (DTE ready)	0	0	1	1	1	1	

Table 1 – Load sequence normative states

Load states (a) and (i) shall be supported by the ADC device server at a minimum. Other states should be reported to accurately reflect the states actually used by the DTE.

To indicate an error in any of the listed states, or to report a state not listed, the recovery requested (RRqst) field in the Very High Frequency data shall be set to 1 and the in transition (InXtn) field shall be set to 0.

When the in transition (InXtn) field is set to 0, the DTE requires an external stimulus (such as a command or physical translation of media) to attempt to reach another state.

Load state (a) represents an empty DTE, available for loading by the automation device.

Load state (b) represents initial placement of media into the DTE by automation. Depending on the DTE's design, media present may also be detected and reported coincident with this state. An additional external stimulus is required to leave this state, such as a "push" of the media by the automation.

ADC STATE TRANSITION TABLE

Load state (c) represents detection and acknowledgement by the DTE of media presence, and that the DTE is now able to relinquish robotic access and assume control of the media. This state may be reflected after a media "push" by the automation for example. An additional external stimulus is required to leave this state, such as a "load" command from the automation.

Load state (d) represents media loading under the control of the DTE. It is used while seating the media.

Load state (e) represents seated media. An additional external stimulus is required to leave this state, such as a "thread" command from the automation. This state may be used in conjunction with MAM access for example.

Load state (f) represents media threading under control of the DTE.

Load state (g) represents threaded media. An additional external stimulus is required to leave this state, such as a command from the automation.

Load state (h) represents any additional processing that may be done by the DTE after threading the media, but prior to the load being fully complete to allow data access.

Load state (i) represents the completion of the load operation, and the DTE being in the SCSI READY state.

An example showing use of a few of the states is given in table 2.

Load Sequence Event	InXtn	RAA	MPrsnt	MStd	MThrd	DAcc	
1) DTE initialized, no media present	0	1	0	0	0	0	
2) Initial media placement into DTE	0	1	0	0	0	0	
3) After "push" by automation, now seating	1	0	1	0	0	0	
4) After seating, media now threading	1	0	1	1	0	0	
5) Media threaded, preparing for data access	1	0	1	1	1	0	
6) Load complete (DTE ready)	0	0	1	1	1	1	

Table 2 –	Load s	sequence	examp	ble
	Loud .	Jequentee	CAUITE	

In this example, the DTE loads by first placing media into it, then pushing the media far enough into the DTE so that it engages the media and completes the operation in one continuous motion.

The load sequence begins with the drive initialized, no media present and robotic access allowed (1). The automation device then places media into the drive, which is not yet recognized by the drive (2). After the initial placement, the automation device pushes the media into the drive, such that media presence is detected and the DTE assumes control of the media and seats it (3). The drive continues transitioning through states as it threads the media (4). After threading, the drive has some final firmware preparations to make (5) prior to completing the load (6).

Table 3 defines the valid states that may be reported in the Very High Frequency data during unload operations. Automation devices rely on this information to coordinate handling of the media from the DTE, as well as to provide activity status back to users of the system.

Unload Sequence State	InXtn	RAA	MPrsnt	MStd	MThrd	DAcc	
a) DTE ready	0	0	1	1	1	1	
b) DTE rewinding	1	0	1	1	1	0	
c) Media unthreaded, still unloading	1	0	1	1	0	0	
d) Media unseated, unloading or ejecting	1	0	1	0	0	0	
e) DTE unloaded (hold point), seated	0	0	1	1	0	0	
f) DTE unloaded (hold point), unseated	0	0	1	0	0	0	
g) Media ejected, presence detected	0	1	1	0	0	0	
h) Media removed, unload complete	0	1	0	0	0	0	

Table 3 – Unload sequence normative states

Unload states (a) and (h) shall be supported by the ADC device server at a minimum. Other states should be reported to accurately reflect the states actually used by the DTE.

To indicate an error in any of the listed states, or to report a state not listed, the recovery requested (RRqst) field in the Very High Frequency data shall be set to 1 and the in transition (InXtn) field shall be set to 0.

ADC STATE TRANSITION TABLE

Unload state (a) reflects the initial DTE state prior to receiving a request to unload.

Unload state (b) reflects the initial DTE state after receiving a request to unload.

Unload state (c) reflects the DTE state during the unload operation after the media has been unthreaded.

Unload state (d) reflects the DTE state during the unload operation after the media has been unseated, as well as the state during the eject operation.

Unload state (e) reflects the DTE state after unloading to hold point, where media is still seated. An external stimulus, such as a request to eject or load, is needed to leave this state.

Unload state (f) reflects the DTE state after unloading to hold point, where media is also unseated. An external stimulus, such as a request to eject or load, is needed to leave this state.

Unload state (g) reflects the DTE state after the media is unloaded and ejected and the DTE is still able to report media present until the media is completely removed.

To Unload state (h) reflects the DTE state after the media is unloaded, ejected and removed.

As an example, an "unload to hold point" sequence could use states (a), (b), (c) and (e), or alternatively (a), (b), (c), (d), and (f). An "unload to eject" sequence could use states (a), (b), (c), (d), and (h).