K2 Protocol Developer's Guide

Revisions

Version	Revision Date	Description
1.0	May 16, 2007	Initial Release
1.1	Feb 15, 2008	3.2 Updates and Corrections.

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1 AMP

1.1 Device management:

1.1.1 What is AMP?

AMP stands for Advanced Media Protocol.

AMP commands are a list of commands specified in the "*Video Disk Recorder Command and Control Specification"* from Odetics Broadcast Corporation as well as new and extended commands added by Grass Valley.

1.1.2 RS-422 and TCP/IP socket connections:

Connections to the K2 can be made via a RS-422 serial connection or a TCP/IP socket connection.

RS-422:
There are up to four RS-422 connections available on a K2 with each connection corresponding to a channel.

Advantages:
- The RS-422 ports are dedicated ports. As soon as you are physically connected to the port you can start sending commands and receiving responses immediately. You don't have to go thru the connection and disconnection process that socket connections do.

Disadvantages:
- You must be physically connected the port corresponding to the channel that you want to control.
- Some commands are not available on RS-422 connections due to a 256 byte limitation of the serial driver.

TCP/IP socket:
There are up to four *channel* connections and ten *channel-less* connections available via TCP/IP socket connections. The sockets use port 3811 as assigned by IANA.

In the K2 software, version 3.2 increased the channel-less connection limit from four to ten.

Advantages:
- You can remotely connect to any machine and channel via Ethernet.
- You have more channel connection options via sockets.

Disadvantages:
- Susceptible to network traffic issues
- Extra overhead of opening and closing sockets for each connection.

You can use either type of channels, but do not try to control a channel using both RS-422 and a TCP/IP socket connection.

1.1.3 Channel versus channel-less socket connections:

There are two types of connections are available: channel and channel-less.

There is a channel connection available for each K2 channel. For example, if a K2 has 4 channels, it has 4 AMP channel connections available. Channel connections can be used for all functionality.

There are ten channel-less connections available. Each channel-less connection can be used for media asset management, but not transport control.

To create channel connections:

For channel 1 send: CRAT0007204Vtr1\n
For channel 2 send: CRAT0007204Vtr2\n
For channel 3 send: CRAT0007204Vtr3\n
For channel 4 send: CRAT0007204Vtr4\n

Where:
"CRAT" tells the AMP listener that a connection is coming.
"0007" is the total number of characters to follow.
"2" is the connection mode: "channel"
"04" is the channel length
"VtrX" is the channel where X is a value from 1 to 4.

To create channel-less connections:
Send: CRAT00014\n

Where:
"CRAT" tells the AMP listener that a connection is coming.
"0001" is the number of characters to follow.
"4" is the connection mode: "channel-less"

Open a connection and reuse it; don't repeatedly open and close connections.

The K2 AMP connection model is such that once you open a connection, you should hang onto it and reuse it. Repeatedly opening and closing connections unnecessarily sets up and tears down processes. The overhead of these extra processes may affect performance.

To close a connection:
Send: STOP0000\n

Where:
"STOP" tells AMP that this is a stop message.
"0000" means no more data to follow.

Close the socket after disconnecting from the AMP server.

See 5 for a list of all calls that channel-less connections can make.

1.1.4 Sending a Socket Command:

To send a command, you must also provide a wrapper. It is called the CMDS wrapper.

If you wanted to send the play command, 2001, you would send:

Send: CMDS00042001\n

Where:
"CMDS" is the command wrapper label.
"0004" is the command length, not a byte count.
"2001" is the command itself, in this case, the play command.

The response will follow and is not contained in a wrapper.

1.1.5 Checksums:

Checksums are not included when sending socket commands. When sending a serial command, you should provide a checksum. To computer the checksum, add up all the command bytes. The resulting byte is the checksum. Add the checksum byte the end of the command.

1.1.6 RS-422 256 byte limit:

The GetThumbnail response returns more than 256 bytes of data. Given that, this command is not available over a RS-422 connection.

1.1.7 Inactivity timeout:

Socket connections have a 6 hour inactivity timeout period. If no commands have been sent during this period, the socket will be disconnected.

This timeout period can be changed in registry by adding the following key:

[HKEY_LOCAL_MACHINE\SOFTWARE\Grass Valley Group\AMP_ETHERNET_SERVER] "SERVER_TIMEOUT"="5"

If the key AMP_ETHERNET_SERVER is not present, create it and add a new string value called SERVER_TIMEOUT. The timeout value is specified in number of minutes. Even though this is a string, the value should only contain numeric characters (0-9). Up to 10 digits can be specified so a very large timeout value can be configured.

If the registry key is not found, the inactivity period will default to 6 hours.

Note, the command timeout is only checked about every five minutes. If you turn the interval down very low, it will still only check for an inactivity timeout about every 5 minutes.

1.1.8 AMP clip caching:

AMP server works on a model where the client application is working with clips in one bin. This bin by default is V:\default.To enable the fastest call response time the AMP server builds a cache of clip data from the clips in this bin.

On the first AMP connection, when the AMP server starts up, it starts building the clip cache. Here is a chart listing the time it takes the AMP server to cache clips in a bin:

Figure 1: AMP server clip caching time

Clips	Seconds
15	1.0
1000	3.0
4000	6.0
8000	7.0
12000	8.0
16000	9.0
20000	10.0

In 3.1 K2 Client software, the first AMP connection must wait for clip cache to build. Starting in 3.2 software, the clip cache is built upon K2 Client boot up.

In 3.1 K2 Client software, the first connection request will not return until the AMP server has finished building the clip cache. Make sure that your AMP client application allows enough time to connect before timing out (i.e. recommended default initial connection timeout = 60 seconds).

The client application may tell AMP to use a different bin by calling (A2.OE) SetWorkingFolder:

1.1.8.1 Set Working Folder:

```
05/14/2007 15:13:36.098 AMP (1) SetWorkingFolderRequest new
> a20e000500036e6577
< 100111

05/14/2007 15:13:36.098 AMP (1)   PortStatusRequest: [0] Busy Rem [1] Stop [2] Still
CueDone [3] Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] C
> 61200f
< 7f2082a0838340004000004300000002000aa

05/14/2007 15:13:36.161 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still CueDone [3]
Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] CuePla
> 61200f
< 7f2002a0838340004000004300000020002a

05/14/2007 15:13:36.161 AMP (1) GetCurrentWorkingFolder
> a00f
< Working Folder: 'new'
< 820f000500036e6577e3
```

Changing the working folder will rebuild the clip cache.

When the AMP server changes its working bin it must cache the clip data of all clips in the new bin. The process is the same as the startup case in that the client application must wait until the caching process finishes. To check this, the application must poll the busy status bit to determine when caching has completed. In 3.2 K2 Client software, the working bin may not need to re-cache the clips if another AMP connection currently has that working folder cached.

1.1.9 Expense of calls:

Use the most efficient calls for your application.

Calls that retrieve data from the clip cache return much more quickly than calls that have to retrieve data from the K2's database and/or file system. There are often different ways to retrieve data so look for the most efficient calls for your needs when writing applications.

Example:
Say that you have an application that needs to get clip duration for all clips in a bin. The bin contains 1000 clips. You could call the "(AA.13) Clip Data Request" command for each clip. This call returns the clip duration, but also retrieves other data about the clip. Additionally, the call has to query the K2's database to retrieve all data about the clip.

Another option would be to call "(A2.17) ID Duration Request" command for each clip. This call only returns the clip duration plus it doesn't have to query the K2 database. The clip's duration is retrieved from the clip cache.

You can see how making the ID Duration Request call 1000 times will yield the best performance.

Clip cache calls:
The following calls return data from the clip cache.

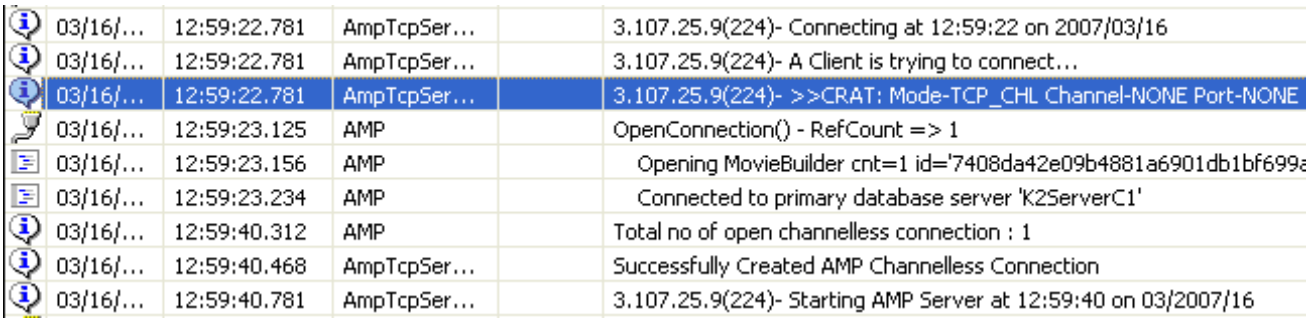
- (AX.14) List First ID
- (AX.15) List Next ID
- (AX.18) ID Status Request
- (A0.12) IDs Changed List Request
- (A2.25) ID Start Time Request
- (A2.17) ID Duration Request

Rebuild clip cache:
The command (A2.OE) SetWorkingFolder rebuilds the clip cache.

Non-clip cache calls:
See 0 for a list of calls that do not use the clip cache.

1.1.10 AMP log examples:

1.1.10.1 AMP Connection:

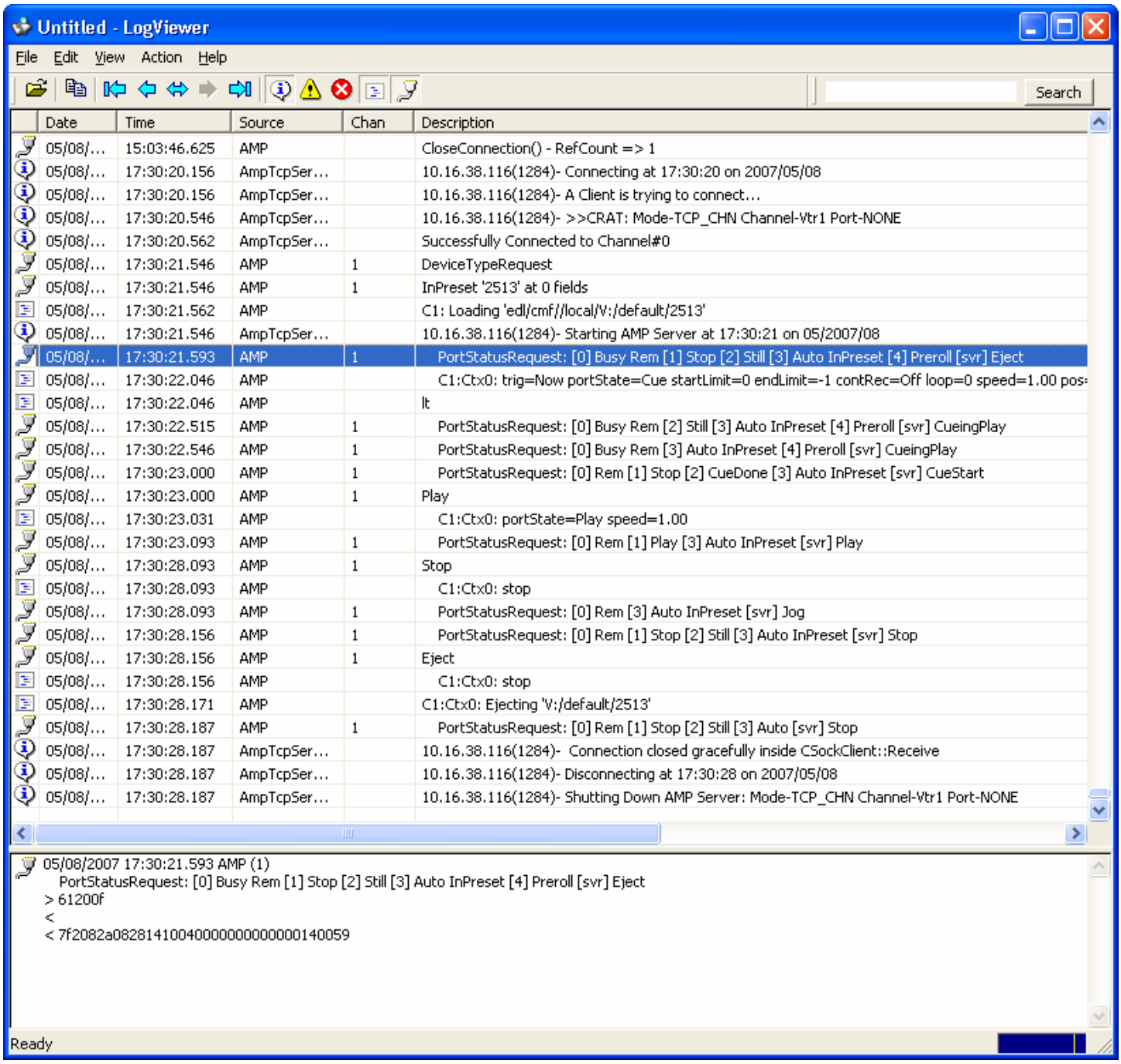


03/16/...	12:59:22.781	AmpTcpSer...		3.107.25.9(224)- Connecting at 12:59:22 on 2007/03/16
03/16/...	12:59:22.781	AmpTcpSer...		3.107.25.9(224)- A Client is trying to connect...
03/16/...	12:59:22.781	AmpTcpSer...		3.107.25.9(224)- >>CRAT: Mode-TCP_CHL Channel-NONE Port-NONE
03/16/...	12:59:23.125	AMP		OpenConnection() - RefCount => 1
03/16/...	12:59:23.156	AMP		Opening MovieBuilder cnt=1 id='7408da42e09b4881a6901db1bf699a
03/16/...	12:59:23.234	AMP		Connected to primary database server 'K2ServerC1'
03/16/...	12:59:40.312	AMP		Total no of open channelless connection : 1
03/16/...	12:59:40.468	AmpTcpSer...		Successfully Created AMP Channelless Connection
03/16/...	12:59:40.781	AmpTcpSer...		3.107.25.9(224)- Starting AMP Server at 12:59:40 on 03/2007/16

AMP connections can be found in the logs by search for "CRAT" (see above). As you can see, the AMP connection reveals the IP address of the automation (3.107.25.9), and a unique connection id (224). If multiple connections exist the unique connection id comes in handy. The CRAT message above, also tells you that this is a channelless connection because the Channel is equal to "NONE". If the connection were a channel, it would be set to "VtrX" where X is the channel number.

Also, notice the "Total no of open channelless connection : 1". This means that this is the first channelless connection. Since the limit is 4, this line is very helpful in debugging if a client cannot create a channelless AMP connection.

1.1.10.2 PortStatusRequest and waiting on Status Sense messages:



In this example, the automation connected to Vtr1, cued (InPreset) clip V:/default/2513, played it for a few seconds, stopped the playback, ejected the clip, then disconnected. These commands are pretty easy to understand in the log above, but what is significant here is the PortStatusRequest messages. From reading the messages above, you can tell that the automation waited for the proper status sense messages.

As an example, immediately after the InPreset (cue) command, we start to see status messages in the logs. The automation is waiting for the Cue Complete status bit to be signaled and also for the Busy status bit to go away. Immediately before the play, we see this which is parsed as "CueDone":

```
05/08/2007 17:30:23.000 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto
InPreset [svr] CueStart
> 61200f
<
```

```
< 7f2002a0818140002000000000000940037
```

Note: Not all status bits are parsed. Future versions of the K2 server may address this. Also, not all status sense commands are logged. K2 AMP server only logs status messages when there has been a change in the response to the automation. Just because there is no status sense in the log, does not mean that the automation did not ask.

1.2 Timeline and Transport Control:

1.2.1 The basics:

1.2.1.1 Load a clip

There are several different ways to load a clip. Here is an example of the most common method, the "In Preset" command. To use the In Preset command, you should be in auto mode. Auto Mode enables the automatic transitioning of clips and also enables the Preset commands.

To enable auto mode, send the "Auto Mode On" command (4041). You can then check a Status Sense to ensure Auto Mode is on. In this example, automode is seen off from a status sense, so the AutoMode On command is sent. The next status sense then reflects "Auto" in the parsed K2 log and also reflects Auto Mode in the status bits returned.

```
05/09/2007 16:03:16.750 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3]
InPreset [svr] PlayStart
> 61200f
< 7f2002a08201400040000000000009400d8

05/09/2007 16:03:16.750 AMP (1) AutoMode On
> 4041
< 100111

05/09/2007 16:03:16.750 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
InPreset [svr] PlayStart
> 61200f
< 7f2002a08281400040000000000000940058
```

Once Auto Mode is enabled, you can cue a clip. For this example, we will cue a clip called "2513" by sending the "In Preset" command (4a14). We send 4a140006000432353133 where 0006 is the extended byte count, 0004 is the clip name length, and 32353133 is the ASCII representation of 2513.

```
05/09/2007 16:08:44.984 AMP ()
C1: Loading 'edl/cmf//local/V:/default/2513'

05/09/2007 16:08:44.984 AMP (1) InPreset '2513' at 0 fields
> 4a140006000432353133
< 100111
```

After sending the In Preset command, the automation then waits for the Cue Done bit to be set high. Upon this time, the In Preset bit will also be set. During cueing, the Busy bit and Preroll bits will be set high.

```
05/09/2007 16:08:44.984 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still [3]
Auto InPreset [4] Preroll [svr] Eject
> 61200f
< 7f2082a08281410040000000000000140059

05/09/2007 16:08:45.281 AMP () C1:Ctx0: trig=Now portState=Cue startLimit=0 endLimit=-1
contRec=Off loop=0 speed=1.00 pos=0 endMode=Default idleMode=Default
```

```
05/09/2007 16:08:45.468 AMP (1) PortStatusRequest: [0] Busy Rem [2] Still [3] Auto
InPreset [4] Preroll [svr] CueingPlay
> 61200f
< 7f208280828141004000000000000140039

05/09/2007 16:08:45.484 AMP (1) PortStatusRequest: [0] Busy Rem [3] Auto InPreset [4]
Preroll [svr] CueingPlay
> 61200f
< 7f208280808141002000000000000140017

05/09/2007 16:08:45.828 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] CueDone [3]
Auto InPreset [svr] CueStart
> 61200f
< 7f2082a08181400020000000000009400b7

05/09/2007 16:08:45.843 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto
InPreset [svr] CueStart
> 61200f
< 7f2002a08181400020000000000000940037
```

1.2.1.2 Play

Sending the play command is fairly simple. To send the play command we send 2001. After sending the play command, issue a status sense to ensure that the server is in play mode.

```
05/09/2007 16:08:45.843 AMP (1) Play
> 2001
< 100111

05/09/2007 16:08:45.921 AMP (1) PortStatusRequest: [0] Rem [1] Play [3] Auto InPreset
[svr] Play
> 61200f
< 7f200281808140002000000000000140097
```

1.2.1.3 Shuttle

Shuttle mode can be achieved by a few different commands. There is a shuttle forward and shuttle reverse command, each with two different modes. The following is an example of the shuttle reverse command with repeated status senses, looking for the beginning of the clip to be reached. At this time, the Stop, Still, and Tape Top bits are set.

```
05/09/2007 16:08:50.921 AMP (1) Shuttle -0.316228
> 22233000
< 100111

05/09/2007 16:08:50.921 AMP () C1:Ctx0: portState=Play speed=-0.32

05/09/2007 16:08:50.921 AMP (1) PortStatusRequest: [0] Rem [2] Shtl [3] Auto InPreset
[svr] Jog
> 61200f
< 7f200280a08140002000000000000001400b6

05/09/2007 16:08:50.953 AMP (1) PortStatusRequest: [0] Rem [2] Shtl Rev [3] Auto InPreset
[svr] JogReverse
> 61200f
< 7f200280a48140001000000000000001400aa

05/09/2007 16:09:06.953 AMP () C1:Ctx0: pause speed=0.00 pos=0(0)
```

```
05/09/2007 16:09:07.015 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
InPreset [svr] PlayStart
> 61200f
< 7f2002a0828140004000000000000940058
```

1.2.1.4 Stop

To issue the stop command, send 2000. Send a status sense to detect that the server has stopped.

```
05/09/2007 16:09:07.015 AMP (1) Stop
> 2000
< 100111

05/09/2007 16:09:07.015 AMP () C1:Ctx0: stop

05/09/2007 16:09:07.015 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
InPreset [svr] Stop
> 61200f
< 7f2002a0828140004000000000000001400d8
```

1.2.1.5 Eject

Eject can be achieved by sending 200f. Status sensing should be done repeatedly until the Bus status bit is low. At that time, the Cue Complete and In Preset status bits will be set back low.

```
05/09/2007 16:09:07.015 AMP (1) Eject
> 200f
< 100111

05/09/2007 16:09:07.015 AMP () C1:Ctx0: stop

05/09/2007 16:09:07.015 AMP () C1:Ctx0: Ejecting 'V:/default/2513'

05/09/2007 16:09:07.031 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
[svr] Stop
> 61200f
< 7f2002a0828040004000000000000001400d7
```

1.2.1.6 Cue a clip for Record

To cue a clip for record, you must establish a connection to a channel with record capabilities. In this example, we will use the "Record Cue With Data" command and we will send a timecode as well. Sending a timecode of 1:0:0:0 will seed the timecode to one hour. The timecode track of the clip will begin at one hour. As an alternative, depending on the current timecode mode, you could record the clip from zero timecode, or use something like LTC or VITC.

In this example, "Record Cue With Data" is sent as "ae02001000000001000a5265636f726454657374" where "ae02" is the command, "0010" is the extended byte count, "00000001" is the timecode in ffssmmhh format, "000a" is the clip length, and "5265636f726454657374" is the clip name "RecordTest". Status is also polled here until the Cue Complete status bit is detected.

```
05/09/2007 16:30:45.078 AMP (1) RecordCueWithData 01:00:00:00 RecordTest
> ae02001000000001000a5265636f726454657374
< 100111

05/09/2007 16:30:45.078 AMP () C1: New 'V:/default/RecordTest'
```

```
05/09/2007 16:30:45.093 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
InPreset [4] Preroll [svr] Eject
> 61200f
< 7f2002a0828141004000000000000001400d9

05/09/2007 16:30:45.843 AMP () C1:Ctx0: editStart=0 editEnd=215784 editDelta=-215784

05/09/2007 16:30:46.250 AMP () C1:Ctx0: trig=Asap portState=CueRecord endLimit=MAX
contRec=Off loop=0 speed=1.00 endMode=Default idleMode=Default

05/09/2007 16:30:48.250 AMP (1) PortStatusRequest: [0] Rem [2] Still [3] Auto InPreset
[4] Preroll [svr] CueingPlay
> 61200f
< 7f200280828141004000000000000001400b9

05/09/2007 16:30:48.265 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto
InPreset [4] Preroll [svr] Idle
> 61200f
< 7f2002a0828141004000000000000001400d9

05/09/2007 16:30:48.375 AMP (1) PortStatusRequest: [0] Rem [2] Still [3] Auto InPreset
[4] Preroll [svr] CueingPlay
> 61200f
< 7f200280828141004000000000000001400b9

05/09/2007 16:30:48.437 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto
InPreset [svr] CueRecord
> 61200f
< 7f2002a0818140002000000000000001400b7
```

1.2.1.7 Record

To send the record command, simply send 2002. Check the status sense for the record bit to be set to indicate that the server is in record mode.

```
05/09/2007 16:30:48.437 AMP (1) Record
> 2002
< 100111
```

1.2.2 Clip names:

1.2.2.1 Standard 8 character names (legacy support from Odetics spec):

```
05/09/2007 17:17:41.609 AMP (1)
CueUpWithData  '1001'
> 28313130303120202020
< (
< 100111
```

1.2.2.2 Clip names longer than 8 character names (added support):

```
05/09/2007 17:17:42.812 AMP (1)
InPreset '1001' at 0 fields
> 4a140006000431303031
< (
< 100111
```

1.2.3 Loading UTF-8 clip names:

```
05/09/2007 17:19:31.000 AMP (1) InPreset '' at 0 fields
> 4a14000e000ce88d89e8b0b7e585ace58fb8
< 100111
```

1.2.4 Loading multiple clips on a timeline and playing short clips:

It is possible to cue multiple clips at once. This allows for multiple clips to be cued together as one clip on the In Preset or Preview timelines. Occasionally, customers will require extremely short clips to be cued. This is an issue with servers and back to back play out. Since it takes anywhere from a few hundred milliseconds to several seconds to cue a clip, then it is going to be an issue if you wish to play very small clips during back to back playback. To successfully bypass this issue, you can cue multiple clips onto a timeline at once, essentially making that timeline long enough to successfully cue the next clip. Some examples of how to cue multiple clips are provided below. New in K2, version 3.2 there is also the Append Preset and Preview Append Preset commands. These commands will allow you to add a clip to an already cued timeline. This opens the possibility of only using one timeline. We recommend that you still use both the preview and in preset timelines and only use these techniques when short clips must be played. We have limits to the numbers of clips that may be cued on a single timeline. While they are very large limits, several hundred clips would increase the server workload tremendously.

1.2.4.1 Cue clip "草谷公司" and "素材" on the preset timeline.

```
05/14/2007 13:27:57.317 AMP (1) InPreset: 草谷公司 0 -1  素材 0 -1
> 4a140016000ce88d89e8b0b7e585ace58fb80006e7b4a0e69d90
< 100111

05/14/2007 13:27:57.333 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still [3]
Auto [4] Preroll [svr] Eject
> 61200f
< 7f2082a08280410040000000000000140058

05/14/2007 13:27:57.348 AMP () C1: New 'V:/default/~Protocol'

05/14/2007 13:27:57.348 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still [3]
Auto InPreset [4] Preroll [svr] Eject
> 61200f
< 7f2082a08281410040000000000000140059

05/14/2007 13:28:00.255 AMP (1) PortStatusRequest: [0] Busy Rem [2] Still [3] Auto
InPreset [4] Preroll [svr] CueingPlay
> 61200f
< 7f208280828141004000000000000000140039

05/14/2007 13:28:00.270 AMP (1) PortStatusRequest: [0] Busy Rem [3] Auto InPreset [4]
Preroll [svr] CueingPlay
> 61200f
< 7f20828080814100200000000000000140017

05/14/2007 13:28:01.114 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] CueDone [3]
Auto InPreset [svr] CueStart
> 61200f
< 7f2082a0818140002000000000000009400b7

05/14/2007 13:28:01.145 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto
InPreset [svr] CueStart
> 61200f
< 7f2002a0818140002000000000000940037
```

1.2.4.2 Cue clip "clip_3" on the preset timeline and "素材" on the preview timeline.

```
05/14/2007 13:59:11.161 AMP (1) InPreset 'clip_3' at 0 fields
> 4a1400080006636c69705f33
< 100111

05/14/2007 13: 59: 12.155 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3]
Auto InPreset [svr] CueStart
> 61200f
< 7f2002a0818140002000000000000940037

05/14/2007 13:59:15.130 AMP (1) OutPreset 00:00:03:00 (180 fields)
> 441500030000
< 100111

05/14/2007 13:59:18.598 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto
OutPreset InPreset [svr] CueStart
> 61200f
< 7f2002a0818340002000004000000a40089

05/14/2007 13:59:18.598 AMP (1) PreviewInPreset
> aa0400080006e7b4a0e69d90
< 100111

05/14/2007 13:59:18.598 AMP () C1: Loading preview 'edl/cmf//local/V:/default/      '

05/14/2007 13:59:18.614 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] CueDone [3]
Auto OutPreset InPreset [9] PrevIn [svr] CueStart
> 61200f
< 7f208 2 a0818340002000041 000000a4000a

05/14/2007 13:59:18.614 AMP (1) PreviewOutPreset
> ae05000d0e000600040000e7b4a0e69d90
< 100111

05/14/2007 13:59:19.098 AMP ()
    C1:Ctx0: endLimit=239

05/14/2007 13:59:19.098 AMP (1)
    PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto OutPreset InPreset [9]
PrevOut PrevIn [svr] CueStart
> 61200f
< 7f2002a0818340002000043000000a4008c

05/14/2007 13:59:19.098 AMP (1) Play
> 2001
< 100111

05/14/2007 13:59:19.098 AMP () C1:Ctx1: portState=Play speed=1.00

05/14/2007 13:59:19.114 AMP () C1:Ctx0: portState=Play speed=1.00

05/14/2007 13:59:19.192 AMP (1)
    PortStatusRequest: [0] Rem [1] Play [3] Auto OutPreset InPreset [9] PrevOut PrevIn
[svr] Play
> 61200f
< 7f2002818083400020000430000002400ec
```

```
05/14/2007 13:59:22.192 AMP (1) PortStatusRequest: [0] Rem [1] Play [3] Auto OutPreset
InPreset [svr] Play
> 61200f
< 7f2002818083400020000000000002400e9

05/14/2007 13:59:22.208 AMP () C1:Ctx0: preview context is now active

05/14/2007 13:59:26.192 AMP () C1:Ctx0: pause speed=0.00 pos=239(239)
```

1.2.4.3 Using the Append Preset command.

```
11/21/2007 13:36:53.829 system (2)
InPreset 'demo_4' at 0 fields
> 4a140008000664656d6f5f34
< 100111

11/21/2007 13:36:53.829 system ()
C2: Loading 'edl/cmf//local/V:/default/demo_4'

11/21/2007 13:36:53.829 system (2)
    PortStatusRequest: [0] Busy Rem [1] Stop [2] Still [3] Auto [4] Loop Preroll [D]
Timer 16:9 [svr] Eject
> 61200f
< 7f2082a08280610040000000000000120076

11/21/2007 13:36:53.829 system ()
    C2:dftCtx: idleMode=Freeze

11/21/2007 13:36:53.829 system ()
    C2:Ctx0: trig=Now portState=Cue startLimit=0 endLimit=-1 speed=1.00 pos=0

11/21/2007 13:36:54.017 system (2)
    PortStatusRequest: [0] Busy Rem [3] Auto [4] Loop Preroll [D] Timer 16:9 [svr]
CueingPlay
> 61200f
< 7f2082808080610020000000000000120034

11/21/2007 13:36:55.142 system (2)
    PortStatusRequest: [0] Rem [1] Stop [2] CueDone [3] Auto InPreset [4] Loop [D] Timer
16:9 [svr] CuePlay
> 61200f
< 7f2002a0818160002000000000000001200d5

11/21/2007 13:36:55.142 system (2)
AppendPreset: 'demo_5' 00:00:00.00-00:01:00.00
> 4f160010000664656d6f5f350000000000000100
< 100111
```

1.2.5 Changing clips on a timeline:

```
05/14/2007 14:00:23.942 AMP (1) PreviewInReset
> a006
< 100111

05/14/2007 14:00:23.942 AMP (1)
PreviewInPreset new_clip
> aa04000a00086e65775f636c6970
< 100111
```

```
05/14/2007 14:00:23.942 AMP ()
C1: Loading preview 'edl/cmf//local/V:/default/new_clip'

05/14/2007 14:00:23.942 AMP (1)
    PortStatusRequest: [0] Busy Rem [1] Stop [2] Still [3] Auto OutPreset InPreset [9]
PresetErr PrevIn [svr] PlayEnd
> 61200f
< 7f2082a0828340004000004100000064006eb

05/14/2007 14:00:23.958 AMP (1)
PreviewOutPreset new_clip
> ae05000f0e0008000001006e65775f636c6970
< 100111

05/14/2007 14:00:24.380 AMP ()
    C1:Ctx1: trig=Follow portState=Play startLimit=0 endLimit=-1 contRec=Off loop=0
speed=1.00 pos=0 endMode=Default idleMode=D

05/14/2007 14:00:24.380 AMP ()
efault

05/14/2007 14:00:24.426 AMP ()
    C1:Ctx1: endLimit=3599

05/14/2007 14:00:24.442 AMP (1)
    PortStatusRequest: [0] Rem [1] Stop [2] Still [3] Auto OutPreset InPreset [9]
PresetErr PrevOut PrevIn [svr] PlayEnd
> 61200f
< 7f2002a0828340004000004300000064006d
```

1.2.6 Record duration and out preset:

Once you start a record, you need to decide when to end the record. There a three methods to doing this.

1. You can stop a record by simply sending the stop command. This is a frame accurate method because it incorporates the pre-roll time into determining when to stop.

2. You may also schedule a stop against timecode by sending the stop command with byte count 4.

3. Setting the record duration is a method you could use if you know the duration a user intends a clip to be.

1.2.6.1.1 Record duration:

```
05/14/2007 14:01:13.145 AMP (1)
SetRecordDuration 00:01:00:02
> a41d00000100
< 100111
```

1.2.6.1.2 Out preset:

```
05/14/2007 14:01:13.161 AMP (1)
OutPreset 00:00:15:00 (-1 fields)
> 441500150000
< 100111
```

1.2.7 Scheduling Plays, Stops, and Records ahead of time:

Rather than be required to issue a play, stop, or record command at the exact moment that you desire the transition to occur, you also have the option of scheduling these events against incoming LTC timecode. If the K2's channel has a LTC

timecode feed, you can issue the Play, Stop, or Record and also pass in a desired timecode for it to occur. These three commands are shown in examples below. Each example shows how you would schedule the command to occur at the timecode 12:30:00:00.

11/21/2007 11:18:21.687 AMP (1)
Play 12:30:00:00
> 240100003012
< 100111

11/21/2007 11:18:21.687 AMP (1)
Stop 12:30:00:00
> 240000003012
< 100111

11/21/2007 11:18:21.687 AMP (1)
Record 12:30:00:00
> 240200003012
< 100111

The example below shows that you can also reschedule events if you decide to change the event time. The "C1:Ctx0: schedule cancel @tick=0(119379)" log entry means that we are canceling your previously scheduled record time, so that we can schedule your next time. You could also schedule a command such as record, and then send a normal record command if an immediate record is needed.

11/21/2007 11:44:42.481 AMP (1)
Record 11:44:44:26
> 240226444411
< 100111

11/21/2007 11:44:42.497 AMP ()
C1:Ctx0: schedule cancel @tick=0(119319)

11/21/2007 11:44:42.497 AMP ()
C1:Ctx0: schedule @tick=119619(119319) portState=Record speed=1.00

11/21/2007 11:44:43.481 AMP (1)
Record 11:44:49:26
> 240226494411
< 100111

11/21/2007 11:44:43.481 AMP ()
C1:Ctx0: schedule cancel @tick=0(119379)

11/21/2007 11:44:43.481 AMP ()
C1:Ctx0: schedule @tick=119919(119379) portState=Record speed=1.00

1.3 Enumerating Clips:

1.3.1 Getting an initial list of clips:

```
05/14/2007 15:44:53.598 AMP () ListFirstFolder
> a02a
< 822a0008000634427269616eda

05/14/2007 15:44:53.614 AMP () SetWorkingFolderRequest 4Brian
> a20e0008000634427269616e
< 100111
```

```
05/14/2007 15:44:53.630 AMP () PortStatusRequest: [0] Busy [2] Still [3] Auto [svr]
> 61200f
< 7f2080808280400040000000000000100031

05/14/2007 15:44:53.739 AMP () PortStatusRequest: [2] Still [3] Auto [svr]
> 61200f
< 7f2000808280400040000000000000001000b1

05/14/2007 15:44:53.739 AMP () GetCurrentWorkingFolder
> a00f
< Working Folder: '4Brian'
< 820f00080006344272696 16ebf

05/14/2007 15:44:53.755 AMP () ListFirstID:CH No#10,dir=4Brian
> a2140000
< Clip Name: aurora-d10
< 8a14000c000a6175726f72612d6431303 0

05/14/2007 15:44:53.755 AMP () ListNextMultipleID:CH No#10,dir=4Brian:count=0
> a115c8
<
8a140035000664313 05f6b32000b4b3220ebb094ebb3b45f3100084b32ebb094ebb3b4000ce88d89e8b0b7e58
5ace58fb80006eca08420434dba

05/14/2007 15:44:53.755 AMP () ListNextMultipleID:CH No#10,dir=4Brian:count=0
> a115c8
< 801494

05/14/2007 15:44:53.755 AMP () ListNextFolder
> a02b
<
822b003c0003443130 0007646566617 56c74000 54a616d6573 0007 6a6a6174657374 0005 6d6f68697 4 00034d5
047 00036e6577 000b52656379636c652042 696

05/14/2007 15:44:53.880 AMP () SetWorkingFolderRequest default
> a20e00090007646566617 56c74
< 100111

05/14/2007 15:44:53.880 AMP () GetCurrentWorkingFolder
> a00f
< Working Folder: 'default'
< 820f00090007646566617 56c786

05/14/2007 15:44:53.880 AMP () ListFirstID:CH No#10,dir=default
> a2140000
< Clip Name: 070417-175810-3-0010s
< 8a1400170015303730343137 2d3137353831302d332d303031307321

05/14/2007 15:44:53.880 AMP () ListNextMultipleID:CH No#10,dir=default:count=0
> a115c8
< 8a1400ea0015303730343137 2d3137353831372d312d303031307 30004313030310006313031353 0…

05/14/2007 15:44:53.880 AMP () ListNextMultipleID:CH No#10,dir=default:count=0
> a115c8
< 8a1400de0004436c69700006436c69705f310008436c69705f312d310008436c69705f312d320007

05/14/2007 15:44:53.880 AMP () ListNextMultipleID:CH No#10,dir=default:count=0
> a115c8
```

```
< 8a1400de0007435237313730370004c6973740006c6973745f310006c6973745f320006c6973…

05/14/2007 15:44:53.880 AMP () ListNextMultipleID:CH No#10,dir=default:count=0
> a115c8
< 801494
```

1.3.2 Getting change notifications without relisting all clips:

Let us say that we had these clip changes:

At 5/14/2007 3:48:17 PM
1 V:/default/1234578 0x2:Delete 2
2 V:/default/2513_new 0x2:Delete 2

At 5/14/2007 3:49:17 PM
1 V:/default/test 0x1:Add 9
2 V:/default/List_5 0x2:Delete 9
3 V:/default/Clip_5 0x1:Add 9
4 V:/default/Clip_5 0x4:Mark Out 9
5 V:/default/Clip_5 0x4:Mark Out 9
6 V:/default/Clip_5 0x4:Mark Out 9
7 V:/default/Clip_5 0x4:Mark Out 9
8 V:/default/Clip_5 0x4:Mark Out 9
9 V:/default/Clip_5 0x4:Mark Out 9

At 5/14/2007 3:49:37 PM
1 V:/default/Clip_5 0x4:Mark Out 5
2 V:/default/Clip_5 0x4:Mark Out 5
3 V:/default/Clip_5 0x4:Mark Out 5
4 V:/default/Clip_5 0x4:Mark Out 5
5 V:/default/Clip_5 0x4:Mark Out 5

Here is how you would get the change notifications without needing to relist the clips:

```
05/14/2007 15:47:32.770 AMP () IDsChangeListRequest
> a012
< 8213000095

05/14/2007 15:47:52.770 AMP () IDsChangeListRequest
> a012
< 8213000095

05/14/2007 15:47:56.489 system () Deleting 'edl/cmf//MX-C36/V:/default/1234578'

05/14/2007 15:48:09.645 system () Deleting 'edl/cmf//MX-C36/V:/default/2513_new'

05/14/2007 15:48:12.770 AMP () IDsChangeListRequest
> a012
< 821300250002563a000764656661756c74020002000731323334353738000200083235313335f6e65772f

05/14/2007 15:48:52.786 AMP () IDsChangeListRequest
> a012
< 8213000095

05/14/2007 15:48:54.864 system () Renaming 'edl/cmf//MX-C36/V:/default/List_5' to 'test'

05/14/2007 15:49:05.192 system () C3: New 'V:/default/Clip_5'

05/14/2007 15:49:07.536 system () C3:Ctx0: portState=Record speed=1.00
```

```
05/14/2007 15:49:07.770 system () C3:Ctx0: Starting construction for 'edl/cmf//MX-
C36/V:/default/Clip_5'

05/14/2007 15:49:12.786 AMP () IDsChangeListRequest
> a012
<
821300660002563a000764656661756c74090001000474657374000200064c6973745f3500010006436c69705
f3500040006436c69705f3500040006436c697

05/14/2007 15:49:15.411 system () C3:Ctx0: Ejecting 'V:/default/Clip_5'

05/14/2007 15:49:15.411 system () C3:Ctx0: trig=Asap portState=Idle

05/14/2007 15:49:16.489 system () C3:Ctx0: Ending construction for 'edl/cmf//MX-
C36/V:/default/Clip_5'

05/14/2007 15:49:32.786 AMP () IDsChangeListRequest
> a012
<
821300400002563a000764656661756c74050004006436c69705f3500040006436c69705f3500040006436c6
9705f3500040006436c69705f3500040006436
```

1.4 Asset Management:

1.4.1 Basics:

1.4.1.1 copy a clip, check status bits

```
05/14/2007 14:17:52.239 AMP (1) IDStatusRequest '2513'
> aa180006000432353133
< Exists Ready
< 8118059e

05/14/2007 14:17:52.239 AMP (1) IDStatusRequest '2513_new'
> aa18000a0008323531335f6e6577
< Clip not found
< 81180099

05/14/2007 14:17:52.239 AMP (1) NewCopy 2513   2513_new
> aa190011530004323531330008323531335f6e6577
< 100111

05/14/2007 14:17:52.239 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still
CueDone [3] Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] C
> 61200f
< 7f2082a0838340004000004300000024 00ae

05/14/2007 14:17:52.755 AMP () Creating subclip 'V:/default/2513_new' in=0 out=1800

05/14/2007 14:17:53.692 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still CueDone [3]
Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] CuePla
> 61200f
< 7f2002a0838340004000004300000024002e

05/14/2007 14:17:54.270 AMP (1) IDStatusRequest '2513_new'
> aa18000a0008323531335f6e6577
< Exists Ready
```

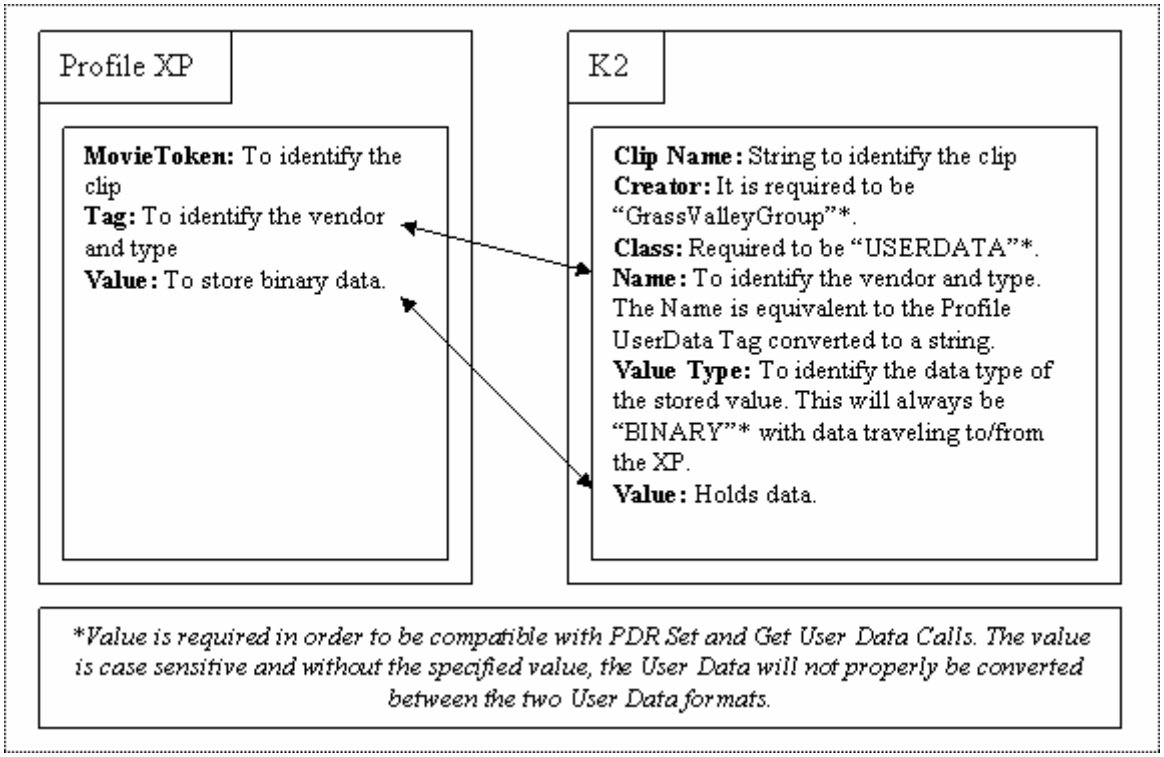
```
< 8118059e
```

1.4.1.2 move a clip, check status bit

```
05/14/2007 14:18:53.380 AMP (1) IDStatusRequest '2513_new'
> aa18000a0008323531335f6e6577
< Exists Ready
< 8118059e

05/14/2007 14:18:53.380 AMP (1) IDStatusRequest '2513_moved'
> aa18000c000a323531335f6d6f766564
< Clip not found
< 81180099

05/14/2007 14:18:53.380 AMP (1) NewCopy (MOVE CLIP ) 2513_new 2513_moved
> aa1900174d0008323531335f6e6577000a323531335f6d6f766564
< 100111

05/14/2007 14:18:53.380 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still
CueDone [3] Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] C
> 61200f
< 7f2082a0838340004000004300000024002ae

05/14/2007 14:18:53.395 AMP () Moving 'edl/cmf//local/V:/default/2513_new' to
'edl/cmf//local/V:/default/2513_moved'

05/14/2007 14:18:56.223 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still CueDone [3]
Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] CuePla
> 61200f
< 7f2002a0838340004000004300000024002e
eraseID, status bits
05/14/2007 14:19:21.880 AMP (1) IDStatusRequest '2513_moved'
> aa18000c000a323531335f6d6f766564
< Exists Ready
< 8118059e

05/14/2007 14:19:21.880 AMP () Deleting 'edl/cmf//local/V:/default/2513_moved'

05/14/2007 14:19:21.880 AMP (1) EraseID 2513_moved
> aa10000c000a323531335f6d6f766564
< 100111

05/14/2007 14:19:21.880 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still
CueDone [3] Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] C
> 61200f
< 7f2082a0838340004000004300000002400ae

05/14/2007 14:19:23.911 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still CueDone [3]
Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] CuePla
> 61200f
< 7f2002a0838340004000004300000024002e

05/14/2007 14:19:23.911 AMP (1) IDStatusRequest '2513_moved'
> aa18000c000a323531335f6d6f766564
< Clip not found
< 81180099
```

1.4.2 User data compatibility (XP to K2)

The Profile XP's PdrGetUserData and PdrSetUserData calls are now compatible with the newer extension format on the K2. Regardless of whether you use PdrGetUserData and PdrSetUserData or the newer extension format on the XP, your user data can now be compatible with your user data on the K2 server. There are a few requirements, outlined in the figure below.



1.4.2.1 Set and Get User Data on the K2

```
05/14/2007 15:52:49.036 AMP ()
SetClipData V:/default/草谷公司_1 2147614721 <data>                BYTE
>
aa08003c0019563a2f64656661756c742fe88d89e8b0b7e585ace58fb85f310a323134373631343732310001f
f06e7b4a0e69d9006e4baa8e789b9044259544
< 8a0800206533633334323065636239323461376161616265626166636663333383263333780

05/14/2007 15:52:50.739 AMP ()
ClipDataRequest:CH No:#10, clip:V:/default/草谷公司_1
> aa13001c450019563a2f64656661756c742fe88d89e8b0b7e585ace58fb85f31
< 8a1300210a32313437363134373231 06e7b4a0e69d9006e4baa8e789b904425954450001ffcc
```

1.4.3 Trimming clips:

```
05/14/2007 14:19:55.536 AMP (1)
IDStartTimeRequest 2513_new
> a225000a0008323531335f6e6577
< Start Time: 00:00:00:00
< 842500000000a9

05/14/2007 14:19:55.536 AMP (1)
IDDurationRequest 2513_new
```

```
> a217000a0008323531335f6e6577
< Clip Duration: 00:00:30:00
< 8417 00300000 cb

05/14/2007 14:19:55.536 AMP (1)
Erase Segment(New) 2513_new In: 0:0:1:0 Out: 0:0:29:0
> aa1100120001000000290000000 8323531335f6e6577
< 100111

05/14/2007 14:19:56.161 AMP ()
EraseUnusedMedia 'V:/default/2513_new'
```

Wait for the Busy status bit to go low.

1.4.4 Striping timecode, converting DF->NDF:

```
05/14/2007 15:10:37.208 AMP (1) IDStartTimeRequest 2513
> a2250006000432353133
< Start Time: 00:00:00:00
< 842500000000a9

05/14/2007 15:10:37.286 AMP (1) ClipDataRequest:CH No:#0, clip:V:/default/2513
> aa13000743000432353133
<
8a13002801c7962ff87e3b0001c79639fd47ec8000300000030001100001000000 11 00000000000000000000933
3

05/14/2007 15:10:37.348 AMP (1) SetDropFrameMode(non-DF)
> 0106 00
< 100111

05/14/2007 15:10:37.348 AMP (1) Stripe Timecode V:/default/2513 At: 00:00:00.00
> aa2d000a00000000000432353133
< 100111

05/14/2007 15:10:37.364 AMP (1) PortStatusRequest: [0] Busy Rem [1] Stop [2] Still
CueDone [3] Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] C
> 61200f
< 7f20 82 a0838340004000004300000002000aa

05/14/2007 15:10:37.880 AMP (1) PortStatusRequest: [0] Rem [1] Stop [2] Still CueDone [3]
Auto OutPreset InPreset [9] PresetErr PrevOut PrevIn [svr] CuePla
> 61200f
< 7f20 02 a0838340004000004300000020002a

05/14/2007 15:10:37.880 AMP (1) IDStartTimeRequest 2513
> a2250006000432353133
< Start Time: 00:00:00:00
< 8425 00000000 a9

05/14/2007 15:10:37.942 AMP (1)
ClipDataRequest:CH No:#0, clip:V:/default/2513
> aa13000743000432353133
< 8a130028
01c7962ff87e3b0001c7963a06d1548000300000030001100001000000 01 00000000000000000000931f
```

1.4.5 Transferring clips:

The following sections will provide some examples of how to conduct transfers with AMP. They will show you how to use the Extended Transfer ID command and the Transfer ID Status command. The Extended Transfer ID command has many possible options. Not all are implemented on the K2, the MPEG option is implemented only on the Turbo, the Vibrint option is implemented only on older Profile usits.

1.4.5.1 Exploded files

To transfer clips directly between Grass Valley servers, you will want to use transfer option 3, the Profile option. Using this option for both the source and destination will tell the server to transfer the clip from one Grass Valley server, to another Grass Valley server. After the clip is transferred, the clip will be registered in the server as a playable clip.

```
05/14/2007 15:58:56.301 AMP ()
Ext. TransferID mx-c36/explodedFile/V:/default/Clip =>
mx3/explodedFile/V:/default/ClipTest1
>
c225003c0300166d782d6333362f563a2f64656661756c742f436c6970ffffffffffffffff0300186d78332f5
63a2f64656661756c742f436c6970546573743
< d12500f6

05/14/2007 15:58:57.411 AMP ()
TransferIDStatusRequest
> c227001b0000186d78332f563a2f64656661756c742f436c69705465737431
< Transfer Status: pending
< d12700f8

05/14/2007 15:58:57.473 Transfer FTP Movie Aspect ()
CXferSessionFactory::CreateSession(localhost/explodedFile/V:/default/Clip,
MX3/explodedFile/V:/default/ClipTest1) started

05/14/2007 15:58:57.520 Transfer FTP Movie Aspect ()
CreateSession resolved destUml from MX3/explodedFile/V:/default/ClipTest1 to
MX3/explodedFile/V:/default/ClipTest1.

05/14/2007 15:58:57.692 Transfer FTP Movie Aspect ()
Transfer session initiated from /explodedFile/V:/default/Clip to
MX3/explodedFile/V:/default/ClipTest1...

05/14/2007 15:58:57.755 Movie Xfer Session 5372 ()
    Opening MovieBuilder cnt=1 id='254f28d079324bb28ac0f9a222a4e945'
suite='82e84068b63248b5805363def3b08fdd' pid=5372

05/14/2007 15:58:57.801 Movie Xfer Session 5372 ()
    Connected to primary database server 'MX-C36'

05/14/2007 15:58:58.411 AMP ()
TransferIDStatusRequest
> c227001b0000186d78332f563a2f64656661756c742f436c69705465737431
< Transfer Status: in progress
< d12701f9

05/14/2007 15:58:58.426 AMP ()
TransferIDStatusRequest
> c227001b0100186d78332f563a2f64656661756c742f436c69705465737431
< Percentage: 00
< d12700f8

05/14/2007 15:59:01.426 AMP ()
TransferIDStatusRequest
```

```
> c227001b0000186d78332f563a2f64656661756c742f436c69705465737431
< Transfer Status: in progress
< d12701f9

05/14/2007 15:59:01.442 AMP ()
TransferIDStatusRequest
> c227001b0100186d78332f563a2f64656661756c742f436c69705465737431
< Percentage: 96
< d127968e

05/14/2007 15:59:07.739 Movie Xfer Session 5372 ()
Transfer: localhost/explodedFile/V:/default/Clip to MX3/explodedFile/V:/default/ClipTest1
completed.

05/14/2007 15:59:17.755 AMP ()
TransferIDStatusRequest
> c227001b0000186d78332f563a2f64656661756c742f436c69705465737431
< Transfer Status: completed
< d12703fb
```

1.4.5.2 GXF

To import or export a clip to/from a Grass Valley server as a gxf file, you will want to use the GXF option, byte code 0x00. If you want to import a GXF file into a Grass Valley server, pass in 0x00 (GXF) as the source transfer type and 0x03 (Profile) as the destination file type. This will cause the clip to transfer into the server and be registered as a playable clip. If you want to export a clip out of a server, use option 0x03 (Profile) as the source transfer type and then 0x00 (GXF) as the destination file type.

1.4.5.2.1 Export to GXF:

```
05/14/2007 16:02:30.942 AMP ()
Ext. TransferID mx-c36/explodedFile/V:/default/Clip => mx-c36/gxfFile/C:\temp\Clip.gxf
>
c225003b0300166d782d6333362f563a2f64656661756c742f436c6970ffffffffffffffff0000176d782d633
3362f433a5c74656d705c436c69702e677866
< d12500f6

05/14/2007 16:02:31.786 Transfer FTP Movie Aspect ()
CXferSessionFactory::CreateSession(localhost/explodedFile/V:/default/Clip,
localhost/gxfFile/C:\temp\Clip.gxf) started

05/14/2007 16:02:31.958 Transfer FTP Movie Aspect ()
Transfer session initiated from /explodedFile/V:/default/Clip to
localhost/gxfFile/C:\temp\Clip.gxf...

05/14/2007 16:02:32.005 Movie Xfer Session 1084 ()
    Opening MovieBuilder cnt=1 id='c0a2a78e9aab477c82101635a2de76c8'
suite='30f1feca79bc4d1c8594d46fab66627f' pid=1084

05/14/2007 16:02:32.067 Movie Xfer Session 1084 ()
    Connected to primary database server 'MX-C36'

05/14/2007 16:02:32.051 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f433a5c74656d705c436c69702e677866
< Transfer Status: in progress
< d12701f9

05/14/2007 16:02:32.051 AMP ()
```

```
TransferIDStatusRequest
> c227001a0100176d782d6333362f433a5c74656d705c436c69702e677866
< Percentage: 00
< d12700f8

05/14/2007 16:02:32.676 Movie Xfer Session 1084 ()
Transfer: localhost/explodedFile/V:/default/Clip to localhost/gxfFile/C:\temp\Clip.gxf
completed.

05/14/2007 16:02:33.051 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f433a5c74656d705c436c69702e677866
< Transfer Status: in progress
< d12701f9

05/14/2007 16:02:33.067 AMP ()
TransferIDStatusRequest
> c227001a0100176d782d6333362f433a5c74656d705c436c69702e677866
< Percentage: 00
< d12700f8

05/14/2007 16:02:42.708 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f433a5c74656d705c436c69702e677866
< Transfer Status: completed
< d12703fb

05/14/2007 16:02:42.692 Movie Xfer Session 1084 ()
Timedout checking existance of QT reference file V:\ASSETS\default\Clip\Clip.MOV

05/14/2007 16:02:42.692 Movie Xfer Session 1084 ()
    Closing MovieBuilder cnt=0 id='c0a2a78e9aab477c82101635a2de76c8'
suite='30f1feca79bc4d1c8594d46fab66627f' pid=1084
```

1.4.5.2.2 Import from GXF:

```
05/14/2007 16:03:20.864 AMP ()
Ext. TransferID mx-c36/gxfFile/C:/temp/Clip.gxf => mx-c36/explodedFile/V:/default/Clip2
>
c225003c0000176d782d6333362f433a2f74656d702f436c69702e677866ffffffffffffffff0300176d782d6
333362f563a2f64656661756c742f436c69703
< d12500f6

05/14/2007 16:03:21.723 Transfer FTP Movie Aspect ()
CXferSessionFactory::CreateSession(localhost/gxfFile/C:/temp/Clip.gxf,
localhost/explodedFile/V:/default/Clip2) started

05/14/2007 16:03:21.801 Transfer FTP Movie Aspect ()
Transfer session initiated from localhost/gxfFile/C:/temp/Clip.gxf to
/explodedFile/V:/default/Clip2...

05/14/2007 16:03:21.973 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f563a2f64656661756c742f436c697032
< Transfer Status: in progress
< d12701f9

05/14/2007 16:03:21.989 AMP ()
TransferIDStatusRequest
```

```
> c227001a0100176d782d6333362f563a2f64656661756c742f436c697032
< Percentage: 00
< d12700f8

05/14/2007 16:03:21.942 Movie Xfer Session 5348 ()
    Opening MovieBuilder cnt=1 id='a0572b48e1444681a56007240288ee98'
suite='615fb0f1f9534ff98bb1dc4466cfcdc6' pid=5348

05/14/2007 16:03:21.973 Movie Xfer Session 5348 ()
    Connected to primary database server 'MX-C36'

05/14/2007 16:03:22.192 Movie Xfer Session 5348 ()
    Starting transfer of 'V:/default/Clip2'

05/14/2007 16:03:22.973 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f563a2f64656661756c742f436c697032
< Transfer Status: in progress
< d12701f9

05/14/2007 16:03:22.989 AMP ()
TransferIDStatusRequest
> c227001a0100176d782d6333362f563a2f64656661756c742f436c697032
< Percentage: 00
< d12700f8

05/14/2007 16:03:24.161 Movie Xfer Session 5348 ()
    Ending transfer of 'V:/default/Clip2'

05/14/2007 16:03:34.536 Movie Xfer Session 5348 ()
Timedout checking existance of QT reference file V:\ASSETS\default\Clip2\Clip2.MOV

05/14/2007 16:03:34.536 Movie Xfer Session 5348 ()
Transfer: localhost/gxfFile/C:/temp/Clip.gxf to localhost/explodedFile/V:/default/Clip2
completed.

05/14/2007 16:03:34.536 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f563a2f64656661756c742f436c697032
< Transfer Status: in progress
< d12701f9

05/14/2007 16:03:34.536 AMP ()
TransferIDStatusRequest
> c227001a0100176d782d6333362f563a2f64656661756c742f436c697032
< Percentage: 96
< d127968e

05/14/2007 16:03:35.583 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f563a2f64656661756c742f436c697032
< Transfer Status: in progress
< d12701f9

05/14/2007 16:03:35.583 AMP ()
TransferIDStatusRequest
> c227001a0100176d782d6333362f563a2f64656661756c742f436c697032
< Percentage: 96
< d127968e
```

```
05/14/2007 16:03:36.036 Movie Xfer Session 5348 ()
    Closing MovieBuilder cnt=0 id='a0572b48e1444681a56007240288ee98'
suite='615fb0f1f9534ff98bb1dc4466cfcdc6' pid=5348

05/14/2007 16:03:36.583 AMP ()
TransferIDStatusRequest
> c227001a0000176d782d6333362f563a2f64656661756c742f436c697032
< Transfer Status: completed
< d12703fb
```

1.4.5.3 MXF

To import or export a clip to/from a Grass Valley server as a mxf file, you will want to use the MXF option, byte code 0x04. If you want to import a MXF file into a Grass Valley server, pass in 0x04 (MXF) as the source transfer type and 0x03 (Profile) as the destination file type. This will cause the clip to transfer into the server and be registered as a playable clip. If you want to export a clip out of a server, use option 0x03 (Profile) as the source transfer type and then 0x04 (MXF) as the destination file type.

1.4.5.3.1 Export to MXF:

```
05/14/2007 16:07:40.755 AMP ()
Ext. TransferID mx-c36/explodedFile/V:/default/Clip => mx-c36/p2File/C:\temp\clip.mxf
>
c225003b0300166d782d6333362f563a2f64656661756c742f436c6970ffffffffffffffff0400176d782d633
3362f433a5c74656d705c636c69702e6d7866
< d12500f6
```

1.4.5.3.2 Import from MXF:

```
05/14/2007 16:08:41.739 AMP ()
Ext. TransferID mx-c36/p2File/C:\temp\Clip.mxf => mx-c36/explodedFile/V:/default/clip_mxf
>
c225003f0400176d782d6333362f433a5c74656d705c436c69702e6d7866ffffffffffffffff03001a6d782d6
333362f563a2f64656661756c742f636c69705
< d12500f6
```

1.4.5.4 AVI

To import or export a clip to/from a Grass Valley server as an avi file, you will want to use the AVI option, byte code 0x01. If you want to import a AVI file into a Grass Valley server, pass in 0x01 (AVI) as the source transfer type and 0x03 (Profile) as the destination file type. This will cause the clip to transfer into the server and be registered as a playable clip. If you want to export a clip out of a server, use option 0x03 (Profile) as the source transfer type and then 0x01 (AVI) as the destination file type.

1.4.5.4.1 Export to AVI:

```
05/14/2007 16:09:50.895 AMP ()
Ext. TransferID mx-c36/explodedFile/V:/default/clip => mx-c36/aviFile/C:\temp\clip.avi
>
c225003b0300166d782d6333362f563a2f64656661756c742f636c6970ffffffffffffffff0100176d782d633
3362f433a5c74656d705c636c69702e617669
< d12500f6
```

1.4.5.4.2 Import from AVI:

```
05/14/2007 16:08:59.505 AMP ()
Ext. TransferID mx-c36/aviFile/C:\temp\Clip.avi => mx-36/explodedFile/V:/default/clip_avi
```

```
>
c225003f0100176d782d6333362f433a5c74656d705c436c69702e617669ffffffffffffffff03001a6d782d6
333362f563a2f64656661756c742f636c69705
< d12500f6
```

1.4.5.5 MPEG (Turbo only)

To import or export a clip to/from a Grass Valley server as an mpeg file, you will want to use the MPEG option, byte code 0x05. If you want to import a MPEG file into a Grass Valley server, pass in 0x05 (MPEG) as the source transfer type and 0x03 (Profile) as the destination file type. This will cause the clip to transfer into the server and be registered as a playable clip.
If you want to export a clip out of a server, use option 0x03 (Profile) as the source transfer type and then 0x05 (MPEG) as the destination file type.

1.4.6 Transfer UTF-8 clips:

```
05/14/2007 16:20:16.130 AMP ()
Ext. TransferID mx-c36/explodedFile/V:/default/素材 => mx-c36/aviFile/C:\temp\素材.avi
>
c225004b03001e6d782d6333362f563a2f64656661756c742fc3a7c2b4c2a0c3a6c29dc290ffffffffffffff
f01001f6d782d6333362f433a5c74656d705cc
< d12500f6
```

2 VDCP

2.1 Device management:

2.1.1 Open a Port

```
05/15/2007 16:09:30.114 VDCP (1) OpenPort 1
> 0204300101 00ce
< Port Granted
< 02033081014e
```

2.1.2 Close Port

```
05/15/2007 16:20:26.395 VDCP (1)
ClosePort 1
> 0203202101be
< 04
```

2.1.3 Open Record Port

```
05/15/2007 16:21:40.411 VDCP (1)
OpenPort 81
> 0204300181004e
< Port Granted
< 02033081014e
```

- Example

2.2 Transport control and Timelines:

2.2.1 The basics:

2.2.1.1 Load a clip

2.2.1.1.1 Load Standard Clip Name:

```
05/15/2007 16:17:11.270 VDCP (1)
PlayCue 'Audio12'
> 020a2024417564696f31322047
< 04

05/15/2007 16:17:11.270 VDCP ()
C1: Loading 'edl/cmf//local/V:/default/Audio12'

05/15/2007 16:17:11.286 VDCP (1)
    PortStatusRequest: [1] Cueing [4] D1 [svr] Eject
> 020330050fbc
< 020a30850f0201000000001029

05/15/2007 16:17:11.317 VDCP ()
    C1:Ctx0: trig=Asap portState=Cue contRec=Off loop=0 speed=1.00 pos=0 endMode=Default
idleMode=Default

05/15/2007 16:17:11.739 VDCP (1)
    PortStatusRequest: [1] CueingDone [4] D1 [svr] CueStart
> 020330050fbc
< 020a30850f80010000000010ab
```

2.2.1.1.2 Load Extended Clip Name:

```
05/15/2007 16:13:23.630 VDCP (1) Stop
> 02021000f0
< 04

05/15/2007 16:13:23.723 VDCP (1) PlayCue 'Audio12'
> 020aa02407417564696f3132e0
< 04

05/15/2007 16:13:23.723 VDCP () C1: Loading 'edl/cmf//local/V:/default/Audio12'

05/15/2007 16:13:23.739 VDCP (1) PortStatusRequest: [1] Cueing [4] D1 [svr] Eject
> 020330050fbc
< 020a30850f0201000000001029

05/15/2007 16:13:23.958 VDCP () C1:Ctx0: trig=Asap portState=Cue contRec=Off loop=0
speed=1.00 pos=0 endMode=Default idleMode=Default

05/15/2007 16:13:24.958 VDCP (1) PortStatusRequest: [1] CueingDone [4] D1 [svr] CueStart
> 020330050fbc
< 020a30850f80010000000010ab
```

2.2.1.2 Play a clip

```
05/15/2007 16:14:08.833 VDCP (1) Continue
> 02021006ea
< 04

05/15/2007 16:14:08.833 VDCP () C1:Ctx0: portState=Play speed=1.00

05/15/2007 16:14:08.895 VDCP (1) PortStatusRequest: [1] Play/Rec [4] D1 [svr] Play
> 020330050fbc
< 020a30850f0401000000001027

Stop
05/15/2007 16:14:16.317 VDCP (1) Still
> 02021004ec
< 04

05/15/2007 16:14:16.317 VDCP () C1:Ctx0: stop

05/15/2007 16:14:16.380 VDCP (1) PortStatusRequest: [1] Still Play/Rec [4] D1 [svr] Jog
> 020330050fbc
< 020a30850f0c0100000000101f
```

2.2.1.3 Eject

2.2.1.4 Record Cue a 10 second Clip

```
05/15/2007 16:24:08.942 VDCP (1) RecordInitWithData 'TEST3571' 01:00:00:00 00:00:10:00
> 0212202c5445535433353731000000010010000093
< 04

05/15/2007 16:24:08.942 VDCP () C1: New 'V:/default/TEST3571'

05/15/2007 16:24:09.005 VDCP (1) PortStatusRequest: [1] Cueing [4] D1 [svr] Eject
> 020330050fbc
< 020a30850f02810000000010a9
```

```
05/15/2007 16:24:09.598 VDCP () C1:Ctx0: editStart=0 editEnd=215784 editDelta=-215784

05/15/2007 16:24:09.739 VDCP () C1:Ctx0: trig=Asap portState=CueRecord endLimit=MAX
contRec=Off loop=0 speed=1.00 endMode=Default idleMode=Default

05/15/2007 16:24:09.770 VDCP (1) PortStatusRequest: [1] Cueing [2] IDsAdded [4] D1 [svr]
Idle
> 020330050fbc
< 020a30850f02810200000010a7

05/15/2007 16:24:12.442 VDCP (1) PortStatusRequest: [1] CueingDone [2] IDsAdded [4] D1
[svr] CueRecord
> 020330050fbc
< 020a30850f8081020000001029

05/15/2007 16:24:12.505 VDCP () C1:Ctx0: endLimit=599
```

2.2.1.5 Start the record

```
05/15/2007 16:24:57.536 VDCP (1) Record
> 02021002ee
< 04

05/15/2007 16:24:57.536 VDCP () C1:Ctx0: schedule @tick=13688(13666) portState=Record
speed=1.00

05/15/2007 16:24:57.911 VDCP () C1:Ctx0: triggered portState=Record speed=1.00

05/15/2007 16:24:57.911 VDCP () C1:Ctx0: Starting construction for 'edl/cmf//MX-
C36/V:/default/TEST3571'

05/15/2007 16:24:57.942 VDCP (1) PortStatusRequest: [1] Play/Rec [2] IDsAdded [4] D1
[svr] Record
> 020330050fbc
< 020a30850f04810200000010a5

05/15/2007 16:25:08.864 VDCP () C1:Ctx0: Ending construction for 'edl/cmf//MX-
C36/V:/default/TEST3571'

05/15/2007 16:25:08.880 VDCP (1) PortStatusRequest: [1] Busy Idle [2] IDsAdded [4] D1
[svr] Idle
> 020330050fbc
< 020a30850f4181020000001068

05/15/2007 16:25:09.255 VDCP () C1:Ctx0: Ejecting 'V:/default/TEST3571'

05/15/2007 16:25:09.864 VDCP (1) PortStatusRequest: [1] Idle [2] IDsAdded [4] D1 [svr]
Eject
> 020330050fbc
< 020a30850f01810200000010a8
```

2.3 Enumerating Clips:

2.3.1 Enumerate clips with standard 8 character names:

```
05/15/2007 16:16:04.036 VDCP (1) SortMode EnumAlpha
> 0203202000c0
< 04
```

```
05/15/2007 16:16:06.286 VDCP (1) List
> 02023011bf
< Clips: 1001    101502  123     1234    22 22   2513    3333test4321    51667   90423
<02543091003c313030312020202031303135303220203132332020202020313233342020202032322032322020323531332020202033333333374657374343

05/15/2007 16:16:09.520 VDCP (1) Next
> 02023002ce
< Clips: 99999999Audio12 Audio16 Audio2  Audio4  Audio6  Audio8  bryan   bryan2  bryan4
<025430820032393939393939393939417564696f313220417564696f313620417564696f322020417564696f342020417564696f362020417564696f382020627

05/15/2007 16:16:10.989 VDCP (1) Next
> 02023002ce
< Clips: Clip    Clip2   Clip_1  Clip_1-1Clip_1-2Clip_10 Clip_11 Clip_12 Clip_13 Clip_2
<025430820025436c697020202020436c697032202020436c69705f312020436c69705f312d31436c69705f312d32436c69705f313020436c69705f313120436

05/15/2007 16:16:12.145 VDCP (1) Next
> 02023002ce
< Clips: Clip_2-1Clip_3  Clip_3-1Clip_4  Clip_4-1Clip_5  Clip_5-1Clip_6-1Clip_7  Clip_7-1
<02543082001b436c69705f322d31436c69705f332020436c69705f332d31436c69705f342020436c69705f342d31436c69705f352020436c69705f352d31436

05/15/2007 16:16:13.286 VDCP (1) Next
> 02023002ce
< Clips: Clip_8  Clip_8-1Clip_9  Clip_9-1CR71707 List    List_1  List_2  List_3  List_4
<025430820010436c69705f382020436c69705f382d31436c69705f392020436c69705f392d31435237313730
37204c697374202020204c6973745f3120204c6

05/15/2007 16:16:14.536 VDCP (1) Next
> 02023002ce
< Clips: List_6  List_7  new_clipnews    NTSC-LO NTSC_1-1NTSCO_1 test    udtest
<0254308200004c6973745f3620204c6973745f3720206e65775f636c69706e657773202020204e5453432d4c4f204e5453435f312d314e5453434f5f3120746

05/15/2007 16:16:15.801 VDCP (1) Next
> 02023002ce
< Clips:
< 0204308200004e
```

2.3.2 Enumerate clips with extended clip names:

```
05/15/2007 16:12:07.458 VDCP (1) SortMode EnumAlpha
> 0203202000c0
< 04

05/15/2007 16:12:10.755 VDCP (1) List
> 0202b0113f
< Clips:  070417-175810-3-0010s 070417-175817-1-0010s 1001 101502 123 1234 2006112911
<0250b09100421530373034313720d3137353831302d332d303031307315303730343137 2d3137353831372d312d303031307304313030310631303135303 2033

05/15/2007 16:12:14.223 VDCP (1) Next
> 0202b0024e
< Clips:  22 22 2513 3333test 4321 51667 90423 99999999 Audio12 Audio16 Audio2 Audio4
<0250b0820037053232032320432353133083333333374657374043433323105353136363705393034323308393939393939390741756469 6f31320741756
```

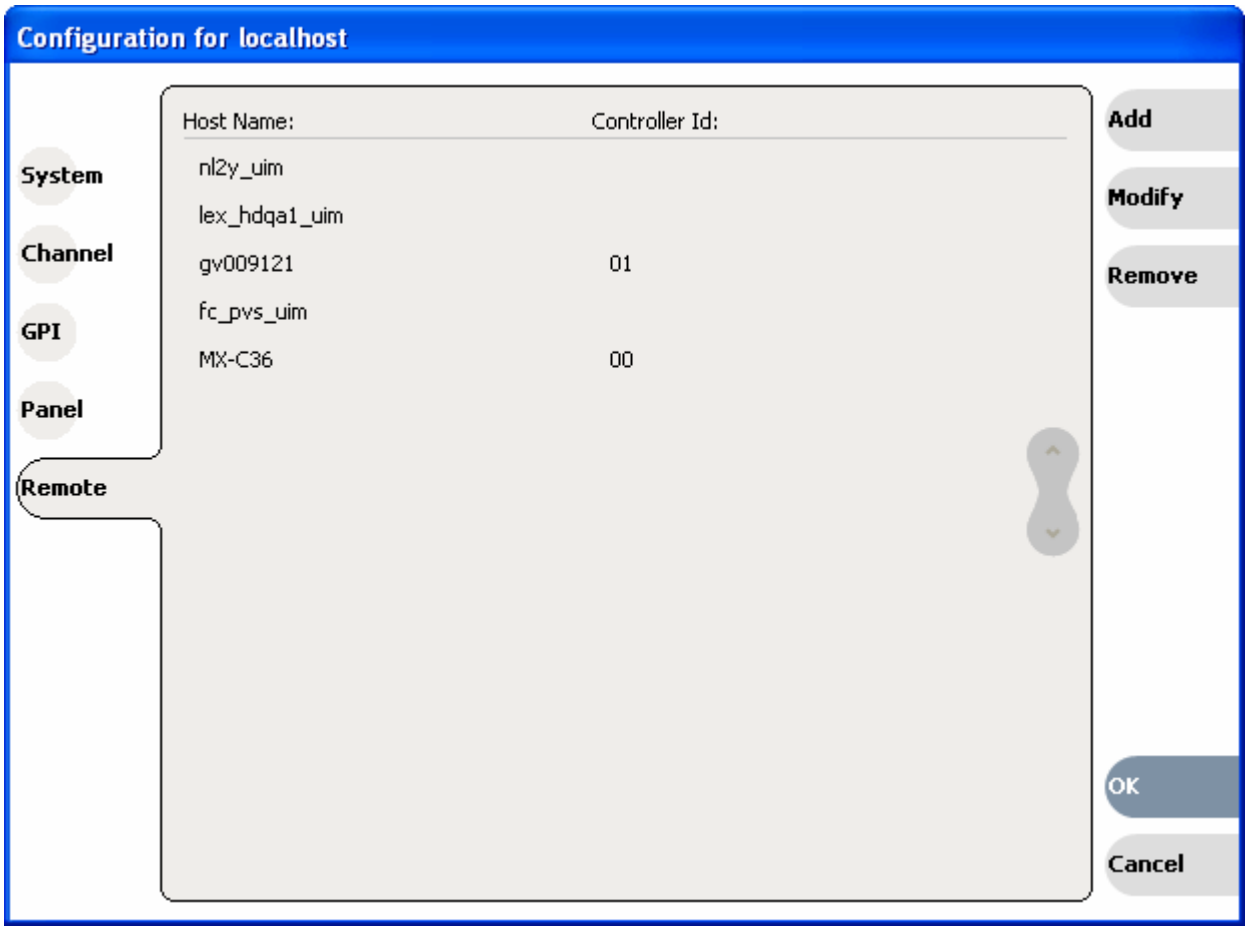
```
05/15/2007 16:12:16.348 VDCP (1) Next
> 0202b0024e
< Clips:  Audio6 Audio8 bryan bryan2 bryan4 bryanCopy bryanFromProfile Clip Clip2 Clip_1
<0253b082002d06417564696f3606417564696f3805627279616e06627279616e3206627279616e3409627279
616e436f707910627279616e46726f6d50726f6

05/15/2007 16:12:17.833 VDCP (1) Next
> 0202b0024e
< Clips:  Clip_1-1 Clip_1-2 Clip_10 Clip_11 Clip_12 Clip_12-1 Clip_13 Clip_2 Clip_2-1
<0250b082002408436c69705f312d3108436c69705f312d3207436c69705f313007436c69705f313107436c69
705f313209436c69705f31322d3107436c69705

05/15/2007 16:12:18.973 VDCP (1) Next
> 0202b0024e
< Clips:  Clip_3 Clip_3-1 Clip_4 Clip_4-1 Clip_5 Clip_5-1 Clip_6-1 Clip_7 Clip_7-1
<024db082001b06436c69705f3308436c69705f332d3106436c69705f3408436c69705f342d3106436c69705f
3508436c69705f352d3108436c69705f362d310

05/15/2007 16:12:20.130 VDCP (1) Next
> 0202b0024e
< Clips:  Clip_8 Clip_8-1 Clip_9 Clip_9-1 Clip_deepak CR71707 List List_1 List_2 List_3
<0252b082001106436c69705f3808436c69705f382d3106436c69705f3908436c69705f392d310b436c69705f
64656570616b074352373137303704 4c6973740

05/15/2007 16:12:21.380 VDCP (1) Next
> 0202b0024e
< Clips:  List_4 List_6 List_7 List_mixed new_clip news NTSC-LO NTSC-LOGO NTSC_1-1
<024db0820008064c6973745f34064c6973745f36064c6973745f370a4c6973745f6d69786564086e65775f63
6c6970046e657773074e5453432d4c4f094e545

05/15/2007 16:12:22.520 VDCP (1) Next
> 0202b0024e
< Clips:  NTSCO_1 NTSCO_2 test udtest UDTestClip UDTestClip2 UserDataTestK2
<0251b0820000074e5453434f5f310b546563686e69636f6c6f72047465737406756474657374 0a5544546573
74436c69700b554454657374436c6970320e557
```

2.4 Asset Management:

ID Request

```
05/15/2007 16:23:54.786 VDCP (1) IDRequest 'TEST3571'
> 020a3016544553543353731aa
< 02033096003a
```

If you wish to conduct transfers with VDCP, you will need to add the host names to the remote tab in the K2 Client configuration. Once the host name is added, you need to associate a controller ID with the host name. You are required to have both the source and destination in the list. Once both have been added, use the Copy File To command to transfer clips.


Configuration for localhost
System
Channel
GPI
Panel
Remote
Host Name:
Controller Id:
nl2y_uim
lex_hdqa1_uim
gv009121
01
fc_pvs_uim
MX-C36
00
Add
Modify
Remove
OK
Cancel

3 FTP

3.1 Asset Management:

3.1.1 Supported FTP Commands:

FTP command name	FTP command description	Streaming support requirement M/Turbo/Profile/UIM	 K2
USER	User Name	Supported	Supported
PASS	Password	Not supported	Supported
ACCT	Account	Not supported	Not supported
CWD	Change working directory	Not supported	Supported
CDUP	Change to parent directory	Not supported	Supported
SMNT	Structure mount	Not supported	Not supported
REIN	Reinitialize	Not supported	Not supported
QUIT	Logout	Supported	Supported
PORT	Data port	Supported	Supported
PASV	Passive	Supported	Supported
TYPE	Representation type	Supported	Supported
STRU	File structure	Not supported	Not supported
MODE	Transfer mode	Not supported	Not supported
RETR	Retrieve	Supported	Supported
STOR	Store	Supported	Supported
STOU	Store unique	Not supported	Not supported
APPE	Append (with create)	Not supported	Not supported
ALLO	Allocate	Not supported	Not supported
REST	Restart	Not supported	Not supported
RNFR	Rename From	Not supported	Supported
RNTO	Rename To	Not supported	Supported
ABOR	Abort	Supported	Supported

DELE	Delete	Supported	Supported
RMD	Remove directory	Not supported	Supported
MKD	Make directory	Not supported	Supported
PWD	Print working directory	Not supported	Supported
LIST	List	Not supported. Reports size in number of fields.	Supported. Reports size in number of fields.
NLST	Name List	Not supported	Supported
SITE	Site Parameters	Supported	Supported
SYST	System	Supported	Supported
SIZE	Size of file (clip)	Supported. Reports size in Bytes.	Supported. Reports size in Bytes.
STAT	Status	Supported	Supported
HELP	Help	Supported	Supported
NOOP	No Operation	Supported	Supported

3.1.2 Direct versus PASV transfers:

PASV:

Client: mx3

C:\temp>ftp mx3

Connected to mx3.grassvalleygroup.com.

220 FTP Server (3.1.13.675) ready.

User (mx3.grassvalleygroup.com:(none)): movie

230 Aspect successfully set to MOVIE.

ftp> bin

200 Type set to IMAGE.

ftp> cd misc

250 Change of directory to V:/GXF/misc/ successful, xfer mode GXF.

ftp> literal pasv

227 Entering Passive Mode (10,16,40,189,5,216).

ftp> literal retr Clip

150 Opening MOVIE mode data connection for /explodedFile/V:/misc/Clip.

ftp> literal stat

226 Transfer complete.

211-MX3 FTP server status:

Version 3.1.13.675

Connected to 10.16.40.189 on local address 10.16.40.189:1496

Logged in as MOVIE

Transfer mode is GXF

Type: IMAGE, Structure: FILE, Mode: STREAM.

Client: mx-proto-b17

C:\temp>ftp mx-proto-b17

Connected to mx-proto-b17.grassvalleygroup.com.

220 FTP Server (3.1.13.675) ready.

User (mx-proto-b17.grassvalleygroup.com:(none)): movie

230 Aspect successfully set to MOVIE.

ftp> bin

200 Type set to IMAGE.

ftp> cd James

250 Change of directory to V:/GXF/James/ successful, xfer mode GXF.

ftp> literal port 10,16,40,189,5,216

200 PORT command okay.

ftp> literal stor Clip1

150 Opening MOVIE mode data connection for /explodedFile/V:/James/Clip1.

ftp> literal stat

226 Transfer complete.

211-MX-PROTO-B17 FTP server status:

Version 3.1.13.675

Connected to 10.16.40.189 on local address 10.16.40.179:1496

Logged in as MOVIE

Transfer mode is GXF

Type: IMAGE, Structure: FILE, Mode: STREAM.

No data connection (total data connections on this connection 3)
Data transfers handled 13
Data transfers dropped 0
Data transfers failed 0
Connections accepted 7
Connections active 1 (out of max 10)
Connections closed due to inactivity 3
Connections dropped due to resource limitations 0
Deletes attempted 0
Directory listings attempted 0
211 End of server status.
ftp>

No data connection (total data connections on this connection 3)
Data transfers handled 1613
Data transfers dropped 0
Data transfers failed 2
Connections accepted 1612
Connections active 1 (out of max 10)
Connections closed due to inactivity 1
Connections dropped due to resource limitations 0
Deletes attempted 0
Directory listings attempted 0
211 End of server status.
ftp> dir
200 PORT command okay.
150 Opening data connection for LIST V:/GXF/James/.
-rwxr-xr-x 1 user group 2236 Apr 18 16:07:06 Clip
-rwxr-xr-x 1 user group 370 May 11 16:15:42 Clip1
226 Transfer complete.

3.1.3 Exploded file transfers:

3.1.4 Import/export GXF:

C:\>ftp mx3
Connected to mx3.grassvalleygroup.com.
220 FTP Server (3.1.13.675) ready.
User (mx3.grassvalleygroup.com:(none)): movie
230 Aspect successfully set to MOVIE.
ftp> bin
200 Type set to IMAGE.
ftp> cd misc
250 Change of directory to V:/GXF/misc/ successful, xfer mode GXF.
ftp> dir
200 PORT command okay.
150 Opening data connection for LIST V:/GXF/misc/.
-rwxr-xr-x 1 user group 370 Apr 10 11:47:22 Clip
-rwxr-xr-x 1 user group 364 Apr 10 11:47:34 Clip_1
-rwxr-xr-x 1 user group 394 Apr 10 11:47:46 Clip_2
-rwxr-xr-x 1 user group 396 Apr 10 11:48:00 Clip_3
-rwxr-xr-x 1 user group 296 Apr 10 11:49:14 Clip_4
-rwxr-xr-x 1 user group 1060 Apr 10 11:58:02 List
-rwxr-xr-x 1 user group 1820 Apr 10 11:51:43 List_1
226 Transfer complete.
ftp: 486 bytes received in 0.02Seconds 30.38Kbytes/sec.
ftp> get Clip c:\temp\Clip.gxf
200 PORT command okay.
150 Opening MOVIE mode data connection for /explodedFile/V:/misc/Clip.
226 Transfer complete.
ftp: 28102932 bytes received in 5.89Seconds 4770.49Kbytes/sec.
ftp>

ftp> put c:\temp\Clip.gxf Clip_5
200 PORT command okay.
150 Opening MOVIE mode data connection for /explodedFile/V:/misc/Clip_5.
226 Transfer complete.
ftp: 28102932 bytes sent in 5.01Seconds 5603.78Kbytes/sec.

3.1.5 Import/export MXF:

```
C:\>ftp mx3
Connected to mx3.grassvalleygroup.com.
220 FTP Server (3.1.13.675) ready.
User (mx3.grassvalleygroup.com:(none)): mxfmovie
230 Aspect successfully set to MOVIE.
ftp> cd misc
250 Change of directory to V:/MXF/misc/ successful, xfer mode MXF.
ftp> bin
200 Type set to IMAGE.
ftp> dir
200 PORT command okay.
150 Opening data connection for LIST V:/MXF/misc/.
-rwxr-xr-x   1 user  group            370 Apr 10 11:47:22 Clip
-rwxr-xr-x   1 user  group            364 Apr 10 11:47:34 Clip_1
-rwxr-xr-x   1 user  group            394 Apr 10 11:47:46 Clip_2
-rwxr-xr-x   1 user  group            396 Apr 10 11:48:00 Clip_3
-rwxr-xr-x   1 user  group            296 Apr 10 11:49:14 Clip_4
-rwxr-xr-x   1 user  group            370 May 11 15:29:30 Clip_5
226 Transfer complete.
ftp: 418 bytes received in 0.02Seconds 26.13Kbytes/sec.
ftp> get Clip c:\temp\Clip.mxf
200 PORT command okay.
150 Opening MOVIE mode data connection for /explodedFile/V:/misc/Clip.
226 Transfer complete.
ftp: 27208375 bytes received in 11.11Seconds 2449.22Kbytes/sec.
ftp>
ftp> put c:\temp\Clip.mxf Clip_6
200 PORT command okay.
150 Opening MOVIE mode data connection for /explodedFile/V:/misc/Clip_6.
226 Transfer complete.
ftp: 27208375 bytes sent in 5.22Seconds 5213.33Kbytes/sec
```

3.1.6 Transfer UTF-8 clips:

3.1.7 File listing (dir) on a K2:

```
C:\>ftp mx3
Connected to mx3.grassvalleygroup.com.
220 FTP Server (3.1.13.675) ready.
User (mx3.grassvalleygroup.com:(none)): movie
230 Aspect successfully set to MOVIE.
ftp> bin
200 Type set to IMAGE.
ftp> dir
200 PORT command okay.
150 Opening data connection for LIST V:/GXF/.
drwxr-xr-x   1 user  group            Mar 30 16:37:00 1440
drwxr-xr-x   1 user  group            Mar 29 12:36:00 AXfer
drwxr-xr-x   1 user  group            Mar 17 2006 Bruce
drwxr-xr-x   1 user  group            Jan 02 15:40:00 bryan
drwxr-xr-x   1 user  group            Apr 18 08:09:00 dan
drwxr-xr-x   1 user  group            May 04 2006 Davorin
drwxr-xr-x   1 user  group            Nov 15 2005 default
drwxr-xr-x   1 user  group            Mar 28 15:47:00 demo
```

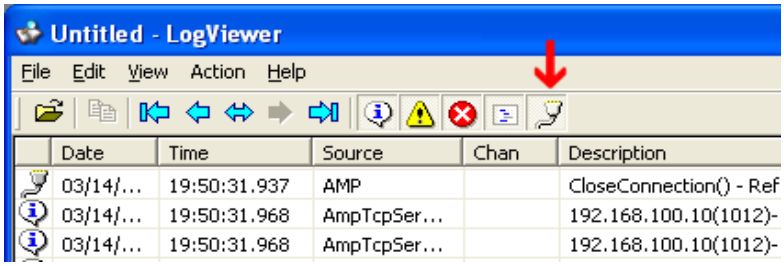
```
drwxr-xr-x   1 user  group              Dec 09 2005 Florida
drwxr-xr-x   1 user  group              Feb 14 10:48:00 larrym
drwxr-xr-x   1 user  group              Sep 18 10:53:00 misc
drwxr-xr-x   1 user  group              May 31 17:17:00 QuickTimeDeletes
drwxr-xr-x   1 user  group              Nov 15 2005 Recycle Bin
drwxr-xr-x   1 user  group              Apr 19 14:42:00 SendBin
drwxr-xr-x   1 user  group              Dec 22 17:04:00 TimeDelay
drwxr-xr-x   1 user  group              Jun 19 21:25:00 XferBin
226 Transfer complete.
ftp: 1118 bytes received in 0.30Seconds 3.76Kbytes/sec.
ftp> cd misc
250 Change of directory to V:/GXF/misc/ successful, xfer mode GXF.
ftp> dir
200 PORT command okay.
150 Opening data connection for LIST V:/GXF/misc/.
-rwxr-xr-x   1 user  group               370 Apr 10 11:47:22 Clip
-rwxr-xr-x   1 user  group               364 Apr 10 11:47:34 Clip_1
-rwxr-xr-x   1 user  group               394 Apr 10 11:47:46 Clip_2
-rwxr-xr-x   1 user  group               396 Apr 10 11:48:00 Clip_3
-rwxr-xr-x   1 user  group               296 Apr 10 11:49:14 Clip_4
-rwxr-xr-x   1 user  group              1060 Apr 10 11:58:02 List
-rwxr-xr-x   1 user  group              1820 Apr 10 11:51:43 List_1
226 Transfer complete.
```

4 Logs

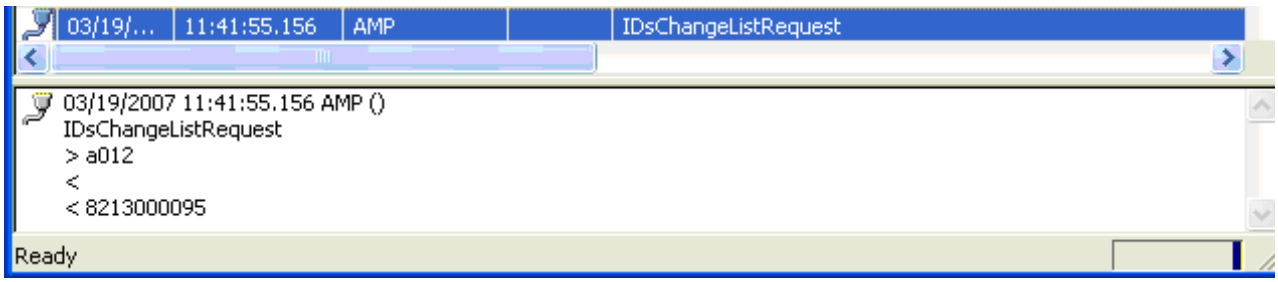
Run c:\profile\Log.exe to view information, warning, error, debug, and protocol log messages. You can also run Log by Clicking Start / Run and typing "log" in the text box and clicking the OK button.

4.1 Protocol logs:

AMP, VDCP, and BVW protocols log commands and results to the log file. In the log viewer, make sure that you have protocol button  selected to see all protocol output in the logs:



If you click on an entry in the log viewer, the panel at the bottom will display full information about the logged event.



You can select one or more log entries in Log.exe and copy them to the clipboard by pressing CTRL-C. This is useful if you want to copy a section of the log and paste it to a text document or an email message.

In the example above, the command ID's Changed List (a0.12) was received by the AMP server and a response of "8213000095" was returned.

Commands that are received by the K2 AMP server are shown with a ">" symbol in the log. Similarly, responses that are returned by the AMP server are shown with a "<" symbol. The first response line is where a human readable format of the response (if it is needed) would be displayed. The second response line is the actual returned values. In the above example there is no human readable response.

NOTE: the command and response lines hold around 256 bytes of data. If that limit is reached the value will be truncated followed by the string "…". Select the next log entry to see the rest of the message.

4.2 AMP extended logging:

You can enable extended AMP logging by creating or setting the log level value in the registry. Absence of the key in the registry means that it is at the default log level. You often have to create the Key and the AMPServer Node in order to enable extended logging.

[HKEY_LOCAL_MACHINE\SOFTWARE\Grass Valley Group\Applications\AMPServer]
"LogLevel"=dword:4

LogLevel is a value of type REG_DWORD for the above mentioned key. See 0 for a list commands displayed for each log level.

Values can be:
0: no command logging
1: default logging (level 2 & 3 cmds not logged), status filtered for changes only
2: default plus level 2 (level 3 cmds not logged), status filtered for changes only
3: all log levels, status filtered for changes only
4 or above: all log levels, no status filtering

Log level of 4 sets the highest level of AMP logging. This is useful when trying to debug a problem. To restore back to the normal level of logging set LogLevel equal to 2 or delete the LogLevel key.

0: no command logging
1: default logging (level 2 & 3 cmds not logged), status filtered for changes only
2: default plus level 2 (level 3 cmds not logged), status filtered for changes only

For normal operation, it is best to leave the LogLevel at or below 2.

Restart the K2 Client to enable the new log level settings.

4.3 VDCP extended logging

You can enable extended AMP logging by creating or setting the log level value in the registry. Absence of the key in the registry means that it is at the default log level. You often have to create the Key and the VDCPServer Node in order to enable extended logging.

[HKEY_LOCAL_MACHINE\SOFTWARE\Grass Valley Group\Applications\VDCPServer]
"LogLevel"=dword:4

LogLevel is a value of type REG_DWORD for the above mentioned key. See 0 for a list commands displayed for each log level.

Values can be:
0: no command logging
1: default logging (level 2 & 3 commands not logged), status filtered for changes only
2: default plus level 2 (level 3 commands not logged), status filtered for changes only
3: all log levels, status filtered for changes only
4 or above: all log levels, no status filtering

Log level of 4 sets the highest level of VDCP logging. This is useful when trying to debug a problem. To restore back to the normal level of logging set LogLevel equal to 1 or delete the LogLevel key.

For normal operation, it is best to leave the LogLevel at or below 1.

Restart the K2 Client to enable the new log level settings.

5 3.2 Features

5.1 End-mode:

End-mode can be set in AMP so that when a player reaches the end of a clip the clip will show:

1. the last frame of the clip
2. the first frame of the next clip
3. black
4. E-to-E (if available)

This is on a timeline basis, not a clip basis.

5.2 Loop mode:

Loop mode can be set in AMP so that when a player reaches the end of a timeline it will loop back to the start again and continue playing.

5.3 SetMarkin & SetMarkout:

AMP will have the abilitiy to set the MarkIn and MarkOut values of clips.

5.4 Aspect ratio for playout:

For playout, the aspect ratio can be set via AMP for a clip so that it displays bars, crop or stretch. This is on a clip basis.

5.5 Widescreen mode for SD recording:

For SD recording, the widescreen mode can be set via AMP to 4:3 or 16:9. This is on a channel basis.

5.6 Audio gain command:

For playout, a clip's audio output gain can be set via AMP to a floating point value designated in dBu's. The range is from -40.0 to +24.0. Unity gain can be set as 0.0. This is on a clip basis.

5.7 Replace edit command:

Via AMP a section of all audio tracks or a section of the video track of a clip may be replaced by audio or video from another clip. The section may also be replaced by black.

5.8 Ganging:

Via AMP channels may now be ganged together for ganged records or playback.

5.9 Date localization:

Dates in AppCenter can now be displayed in any localized format.

5.10 Dropframe status bit:

Dropframe was added to the ClipDataResponse to indicate whether a clip is DF or NDF.

5.11 Additional IDStatusRequest bits added:

To AMP to indicate:

1. Whether a clip is ready to play.
2. Whether a clip is loaded on another channel of the same K2.

Appendix A: AMP Channel-less calls

This is a list of all calls that channel-less connections can make:

0x000c	Local Disable
0x001d	Local Enable
0x021d	Ext Local Enable
0x0011	Device Type Request
0xa021	Device Id Request
0xa02c	Device Name Request
0x610c	Current time sense
0x6120	Status sense
0xa026	Id Count Request
0xa014	List First Id
0xa214	List First Ext Id
0xa015	List Next Id
0xa215	List Next Ext Id
0xa115	Ext List Next Id
0xa818	Id Status Req
0xaa18	Ext Id Status Req
0xa20e	Set Working Folder Req
0xa00f	Get Working Folder Req
0xa010	Erase All Id's
0xa810	Erase ID
0xaa10	Ext Erase Id
0xa012	IDs Changed List Request
0xa027	Get All Folders Request
0xa231	Create Folder
0xa228	Rename Folder
0xa229	Delete Folder
0xa225	ID Start Time Request
0xa217	ID Duration Request
0xc028	Abort Transfer ID
0xc228	Extended Abort Transfer ID
0xc127	Transfer ID Status Request
0xc227	Extended Transfer ID Status Request
0xc226	Transfer Id
0xc225	Extended Transfer ID
0xc229	Network Delete
0xaa08	Set Clip Data
0xaa13	Clip Data Request
0xaa19	New Copy without marks
0xae19	New Copy with marks
0xa02a	List First Folder
0xa02b	List Next Folder(s)
0xa209	Get Thumbnail Command
0xa01c	Longest Contiguos Storage Request
0xa11c	Extended Storage Request
0xaa11	Extended Erase Segment
0xa21a	Get Aspect Ratio Conversion (for a clip)
0xa21b	Set Aspect Ratio Conversion (for a clip)

0x4136	Enabling timer mode(Used for Erase Segment Command)

Appendix B: AMP calls not using the clip cache

- (01.06) Set Drop Frame Mode
- (00.0C) Local Disable
- (0X.1D) Local Enable
- (00.11) Device Type Request
- (20.04) Standby Off
- (20.05) Standby On
- (20.60) EE Off
- (20.61) EE On
- (A8.20) Set Device ID
- (A0.21) Device ID Request
- (A0.2C) Device Name Request
- (2X.00) Stop
- (2X.01) Play
- (2X.02) Record
- (20.0F) Eject
- (20.10) Fast Forward
- (2X.11) Jog Forward
- (2X.12) Variable Forward
- (2X.13) Shuttle Forward
- (20.20) Rewind
- (2X.21) Jog Reverse
- (2X.22) Variable Reverse
- (2X.23) Shuttle Reverse
- (2X.31) Cue Up With Data
- (20.52) Tension Release
- (44.05) User Bits Preset
- (40.20) In Reset
- (41.36) Timecode Mode Preset
- (40.40) Auto Mode Off
- (40.41) Auto Mode On
- (41.42) Set Loop Playback Mode
- (41.43) Set Widescreen Mode
- (60.0B) State Change Latency Request
- (61.0C) Current Time Sense
- (61.20) Status Sense
- (AX.02) Record Cue Up With Data
- (4X.14) In Preset
- (4X.15) Out Preset
- (4X.21) Out Reset
- (A0.06) Preview In Reset
- (AX.07) Preview Out Reset
- (44.31) Pre-roll
- (AX.04) Preview In Preset
- (AX.05) Preview Out Preset
- (AX.11) Erase Segment
- (A0.16) ID Loaded Request
- (AX.01) Auto Skip
- (A0.26) ID Count Request
- (A0.0F) Get Working Folder Request
- (AX.10) Erase ID

- (A0.2A) List First Folder
- (A0.2B) List Next Folder
- (AX.1C) Total /Available Storage Request
- (A4.1D) Set Record Duration
- (A3.11) Create Folder
- (A2.28) Rename Folder
- (A2.29) Delete Folder
- (AX.2D) Stripe Timecode
- (AX.2E) Set Mark In
- (AX.2F) Set Mark Out
- (AX.1A) Get Aspect Ratio Conversion Override
- (A2.1B) Set Aspect Ratio Conversion Override
- (C0.28) Abort Transfer ID
- (C1.27) Transfer ID Status Request
- (C2.26) Transfer ID
- (C2.25) Extended Transfer ID
- (C2.29) Network Delete
- (AX.19) New Copy
- (AA.08) Set Clip Data
- (AA.13) Clip Data Request
- (A2.09) Get Thumbnail

Appendix C: Protocol Log Levels

AMP Log Levels:

Log Level 2 Commands

- 0x0011 Device Type Request
- 0x2004 Stand by Off
- 0x2005 Stand By On
- 0xa021 Device Id Request
- 0xa02c Device Name Request
- 0x2052 Tension Release
- 0x600b State Change Latency Request
- 0xa016 Current ID
- 0xa026 Id Count Request
- 0xa014 List First Id
- 0xa214 List First Ext Id
- 0xa015 List Next Id
- 0xa215 List Next Ext Id
- 0xa115 Ext List Next Id
- 0xa818 Id Status Req
- 0xaa18 Ext Id Status Req
- 0xa00f Get Working Folder Req
- 0xa012 IDs Changed List Request
- 0xa027 Get All Folders Request
- 0xa225 ID Start Time Request
- 0xa217 ID Duration Request
- 0xc127 Transfer ID Status Request
- 0xc227 Transfer ID Status Request - option 2
- 0xaa13 Clip Data Request
- 0xa02a List First Folder
- 0xa02b List Next Folder(s)
- 0xa209 Get Thumbnail Command

Log Level 3 Commands are disabled from logging (except changes in status sense messages.)

- 0xa01c Longest Contiguous Storage Request
- 0x610c Current Time Sense
- 0x6120 Status Sense

VDCP Log Levels:

Log Level 2 Commands:

- 0x3001 - Open Port
- 0x3002 - Next - ID Listing
- 0xB002 - Variable Next - ID Listing
- 0x3003 - Last
- 0xB003 - Variable Last
- 0x3007 - Active Id Request
- 0xB007 - Variable Active Id Request
- 0x3008 - Device type Request
- 0x3010 - System Status Request
- 0x3011 - Id List
- 0xB011 - Variable ID List
- 0x3014 - ID size Request
- 0xB014 - Variable Id size request
- 0x3018 - ID's Added List

0xB018 - Variable ID's Added List
0x3019 - ID's Deleted List
0xB019 - Variable ID's Deleted List

Log Level 3 Commands:
0x3006 - Position request
0x3016 - ID Request
0xB016 - Variable ID Request