



kaleidescape

99/2/SHOW\_CONTROLLER\_DETAILS:1.0-S\_c4403679::

99: device\_id

2: command sequence

SHOW\_CONTROLLER\_DETAILS

movie\_id (from web UI scraping)

:: (nothing)

## Control Protocol Reference Manual

for Kaleidescape Systems

January 2022

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## Using This Document

The simple text-based control protocol for Kaleidescape Systems can be used to issue commands from, and provide information to, control devices. Connections between control devices and Kaleidescape components can be via TCP/IP over the Ethernet network or via serial links for some Premiere components.

This document describes the low-level details of the Kaleidescape System control protocol. For templates, modules, and documentation for specific control systems, go to [support.kaleidescape.com](http://support.kaleidescape.com) and search 'control systems'.

**Note:** The information in this document does not apply to the Kaleidescape Reader, the Kaleidescape Bulk Loader, the Kaleidescape Speed Reader, or the Modular Disc Vault. Those devices do not support communication through the control protocol.

This document revision corresponds to kOS versions 10.12 and 8.8.

## Overview

### Basic communication

The connection between a controller and a Kaleidescape component is either via TCP/IP over the Ethernet network or a direct serial connection for some Premiere components.

Premiere Players that are used with Kaleidescape Co-Star are controlled by the connected Strato player and cannot be controlled directly.

For test purposes, a terminal emulator can be used to send commands to a Kaleidescape player. See [Quick Start Tutorial](#) on page 6 for details.

### Types of control messages

This document describes three types of control messages: commands, response messages, and event messages.

- ▶ Commands are sent from the controller (or terminal) to a Kaleidescape component.
- ▶ Response messages are sent from a Kaleidescape component in response to a command.
- ▶ Event messages are unsolicited messages sent from a Kaleidescape component to indicate a change of state.

Event messages can also be sent as response messages to commands. This way the controller can determine the current state of a component even if there has been no change.

Kaleidescape control messages have either three or four segments, separated by slash (/) characters. See [Basic control protocol](#) on page 16 for complete information on message syntax.

See [Appendix A: Command Summary and Status Codes](#) on page 194 for a complete list of control messages.

## Quick Start Tutorial

This section provides a quick start tutorial using control messages on a computer. Use this information to learn how certain messages affect the system.

### Connections

A computer can be connected to a Kaleidescape component via TCP/IP over the existing Ethernet network or by direct serial connection for some Premiere products.

#### TCP/IP link

Use the following steps to find the IP address for a Kaleidescape player.

1. Turn on both the computer and the Kaleidescape player.
2. Verify the computer is on the same subnet as the Kaleidescape player.
3. Open the browser interface using:  
<http://my-kaleidescape> (Windows)  
<http://my-kaleidescape.local> (Mac)
4. Provide a password as required. Select the **SETTINGS** tab.
5. Click on **Components** in the second row of tabs.
6. Record the IP address listed for the player.

#### Serial link

1. Use the following steps to look up and change the serial port settings for a Kaleidescape player. (Only Premiere line players – with the exception of Mini players – have serial ports.) Turn on both the computer and the Kaleidescape player.
2. Verify the computer is on the same subnet as the Kaleidescape player.
3. Open the browser interface using:  
<http://my-kaleidescape> (Windows)  
<http://my-kaleidescape.local> (Mac)

Provide a password as required.

4. Select the **SETTINGS** tab.
5. Click on **Components** in the second row of tabs.

6. Select the **Settings** button for the player.
7. In the new window, click on the **CONTROL** tab,



Figure 1: Control tab

8. Verify that **Flow Control** is set to *None* and make any other required changes.
9. Record the settings for the player. This information is required to set up the terminal emulation program.
10. Click **OK** to close the window.

## Terminal emulator

Use the following procedures to set up a terminal emulator. Several third-party emulators are available. This document describes the procedure using PuTTY for Windows. A telnet client in the terminal window can be used for a Mac or Linux.

**Note:** PuTTY is available at <http://www.chiark.greenend.org.uk/~sgtatham/putty>

## TCP/IP connection

1. Open PuTTY on the computer.
2. Select the **Telnet** radio button in the **Connection type** section as shown in the following figure.

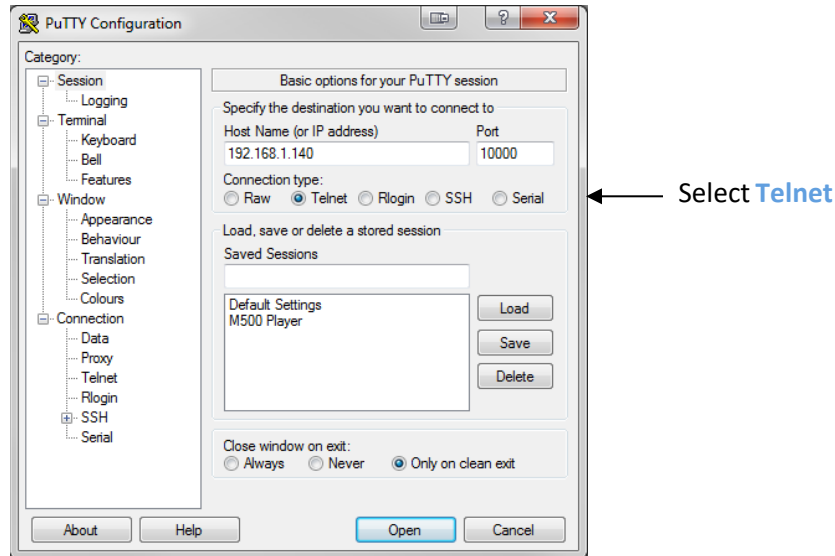


Figure 2: Telnet selection

3. Enter the IP address of the player and enter *10000* for the **Port** setting.
4. Click **Open**. A terminal session window appears.

## Serial connection

If using another emulator rather than PuTTY, see Table 1 for serial parameters.

Table 1: Serial Parameters

Serial Parameter	Player
Speed (baud)	19200
Data bits	8
Parity	None
Stop bits	1
Flow control	None



1. Open PuTTY on the computer.
2. Select the **Serial** radio button in the **Connection type** section as shown in the following figure.

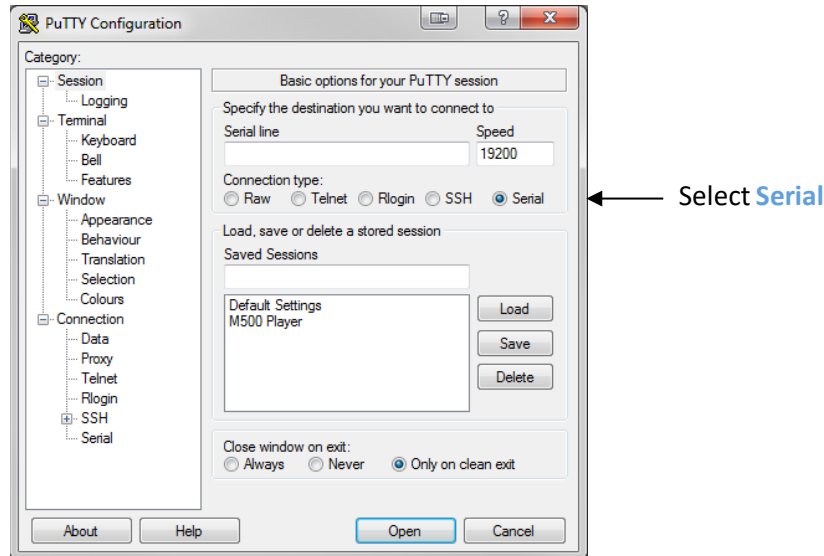


Figure 3: Serial selection

3. Enter the name of the computer serial port in the **Serial line** text box. This is usually *COM1* or *COM2*; however, USB to serial adaptors usually use *COM3*.

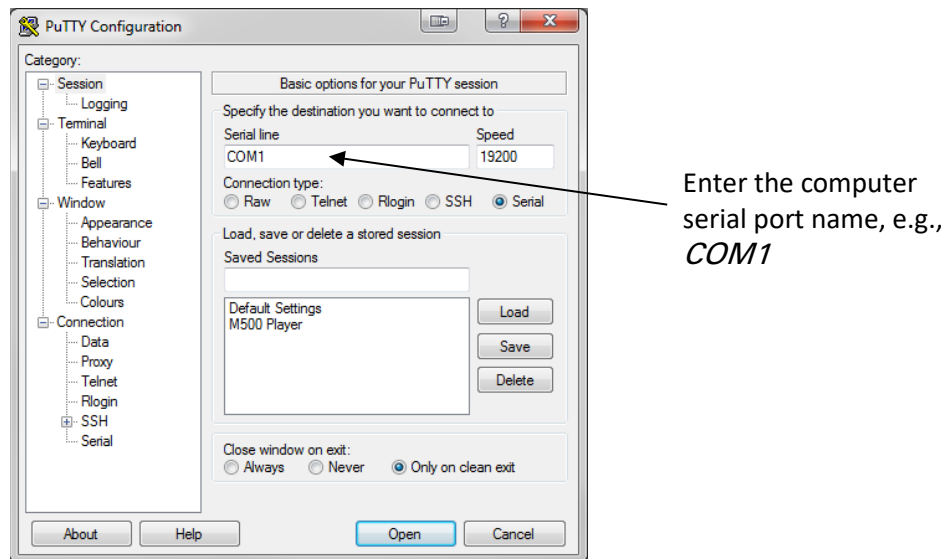


Figure 4: Serial line text box

4. Enter the baud rate found on the browser interface into the **Speed** text box. The default baud rate is 19200 for a player and 115200 for a server.

- Click the **Serial** option under **Connection** in the **Category** section of the window as shown in the following figure.

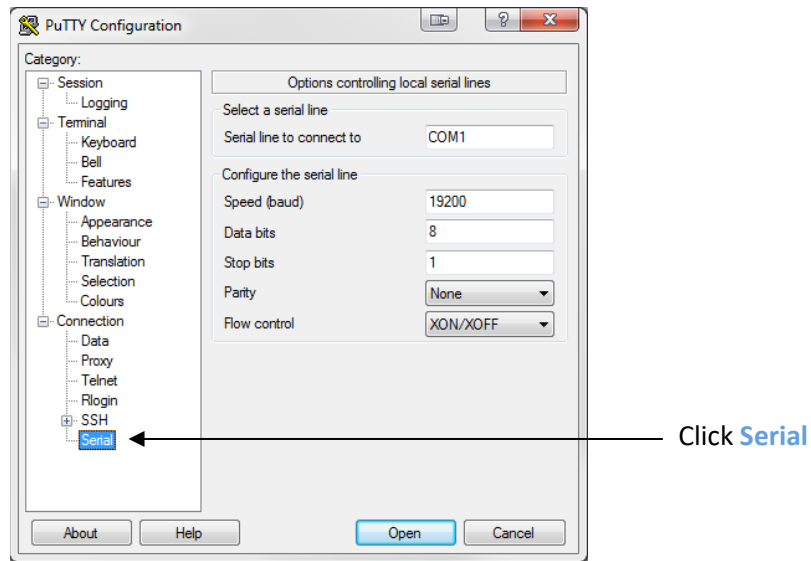


Figure 5: Serial option

- Verify that *None* is selected for **Flow control** from the drop-down menu as shown in the following figure.

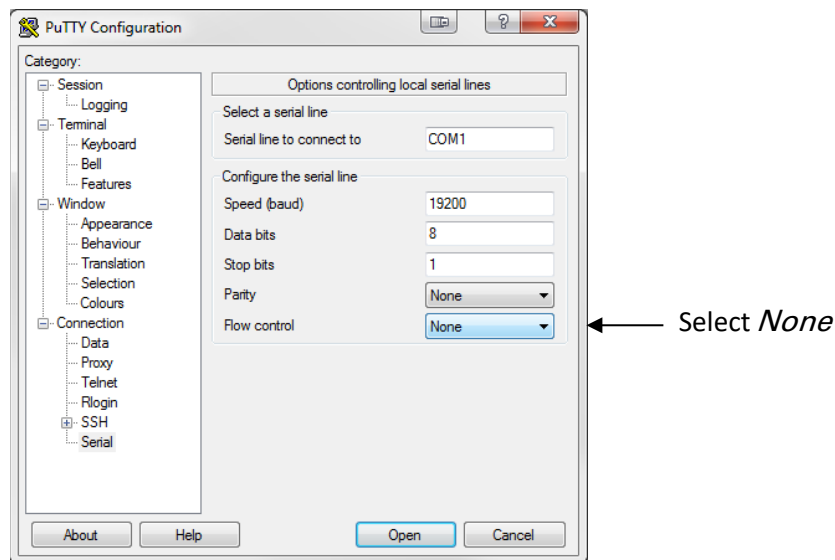


Figure 6: Flow control setting

- Click **Open**. A terminal session window appears.
- Connect a female-to-female DB-9 serial null modem cable to a serial port or serial adapter on the computer and connect the other end of the cable to the control port on the Kaleidescape player.

## Control messages

After connecting to a Kaleidescape component and opening a terminal session window, enter a sample command for the onscreen display. The following command for controlling the onscreen display is a good example because the command response is immediately visible.

### Command example

Type the following down arrow command in the terminal session window. Remember to press the enter key to send commands in a terminal session.

`01/1/DOWN:`

In this example, the command has three parts.

<code>01</code>	is the device ID for the component receiving the command. The value <code>01</code> is the control protocol device ID (CPDID) that identifies the component directly connected. This means that regardless of the CPDID setting for the player connected, the player will act on commands with device ID <code>01</code> .
<code>1</code>	is the sequence number, which the component will send back in response to the command. The sequence number allows the controller to verify that the command was received.
<code>DOWN</code>	is the message body, which indicates the action the component is to perform. In this example, the <code>DOWN</code> command moves the highlight down the list. If the screen saver was on, the screen saver disappears.

### Command response

The following text appears in the terminal session window:

`01/1/000:/89`

This is the response from the component to the `DOWN` command. The response to this command has four parts.

<code>01</code>	is the device ID of the component that sent the response, which matches the device ID of the component that the <code>DOWN</code> command was sent to.
<code>1</code>	is the sequence number. This number is the same number as the command so that responses can be matched to commands.
<code>000</code>	is the message body which starts with the three-digit status code that indicates whether or not the command was handled successfully. The value <code>000</code> indicates successful handling.

89 is the checksum that accompanies every response from a Kaleidescape component. The controller program can use this number to validate the message.

## Event messages

A DOWN command can trigger state changes in the Kaleidescape component that result in event messages. If the screen saver was active when the DOWN command was issued, the following the event message appears:

```
01/!/000:UI_STATE:01:00:00:0:/38
```

This event message provides information about the current state of the onscreen display. The message body in this example has six fields separated by colons.

01	is the device ID of the component that sent the response, which matches the device ID of the component that the DOWN command was sent to.
!	is used as the sequence number to indicate that this is an unsolicited event message.
000	is the three-digit status code. The value 000 indicates successful handling and no errors.
UI_STATE	is the name of the message, which indicates that the onscreen display has changed.
01:00:00:0	are response parameters.
01	means that the onscreen display is on the Movie List.
00	means that no movie details page or menu is displayed.
00	means that no dialog box is displayed.
0	means that the screen saver is off.
38	is the checksum.

Refer to the command sections to view commands, how the system responds, and the event messages generated. See [Appendix B: Revision History](#) on page 206 for command additions and changes.

## Communication

The Kaleidescape System communicates with a controller using a simple text-based protocol. There are two important elements for communicating with the Kaleidescape System.

- ▶ Setting up a TCP/IP link or a serial link between a controller and a Kaleidescape component
- ▶ Understanding the message syntax for the Kaleidescape control protocol

## Physical connection

Although connected to a single component, a controller can route commands to any component in the Kaleidescape System using assigned device ID numbers or component serial numbers.

## Setting up a TCP/IP connection

Each Kaleidescape component can handle up to twenty simultaneous TCP/IP control connections. The controller must specify the IP address of the component and port 10000.

## Determining the IP address of a Kaleidescape component

Verify that the computer is on the same subnet as the Kaleidescape System, and use the following procedure to find a component IP addresses.

1. Open the browser interface using:

<http://my-kaleidescape> (Windows)

<http://my-kaleidescape.local> (Mac)

Provide a password as required.

2. Select the **SETTINGS** tab.
3. Click on **Components** in the second row of tabs.
4. Record all IP addresses listed for the components in the group that the controller will connect to.

## Using a stable IP address

When using TCP/IP connections, Kaleidescape components usually obtain IP addresses via DHCP, which means that IP addresses can change.

An unstable IP address can result in the controller losing connection to the Kaleidescape System. There are two ways to make a component IP address stable.

- ▶ Reserve an IP address for the Kaleidescape component in the DHCP server. If the DHCP server supports reservations, this is the preferred option.
- ▶ Assign a static IP address to the component. This option is less desirable because the Kaleidescape component must be reconfigured if moved to a different subnet.

DHCP reservations provide a central point of management for all IP allocations at a site. With DHCP reservations, network parameters such as IP addresses, subnet mask, default gateway, and DNS servers are set in one place — at the DHCP server. If any of these parameters change, only the DHCP server has to be modified.

For most installations, the DHCP server built into the router is perfectly adequate. The procedure to create DHCP reservations is device-specific. Refer to the router or DHCP server documentation for instructions. DHCP reservations are usually made using MAC addresses. To see MAC addresses for Kaleidescape components, go to the [Components](#) tab in the browser interface.

## Setting up an RS-232 serial connection

Kaleidescape components act as an RS-232 Data Terminal Equipment (DTE) device with data rates up to 115,200 baud for servers and up to 57,600 baud for players.

The male DB-9 serial control port uses a standard DTE pinout shown in Figure 7. CTS and RTS are optional and are used only when using hardware flow control.

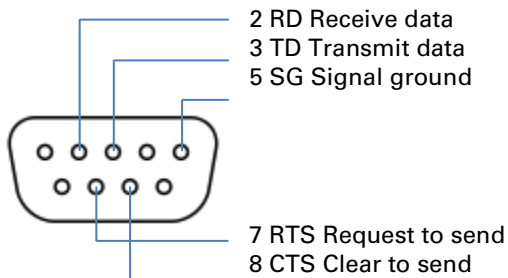


Figure 7: RS-232 pinout

Use a straight-through cable to connect to a DTE device. If connecting to another DTE device, use a null modem cable. If in doubt of which cable to use, check the pinout for the port connecting to the Kaleidescape component. The component can be connected to a standard computer serial port using a null modem cable. Most AMX and Crestron DB-9 serial ports require a null modem cable.

## Configuring the serial port

Use the following steps to configure the Kaleidescape serial port.

1. Open the browser interface using:

<http://my-kaleidescape> (Windows)

<http://my-kaleidescape.local> (Mac)

Provide a password as required.

2. Select the [SETTINGS](#) tab.
3. Click on [Components](#) in the second row of tabs.
4. Click on the [Settings](#) button for the player.
5. In the new window, click on the [CONTROL](#) tab.
6. Select the appropriate serial port settings for the player from the drop-down menus. Table 2 shows the default port settings for servers and players. Server port settings cannot be changed. The port settings on the control system must be set to match.

Table 2: Default port settings for servers and players

Serial Parameter	Server	Player
Speed (baud)	115200	19200
Data bits	8	8
Parity bits	None	None
Stop bits	1	1
Flow control	None	None

### Flow control

Kaleidescape components support hardware flow control using the RTS/CTS lines, but not software flow control. Table 3 describes effects of flow control options: *None* (default) or *RTS/CTS*.

**Note:** RTS and CTS signal wiring can be omitted between a component serial port and the controller if the default flow control setting is used.

Table 3: Flow control settings

Flow Control Option	Line Status
None	Component ignores CTS. Sends data at any time, and keeps RTS asserted, indicating that component is always ready to accept data.
RTS/CTS	Component only sends data when the CTS line is asserted, and asserts the RTS line when the component is ready to accept data. The controller does not send data when the RTS line is clear.

### Character echo

To avoid overloading the serial link, Kaleidescape components do not echo characters back to the sender. Error detection is handled through checksums. See [Error detection](#) on page 25 for more information.

If working with a terminal emulator, turn on local character echo to view commands. Both carriage return and line feed might also have to be set to send.

### Estimating response times

Kaleidescape components respond to all commands. To detect dropped or lost commands, the controller can expect a response within the time frames listed in Table 4. Time is based on the serial link speed.

Table 4: Response times of Kaleidescape Systems

Speed	Response Time
9600	3.2 seconds
19200	1.6 seconds
38400	0.8 seconds
57600	0.5 seconds

## Basic control protocol

Control commands for the Kaleidescape System use a simple ASCII text-based format. Each control message has up to 1024 characters followed by a carriage return or line feed character (decimal ASCII 13 and 10).

Kaleidescape components ignore multiple carriage returns or line feed characters as empty messages. This makes it easy to enter control commands in a terminal emulator while developing or testing controller programming.

## Control message syntax

Kaleidescape control messages have either three or four segments, separated by slash (/) characters:

*device\_id/seq/message\_body[/checksum]*

<i>device_id</i>	identifies the Kaleidescape component sending or receiving a message. This is usually the control protocol device ID (CPDID) of the Kaleidescape component.
<i>seq</i>	is a sequence number used to match a response from the component with the original command sent by the controller.
<i>message_body</i>	contains the message name and other data. Message fields are delimited by colons and order dependent. See <a href="#">Message body</a> on page 20.
<i>checksum</i>	aids in error detection. The checksum is optional in commands but part of all response and event messages.

Binary delimiters can be enabled where required by the control system. See [SET\\_PROTOCOL\\_SETTINGS](#) on page 54 for more details.

## Device identifier

There are two types of device identifiers.

- ▶ Control protocol device ID (CPDID)
- ▶ Serial number device identifier



A music zone identifier (Premiere Only) can be appended to a device ID with .xx, e.g., 01.02 is device 01, music zone 02.

The device ID identifies the Kaleidescape component receiving or responding to a command. The device ID allows controllers to send and receive messages to and from a Kaleidescape component while connected to another component. This is called command routing.

Command routing is a feature of the Kaleidescape control protocol that allows commands routed through a single physical connection on one Kaleidescape component to reach other Kaleidescape components on the network. This allows multiple Kaleidescape components to be controlled with only one connection to the controller.

Commands prefaced with a unique CPDID for a component or with the serial number of the component, are received by that component, no matter the physical connection.

The advantage of using a unique CPDID as opposed to a serial number device ID is that a component can be replaced without changing the control program. The advantage of using the serial number format is that CPDIDs do not have to be assigned.

**Note:** The only module provided by Kaleidescape that requires CPDIDs to be set is the AMX module. Other modules communicate directly with the player being controlled.

**Note:** It is not usually necessary to connect a controller to the server. This is useful only when using the server as a gateway to route commands to other components.

## Control protocol device ID (CPDID)

Control protocol device ID (CPDID) numbers are the most common device IDs. CPDIDs are two-digit numbers assigned to a component for communication.

### Numbering

CPDID numbers range from 01 to 99.

- ▶ CPDID 01 is the component directly connected to the controller, either via a TCP/IP session or a serial link.
- ▶ A specific CPDID (from 02 to 99) can be set to allow for command routing. Using this ID sends the command to the specified component.
- ▶ CPDID ?? is a special identifier that appears only in response messages when the original command was garbled and the Kaleidescape component could not determine the intended destination for the command.
- ▶ CPDID 00 is invalid.

## Assigning CPDID numbers

Use the following steps to assign CPDIDs on the installer pages of the browser interface.

1. Open the browser interface using:

<http://my-kaleidescape> (Windows)

<http://my-kaleidescape.local> (Mac)

Provide a password as required.

2. Select the **SETTINGS** tab.
3. Click on **Components** in the second row of tabs.
4. Click on the **Settings** button for the player.
5. In the new window, click on the **CONTROL** tab.
6. Select the **Control Protocol Device ID** from the drop-down menu.

Never assign the same CPDID (other than *None*) to two components in the same server group. In the case of duplicate CPDIDs, messages directed to that CPDID return a response status error indicating a device identifier conflict.

- ▶ When connecting a serial controller directly to a player or Cinema One (1<sup>st</sup> generation) via the RS-232 control port, communication parameters must be set to match the serial controller.
- ▶ The M300 Player has no serial port, but can be controlled via TCP/IP or via a controller connected by RS-232 to another player.

7. Click **OK**.

## Example 1

In this example, the system has a Cinema One (1<sup>st</sup> generation) and an M500 Player with a controller connected directly to the M500 Player. The Cinema One has been set to CPDID 02. The controller can send messages to the Cinema One using CPDID 02, or send messages to the M500 Player using CPDID 01.

### Controller sends:

02/1/GET\_NUM\_ZONES: (command routed to Cinema One)

### Kaleidescape System sends:

02/1/000:NUM\_ZONES:01:03:/94 (response from Cinema One)

### Controller sends:

01/1/GET\_NUM\_ZONES: (command sent directly to connected M500 Player)

### Kaleidescape System sends:

01/1/000:NUM\_ZONES:01:01:/91 (response from M500 Player)

## Example 2

In this example, the system has an M500 Player directly connected to a controller. The M500 Player has been set to CPDID 03. The controller can send messages to the player using CPDID 01 (the local device ID) or 03 (the indirect/routable CPDID).

**Controller sends:**

03/1/GET\_NUM\_ZONES: (command routed to M500 Player)

**Kaleidescape System sends:**

03/1/000:NUM\_ZONES:01:01:/93 (response from M500 Player)

**Controller sends:**

01/1/GET\_NUM\_ZONES: (command sent directly to connected M500 Player)

**Kaleidescape System sends:**

01/1/000:NUM\_ZONES:01:01:/91 (response from M500 Player)

## Serial number device identifier

The device identifier can also be the serial number of the component. The serial number device identifier is specified by a pound sign followed by the serial number. Leading zeros in serial numbers may be omitted in commands. For example, to send a command to a component with serial number 0000 000144B,

#144B/1/DOWN:

The response message will also contain the serial number, identified with a pound sign, and zero-padded to 12 hexadecimal. For example,

#00000000144B/1/000:/30

By default, events always use the two-digit device ID format. To receive event messages in serial number format, use the `ENABLE_EVENTS` command. See [ENABLE\\_EVENTS](#) on page 56.

## Music zone identifier (Premiere Only)

The device identifier field can contain an optional music zone identifier. A music zone identifier has two digits and is preceded by a period. For example,

01.02/3/PAUSE:

In this example, the connected device (01) has a music zone (02), which is paused. When using serial number syntax, the music zone identifier follows the serial number. For example,

#144B.02/3/PAUSE:

Commands sent to a music zone do not specifically control the Kaleidescape onscreen display. When a music zone is specified in the device identifier, only commands that control music are allowed. These commands include `BROWSE` and music controls, such as `PAUSE`.

If the music zone identifier is omitted, the command applies to the onscreen display if applicable. If the component does not have an onscreen display, only a limited set of commands are available, e.g., network setting commands.

### Examples

01/6/STOP:

This command controls the onscreen display. If the screen saver is active, the first time this command is sent, the screen saver is cleared. The second time the command is sent, the movie or music playing stops.

01.01/6/STOP:

Sending this command to an M500 Player music zone only stops the music (if playing) and does not disable the screen saver.

If the onscreen display is set to control a different music zone (via the Now Playing view or the SET\_CONTROLLED\_ZONE command), the 01/6/STOP: command stops music in that zone, rather than the zone in the connected player. The 01.01/6/STOP: command always stops the music for the connected player.

### Sequence number

The sequence number is a single digit from 0 to 9 for commands and response messages, or the character ! for an event message.

When a Kaleidescape component sends a response to a command from a controller, the component puts the sequence number from the message received into the response. This sequence number allows the controller to keep track of the responses to each command.

If a Kaleidescape component cannot determine the sequence number of a command, the question mark character ? is used as the sequence number in the response.

### Message body

The message body contains the name of the message and any associated data. Event messages and command responses also contain a status code in the message body. See [Appendix A: Command Summary and Status Codes](#) on page 194 for a list of status codes.

The information in the message body is delimited into fields separated by colons. The number and meaning of the fields varies with the specific message.

For commands, the first field is always the name of the message. For example, GO\_MOVIE\_COVERS or PLAY.

For response and event messages, the message body always begins with a status code, followed by the message name and any additional fields.

The following example has some commands that might be sent by a controller, along with the responses and event messages from the Kaleidescape component.

```
01/1/GO_MOVIE_COVERS:
    01/1/000:/89                                (response)
    01/!/000:UI_STATE:03:00:00:0:/40            (event message)
01/2/PLAY:
    01/2/000:/90                                (response)
    01/!/000:UI_STATE:03:02:00:0:/42            (event message)
    01/!/000:TITLE_NAME:Almost Famous:/34      (event message)
...
01/3/PA.SE:
    01/3/010:/92                                (response)
01/4/~AUSE:/30
    01/4/003:/95                                (response)
```

This sequence of commands displays the Movie Covers view and begins playing the highlighted movie, Almost Famous. Note that these commands have increasing sequence numbers, and the first three have no checksums.

The responses from the Kaleidescape component have sequence numbers matching the commands and contain checksums (as do all responses sent by Kaleidescape components).

The status code 000 in the first two responses indicates that no error occurred receiving or handling the commands. Some event messages follow the responses that indicate changes in the state of the zone under control.

In the last example, the controller sent two garbled PAUSE commands some time after the original commands. Because there is no checksum, the component must look at the message itself to determine whether the message was sent correctly. The component does not recognize the command name and responds with a status of 010 indicating an invalid command.

The controller reacts by sending another PAUSE command, this time with a checksum of 30 (the correct checksum for the ungarbled message), but the message becomes garbled again. The component compares the checksum (30) provided by the controller to the checksum on the received message (76), to determine that the message was garbled. The component then responds with a status of 003, indicating a checksum error. Checksums can be used to detect problematic RS-232 connections.

### Message status codes

All response and event messages contain a zero-padded, three-digit status code. A 000 status code means no errors; any other code indicates an error. Error messages are not intended to be displayed to the end user.

- ▶ For event messages, the status code is always 000 (no error) to simplify message parsing.
- ▶ For response messages, the status code can be a non-zero value indicating an error of some sort. For a complete list, see [Status codes](#) on page 204.

The controller must inspect the status field of any response message before taking action based on the response.

Some commands, for example the BROWSE command, return a brief message along with the status code if there is an error. For example,

```
01/1/BROWSE:bad::1-10::  
01/1/012:Invalid node:/15
```

### Message character set

Other than message delimiters (carriage return and line feed), all characters in a control message must be printable, 8-bit ASCII characters in the ISO 8859-1 (Latin-1) character set — no raw control characters are allowed.

The characters allowed in a message range from decimal value 32 (the space character) to decimal 255 (y-umlaut, ÿ).

Certain characters from the Latin-1 character set are also supported using special escape sequences.

**Note:** A controller must be able to handle escaped characters in response and event messages, and must be able to escape ASCII characters with special meaning in the message format.

To support interactive serial or TCP/IP connections where each character is transmitted as typed, the serial protocol handles ASCII 8 (BS) and 127 (DEL) by deleting the preceding character.

**Note:** The SET\_PROTOCOL\_SETTINGS command can override most of this behavior.

### Special characters

To include format and control characters in a message data field, characters must be escaped with a backslash \ character using the sequences in Table 5.

If the controller cannot handle escape sequences, escaped characters can be avoided by using the SET\_PROTOCOL\_SETTINGS command.

Table 5: Special characters

Character	Escape sequence
Line feed	\n
Carriage return	\r
Horizontal tab	\t
Slash (/)	\/
Backslash (\)	\\
Colon (:)	\:
Any Latin-1 character including characters with accents	\dnnn where nnn is the zero-padded three-digit decimal value for the character

The Kaleidescape System uses the Latin-1 character set for accented letters common in foreign films and names, and for special punctuation. To include these characters, use the character directly or use the escape sequence \d followed by the three-digit decimal value for the letter. For example, to represent the character a-acute (á), which has the 8-bit ASCII value 225, use the sequence \d225.

### Field processing algorithm

The pseudo code below shows how to process a field from a control message. The variable `field` is assumed to be a string of the field within the overall message string. The variable `field_terminated` is used to make sure the field ends with a colon character. The variable `field_text` is filled with the processed characters from the message. The variables `escaped` and `char` handle escape sequences in the loop that runs through the message until it encounters a colon character terminating the field, or the end of the message string. After the loop finishes, if a colon was not found (or a segment delimiter (/) was found), an error occurs.

```
field_text = ""
field_terminated = false
escaped = false
char = ''

for each character in field:
    if (escaped is true) then
        if (character is 'd') then
            char = (next three digit characters as a decimal value)
            (advance loop past digit characters)
        else if (character is 'n') then
            char = (newline character)
        else if (character is 'r') then
            char = (carriage return character)
        else if (character is 't') then
            char = (tab character)
        else if (character is '/') then
            char = '/'
        else if (character is ':') then
            char = ':'
        else if (character is '\') then
            char = '\'
        end if

        append char to field_text
        escaped = false
    else if (character is '\') then
        escaped = true
    else if (character is ':') then
        field_terminated = true
        break loop // a field delimiter ends scan w/success
    else if (character is '/') then
        break loop // a segment delimiter ends scan w/o a valid field
    else if (not between 32 and 126) then
        note error condition
        break loop
    else
        append character to field_text
    end if
next for

if (field_terminated is false) then
    note error condition
end if
```



## Error detection

The Kaleidescape control protocol allows for a checksum to be included with every message for reliable communication even on noisy connections.

The checksum is an optional segment in controller commands. If a checksum is provided, the Kaleidescape System uses this information to detect transmission errors before processing a command. If the checksum is omitted, the slash character before the checksum must also be omitted.

The checksum is always included in response and event messages. The controller has the option to use or ignore the checksum.

The controller programmer must decide how to handle a response or event message with an incorrect checksum. This situation indicates a problem with the communications link and must, at the least, result in a log message to identify the problem. The controller software can check the message body status field for a 000 (no error) value to decide whether or not to resend the command with the matching sequence number.

The programmer must decide if the controller will assume that the command arrived intact. This decision depends on whether a repeated command is preferable to a missed one. This decision depends on the specific message. A repeated KALEIDESCAPE\_MENU\_TOGGLE command, which flashes the Kaleidescape menu briefly onscreen, is likely to be more annoying than a missed one, where the menu simply fails to appear.

On the other hand, a repeated STOP command can do no harm. The simplest policy is to ignore all responses and events that fail checksum verification, on the assumption that it is better to ignore a garbled message than to act on incorrect contents.

Checksums are not applicable when using a TCP/IP connection, because the TCP protocol has built-in error handling.

## Calculating the checksum

A checksum is a zero-padded, two-digit decimal number, calculated as a straightforward sum, modulo 100, of the decimal value of each character in the message before the checksum, including the last slash character.

Use the following pseudo code to compute a checksum.

```
checksum = 0
for each character in the full message before the checksum segment
    checksum = checksum + (current character decimal value)
checksum = checksum modulo 100
end for
```

## Event messages

Event messages are unsolicited messages sent from a Kaleidescape component to indicate a change of state. It is not necessary for a controller to query a Kaleidescape component repeatedly for information about the current state of the component. Any changes such as the state of the user interface are automatically sent to the controller.

The component sends out event messages any time relevant information changes. The controller only needs to monitor for such messages and take appropriate action.

Some event messages are nearly identical to command response messages.

For example,

```
01/!/000:UI_STATE: ...
```

contains the same message parameters as the response to the GET\_UI\_STATE command.

```
01/1/000:UI_STATE: ...
```

## Examples

1. When a movie enters the end credits, a MOVIE\_LOCATION event message is sent to the controller which can respond by raising the lights in the theater.
2. A PLAY\_STATUS message indicates playback and scan speed, which the controller can use to swap a **Play** button with a **Pause** button, or to highlight the **Fast Forward** button when the player is scanning. This message also contains information on the currently playing title and chapter numbers, as well as the playback location within each, which the controller can display on a touch panel.
3. A TITLE\_NAME message indicates the title of the movie currently playing.
4. For theater installations that must manage changes in aspect ratio for masking systems or installations with external scalers, the event messages VIDEO\_MODE and SCREEN\_MASK provide the necessary information to adjust the theater equipment automatically as the user switches between the onscreen display and movies with different aspect ratios.
5. For installations that must react to video mode changes, such as those incorporating external scalers or display devices that do not automatically detect changes in the video mode, a VIDEO\_MODE event message indicates the current video mode for each video output of the movie zone. This information can be used by the controller to configure the downstream video display or processing devices accordingly.
6. The UI\_STATE message provides information about which screen is visible in the Kaleidescape user interface, along with any details pages or menus, dialog boxes, or a screen saver.

7. The USER\_INPUT message tells if the user is being prompted for input, what type of input, what the prompt is, and any currently entered characters. The controller can inspect this event message and change the display to show a numeric keypad or alphanumeric keyboard, display a field with the prompt string, as well as show what the user has already entered.

## Maintaining synchronization

Some control protocol messages change the behavior of a component. When the component restarts or loses connection to the controller, those messages must be resent to the component.

For example, the SET\_SCREEN\_MASK message sends data to the component that the component remembers and uses until a restart. When the component restarts, the component state resets to the default values. This means the SET\_SCREEN\_MASK message has to be sent again.

The controller can tell that a component might have restarted or temporarily lost the serial connection when the controller receives the PLAYER\_RESTART, VIDEO\_MODE or SCREEN\_MASK messages.

## Command Usage

Understanding how commands in the Kaleidescape control protocol work together allows programmers to use all of the capabilities provided by the Kaleidescape System.

Unsupported commands will result in 'Invalid request' responses. For example:

```
01/1/010:Invalid request:/68
```

This general overview of commands divides commands into five main groups depending on usage.

- ▶ Connection
- ▶ OSD control
- ▶ Playback control
- ▶ Standalone music control (SATP and keypad)
- ▶ Advanced integration

## Connection commands

Connection commands affect all components. These commands can be divided into the following groups.

- ▶ Power
- ▶ Idle mode
- ▶ Verification

- ▶ Protocol
- ▶ Event message registration
- ▶ Module registration
- ▶ Friendly name

## Power commands and messages

### Commands

`ENTER_STANDBY`

`PLAYER_RESTART`

`LEAVE_STANDBY`

`GET_DEVICE_POWER_STATE`

When a controller connects to the Kaleidescape System for the first time, the controller must check the power state of the component with the `GET_DEVICE_POWER_STATE` command.

If a player is in standby, the controller can send a `LEAVE_STANDBY` command. Kaleidescape components other than the M-Class players and Cinema One reset the TCP/IP connection at power on, so if a `DEVICE_POWER_STATE` message does not appear within a second, the controller should drop the connection, wait at least 30 seconds, and then try to reconnect. A Kaleidescape component can take several minutes to reboot, depending on system conditions. If the controller cannot reconnect within a reasonable amount of time, the controller should display an error message to the user.

In some situations, it can be difficult to determine whether an existing TCP/IP connection is still active. In this case, a command can be sent to determine whether the connection is active. The `GET_TIME` command is a good test command because this command has no effect on the system.

When a component restarts, depending on the specific type of component, the controller either loses the TCP/IP connection to the component, receives a `DEVICE_POWER_STATE` event message indicating a change in power state, or receives a `PLAYER_RESTART` event message. The controller should handle any of these situations by reconnecting to and resynchronizing with the component. Use the `GET_UI_STATE` command to the view changes.

## Idle mode commands and messages

### Commands

`GET_SYSTEM_READINESS_STATE`

`LEAVE_IDLE_MODE`

When a controller connects to an Strato Movie Player or Kaleidescape Cinema One (2<sup>nd</sup> generation), the controller may check the idle mode using `GET_SYSTEM_READINESS_STATE`.

The controller can monitor idle mode while it is connected using the `SYSTEM_READINESS_STATE` message. The controller can remove the system from idle mode by sending `LEAVE_IDLE_MODE`. The controller can display a message that the Kaleidescape system is “Spinning up” when `SYSTEM_READINESS_STATE` = 1, and dismiss the message after the Kaleidescape system has left idle mode, `SYSTEM_READINESS_STATE` = 0.

A Kaleidescape Strato Movie Player or Cinema One (2<sup>nd</sup> generation) will automatically enter idle mode after a period of inactivity. The Kaleidescape system will exit idle mode after receiving `LEAVE_IDLE_MODE`, `LEAVE_STANDBY` or after any user interaction.

## Verification commands

### Commands

<code>GET_SYSTEM_VERSION</code>	<code>GET_NUM_ZONES</code>
<code>GET_DEVICE_TYPE_NAME</code>	<code>GET_TIME</code>
<code>GET_AVAILABLE_DEVICES</code>	<code>GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER</code>

After a connection has been established to a component that is powered on, check the current system version with the `GET_SYSTEM_VERSION`. This command can also be used to check the protocol version as well as the kOS version.

The `GET_NUM_ZONES` command can be used to verify controller configuration. For example, if the controller has been configured to control a movie zone on a component that does not have a movie zone, the `GET_NUM_ZONES` command returns a 0 for the number of movie zones, allowing the controller to produce an error message for the user. The `GET_DEVICE_TYPE_NAME` command can be used in conjunction with the error message to make the error message more meaningful.

The `GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER` and `GET_AVAILABLE_DEVICES` commands can be used to discover all components in the system.

## Protocol commands

### Commands

<code>GET_PROTOCOL</code>	<code>SET_PROTOCOL_SETTINGS</code>
<code>GET_ACTIVE_PROTOCOL</code>	<code>SET_SUPPORTED_PROTOCOL</code>

After a connection has been established to a component that is powered on, check the protocol version with the `GET_PROTOCOL` command. The controller can require a minimum protocol version to ensure that all commands are available. If the protocol version is high enough, the controller can continue with initialization.

To match controllers and device protocol versions, use the `GET_ACTIVE_PROTOCOL` and `SET_SUPPORTED_PROTOCOL` to read the current sessions protocol version and, if necessary, set the correct version for the current session that is compatible with both the control system and the Kaleidescape devices being controlled.

During startup, changing the protocol settings to enable binary delimiters allows for faster parsing and processing by the controller. Use the SET\_PROTOCOL\_SETTINGS command to change protocol settings.

## Event message registration

### Commands

ENABLE_EVENTS	GET_DEVICE_INFO
DISABLE_EVENTS	SEND_EVENT

To control a movie or music zone on the component connected directly to the controller, use the GET\_DEVICE\_INFO command to identify the Control Protocol Device ID (CPDID) of the connected device. Even though the component responds to commands sent to CPDID 01, the component only generates event messages from the assigned CPDID. The GET\_DEVICE\_INFO command provides the assigned CPDID so the controller can accept event messages from the component.

If the controller is configured to control a zone other than the locally connected movie zone, the controller must use the ENABLE\_EVENTS command to receive event messages from that zone. This command applies to music zones on the directly connected component as well as all zones on other components.

## Module registration

### Commands

SEND\_TO\_SYSLOG

To assist in troubleshooting, a Kaleidescape System can send information to the diagnostic logs about the control module version. Use the SEND\_TO\_SYSLOG command to send a message with the module description and version. Kaleidescape recommends sending this command once a day and each time Kaleidescape control is initiated.

**Note:** This information is covered by the Kaleidescape privacy policy.

## Friendly name commands

### Commands

GET\_FRIENDLY\_NAME  
SET\_FRIENDLY\_NAME  
GET\_FRIENDLY\_SYSTEM\_NAME

The controller can display the name of the Kaleidescape movie zone or music zone being controlled. Use the GET\_FRIENDLY\_NAME command to discover the friendly name. Use SET\_FRIENDLY\_NAME to label a zone on a user interface. Use GET\_FRIENDLY\_SYSTEM\_NAME to determine the system name that the zone is a part of.

## OSD control

The onscreen display (OSD) control commands navigate the Kaleidescape onscreen display, control movie and music playback through the onscreen display, and respond to playback events. Software modules that support these commands are sometimes referred to as OSD control modules.

All OSD control commands are sent to a movie zone, and all event messages related to OSD control are sent from a movie zone. These commands can be divided into the following groups.

- ▶ Navigation
- ▶ Menu
- ▶ Views
- ▶ User input
- ▶ View-specific commands
- ▶ Page and content details
- ▶ Screen saver

### Navigation

#### Commands

##### Arrow commands

SELECT

CANCEL

CHILD\_SELECT

##### Page up/down commands

POSITION\_SELECT

##### Paging and skipping

The user must be provided with basic controls to navigate the onscreen display. The UP, DOWN, LEFT, RIGHT and other arrow commands are used to navigate the onscreen options, and the SELECT or CHILD\_SELECT command to select. (CHILD\_SELECT behaves like SELECT but also activates the child user interface.) The PAGE\_UP, PAGE\_DOWN and other paging commands allow the user to search through long lists quickly in the list and collections views.

The arrow commands and page up/down commands have \_PRESS and \_RELEASE versions to refine user navigation (for example PAGE\_UP\_RELEASE). If the controller can detect distinct press and release events, program the controller so that pressing the corresponding button sends the \_PRESS version of the command, and releasing the button sends the \_RELEASE version.

To close dialog boxes and cancel user input, use the CANCEL or STOP\_OR\_CANCEL command. The STOP\_OR\_CANCEL command is useful when there is no explicit **Cancel** or **Exit** button available.

A controller that supports a touch-sensitive video feed can use the `POSITION_SELECT` command to make it possible for the user to have direct touch control to interact with the Kaleidescape onscreen display. Kaleidescape refers to software that support this feature as OSD Video and software that does not as OSD No Video.

Paging and skipping commands behave like `PAGE_UP` or `PAGE_DOWN` in the user interface.

## Menu

### Commands

<code>KALEIDESCAPE_MENU_ON</code>	<code>KALEIDESCAPE_MENU_TOGGLE</code>
<code>KALEIDESCAPE_MENU_OFF</code>	<code>DISC_OR_KALEIDESCAPE_MENU</code>

The Kaleidescape user interface has three types of views for the user to access content: list, covers, and collections. These views can all be accessed through the Kaleidescape menu, which is accessed using the Kaleidescape menu commands.

If the controller cannot support both a [Disc Menu](#) button and a [Kaleidescape Menu](#) button, use the `DISC_OR_KALEIDESCAPE_MENU` command to provide a single button that provides both functions.

## Views

**Note:** Music view commands will re-direct to the movie collection “Songs” when sent to a player which does not support music.

### Commands

<code>GET_UI_STATE</code>	<code>GO_MUSIC</code>
<code>GO_MOVIES</code>	<code>GO_MUSIC_LIST</code>
<code>GO_MOVIE_LIST</code>	<code>GO_MUSIC_COVERS</code>
<code>GO_MOVIE_COVERS</code>	<code>GO_MUSIC_COLLECTIONS</code>
<code>GO_MOVIE_COLLECTIONS</code>	<code>GO_MUSIC_COLLECTION</code>
<code>GO_MOVIE_COLLECTION</code>	<code>GO_NOW_PLAYING</code>
<code>GO_MOVIE_STORE</code>	<code>GO_PARENTAL_CONTROL</code>
<code>GO_SYSTEM_STATUS</code>	<code>DISC_IN_TRAY_TOGGLE</code>
<code>GO_VAULT_SUMMARY</code>	

Direct access to the views on the Kaleidescape menu are available by using the `GO_MOVIE_LIST`, `GO_MOVIE_COVERS`, `GO_MOVIE_COLLECTIONS`, `GO_MOVIE_STORE`, `GO_MUSIC_LIST`, `GO_MUSIC_COVERS`, `GO_MUSIC_COLLECTIONS`, `GO_NOW_PLAYING`, `GO_VAULT_SUMMARY`, `GO_SYSTEM_STATUS`, and `GO_PARENTAL_CONTROL` commands. To switch between music and movie views, use the `GO_MOVIES` and `GO_MUSIC` commands.

The controller can provide feedback about the view currently active by using the `GET_UI_STATE` command or waiting for a `UI_STATE` event message when the view changes.



## User input

### Commands

GET_USER_INPUT	GET_USER_INPUT_PROMPT
SET_USER_INPUT_ENTRY	SELECT
KEYBOARD_CHARACTER	KEYBOARD_LITERAL
CANCEL	BACKSPACE

User input is sometimes requested from the Kaleidescape onscreen display. Capable controllers should watch for unsolicited USER\_INPUT event messages to display the appropriate keyboard or numeric keypad when required. These event messages can occur at any time, even during movie playback. When user input is requested, the specifics of the on-screen prompts can be determined by use of the GET\_USER\_INPUT\_PROMPT command. Entering user input is done with KEYBOARD\_CHARACTER commands send the input character by character, or SET\_USER\_INPUT\_ENTRY for sending complete strings. The BACKSPACE command is used to delete characters and fix errors. Sometimes, input requires a SELECT command to confirm that the entry is complete. The CANCEL command is used to cancel user input.

When user input is not being requested, KEYBOARD\_CHARACTER commands act differently.

### View-specific commands

#### Commands

FILTER_LIST	KEYBOARD_CHARACTER
DEFAULT_LEVEL	KEYBOARD_LITERAL
SAFE_LEVEL	BACKSPACE
SHUFFLE_COVER_ART	SELECT
ALPHABETIZE_COVER_ART	CANCEL
GET_USER_INPUT	GET_USER_INPUT_PROMPT
SET_USER_INPUT_ENTRY	GO_PARENTAL_CONTROL
CHILD_SHUFFLE_COVER_ART	GO_SEARCH

Different commands are enabled depending on the user interface view. Parental controls are enabled on all movie views. To enter a parental control passcode to enable restricted content, send the numeric passcode to the component using KEYBOARD\_CHARACTER commands. The BACKSPACE command can be used to fix typing errors when entering the code and the CANCEL command to return to the movie library.

As characters are entered, USER\_INPUT event messages are generated containing the characters currently displayed on the screen and the passcode prompt. When entering a passcode, the digits are masked by asterisks.

Direct access to the parental control settings view can be made through the GO\_PARENTAL\_CONTROL command.

Lists in the Movie List, Music List, Movie Collections, and Music Collections views can be filtered using the `FILTER_LIST` command. This command puts the OSD in a filtering mode. To filter the list, send `KEYBOARD_CHARACTER` commands containing the string for filtering. As characters are entered, `USER_INPUT` event messages are generated containing the text, along with a prompt that can be displayed on the controller.

When filtering the list, `BACKSPACE` can be used to delete characters, and `CANCEL` to exit filtering mode.

When not in filtering mode, sending a `KEYBOARD_CHARACTER` command causes the display to jump quickly to movies or albums starting with the keyboard letter without entering filtering mode.

The `GO_SEARCH` command can be used to initiate a search of the current place. For example, if the command is sent while on the OSD store, then the store will be searched. When on any library place, this command will search the local library. Note that some places do not support search. Sending the command opens the onscreen keyboard.

When the onscreen keyboard is displayed the `SET_USER_INPUT_ENTRY` or `KEYBOARD_LITERAL` commands can be used to enter characters. Focus is placed on the `DONE` button after every character sent, ready for the `SELECT` command to complete the onscreen keyboard entry. `BACKSPACE` can be used to delete characters, and `CANCEL` to exit search mode.

In the Movie Covers and Music Covers views, the `SHUFFLE_COVER_ART` command can be used to force the cover art shuffling.

## Page and content details

### Commands

#### [DETAILS](#)

#### [GET\\_CONTENT\\_DETAILS](#)

#### [GET\\_HIGHLIGHTED\\_SELECTION](#)

As the user navigates the onscreen display, `HIGHLIGHTED_SELECTION` event messages are generated for each selection highlight change. The `HIGHLIGHTED_SELECTION` message supplies a handle that can be used by the `GET_CONTENT_DETAILS` command to get selection item details.

### Screen saver

#### Commands

#### [GO\\_SCREEN\\_SAVER](#)

#### [STOP\\_SCREEN\\_SAVER](#)

After establishing a fresh connection to a Kaleidescape component, Kaleidescape recommends sending the `STOP_SCREEN_SAVER` command to clear the screen saver. This saves the user a button press. The `UI_STATE` message is used to determine whether or not the screen saver is active and can be used to display a message on the controller when the screen saver is active.

## OSD playback control

These commands control movie and music playback through the onscreen display.

These commands can be divided into the following groups.

- ▶ Playback control
- ▶ Playback information
- ▶ Music playback controls
- ▶ DVD/Blu-ray Disc navigation
- ▶ Movie playback options
- ▶ Blu-ray Disc playback options

## Playback control

### Commands

PLAY	Paging and skipping
PAUSE	Kaleidescape menu commands
STOP	INTERMISSION_ON
REPLAY	INTERMISSION_OFF
NEXT and PREVIOUS	INTERMISSION_TOGGLE
CHILD_STOP	SCAN_FORWARD and SCAN_REVERSE
CHILD_PLAY	CHILD_PAUSE

Basic movie and music playback control can be achieved through the `PLAY`, `PAUSE`, and `STOP` commands, along with the paging and skipping commands.

The `CHILD_PLAY`, `CHILD_STOP`, and `CHILD_PAUSE` commands function like the corresponding non-child playback commands, and also activate the child user interface if not already active.

These commands do not directly control music playback when sent to a movie zone. These commands can also have different effects depending on the current status of the onscreen display. For example, if the screen saver is active, `01/1/PLAY`: first hides the screen saver before playing anything. The command `01.01/1/PLAY`: simply starts music playback of whatever is in the Now Playing view.

The `INTERMISSION_` commands produce an effect similar to `PAUSE`, but also trigger lighting events and display an Intermission screen.

## Movie playback

### Commands

SET_STATUS_CUE_PERIOD	GET_UI_STATE
GET_PLAY_STATUS	GET_MOVIE_LOCATION
GET_PLAYING_TITLE_NAME	

These commands determine the state of movie playback. These commands can be used to display playback information to the user, change controls on a touch panel page, or trigger lighting events. UI\_STATE and MOVIE\_LOCATION messages indicate whether or not a movie is playing and are generated when movie playback stops or starts.

The PLAY\_STATUS message can be used to determine how far movie playback has progressed, what chapter playback is on, or whether playback is paused, scanning, or playing. This message is normally sent during chapter changes or changes in playback. For more frequent updates, use the SET\_STATUS\_CUE\_PERIOD command to set PLAY\_STATUS messages to be generated once per second.

## Music playback

### Commands

**Note:** The response code for music related commands will return “Command is not available” or “Invalid request” for products which do not support music.

MUSIC_RANDOM_ON	GET_CONTROLLED_ZONE
MUSIC_REPEAT_OFF	SET_CONTROLLED_ZONE
MUSIC_RANDOM_TOGGLE	GET_MUSIC_NOW_PLAYING_STATUS
MUSIC_REPEAT_ON	GET_MUSIC_PLAY_STATUS
MUSIC_REPEAT_OFF	GET_MUSIC_TITLE
MUSIC_REPEAT_TOGGLE	

Music playback status has a different set of commands than movie playback. The MUSIC\_PLAY\_STATUS message is used instead of PLAY\_STATUS messages to discover how far the current track playback has progressed, what track playback is on, and whether playback is paused, scanning or playing. The MUSIC\_PLAY\_STATUS message frequency is controlled by the SET\_STATUS\_CUE\_PERIOD command like the PLAY\_STATUS message.

The GET\_MUSIC\_TITLE and GET\_MUSIC\_NOW\_PLAYING\_STATUS commands request information about the music currently playing, that can be used to populate a user display. Information includes the name of the song, the artist performing the song, and the album with the song.

Various settings related to music playback can be controlled in the Now Playing view on the onscreen display. Whether the music playlist plays back randomly, whether the music repeats, and what music zone the onscreen display is controlling can all be modified from this view. These settings can also be changed directly through the control protocol using the `MUSIC_RANDOM_TOGGLE` and `MUSIC_REPEAT_TOGGLE` commands (along with `_ON` and `_OFF` variants, and the `SET_CONTROLLED_ZONE` and `GET_CONTROLLED_ZONE` commands).

## DVD/Blu-ray Disc navigation

### Commands

<code>DISC_MENU</code>	<code>START_CHAPTER_ENTRY</code>
<code>DISC_TOP_MENU</code>	<code>START_DISC_TITLE_ENTRY</code>
<code>DISC_RESUME</code>	<code>KEYBOARD_CHARACTER</code>
<code>DISC_OR_KALEIDESCAPE_MENU</code>	

DVDs and Blu-ray Discs have menus that can be accessed through the `DISC_MENU` command. If there is no room for discrete `DISC_MENU` and `KALEIDESCAPE_MENU` controls on the control interface, use the `DISC_OR_KALEIDESCAPE_MENU` command. To leave the disc menu, use the `DISC_MENU` command again, the `DISC_RESUME` command, or even the `PLAY` command.

It is possible to jump to specific chapters on a disc using the `START_CHAPTER_ENTRY` command, followed by `KEYBOARD_CHARACTER` commands to select the chapter.

## Movie playback options

### Commands

<code>SHOW_NAVIGATION_OVERLAY</code>	<code>START_SEND_NUMBER_TO_DISC_ENTRY</code>
<code>STATUS_AND_SETTINGS</code>	<code>ANGLE_NEXT</code>
<code>SET_FAVORITE_SCENE_START</code>	<code>ANGLE_PREVIOUS</code>
<code>SET_FAVORITE_SCENE_END</code>	<code>AUDIO_NEXT</code>
<code>SUBTITLES_NEXT</code>	<code>GET_CAMERA_ANGLE</code>

There are several playback options to be adjusted during movie playback. These options are accessed onscreen through the movie overlay. This overlay can be toggled using the `STATUS_AND_SETTINGS` command.

Some of the functions in the movie overlay can be accessed directly using control protocol commands. For example, the `SET_FAVORITE_SCENE_START` and `SET_FAVORITE_SCENE_END` commands can be used to mark scenes. The `ANGLE_NEXT` and `ANGLE_PREVIOUS` commands change angles. The `AUDIO_NEXT` and `SUBTITLES_NEXT` change the audio and subtitle tracks for the disc.

## Blu-ray Disc playback options

### Commands

<code>Blu-ray color buttons</code>	<code>BLURAY_SPECIAL_STOP</code>
------------------------------------	----------------------------------

[GET\\_MOVIE\\_MEDIA\\_TYPE](#)[BLURAY\\_POPUP\\_MENU\\_TOGGLE](#)

Some Blu-ray Discs support color buttons in the disc menus and special features. To use these controls, use the Blu-ray color button commands, RED, GREEN, BLUE, and YELLOW. Blu-ray specific controls can be set to display only when a Blu-ray Disc is played back. The MOVIE\_MEDIA\_TYPE event message indicates what type of disc is being played.

## Standalone music control (SATP and keypad)

These commands control the Kaleidescape System when the Kaleidescape onscreen display is not available, or the user prefers not to use the OSD because these commands provide a more direct experience. These commands support simple keypads and more complex controllers with graphical displays.

**Note:** The response code for music related commands will return “Command is not available” or “Invalid request” for products which do not support music.

Standalone music control commands can be divided into the following groups.

- ▶ Text-based music browsing interface (SATP)
- ▶ Keypad collections and presets

Basic playback information is used differently by OSD control, SATP (Standalone Touch Panel) control, and keypad control. The same commands that control basic playback through the onscreen display also control music playback directly when sent to a music zone.

### Commands

[PLAY](#)[REPLAY](#)[PAUSE](#)[STOP](#)[NEXT and PREVIOUS](#)[SCAN\\_FORWARD and SCAN\\_REVERSE](#)[GET\\_MUSIC\\_TITLE](#)[GET\\_MUSIC\\_NOW\\_PLAYING\\_STATUS](#)[SET\\_STATUS\\_CUE\\_PERIOD](#)[MUSIC\\_RANDOM\\_TOGGLE](#)[GET\\_MUSIC\\_PLAY\\_STATUS](#)[MUSIC\\_REPEAT\\_TOGGLE](#)

All the messages in this section are sent to and from a music zone. To receive event messages from a music zone, use the ENABLE\_EVENTS command for the zone.

### SATP applications

For SATP applications, because there is no onscreen display, the controller must display information about music playback on the controller screen. The MUSIC\_TITLE message provides information that can be used to display information to the user including the current song title, artist name, and album title, along with information required to find the URL for cover art.

For information about playback progress for the current track, use the SET\_STATUS\_CUE\_PERIOD command to generate MUSIC\_PLAY\_STATUS event messages every second. The information in the event message about the playback mode (playing, rewinding, fast forwarding, paused) also states how far playback is into the current track.

The MUSIC\_NOW\_PLAYING\_STATUS message is generated when random and repeat settings are changed. This message can be used to display information to the user. To change the random and repeat settings, send the MUSIC\_RANDOM\_TOGGLE and MUSIC\_REPEAT\_TOGGLE commands (along with their \_ON and \_OFF variants).

### Keypad applications

For keypad applications, the MUSIC\_RANDOM\_TOGGLE and MUSIC\_REPEAT\_TOGGLE commands (along with their \_ON and \_OFF variants) can be used to toggle the status of random and repeat. If feedback is supported, such as a simple text display or highlighted button, the MUSIC\_NOW\_PLAYING\_STATUS message can be used to determine the current status of the random and repeat functions.

Depending on the space available for text display, the MUSIC\_TITLE message can be used to provide feedback to the user about the music currently playing (the current song title, artist name, and album title, along with information required to find the URL for cover art).

For information about playback progress for the current track, use the SET\_STATUS\_CUE\_PERIOD command to generate MUSIC\_PLAY\_STATUS event messages every one or three seconds. The information in the event message about the playback mode (playing, rewinding, fast forwarding, paused) also states how far playback is into the current track.

## Text-based music browsing interface (SATP)

### Commands

BROWSE

GET\_MUSIC\_NOW\_PLAYING\_STATUS

PERFORM\_ACTION

The Kaleidescape Premiere System supports a text-based interface for browsing the music library. The text-based music control interface is for controllers that have a graphical display component but cannot provide video for the Kaleidescape onscreen display. Kaleidescape modules that implement these commands are sometimes referred to as Standalone Touch Panel modules, or SATP modules.

This interface is controlled through the BROWSE and PERFORM\_ACTION commands. This text-based interface has a series of pages of text arranged in a hierarchical fashion. The BROWSE command is used to retrieve information stored at each level of the hierarchy. The PERFORM\_ACTION command is used to begin playback, queue tracks, or similar actions. When the structure of the hierarchy or the data in that hierarchy changes, a MUSIC\_NOW\_PLAYING\_STATUS message is generated with a new generation value to indicate the change. See [Standalone music control \(SATP and keypad\)](#) on page 38 for more detail on how to use this interface.

## Keypad control

### Commands

PLAY_FIRST_IN_MUSIC_COLLECTION	ASSIGN_PLAYING_MUSIC_TO_PRESET
PLAY_NEXT_IN_MUSIC_COLLECTION	PLAY_MUSIC_PRESET
PLAY_PREVIOUS_IN_MUSIC_COLLECTION	GET_MUSIC_PRESET_INFORMATION
GET_PLAYING_MUSIC_INFORMATION	

Collections created by the user in the browser interface can be associated with a simple control protocol command. These commands work well as individual buttons on a keypad. To navigate a collection, use the `PLAY_FIRST_IN_MUSIC_COLLECTION`, `PLAY_NEXT_IN_MUSIC_COLLECTION`, and `PLAY_PREVIOUS_IN_MUSIC_COLLECTION` commands.

Music presets are used to create a simplified user interface for users with minimal controls. A controller can be preprogrammed with a set of presets to call back at will, or the controller can be programmed to allow the user to modify the presets on the fly. Presets are called using the `PLAY_MUSIC_PRESET` command and are stored with the `ASSIGN_PLAYING_MUSIC_TO_PRESET` command.

For a description of the current setting of a preset, use `GET_MUSIC_PRESET_INFORMATION`. This command is useful if a keypad has text display capabilities.

The `MUSIC_PRESET_INFORMATION` message can be used in conjunction with the `PLAYING_MUSIC_INFORMATION` message to discover which presets are active. For example, a keypad button can be illuminated when the associated preset is playing.

## Advanced integration

The Kaleidescape System provides information to support advanced lighting, masking, and other forms of system integration. These commands can be divided into the following groups.

- ▶ Lighting, screen masking, and video settings
- ▶ Scripts
- ▶ User-defined events

### Lighting, screen masking, video, and audio settings

#### Commands

GET_CINEMASCAPE_MASK	GO_CALIBRATE_MASKING
GET_CINEMASCAPE_MODE	GO_CALIBRATE_MASKING_OVERSCAN
GET_MOVIE_LOCATION	SET_CINEMASCAPE_MODE
GET_SCALE_MODE	SET_SCREEN_MASK
GET_SCREEN_MASK	GET_SCREEN_MASK2



## GET\_VIDEO\_COLOR

The MOVIE\_LOCATION event message can be used to trigger lighting events by monitoring when movie playback begins and ends, when the end credits start to roll, and whether or not the intermission function is activated.

The SCREEN\_MASK message provides information on the aspect ratio of the video output, as well as more detailed masking information that can be fed into a masking system.

To reduce controller processing time, the SCREEN\_MASK2 message can provide masking information specifically calibrated to match the format expected by the masking processor. The masking processor must be calibrated first using the GO\_CALIBRATE\_MASKING and GO\_CALIBRATE\_MASKING\_OVERSCAN commands.

Some movies place subtitles in areas covered by the masking system. Use the SET\_SCREEN\_MASK command to reposition subtitles if a screen masking system is being used.

For players with output that can be distributed from a 2:35 theater to another room with a non-CinemaScope friendly display, the CINEMASCAPE\_MODE message provides information on the CinemaScope mode. The CINEMASCAPE\_MASK message returns the frame aspect ratio for the video format.

The SCALE\_MODE event message is most useful to theaters using CinemaScope Native mode, providing information to the projector on whether image scaling is required.

## Scripts

**Note:** Scripts are not supported on Strato Movie Players or Cinema One (2<sup>nd</sup> generation).

## Command

### PLAY\_SCRIPT

Scripts can be created on the user pages of the browser interface. These scripts can be played using the PLAY\_SCRIPT command. One of the steps that can be added to a script is sending a command to the controller during script execution. These steps are received in USER\_DEFINED\_EVENT event messages.

## User-defined events

## Command

### SEND\_EVENT

User-defined events can be used by the controller to perform tasks based on commands sent from scripts, sent by other controllers using SEND\_EVENT, volume commands from other controllers (including IR remotes), or when the Kaleidescape System requests that its input be selected using SELECT\_KALEIDESCAPE\_INPUT.

## Child user interface commands

### ENTER\_CHILD\_MODE

#### LEAVE\_CHILD\_MODE

#### GET\_CHILD\_MODE\_STATE

A user-defined event, SELECT\_KALEIDESCAPE\_INPUT, is issued informing the controller when a player enters the child user interface, or when the screen saver active over the child user interface is cleared. Using another remote to control the Kaleidescape component, or sending non-child commands, switches the component out of the child user interface.

The controller can explicitly request the child user interface with ENTER\_CHILD\_MODE, exit the child user interface with LEAVE\_CHILD\_MODE, and query if the child user interface is active with GET\_CHILD\_MODE\_STATE.

## Connection management

Connection commands include turning components on and off, verifying system configuration. Commands are grouped with a detailed description of each command including command examples. Table 6 lists connection commands.

Table 6: Connection management command summary

Command	Description
<b>Power commands</b>	
GET_DEVICE_POWER_STATE	Returns power state of a component.
PLAYER_RESTART	Event message stating that a player has just been restarted.
ENTER_STANDBY	Puts component into standby.
LEAVE_STANDBY	Takes component out of standby. For Strato products this command will also leave idle mode.
<b>Idle Mode</b>	
GET_SYSTEM_READINESS_STATE	Returns the idle mode of Strato Movie Player or Cinema One (2 <sup>nd</sup> generation). Idle mode is not supported on Premiere line products.
LEAVE_IDLE_MODE	Takes Strato Movie Player or Cinema One (2 <sup>nd</sup> generation) out of idle mode. Idle mode is not supported on Premiere line products.
<b>Verification</b>	
GET_AVAILABLE_DEVICES	Returns a list of CPDIDs for all system components powered on.
GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER	Returns list containing the serial number device identifiers of all components in the system.
GET_DEVICE_TYPE_NAME	Returns component type.
GET_NUM_ZONES	Returns number of zones in a component.
GET_SYSTEM_VERSION	Returns protocol version number and the version of kOS.
<b>Protocol</b>	
GET_PROTOCOL	Returns protocol version number.
SET_PROTOCOL_SETTINGS	Changes protocol syntax.
SET_SUPPORTED_PROTOCOL	Changes Protocol version for the session.

Command	Description
<code>GET_ACTIVE_PROTOCOL</code>	Returns the current protocol for the session.
<b>Event message registration</b>	
<code>ENABLE_EVENTS</code>	Enables event messages from a specified movie or music zone.
<code>DISABLE_EVENTS</code>	Disables event messages from a specified movie or music zone.
<code>GET_DEVICE_INFO</code>	Returns component device type, serial number, device ID, and IP address.
<b>Module registration</b>	
<code>SEND_TO_SYSLOG</code>	Posts message to Kaleidescape System logs.
<b>Friendly name</b>	
<code>GET_FRIENDLY_NAME</code>	Returns name of component or music zone.
<code>SET_FRIENDLY_NAME</code>	Renames component or music zone.
<code>GET_FRIENDLY_SYSTEM_NAME</code>	Returns the system name.

## Power commands

### GET\_DEVICE\_POWER\_STATE

**Affects** All components

**Command** `GET_DEVICE_POWER_STATE:`

**Response/Event** `status:DEVICE_POWER_STATE:power_state:  
[zone_1_state:...zone_n_state:]`

A component responds with the component's current power state.

<i>power_state</i>	has the following values.
0	component is in standby
1	component is powered on
<i>zone_1_state ... zone_n_state</i>	describe the availability of each zone for the component.
0	zone is disabled
1	zone is available

An event message is generated when the power state of a component changes. Because the 1080p Player, 1080p Mini Player, Movie Player 2, and Music Player disconnect the TCP/IP connection when entering or leaving standby, the controller might not be connected to the system when the `DEVICE_POWER_STATE` event is generated on these components.

### Example 1 Command/Response

**Controller sends:**

01/1/GET\_DEVICE\_POWER\_STATE:

**Kaleidescape System sends:**

01/1/000:DEVICE\_POWER\_STATE:0:0:1:1:/77

### Example 2 Event message

**Controller sends:**

01/1/LEAVE\_STANDBY:

**Kaleidescape System sends:**

01/!/000:DEVICE\_POWER\_STATE:1:1:/50

In the first example, the power state of a Kaleidescape Cinema One (1<sup>st</sup> generation) is requested. The response says that the system is in standby, but that zones 2 and 3 are still available and active.

In the second example, a `LEAVE_STANDBY` command is sent to an M500 Player, causing it to leave standby. As the player exits standby, a `DEVICE_POWER_STATE` event message is generated stating that the component is powered on and its zone is available.

## PLAYER\_RESTART

**Affects** Any component with zones

**Event** `PLAYER_RESTART:`

This event message is generated when a user presses the **Power** button or after the component receives a `LEAVE_STANDBY` command. The message is generated only after the component has finished powering up and is ready for user input.

This notification can be used to enable buttons on a touch panel, or inform the user that the component is ready to receive input. Receiving this event message can also be a cue to send commands that establish settings, such as SET\_STATUS\_CUE\_PERIOD, and get the current state of the system through messages such as GET\_UI\_STATE and GET\_MOVIE\_LOCATION.

**Note:** This event message does not contain a status code.

## ENTER\_STANDBY

<b>Affects</b>	Any component with zones
<b>Command</b>	ENTER_STANDBY:
<b>Response</b>	<i>status:</i>

This command causes the component to enter standby immediately. After entering standby mode, the component sends a DEVICE\_POWER\_STATE event message.

Use the LEAVE\_STANDBY command to turn the component back on. If the component is already in standby when this command is received, only the normal status reply is sent.

When the 1080p Player, 1080p Mini Player, Music Player, or Movie Player 2 enters standby, the TCP/IP connection is temporarily dropped. This situation can cause the controller to miss the DEVICE\_POWER\_STATE message while the controller reconnects to the player. These players do not return a response to the ENTER\_STANDBY command.

## Example

### Controller sends:

01/1/ENTER\_STANDBY:

### Kaleidescape System sends:

01/1/000:/89

01/!/000:DEVICE\_POWER\_STATE:0:0:/47

01/!/000:VIDEO\_MODE:00:00:00:/56

01/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000046:./76

01/!/000:HIGHLIGHTED\_SELECTION:./63

In this example, the ENTER\_STANDBY command is sent to an M500 Player. The component enters standby and then sends several event messages indicating the change in state.

## LEAVE\_STANDBY

<b>Affects</b>	Any component with zones
<b>Command</b>	LEAVE_STANDBY:
<b>Response</b>	<i>status:</i>

This command causes the component to exit standby mode. If the component is in standby when this command is received, the component sends out a DEVICE\_POWER\_STATE event message when startup is complete. If the component is on when this command is received, nothing more happens. The ENTER\_STANDBY command can be used to put the component into standby.

For the Movie Player, this command can only be issued directly to the RS-232 port.

For the 1080p Player, 1080p Mini Player, Movie Player 2 and Music Player, this command works over both RS-232 and TCP/IP. After issuing this command over TCP/IP, the connection is disconnected. Wait 15 seconds and reconnect before sending further commands.

For the Cinema One (1<sup>st</sup> generation) and M-Class players, this command works on both the RS-232 port and the TCP/IP port. The connection is not disconnected after issuing the command over TCP/IP. To retrieve information about the current state of the Kaleidescape component, send GET\_UI\_STATE and GET\_CHILD\_MODE\_STATE commands.

For the Strato products, this command works only on the TCP/IP port. The connection is not disconnected after issuing the command over TCP/IP. To retrieve information about the current state of the Kaleidescape component, send GET\_UI\_STATE and GET\_CHILD\_MODE\_STATE commands. If the Strato component is in idle mode, it will leave idle mode.

**Note:** Command routing can be used to leave standby on Strato players, M-Class players and Cinema Ones (1<sup>st</sup> generation), but not on the 1080p Player, 1080p Mini Player, Movie Player 2, Music Player, or Movie Player.

### Example 1

**Controller sends:**

01/1/LEAVE\_STANDBY:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:DEVICE\_POWER\_STATE:1:1:/50

01/!/000:VIDEO\_MODE:02:02:13:/65

In the above example, the LEAVE\_STANDBY command is sent to an M500 Player, causing the player to leave standby. This causes DEVICE\_POWER\_STATE and VIDEO\_MODE event messages to be generated.

### Example 2

**Controller sends:**

01/1/LEAVE\_STANDBY:

**Kaleidescape System sends:**

```
01/1/000:/89
01/!/000:DEVICE_POWER_STATE:1:1:/50
01/!/000:VIDEO_MODE:00:00:09:/65
01/!/000:VIDEO_COLOR:01:00:30:03:/07
01/!/000:HIGHLIGHTED_SELECTION:26-0.a31046507162a444-L8_2565:/01
```

In this second example, the LEAVE\_STANDBY command is sent to a Strato Player in **standby**, causing the player to leave standby. This causes DEVICE\_POWER\_STATE, VIDEO\_MODE, VIDEO\_COLOR, and HIGHLIGHTED\_SELECTION event messages to be generated.

**Example 3****Controller sends:**

```
01/1/LEAVE_STANDBY:
```

**Kaleidescape System sends:**

```
01/1/000:/89
01/!/000:SYSTEM_READINESS_STATE:1:/68
01/!/000:SYSTEM_READINESS_STATE:0:/67
01/!/000:UI_STATE:01:00:00:0:/38
```

In the third example, the LEAVE\_STANDBY command is sent to a Strato in **idle mode**, causing the player to leave idle mode. This causes the device to signal it is first leaving idle mode and becoming ready, then that it has left idle and is ready and dismissed the screen saver.

**Idle Mode****GET\_SYSTEM\_READINESS\_STATE**

**Affects** Strato players and Cinema One (2<sup>nd</sup> generation)

**Command** GET\_SYSTEM\_READINESS\_STATE:

**Response/Event** *status*: SYSTEM\_READINESS\_STATE:*state*:

A component responds with the systems current idle mode.

*state* has the following values.

- |   |                          |
|---|--------------------------|
| 0 | system is ready          |
| 1 | system is becoming ready |
| 2 | system is idle           |

An event message is generated when the idle mode of the Strato player or Cinema One (2<sup>nd</sup> generation) changes.



**Example 1    Event message****Controller sends:**

01/1/LEAVE\_IDLE\_MODE:

**Kaleidescape System sends:**

01/!/000:SYSTEM\_READINESS\_STATE:1:/68

01/!/000:SYSTEM\_READINESS\_STATE:0:/67

01/!/000:UI\_STATE:01:00:00:0:/38

**Example 2    Command/Response****Controller sends:**

01/1/GET\_SYSTEM\_READINESS\_STATE:

**Kaleidescape System sends:**

01/1/000:SYSTEM\_READINESS\_STATE:2:/85

In the first example, a LEAVE\_IDLE\_MODE command is sent to Alto causing it to exit idle mode. Alto responds by first indicating it is leaving idle mode, then that it has left idle mode and its zones are available.

In the second example the idle mode of Alto is requested. The response indicates the system is in idle mode.

**LEAVE\_IDLE\_MODE**

**Affects**                      Strato players and Cinema One (2<sup>nd</sup> generation)

**Command**                LEAVE\_IDLE\_MODE:

This command causes Strato player or Cinema One (2<sup>nd</sup> generation) to exit idle mode.

**Example    Command/Response****Controller sends:**

01/1/LEAVE\_IDLE\_MODE:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:SYSTEM\_READINESS\_STATE:1:/68

01/!/000:SYSTEM\_READINESS\_STATE:0:/67

01/!/000:UI\_STATE:01:00:00:0:/38

In this example, the LEAVE\_IDLE\_MODE command is sent to Strato. Leaving idle mode causes the Strato to first indicate it is leaving idle mode, then that it has left idle mode and dismissed the screen saver.

## Verification

### GET\_AVAILABLE\_DEVICES

**Affects** All components

**Command** GET\_AVAILABLE\_DEVICES:

**Response/Event** *status:AVAILABLE\_DEVICES:dev1:[dev2:...]*

A component responds to this command with a list of CPDID numbers of all available and CPDID-addressable components in the system, each separated by a colon. To be available a component must be powered on but the component may be in standby mode.

The directly connected component (CPDID 01) is always listed. If the directly connected component has an assigned CPDID (other than 01), the assigned CPDID will be listed too. Available components without CPDIDs are not listed; see GET\_AVAILABLE\_DEVICES\_BY\_SERIAL\_NUMBER below.

After a list of CPDIDs is obtained, the GET\_NUM\_ZONES and GET\_DEVICE\_INFO commands can be used to get information about each component.

The AVAILABLE\_DEVICES message is sent as an unsolicited event message when the list of available components changes.

#### Example 1 Event message

**Kaleidescape System sends:**

01/!/000:AVAILABLE\_DEVICES:01:03:04:/68

01/!/000:AVAILABLE\_DEVICES:01:03:04:05:/11

#### Example 2 Command/Response

**Controller sends:**

01/1/GET\_AVAILABLE\_DEVICES:

**Kaleidescape System sends:**

01/1/000:AVAILABLE\_DEVICES:01:03:04:05:/27

In the first example, only the component directly connected (CPDID 01) and a component with CPDID 03 are active when a component with CPDID 04 is powered on, causing an AVAILABLE\_DEVICES message to be generated with the new information. Shortly after that, a component with CPDID 05 is powered on, causing another AVAILABLE\_DEVICES event message to be generated with the new list.

The second example shows the same information when requested by a GET\_AVAILABLE\_DEVICES command executed later.

## GET\_AVAILABLE\_DEVICES\_BY\_SERIAL\_NUMBER

<b>Affects</b>	All components
<b>Command</b>	GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER:
<b>Response</b>	<i>status</i> :AVAILABLE_DEVICES_BY_SERIAL_NUMBER: <i>sn1</i> : [ <i>sn2</i> :...]

A component responds to this command with a list of serial numbers of available components in the system, each separated by a colon. The serial numbers are zero-padded to 12 hexadecimals. To be available a component must be powered on but the component may be in standby mode.

After a list of serial number device identifiers is obtained, the GET\_NUM\_ZONES and GET\_DEVICE\_INFO commands can be used to get information about each component.

The AVAILABLE\_DEVICES\_BY\_SERIAL\_NUMBER message is sent as an unsolicited event message when the list of available components changes.

### Example

**Controller sends:**

01/1/GET\_AVAILABLE\_DEVICES\_BY\_SERIAL\_NUMBER:

**Kaleidescape System sends:**

01/1/000:AVAILABLE\_DEVICES\_BY\_SERIAL\_NUMBER:000000003638:  
0000001CFF1B:/56

## GET\_DEVICE\_TYPE\_NAME

<b>Affects</b>	All components
<b>Command</b>	GET_DEVICE_TYPE_NAME:
<b>Response</b>	<i>status</i> :DEVICE_TYPE_NAME: <i>device_name</i> :

A component responds to this command with its type name. This command can be used to generate messages displayed to the user.

*device\_name* is the name of the Kaleidescape component, which is one of Server, Cinema One, Strato, Alto, Terra Movie Server, Player, Music Player, or Disc Vault.

### Example

**Controller sends:**

01/1/GET\_DEVICE\_TYPE\_NAME:

**Kaleidescape System sends:**

01/1/000:DEVICE\_TYPE\_NAME:Music Player:/04

## GET\_NUM\_ZONES

<b>Affects</b>	All components
<b>Command</b>	GET_NUM_ZONES:
<b>Response</b>	<i>status</i> :NUM_ZONES: <i>num_movie_zones</i> : <i>num_music_zones</i> :

This command is used to identify the number of zones for a component. A controller can then determine which commands a specific component supports.

<i>num_movie_zones</i>	is 01 if there is an onscreen display associated with the component, and 00 if there is not.
<i>num_music_zones</i>	tells how many music zones are associated with the component.

If the component has a movie zone, the first music zone corresponds to the audio outputs of that zone.

### Example 1 How a Music Player responds

**Controller sends:**

01/1/GET\_NUM\_ZONES:

**Kaleidescape System sends:**

01/1/000:NUM\_ZONES:00:04:/93

In this example, the Music Player does not have a movie zone, but has 4 music zones.

### Example 2 How an M500 Player responds

**Controller sends:**

01/1/GET\_NUM\_ZONES:

**Kaleidescape System sends:**

01/1/000:NUM\_ZONES:01:01:/91

In this example, the M500 Player has a single movie zone and a single music zone. The single music zone is the same zone as the movie zone.

## GET\_SYSTEM\_VERSION

<b>Affects</b>	All components
<b>Command</b>	GET_SYSTEM_VERSION:
<b>Response</b>	<i>status</i> :SYSTEM_VERSION: <i>control_protocol_version</i> : <i>kOS_version</i> :

The response to this message shows the current version of the control protocol used by the Kaleidescape component and the version of kOS that is running.

*control\_protocol\_version*

is a zero-padded, two-digit number representing the current protocol version. The version described in this document is 16.

*kOS\_version*

is the string representation of the version number currently running on the device.

### Example

**Controller sends:**

01/1/GET\_SYSTEM\_VERSION:

**Kaleidescape System sends:**

01/1/000:SYSTEM\_VERSION:16:10.4.2-19218:/91

This is an expected response from a component running the latest Kaleidescape software version (10.4.2).

## Protocol

### GET\_PROTOCOL

**Affects** All components

**Command** GET\_PROTOCOL:

**Response** *status*:PROTOCOL:*version*:

The response to this message shows the current version of the control protocol used by the Kaleidescape component.

*version*

is a zero-padded, two-digit number representing the current protocol version. The current version is 17.

### Example

**Controller sends:**

01/1/GET\_PROTOCOL:

**Kaleidescape System sends:**

01/1/000:PROTOCOL:17:/34

This is the expected response from a component running the latest Kaleidescape software.

**Note:** This command replaces GET\_PROTOCOL\_VERSION which returned only the version number without the PROTOCOL message and was more difficult to use. The GET\_PROTOCOL\_VERSION command is still available, but GET\_PROTOCOL is preferred.

SET\_PROTOCOL\_SETTINGS

Affects	All components
Command	SET_PROTOCOL_SETTINGS: <i>delimiter_type</i> : <i>character_set</i> :
Response	<i>status</i> :

Normal control protocol messages transmit extended ASCII characters as escaped characters. For example, the character é is transmitted as \d138. Some controllers are unable to parse this format quickly. This command transmits extended ASCII characters in the clear (unescaped).

This command also replaces the default delimiters (colon, slash, and line feed) which are sometimes used in the message body of a control message. These characters are replaced with the binary delimiters SOH, STX, and EOT in all command responses and event messages. This change allows colons, slashes, and line feeds to appear unescaped in the message body for a simpler parsing algorithm.

**Note:** Binary delimiters are not supported for control via RS-232. These settings are only valid for a given connection and are reset when that connection is terminated.

A controller receiving messages with binary delimiters should read messages until an EOT character (ASCII value 4) is found. Then the controller can parse the message by SOH characters (ASCII value 1) and STX characters (ASCII value 2) for message content. This command can only set the delimiters used for responses and events sent from the Kaleidescape component to the controller. Commands from the controller to the component must still be sent using printable delimiters.

<i>delimiter_type</i>	PRINTABLE_DELIMITERS Sends messages with the default printable characters, slash (/), colon (:), and carriage return (\r\n).  BINARY_DELIMITERS Sends messages with the binary delimiters SOH, STX, and EOT.
<i>character_set</i>	LATIN-1 Text fields can contain any printable character (ISO 8859-1).

Table 7: Delimiter functions

Printable delimiter	Binary delimiter	Function
/	SOH \x01	Delimits the segments of a Kaleidescape control message.
:	STX \x02	Delimits the fields within the message body of a control message.
\r\n	EOT \x04	Delimits individual control messages.

When using binary delimiters, / is replaced by SOH (ASCII value 1), the : is replaced by STX (ASCII value 2), and \r\n is replaced by EOT (ASCII value 4). The checksum is omitted to speed processing.

### Example

Normally, messages have the following format:

**Controller sends:**

```
01/1/GET_CONTENT_DETAILS:1.W_3675::
```

**Kaleidescape System sends:**

```
01/1/000:CONTENT_DETAILS:2:Album_title:Bart\d243k\:  
Concerto for Orchestra; Music for Strings, Percussion and Celesta;  
Hungarian Sketches:/81
```

However, after sending the SET\_PROTOCOL\_SETTINGS command, these messages have the following format.

**Controller sends:**

```
01/1/SET_PROTOCOL_SETTINGS:1.BINARY_DELIMITERS:1.LATIN-1:  
01/1/GET_CONTENT_DETAILS:1.W_3675::
```

**Kaleidescape System sends:**

```
01(SOH)1(SOH)000(STX)CONTENT_DETAILS(STX)2(STX)Album_title  
(STX)Bartók: Concerto for Orchestra; Music for Strings, Percussion  
and Celesta; Hungarian Sketches(STX)(EOT)
```

## SET\_SUPPORTED\_PROTOCOL

**Affects** All components

**Command** SET\_SUPPORTED\_PROTOCOL:*version*:

**Response** *status*:

This command sets a protocol version for the current session. This allows control protocol clients to enable newer protocol semantics for advanced kOS features.

If not used, the active session control protocol feature set is roughly limited to what is available in version 14 of the control protocol.

*version* is a zero-padded, two-digit number representing the current protocol version.

**Controller sends:**

01/1/SET\_SUPPORTED\_PROTOCOL:17:

**Kaleidescape System sends:**

01/1/000:/89

## GET\_ACTIVE\_PROTOCOL

**Affects** All components

**Command** GET\_ACTIVE\_PROTOCOL:

**Response** *status*:ACTIVE\_PROTOCOL:*version*:

This command reports a subset of control protocol features for the established control protocol session.

If required, the SET\_SUPPORTED\_PROTOCOL command can be used to limit or expand the session feature set. For reference, use the GET\_PROTOCOL command to identify the most capable protocol version supported by the component.

**Controller sends:**

01/1/GET\_ACTIVE\_PROTOCOL:

**Kaleidescape System sends:**

01/1/000:ACTIVE\_PROTOCOL:14:/71

## Event message registration

### ENABLE\_EVENTS

**Affects** All components

**Command** ENABLE\_EVENTS:*target\_device\_id*:

**Response** *status*:

Enables event messages for the zone identified by *target\_device\_id*. The command must be sent to the directly connected component (CPDID 01). Use the DISABLE\_EVENTS command to turn off events from another component.

*target\_device\_id* is the device ID for the zone from which the controller wants to receive event messages. This must include the actual CPDID or serial number of the component referenced. If enabling events from a zone on the component directly connected, CPDID 01 can only be used if the component does not have an assigned CPDID.



A controller normally receives events only from the component with a direct connection. This allows controllers that connect to a single component to use simple logic in handling event messages, because the controller does not see events from any other zones in the system. To see events from other zones, send an `ENABLE_EVENTS` command for each zone. The `GET_NUM_ZONES` and `GET_AVAILABLE_DEVICES` commands can be used to discover which routable IDs exist and which zones are associated with each ID.

Once enabled, the device ID for incoming events from the designated component matches the format of the *target\_device\_id* (i.e., if the *target\_device\_id* is in serial format, event messages are prefaced with the serial number of the component).

### Example 1

A controller that handles events from all active movie zones might issue the following messages.

**Controller sends:**

01/1/GET\_AVAILABLE\_DEVICES:

**Kaleidescape System sends:**

01/1/000:AVAILABLE\_DEVICES:01:09:/16

**Controller sends:**

01/2/GET\_NUM\_ZONES:

**Kaleidescape System sends:**

01/2/000:NUM\_ZONES:00:00:/90

**Controller sends:**

09/3/GET\_NUM\_ZONES:

**Kaleidescape System sends:**

09/3/000:NUM\_ZONES:01:01:/01

**Controller sends:**

01/4/ENABLE\_EVENTS:09:

The first field of the `NUM_ZONES` response indicates how many movie zones are available. The first component does not have a movie zone, the second component does. The controller checks this value and issues an `ENABLE_EVENTS` command for each component that has a movie zone.

### Example 2

The *target\_device\_id* can also be specified as the serial number of the device whose events are to be displayed, preceded by a pound sign. To receive all events for component with serial number 0000 0000144B, submit the following request:

01/1/ENABLE\_EVENTS:#144B:

Events from the device directly connected are normally prefaced by the CPDID, or CPDID 01 if the device does not have an assigned CPDID. To receive these events in serial format, disable events for the device directly connected, and enable events using the serial number of the connected device.

For component with serial number 0000 0000144B with no assigned CPDID, the following commands would accomplish this.

```
01/1/ENABLE_EVENTS:#144B:
```

```
01/1/DISABLE_EVENTS:01:
```

All subsequent events will be in this format.

```
#00000000144B/!/000:TITLE_NAME:The English Patient:/92
```

### Example 3

The music zone identifier can be appended to the target device ID to receive events for a particular music zone. For example, to receive all music-oriented events from an M500 Player with CPDID 35, to which the controller is directly connected, issue this command.

```
01/1/ENABLE_EVENTS:35.01:
```

The 35 in the field is the CPDID of the directly connected component (the M500 Player). The 01 is the music zone identifier. Note that this example does not use CPDID 01 even though the controller is directly connected to the M500 Player.

### Example 4

To receive events from music zone 03 on a Music Player with serial number 0000 00001E88, issue this command.

```
01/1/ENABLE_EVENTS:#1E88.03:
```

The serial number format with the optional music zone can be mixed and matched.

## DISABLE\_EVENTS

<b>Affects</b>	All components
<b>Command</b>	DISABLE_EVENTS: <i>target_device_id</i> :
<b>Response</b>	<i>status</i> :

Disables event messages from the zone referenced. The command must be sent to the directly connected component (CPDID 01).

<i>target_device_id</i>	identifies the zone from which to disable event messages. The format is identical to the format for ENABLE_EVENTS.
-------------------------	--

### Example

**Kaleidescape System sends:**

```
10/!/000:TITLE_NAME:24 (Season 1):/72
```

```
10/!/000:MOVIE_MEDIA_TYPE:01:/34
```

```
10/!/000:MOVIE_LOCATION:03:/68
```

**Controller sends:**`01/1/DISABLE_EVENTS:10:`**Kaleidescape System sends:**`01/1/000:/89`

In this example, events are received for a component with CPDID 10, in this case stating that movie playback has begun.

When this information is no longer required, sending the `DISABLE_EVENTS` command to the local device tells the device that event messages from CPDID 10 are no longer required.

**GET\_DEVICE\_INFO**

**Affects** All components

**Command** `GET_DEVICE_INFO:`

**Response** `status:DEVICE_INFO:device_type:serial_num:  
cpdid:ip_address:`

A component responds to this command with information about the component.

*device\_type* was previously used to identify the capabilities of the component. This value no longer provides sufficient information. Instead, use `GET_NUM_ZONES` to identify the capabilities of the component and use `GET_DEVICE_TYPE_NAME` to get the type name of the component.

*serial\_num* is the serial number of the component that received the request. *serial\_num* is zero-padded to 16 hexadecimals.

*cpdid* is the assigned device identifier of the component.

*ip\_address* is the network TCP/IP address of the component.

**Note:** The returned *cpdid* is the assigned CPDID even if the command was sent to `01`. If no CPDID has been assigned to the component, `00` is returned instead.

**Example****Controller sends:**`01/1/GET_DEVICE_INFO:`**Kaleidescape System sends:**`01/1/000:DEVICE_INFO:11:000000000018E6D6:00:010.100.012.194:/63`

In this example, the results of the `GET_DEVICE_INFO` command show that the device type is 11 (deprecated information), the serial number of the component is 0000 0018E6D6, there is no assigned CPDID, and the component has IP address 10.100.12.194.

## Module registration

### SEND\_TO\_SYSLOG

<b>Affects</b>	All components
<b>Command</b>	SEND_TO_SYSLOG:INFORMATION: <i>message</i> :
<b>Response</b>	<i>status</i>

This message is used to post information to the Kaleidescape System log. This information is then used by Kaleidescape to track modules in the field and is included in all control system modules provided by Kaleidescape.

*message* is the string logged by the Kaleidescape System.

**Note:** Any information sent to Kaleidescape logs is covered by the Kaleidescape privacy policy.

### Example

**Controller sends:**

01/1/SEND\_TO\_SYSLOG:INFORMATION:OSD Control Module version 8.2:

**Kaleidescape System sends:**

01/1/000:/89

This example registers a module with the name OSD Control Module and version number 8.2. This information can be used by Kaleidescape Support for troubleshooting.

## Friendly name

### GET\_FRIENDLY\_NAME

<b>Affects</b>	Any zone
<b>Command</b>	GET_FRIENDLY_NAME:
<b>Response</b>	<i>status</i> :FRIENDLY_NAME: <i>name</i> :

The response to this command provides the friendly name of the zone or component.

*name* is the music zone friendly name when sent to a music zone. If sent to a movie zone, *name* is the friendly name of the component.

On Premiere line systems, the friendly name is set on the **Components** tab in the browser interface or by using the SET\_FRIENDLY\_NAME command. On the **Components** tab, the friendly name is set in the **Zone n Name (for music)** text box for music zones, and in the component **Device Name** text box for movie zones. For Strato players and Cinema One (2<sup>nd</sup> generation), the friendly name is the player name which is set on the **Player Name** settings page on the onscreen display.

### Example

**Controller sends:**

01/1/GET\_FRIENDLY\_NAME:

**Kaleidescape System sends:**

01/1/000:FRIENDLY\_NAME:Dining Room Player:/93

**Controller sends:**

01.01/1/GET\_FRIENDLY\_NAME:

**Kaleidescape System sends:**

01.01/1/000:FRIENDLY\_NAME:Dining Room Music:/28

In this example, two GET\_FRIENDLY\_NAME commands are sent to an M500 Player serving music in the dining room. In the first command, the controller is requesting the name of the directly connected component, which is Dining Room Player. In the second example, the controller is requesting the friendly name of the music zone for the same player, which is Dining Room Music.

### SET\_FRIENDLY\_NAME

<b>Affects</b>	Any zone
<b>Command</b>	SET_FRIENDLY_NAME: <i>name</i> :
<b>Response</b>	<i>status</i> :FRIENDLY_NAME: <i>name</i> :

Sets the friendly name of the zone or component to the string in the name field.

If sent to a music zone, the friendly name of the music zone is changed. If sent to a movie zone, the friendly name of the component is changed.

*name* is the friendly name to assign to the zone or component.

The friendly name is remembered even if the component is turned off. On Premiere line systems, the friendly name can also be configured using the [Components](#) tab in the browser interface. For Strato players, the friendly name can be set on the [Settings - Components](#) tab of the browser interface. For Alto and Cinema One (2<sup>nd</sup> generation), the friendly name can be set on the [Player Name](#) settings page of the onscreen display.

The response to this command contains the new friendly name for the zone or component; see GET\_FRIENDLY\_NAME for a description of the response message.

### Example

**Controller sends:**

01/1/SET\_FRIENDLY\_NAME:Dining Room Player:

**Kaleidescape System sends:**

01/1/000:FRIENDLY\_NAME:Dining Room Player:/93

**Controller sends:**

01.01/1/SET\_FRIENDLY\_NAME:Dining Room Music:

**Kaleidescape System sends:**  
01.01/1/000:FRIENDLY\_NAME:Dining Room Music:/28

In this example, a controller is making changes to the friendly names associated with an M500 Player serving the dining room. The first command changes the name of the component itself, to Dining Room Player. The second command changes the name of the music zone for the same player to Dining Room Music.

**GET\_FRIENDLY\_SYSTEM\_NAME**

**Affects** Any zone  
**Command** GET\_FRIENDLY\_SYSTEM\_NAME:  
**Response** status:FRIENDLY\_SYSTEM\_NAME:name:

The response to this command provides the friendly system name of which the target component is a part.

*name* is the system name assigned during system registration.

On Premiere line systems, the friendly system name is set initially on system registration but can be changed on the [Settings](#) tab in the browser interface or on the Kaleidescape Movie Store under the [Manage - Account - My Systems](#) page. For Strato systems the friendly system name is initially set at registration and can be changed at the above mentioned online movie store page.

**Example**

**Controller sends:**  
01/1/GET\_FRIENDLY\_SYSTEM\_NAME:  
**Kaleidescape System sends:**  
01/1/000:FRIENDLY\_SYSTEM\_NAME:My Strato System:/85

In this example, the GET\_FRIENDLY\_SYSTEM\_NAME command is sent to a Strato Movie Player. The controller is requesting the name of the system this player is a part of, which is My Strato System.

**OSD Control**

The onscreen display (OSD) control commands navigate the Kaleidescape onscreen display, control movie and music playback through the onscreen display, and respond to playback events. Commands are grouped with a detailed description of each command. Table 8 lists onscreen display control commands.

[Table 8: OSD Control command summary](#)

Command	Description
<b>Basic navigation</b>	
Arrow commands	Used to navigate the onscreen display.
Page up/down commands	Used to navigate by pages on the onscreen display.
SELECT	Selects the highlighted item in the onscreen display.
CANCEL	Dismisses a page, dialog, or text entry.
POSITION_SELECT	Transmits touch screen interaction to the onscreen display.
CHILD_SELECT	Selects the highlighted item in the onscreen display. Also activates the child user interface.
<b>Kaleidescape menu</b>	
KALEIDESCAPE_MENU_ON	Displays Kaleidescape menu.
KALEIDESCAPE_MENU_OFF	Removes Kaleidescape menu.
KALEIDESCAPE_MENU_TOGGLE	Toggles Kaleidescape menu on and off.
<b>Views</b>	
GET_UI_STATE	Provides details about the current state of the user interface.
<b>Movie views</b>	
GO_MOVIES	Changes the interface from a music view to the corresponding movie view.
GO_MOVIE_LIST	Displays the Movie List view.
GO_MOVIE_COVERS	Displays the Movie Covers view.
GO_MOVIE_COLLECTIONS	Displays the Movie Collections view.
GO_MOVIE_COLLECTION	Displays a specific collection in the Movie Collections view.
<b>Music views</b>	
GO_MUSIC	Changes the interface from a movie view to the corresponding music view.
GO_MUSIC_LIST	Displays the Music List view.
GO_MUSIC_COVERS	Displays the Music Covers view.

Command	Description
<code>GO_MUSIC_COLLECTIONS</code>	Displays the Music Collections view.
<code>GO_MUSIC_COLLECTION</code>	Displays a specific collection in the Music Collections view.
<code>GO_NOW_PLAYING</code>	Displays the Now Playing view.
<b>Other views</b>	
<code>GO_MOVIE_STORE</code>	Displays the Kaleidescape Movie Store view.
<code>GO_PARENTAL_CONTROL</code>	Displays the Parental Control view.
<code>GO_SYSTEM_STATUS</code>	Displays the System Status view.
<code>GO_VAULT_SUMMARY</code>	Displays the Vault Summary view.
<b>User input</b>	
<code>GET_USER_INPUT</code>	Provides information about user input requested from the user interface.
<code>GET_USER_INPUT_PROMPT</code>	Returns user input prompt details currently shown on screen.
<code>SET_USER_INPUT_ENTRY</code>	Sends a complete string to the on-screen prompt.
<code>KEYBOARD_CHARACTER</code>	Sends a single character to the onscreen display.
<code>KEYBOARD_LITERAL</code>	Sends a single character to the onscreen keyboard.
<code>BACKSPACE</code>	Erases the last character entered.
<b>View-specific commands</b>	
<code>FILTER_LIST</code>	Filters the list view to search criteria.
<code>GO_SEARCH</code>	Initiates a search of the current place.
<code>SHUFFLE_COVER_ART</code>	Shuffles cover art on the covers view.
<code>CHILD_SHUFFLE_COVER_ART</code>	Shuffles cover art on the child user interface if the child user interface is displayed. If not, displays child user interface.
<code>ALPHABETIZE_COVER_ART</code>	Arranges covers alphabetically.
<code>DEFAULT_LEVEL</code>	Changes the parental control level to the default level.



Command	Description
<code>SAFE_LEVEL</code>	Changes parental control to highest level without a passcode.
<b>Page and content details</b>	
<code>DETAILS</code>	Toggles between the details page and the current display.
<code>DISC_IN_TRAY_TOGGLE</code>	Toggles the disc in player details
<code>GET_CONTENT_DETAILS</code>	Provides information about a movie or album selected.
<code>GET_HIGHLIGHTED_SELECTION</code>	Returns the handle of the movie or album currently selected on the user interface.
<b>Screen saver commands</b>	
<code>GO_SCREEN_SAVER</code>	Displays the screen saver.
<code>STOP_SCREEN_SAVER</code>	Removes screen saver.

## Basic navigation commands

### Arrow commands

<code>UP_PRESS</code>	<code>UP_RELEASE</code>	<code>UP</code>
<code>DOWN_PRESS</code>	<code>DOWN_RELEASE</code>	<code>DOWN</code>
<code>LEFT_PRESS</code>	<code>LEFT_RELEASE</code>	<code>LEFT</code>
<code>RIGHT_PRESS</code>	<code>RIGHT_RELEASE</code>	<code>RIGHT</code>
<code>CHILD_UP_PRESS</code>	<code>CHILD_UP_RELEASE</code>	<code>CHILD_UP</code>
<code>CHILD_DOWN_PRESS</code>	<code>CHILD_DOWN_RELEASE</code>	<code>CHILD_DOWN</code>
<code>CHILD_LEFT_PRESS</code>	<code>CHILD_LEFT_RELEASE</code>	<code>CHILD_LEFT</code>
<code>CHILD_RIGHT_PRESS</code>	<code>CHILD_RIGHT_RELEASE</code>	<code>CHILD_RIGHT</code>

**Affects** Any movie zone

**Command** `UP_PRESS`: (same for other arrow commands)

**Response** *status*:

These commands send directional movement to the onscreen display to navigate menus and lists. During movie playback, these commands navigate DVD or Blu-ray Disc menus and handle interactive content.

The `_PRESS` and `_RELEASE` versions of these commands allow the onscreen display to handle auto-repeat when the user holds down a button for continuous scrolling through lists. Use these commands, instead of the plain directional commands if the controller supports press and release handling.

Send a `_PRESS` command when the corresponding button is pressed and a `_RELEASE` command when the button is released. If a command is sent that affects the user interface between the `_PRESS` and `_RELEASE` commands, including a different direction command, the auto-repeat is canceled and the command that interrupted the repeat is handled normally. Informational commands such as `GET_PLAYING_TITLE_NAME` do not cancel auto-repeat.

Plain directional commands, `UP`, `DOWN`, `LEFT`, and `RIGHT` are available for controllers that do not support press and release handling. Each conveys a single movement in one direction. The controller can be programmed to send a plain directional command repeatedly at some fixed interval to simulate continuous scrolling.

`CHILD_` commands activate the child user interface if not already active, and navigate the child user interface once the child user interface is active.

### Example 1

**Controller sends:**

`01/1/DOWN:`

**Kaleidescape System sends:**

`01/1/000:/89`

**Controller sends:**

`01/2/DOWN:`

**Kaleidescape System sends:**

`01/2/000:/90`

`02/!/000:HIGHLIGHTED_SELECTION:1.0-S_1baaf:/73`

### Example 2

**Controller sends:**

`01/1/DOWN_PRESS:`

**Kaleidescape System sends:**

`01/1/000:/89`

**Controller sends:**

`01/2/DOWN_RELEASE:`

**Kaleidescape System sends:**

`01/2/000:/90`

In the first example, two `DOWN` commands are sent, resulting in the current selection moving down two items. In the second example, a `DOWN_PRESS` is followed by a `DOWN_RELEASE`, which results in the current selection moving down one or more items, depending on the time between sending the two commands.

### Example 3

**Controller sends:**

`01/1/CHILD_RIGHT:`

**Kaleidescape System sends:**`01/1/000:/89``02/!/000:CHILD_MODE_STATE:1:/63``02/!/000:USER_DEFINED_EVENT:SELECT_KALEIDESCAPE_INPUT:/77``02/!/000:HIGHLIGHTED_SELECTION:1.0-S_40f4:/84`

The player was not previously displaying the child user interface, but after receiving the CHILD\_RIGHT command, switched to the child user interface and emitted the appropriate events.

**Page up/down commands**`PAGE_UP_PRESS``PAGE_UP_RELEASE``PAGE_UP``PAGE_DOWN_PRESS``PAGE_DOWN_RELEASE``PAGE_DOWN`**Affects**

Any movie zone

**Command**

PAGE\_UP\_PRESS: (same for other page up/down commands)

**Response***status:*

These commands cause the onscreen display to move up and down in lists by entire pages. Unlike directional arrows, page up/down commands are not passed to any DVD or Blu-ray content currently playing.

**Context-Sensitive Commands** are available for controllers that do not have dedicated **Page Up/Page Down** buttons. These commands scroll a page in the user interface or skip forward/backward through movie chapters or music tracks.

**Example 1****Controller sends:**`01/8/PAGE_UP:`**Kaleidescape System sends:**`01/8/000:/96``02/!/000:HIGHLIGHTED_SELECTION:1.0-S_1baaf:/73`**Example 2****Controller sends:**`01/9/PAGE_UP_PRESS:`**Kaleidescape System sends:**`01/9/000:/97`**Controller sends:**`01/0/PAGE_UP_RELEASE:`**Kaleidescape System sends:**`01/0/000:/88`

The first example shows the PAGE\_UP being sent to the component with a response indicating success and an event indicating a new item is selected.

The second example shows a PAGE\_UP\_PRESS command followed by a PAGE\_UP\_RELEASE.

## SELECT

**Affects** Any movie zone

**Command** SELECT:

**Response** *status:*

Selects the highlighted item in the onscreen display. When a movie or album is already highlighted, the details page for that movie or album usually appears. In the Movie List and Music List views, if the highlight is on a column not currently sorted, this command sorts by that column. When highlighting a menu item, submitting SELECT performs the action for that item. In some contexts, such as passcode entry, this command indicates that the passcode has been entered. This command can be entered from an [Enter](#) button on a numeric keypad or keyboard.

During playback this command is passed to the DVD or Blu-ray Disc playing, which allows the user to interact with menus and interactive disc features.

## Example

**Controller sends:**

01/0/SELECT:

**Kaleidescape System sends:**

01/0/000:/88

02/!/000:UI\_STATE:01:01:00:0:/40

In this example, the SELECT command is sent while the onscreen display is in the Movie List view and on a specific movie. The UI\_STATE event message is generated as the details page for that movie appears on the screen.

## CANCEL

**Affects** Any movie zone

**Command** CANCEL:

**Response** *status:*

In the onscreen display, dismisses a page, dialog, or text entry. See also the [STOP\\_OR\\_CANCEL](#) context-sensitive command.

## Example

**Controller sends:**

01/4/CANCEL:

**Kaleidescape System sends:**

01/4/000:/92

02/!/000:UI\_STATE:01:00:00:0:/39

In this example, the onscreen display is in the Movie List view and the details page for a movie is displayed. Sending the CANCEL command dismisses the details page. A UI\_STATE message is generated to indicate the change.

## POSITION\_SELECT

<b>Affects</b>	Any movie zone
<b>Command</b>	POSITION_SELECT: <i>x_Loc</i> : <i>y_Loc</i> :
<b>Response</b>	<i>status</i> :

Sends the onscreen display a touch event at coordinates *x\_Loc* and *y\_Loc*.

*x\_Loc*, *y\_Loc* identify the location that was touched on the screen.  
(Can be any ASCII decimal integers from 0 to 2 billion.)

A controller can use this command to transmit user touches on a video feed to the onscreen display, allowing direct manipulation of screen elements such as cover images, tabs, and list view columns.

The values a controller sends for *x\_Loc* and *y\_Loc* can be relative to the origin and scale required (the full screen of the touch panel, the frame of the video feed, or something else). When the component is calibrated to work with a touch panel using the onscreen display, the component determines how to interpret the coordinates the controller sends.

The onscreen display can be calibrated for the touch panel through the System Status view. Select the [System Setup](#) tab, then select [Calibrate Touch Panel](#).

If the onscreen display has not been calibrated to work with a touch panel, this command acts as a plain SELECT command.

### Example

**Controller sends:**

01/2/POSITION\_SELECT:220:500:

**Kaleidescape System sends:**

01/2/000:/90

This example sends a POSITION\_SELECT command at the coordinates 220, 500 to the onscreen display. The onscreen display uses prior calibration to determine what was touched on the video and reacts appropriately.

## CHILD\_SELECT

<b>Affects</b>	Any movie zone
<b>Command</b>	CHILD_SELECT:
<b>Response</b>	<i>status</i> :

This command functions like the SELECT command. If the onscreen display was not displaying the child user interface, the player switches to the child user interface. If the selected media is available in the Child collection, playback begins; otherwise, only the transition to the child user interface occurs.

### Example

**Controller sends:**

01/7/CHILD\_SELECT:

**Kaleidescape System sends:**

```
01/7/000:/95
02/!/000:CHILD_MODE_STATE:1:/63
02/!/000:USER_DEFINED_EVENT:SELECT_KALEIDESCAPE_INPUT:/77
02/!/000:MUSIC_NOW_PLAYING_STATUS:00000:00000:1:0:0000000010:/68
02/!/000:UI_STATE:07:00:00:0:/45
02/!/000:TITLE_NAME:Ice Age:/34
```

The player was not displaying the child user interface. The movie selected was also available in the Child collection. After CHILD\_SELECT was sent, the player activated the child user interface, and began playing the selection.

## Kaleidescape menu commands

### KALEIDESCAPE\_MENU\_ON

<b>Affects</b>	Any movie zone
<b>Command</b>	KALEIDESCAPE_MENU_ON:
<b>Response</b>	<i>status:</i>

Displays the Kaleidescape menu if not already onscreen; otherwise this command has no effect. In either case, a status message is returned.

Any active movie playback continues behind the menu until the user chooses an item or a control command interrupting playback is received. If the menu is dismissed, playback simply continues. KALEIDESCAPE\_MENU\_TOGGLE can also be used to display the menu when the menu is not currently displayed.

The context-sensitive command [DISC\\_OR\\_KALEIDESCAPE\\_MENU](#) can be used to display the menu when movie playback is not active. See also KALEIDESCAPE\_MENU\_OFF.

### Example

**Controller sends:**

```
01/4/KALEIDESCAPE_MENU_ON:
```

**Kaleidescape System sends:**

```
01/4/000:/92
01/!/000:UI_STATE:08:00:01:0:/46
```

In this example, the KALEIDESCAPE\_MENU\_ON command is sent while onscreen display is on the System Status menu. A UI\_STATE event message is generated indicating that the Kaleidescape menu is now displayed.

**KALEIDESCAPE\_MENU\_OFF**

<b>Affects</b>	Any movie zone
<b>Command</b>	KALEIDESCAPE_MENU_OFF :
<b>Response</b>	<i>status</i> :

Removes the Kaleidescape menu if onscreen; otherwise has no effect. In either case a status message is returned. If the menu is already displayed, CANCEL, STOP\_OR\_CANCEL, KALEIDESCAPE\_MENU\_TOGGLE, and DISC\_OR\_KALEIDESCAPE\_MENU commands also dismiss the menu.

**Example****Controller sends:**

01/1/KALEIDESCAPE\_MENU\_OFF :

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:UI\_STATE:03:00:00:0:/40

**Controller sends:**

01/2/KALEIDESCAPE\_MENU\_OFF :

**Kaleidescape System sends:**

01/2/000:/90

In this example, KALEIDESCAPE\_MENU\_OFF is called twice. The first time, the Kaleidescape menu was previously displayed and when turned off, caused the UI\_STATE event to be sent. The second time, the Kaleidescape menu was already off, so no event was sent.

**KALEIDESCAPE\_MENU\_TOGGLE**

<b>Affects</b>	Any movie zone
<b>Command</b>	KALEIDESCAPE_MENU_TOGGLE :
<b>Response</b>	<i>status</i> :

Toggles the display of the Kaleidescape menu as described in KALEIDESCAPE\_MENU\_ON and KALEIDESCAPE\_MENU\_OFF. When the menu is not displayed, this command causes the menu to be displayed. When the menu is displayed on screen, this command dismisses the menu.

**Example****Controller sends:**

01/4/KALEIDESCAPE\_MENU\_TOGGLE :

**Kaleidescape System sends:**

01/4/000:/92

01/!/000:UI\_STATE:03:00:00:0:/40

**Controller sends:**

01/5/KALEIDESCAPE\_MENU\_TOGGLE :

**Kaleidescape System sends:**

01/5/000:/93

01/!/000:UI\_STATE:03:00:01:0:/41

In this example, the KALEIDECAP\_MENU\_TOGGLE message is sent twice. The first time removes the Kaleidescape menu and returns to the Movie Covers view, confirmed by the UI\_STATE event message generated. The second time causes the menu to be displayed again.

## Views

### GET\_UI\_STATE

**Affects** Any movie zone

**Command** GET\_UI\_STATE:

**Response/Event** *status:UI\_STATE:screen:popup:dialog:saver:*

The UI\_STATE message provides information about the current state of the user interface, including which view is active, what pages, menus and dialogs are displayed, and whether or not the screen saver is active.

The event message is generated when any of these conditions change.

The information in this message can be used to provide feedback to the user about a state. When UI\_STATE returns a screen value of 00 or any value not directly supported by the control module's programming then a default state should be presented on the interface that includes the following controls:

- ▶ BACK
- ▶ MENU
- ▶ Transport controls
- ▶ Navigation controls
- ▶ SELECT



<i>screen</i>	identifies the view currently active.
00	Unknown
01	Movie List
02	Movie Collections
03	Movie Covers
04	Parental Control
05	unused
06	unused
07	Playing a movie
08	System Status
09	Music List
10	Music Covers
11	Music Collections
12	Music Now Playing
13	unused
14	Vault Summary
15	System Settings
16	Movie Store (req. ACTIVE_PROTOCOL : 16)
17	reserved
18	Library search results (req. ACTIVE_PROTOCOL : 17)

<i>popup</i>	identifies any page or menu that appears to display information or settings. 00 No page or menu 01 Details page 02 Movie overlay displaying the status page (appears only during playback) 03 Movie overlay, but not status page (appears only during playback)
<i>dialog</i>	identifies a floating message box. 00 No dialog 01 Kaleidescape menu 02 Passcode entry (the controller should display a numeric keypad if necessary) 03 Simple question 04 Informational message (such as system upgrade) 05 Warning message 06 Error message (such as a network error) 07 Preplay 08 Import_Warranty 09 Keyboard 10 IP configuration
<i>saver</i>	indicates whether the screen saver is active. 0 Screen saver inactive 1 Screen saver active

### Example

**Controller sends:**

01/5/GET\_UI\_STATE:

**Kaleidescape System sends:**

01/5/000:UI\_STATE:07:01:00:0:/65

The response indicates that a movie was playing back and a movie details page was being displayed over the movie.

### Movie views

#### GO\_MOVIES

**Affects** Any movie zone

**Command** GO\_MOVIES:

**Response** *status*:

Displays a movie view on the onscreen display.

If the interface is already displaying a movie view, changes to the next movie view. For example, if the list view is active, this command will cycle to the cover view.

If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

If the interface is displaying a music view, changes to the equivalent movie view. That is, changes from the Music List view to the Movie List view, from the Music Collections view to the Movie Collections view, and from the Music Covers view to the Movie Covers view.

If there is no equivalent movie view (i.e., Vault Summary, Now Playing, System Status), the OSD displays the last movie view that appeared. If no movie view has been displayed since booting, the Movie List view is displayed.

### Example

**Controller sends:**

01/3/GO\_MOVIES:

**Kaleidescape System sends:**

01/3/000:/91

02/!/000:UI\_STATE:01:00:00:0:/39

02/!/000:HIGHLIGHTED\_SELECTION:1.0-S\_4c4de:/34

In this example, the onscreen display is showing the Music List view when the GO\_MOVIES command is sent. This command causes the Movie List view to be displayed and a UI\_STATE event message to be generated acknowledging the change. A HIGHLIGHTED\_SELECTION message is also generated with the handle of the newly-highlighted movie.

### GO\_MOVIE\_LIST

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_MOVIE_LIST:
<b>Response</b>	<i>status:</i>

Displays the Movie List view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

While in the Movie List view, the FILTER\_LIST command can be used to search the list, and the KEYBOARD\_CHARACTER command can be used to jump to specific letters in the alphabet.

### Example

**Controller sends:**

01/7/GO\_MOVIE\_LIST:

**Kaleidescape System sends:**

01/7/000:/95

02/!/000:UI\_STATE:01:00:00:0:/39

In this example, the onscreen display is showing the Movie Covers view when the GO\_MOVIE\_LIST command is sent. This command causes the display to change to the Movie List view and generates a UI\_STATE event message with that information. Because the same movie remains highlighted, a HIGHLIGHTED\_SELECTION event message is not generated.

## GO\_MOVIE\_COVERS

**Affects** Any movie zone  
**Command** GO\_MOVIE\_COVERS:  
**Response** *status*:

Displays the Movie Covers view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

While in the Movie Covers view, the SHUFFLE\_COVER\_ART and ALPHABETIZE\_COVER\_ART commands can be used to reorganize the cover art.

### Example

**Controller sends:**

01/8/GO\_MOVIE\_COVERS:

**Kaleidescape System sends:**

01/8/000:/96

02/!/000:UI\_STATE:03:00:00:0:/41

In this example, the onscreen display is showing the Movie List view when the GO\_MOVIE\_COVERS command is sent. This command causes the display to switch to the Movie Covers view and generate a UI\_STATE event message confirming the new view. A HIGHLIGHTED\_SELECTION event message is not generated because the same movie remains highlighted.

**Note:** This command replaces the GO\_COVER\_ART command, which is still supported.

## GO\_MOVIE\_COLLECTIONS

**Affects** Any movie zone  
**Command** GO\_MOVIE\_COLLECTIONS:  
**Response** *status*:

Displays the Movie Collections view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list. While in the Movie Collections view, the FILTER\_LIST command can be used to search the selected collection, and the KEYBOARD\_CHARACTER command can be used to jump to specific letters in the alphabet.

### Example

**Controller sends:**

01/3/GO\_MOVIE\_COLLECTIONS:

**Kaleidescape System sends:**`01/3/000:/91``02/!/000:UI_STATE:02:00:00:0:/40``02/!/000:HIGHLIGHTED_SELECTION:1.0-u_3877:/81`

In this example, the onscreen display is showing the Movie List view when the GO\_MOVIE\_COLLECTIONS command is sent. This command causes the display to switch to the Movie Collections view and generate a UI\_STATE event message confirming the new view. A HIGHLIGHTED\_SELECTION message is generated in this example because a new movie is highlighted.

**Note:** This command replaces the GO\_COLLECTIONS command and the GO\_FAVORITES command; however, both are still supported.

**GO\_MOVIE\_COLLECTION**

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_MOVIE_COLLECTION: <i>collection_name</i> :
<b>Response</b>	<i>status</i> :

Displays the Movie Collections view and selects a collection for onscreen display.

*collection\_name* is the name of the predefined or user-defined collection.

If the *collection\_name* does not match one of the movie collections in the system exactly, this command acts like the GO\_MOVIE\_COLLECTIONS command.

If this command is sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

**Example****Controller sends:**`01/9/GO_MOVIE_COLLECTION:Favorites:`**Kaleidescape System sends:**`01/9/000:/97``02/!/000:HIGHLIGHTED_SELECTION:1.0-u_3877:/81`

In this example, the GO\_MOVIE\_COLLECTIONS:Favorites: command was sent while the onscreen display was on another collection. The command causes the collection currently active to change to the Favorites collection. Because this change causes a new movie to be highlighted, a HIGHLIGHTED\_SELECTION event message is sent.

**Music views**

**Note:** Music view commands will re-direct to the movie collection “Songs” when sent to a player which does not support music.

## GO\_MUSIC

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_MUSIC:
<b>Response</b>	<i>status:</i>

Displays a music view on the onscreen display.

If the interface is displaying a music view, changes to the next music view. For example, if the list view is active, this command will cycle to the shuffle view.

If the interface is displaying a movie view, changes to the equivalent music view. That is, changes from the Movie List view to the Music List view, from the Movie Collections view to the Music Collections view, and from the Movie Covers view to the Music Covers view.

If there is no equivalent music view (i.e., Vault Summary, Parental Control, System Status), the OSD displays the last music view that appeared. If no music view has been displayed since booting, the Music List view is displayed.

If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

### Example

**Controller sends:**

01/0/GO\_MUSIC:

**Kaleidescape System sends:**

01/0/000:/88

02/!/000:UI\_STATE:10:00:00:0:/39

02/!/000:HIGHLIGHTED\_SELECTION:1.w\_3675:/54

In this example, the onscreen display was on the Movie Covers view when the GO\_MUSIC command was sent. This command causes the view to switch to the Music Covers view and a UI\_STATE event message is generated confirming the change. Because the highlighted selection changed from a movie to an album, a HIGHLIGHTED\_SELECTION event message is generated with the handle of the newly-selected album.

## GO\_MUSIC\_LIST

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_MUSIC_LIST:
<b>Response</b>	<i>status:</i>

Displays the Music List view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list. While in the Music List view, the FILTER\_LIST command can be used to search the list, and the KEYBOARD\_CHARACTER command can be used to jump to specific letters in the alphabet.

### Example

**Controller sends:**

01/7/GO\_MUSIC\_LIST:

**Kaleidescape System sends:**

01/7/000:/95

01/!/000:UI\_STATE:09:00:00:0:/46

In this example, the onscreen display is showing the Music Covers view when the GO\_MUSIC\_LIST command is sent. This command causes the display to change to the Music List view, and generates a UI\_STATE event message. Because the same album remains highlighted, no HIGHLIGHTED\_SELECTION event message is generated.

### GO\_MUSIC\_COVERS

**Affects** Any movie zone

**Command** GO\_MUSIC\_COVERS:

**Response** *status:*

Displays the Music Covers view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

While in the Movie Covers view, the SHUFFLE\_COVER\_ART and ALPHABETIZE\_COVER\_ART commands can be used to reorganize cover art.

### Example

**Controller sends:**

01/8/GO\_MUSIC\_COVERS:

**Kaleidescape System sends:**

01/8/000:/96

01/!/000:UI\_STATE:10:00:00:0:/38

In this example, the onscreen display is showing the Music List view when the GO\_MUSIC\_COVERS command is sent. This command causes the display to switch to the Music Covers view, and generates a UI\_STATE event message. No HIGHLIGHTED\_SELECTION event message is generated because the same album remains highlighted.

### GO\_MUSIC\_COLLECTIONS

**Affects** Any movie zone

**Command** GO\_MUSIC\_COLLECTIONS:

**Response** *status:*

Displays the Music Collections view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list. While in the Music Collections view, the FILTER\_LIST command can be used to search the selected collection, and the KEYBOARD\_CHARACTER command can be used to jump to specific letters in the alphabet.

### Example

**Controller sends:**

01/9/GO\_MUSIC\_COLLECTIONS:

**Kaleidescape System sends:**

01/9/000:/97

01/!/000:UI\_STATE:11:00:00:0:/39

01/!/000:HIGHLIGHTED\_SELECTION::/63

In this example, the onscreen display is showing the Music List view when the GO\_MUSIC\_COLLECTIONS command is sent. This command causes the display to switch to the Music Collections view, and generates a UI\_STATE event message. A HIGHLIGHTED\_SELECTION message is generated because a new album is now highlighted.

### GO\_MUSIC\_COLLECTION

**Affects** Any movie zone

**Command** GO\_MUSIC\_COLLECTION:*collection\_name*:

**Response** *status*:

Displays the Music Collections view and selects the collection indicated.

*collection\_name* is the name of the predefined or user-defined collection.

If *collection\_name* does not exactly match one of the music collections in the system, this command acts like the GO\_MUSIC\_COLLECTIONS command.

If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

### Example

**Controller sends:**

01/1/GO\_MUSIC\_COLLECTION:Artists:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:HIGHLIGHTED\_SELECTION::/63

In this example, the GO\_MUSIC\_COLLECTION:Artists: command was sent while the onscreen display was on another collection. The command causes the currently active collection to change to the Artists collection. This change causes the highlighted selection to switch from an album to an artist, which has no content details, so a blank HIGHLIGHTED\_SELECTION event message is generated.



## GO\_NOW\_PLAYING

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_NOW_PLAYING:
<b>Response</b>	<i>status:</i>

Displays the Now Playing view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list. The Now Playing view is automatically displayed when music starts playing.

### Example

**Controller sends:**

01/2/GO\_NOW\_PLAYING:

**Kaleidescape System sends:**

01/2/000:/90

01/!/000:UI\_STATE:12:00:00:0:/40

In this example, the GO\_NOW\_PLAYING command is sent while the onscreen display is on the System Status view. The command causes the display to switch to the Now Playing view and generates a UI\_STATE event message indicating the change.

## Store views

### GO\_MOVIE\_STORE

<b>Affects</b>	Any Strato movie zone
<b>Command</b>	GO_MOVIE_STORE:
<b>Response</b>	<i>status:</i>

Displays the Movie Store view.

If this command is sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

### Example

**Controller sends:**

01/1/GO\_MOVIE\_STORE:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:UI\_STATE:16:00:00:0:/44

In this example, the GO\_MOVIE\_STORE command was sent resulting in a change from the current view to the Store view. The change in UI\_STATE is also returned showing the player returned with a screen state of 16 which is the Movie Store screen.

## Other views

### GO\_SYSTEM\_STATUS

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_SYSTEM_STATUS:
<b>Response</b>	<i>status:</i>

Displays the System Status view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list. The STATUS\_AND\_SETTINGS command also displays the System Status view when no movie is playing.

#### Example

**Controller sends:**

01/6/GO\_SYSTEM\_STATUS:

**Kaleidescape System sends:**

01/6/000:/94

01/!/000:UI\_STATE:08:00:00:0:/45

In this example, the onscreen display is on the Movie Collections view when the GO\_SYSTEM\_STATUS command is sent. This command causes the System Status view to be displayed, and a UI\_STATE event message to be generated confirming the change in view.

### GO\_PARENTAL\_CONTROL

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_PARENTAL_CONTROL:
<b>Response</b>	<i>status:</i>

Displays the Parental Control view. If sent during movie playback, playback is halted and the current playback location is saved in the Paused list.

The user can also change to a parental control level that has a passcode at any time from the Kaleidescape onscreen display by entering the passcode for that level. Sending a digit character with the KEYBOARD\_CHARACTER command when the onscreen display is active causes the passcode dialog box to appear.

#### Example

**Controller sends:**

01/3/GO\_PARENTAL\_CONTROL:

**Kaleidescape System sends:**

01/3/000:/91

01/!/000:UI\_STATE:04:00:00:0:/41

In this example, the GO\_PARENTAL\_CONTROL command is sent, and the view changes to the Parental Control view. This causes a UI\_STATE event message to be generated confirming the change.

GO\_VAULT\_SUMMARY

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_VAULT_SUMMARY:
<b>Response</b>	<i>status</i> :

Displays the Vault Summary view. If no vault is connected to a player in the system, the onscreen display displays text indicating there are no vaults available. If sent during playback, playback is halted and the current playback location is saved in the Paused list.

Example

**Controller sends:**  
02/1/GO\_VAULT\_SUMMARY:

**Kaleidescape System sends:**  
02/1/000:/90  
02/!/000:UI\_STATE:14:00:00:0:/43  
02/!/000:HIGHLIGHTED\_SELECTION::/64

User input

GET\_USER\_INPUT

<b>Affects</b>	Any movie zone
<b>Command</b>	GET_USER_INPUT:
<b>Response/Event</b>	<i>status</i> :USER_INPUT: <i>type</i> : <i>prompt</i> : <i>entry</i> :

This message provides information about the user input requested by the user interface. The message includes the type of input request, as well as prompts that can be displayed on a controller.

The event message is generated when the need for input changes, or when the prompt or input changes.

<i>type</i>	specifies the type of prompt. 00      No prompt 01      Alphanumeric prompt (full keyboard required) 02      Numeric prompt (numeric keypad required).
<i>prompt</i>	specifies the query, such as Search for title.
<i>entry</i>	contains the text entered by the user.

To add characters to the entry, the controller sends KEYBOARD\_CHARACTER commands. To remove characters from the input prompt, use the BACKSPACE command. Every change to the input generates another USER\_INPUT event message.

Example

**Controller sends:**  
01/1/GET\_USER\_INPUT:

**Kaleidescape System sends:**

01/1/000:USER\_INPUT:01:Search for title::/67

In this example, the controller sends the GET\_USER\_INPUT command shortly after connecting, to the resynchronize state. The response indicates that the user interface is requesting alphanumeric text in response to the prompt Search for title.

**KEYBOARD\_CHARACTER**

**Affects** Any movie zone

**Request** KEYBOARD\_CHARACTER:character:

**Response** status:

Sends a single character to the onscreen display.

*character* is the character to be sent to the onscreen display. The character can be a letter, digit, or any other symbol.

If a letter is sent to the onscreen display while the Movie List, Music List, Movie Collections, or Music Collections view is active with no prior FILTER\_LIST command, this command causes the list to jump to the first entry that starts with the character sent. (This is known as quick search.)

Note that a colon character must be escaped with a backslash:

01/1/KEYBOARD\_CHARACTER:\: (correct format)

01/1/000:/89

01/2/KEYBOARD\_CHARACTER::: (incorrect format)

01/2/012:/93

**Example 1****Controller sends:**

01/4/KEYBOARD\_CHARACTER:r:

**Kaleidescape System sends:**

01/4/000:/92

02/!/000:HIGHLIGHTED\_SELECTION:1.W\_22033:/91

**Controller sends:**

01/5/KEYBOARD\_CHARACTER:o:

**Kaleidescape System sends:**

01/5/000:/93

02/!/000:HIGHLIGHTED\_SELECTION:1.W\_21892:/03

In this example, the OSD was displaying the music list. The user sent the character r and the OSD scrolled to the first selection that started with r, then sent the HIGHLIGHTED\_SELECTION event. The user then sent the character o and the OSD scrolled to the first selection starting with o and sent the HIGHLIGHTED\_SELECTION event for that command. Note that the OSD did not filter for a title that contains, ro, but instead performed two quick searches based on individual characters.

**Example 2**

See example for [FILTER\\_LIST](#) command.

**Note:** This command replaces the DIGIT command. Both can be used to send letters and digits. KEYBOARD\_CHARACTER is preferred because the name is more accurate.

**KEYBOARD\_LITERAL**

**Affects** Any movie zone  
**Request** KEYBOARD\_LITERAL:*character*:  
**Response** *status*:

Sends a single character to the onscreen keyboard.

*character* is the ASCII character  $\geq 32$  to be sent to the onscreen display. The character can be a letter, digit, or any other symbol.

In most cases this command is similar to KEYBOARD\_CHARACTER. If a letter is sent to the onscreen display while the Movie List, Music List, Movie Collections, or Music Collections view is active with no prior FILTER\_LIST or GO\_SEARCH command, this command causes the list to jump to the first entry that starts with the character sent. (This is known as quick search.)

For onscreen keyboard entries, it is recommended to use KEYBOARD\_LITERAL as it allows upper and lowercase letters to be sent.

Note that a colon or slash characters must be escaped with a backslash:

```
01/1/KEYBOARD_LITERAL:\: (correct format)
01/1/000:/89
01/2/KEYBOARD_LITERAL::: (incorrect format)
01/2/012:/93
```

**Example 1****Controller sends:**

```
01/4/KEYBOARD_LITERAL:r:
```

**Kaleidescape System sends:**

```
01/4/000:/92
02/!/000:HIGHLIGHTED_SELECTION:1.W_22033:/91
```

**Controller sends:**

```
01/5/KEYBOARD_LITERAL:o:
```

**Kaleidescape System sends:**

```
01/5/000:/93
02/!/000:HIGHLIGHTED_SELECTION:1.W_21892:/03
```

In this example, the OSD was displaying the movie list. The user sent the character `r` and the OSD scrolled to the first selection that started with `r`, then sent the `HIGHLIGHTED_SELECTION` event. The user then sent the character `o` and the OSD scrolled to the first selection starting with `o` and sent the `HIGHLIGHTED_SELECTION` event for that command. Note that the OSD did not filter for a title that contains, `ro`, but instead performed two quick searches based on individual characters.

## Example 2

With an onscreen keyboard open for Player Name:

**Controller sends:**

`01/1/KEYBOARD_LITERAL:r:`

**Kaleidescape System sends:**

`01/1/000:/89`

`01/!/000:USER_INPUT:01:Name:r:/15`

**Controller sends:**

`01/1/KEYBOARD_LITERAL:0:`

**Kaleidescape System sends:**

`01/1/000:/89`

`01/!/000:USER_INPUT:01:Name:r0:/94`

In this example, the OSD was the Enter a Player Name from the settings menu. The user sent the character `r` and the `r` was entered into text box and the system responded with the first `USER_INPUT` status message. Next a capital `0` was sent, resulting in a capital `0` appearing next to `r` in the onscreen text box and the `USER_INPUT` status was updated to `r0`.

## BACKSPACE

**Affects** Any movie zone

**Command** `BACKSPACE:`

**Response** *status:*

During any kind of data entry, such as a `FILTER_LIST` or passcode entry, this command erases the last character entered.

## Example

See example for [FILTER\\_LIST](#) command.

## GET\_USER\_INPUT\_PROMPT

**Affects** Any Strato or Alto movie zone

**Command** `GET_USER_INPUT_PROMPT:`

**Response** *status:USER\_INPUT\_PROMPT:type:icon:prompt:  
displayed:char\_limit:valid*

Returns user input prompt info and properties currently shown on screen.

<i>type</i>	specifies the type of prompt.	
	00	No prompt
	01	Alphanumeric prompt (full keyboard required)
	02	Numeric prompt (numeric keypad required).
<i>icon</i>	##	Current icon displayed in the prompt
<i>prompt</i>	specifies the query, such as Search for title.	
<i>displayed</i>	0	Entry not displayed
	1	Entry is displayed
<i>char_limit</i>	Character limit for input	
<i>valid</i>	0	Current entry is not valid
	1	Current entry is valid

### Example

**Controller sends:**

01/1/GET\_USER\_INPUT\_PROMPT:

**Kaleidescape System sends:**

01/1/000:USER\_INPUT\_PROMPT:00:00::00:0:1:/71

### SET\_USER\_INPUT\_ENTRY

**Affects** Any Strato or Alto movie zone

**Command** SET\_USER\_INPUT\_ENTRY:*string*:

**Response** *status*:

Sends the entry in *string* to the current on screen user entry prompt.

### Example

**Controller sends:**

01/1/SET\_USER\_INPUT\_ENTY:mypassword:

**Kaleidescape System sends:**

01/1/000:/89

## View-specific commands

### **FILTER\_LIST**

<b>Affects</b>	Any movie zone
<b>Command</b>	<code>FILTER_LIST:</code>
<b>Response</b>	<code>status:</code>

This command is used to filter the list or collections views according to a user-entered string. This command causes a message to appear in the upper right corner, indicating that the column currently selected is being filtered. The controller can then send `KEYBOARD_CHARACTER` and `BACKSPACE` or `SET_USER_INPUT_ENTRY` commands to build a string used by the onscreen display to filter the list.

A `CANCEL` command halts filtering.

There is no need to implement a keyboard with extra characters, for example, accents and other similar characters. Filtering is accomplished using just the basic, unaccented characters.

### **Example**

**Controller sends:**

`01/7/GO_MOVIE_LIST:`

**Kaleidescape System sends:**

`01/7/000:/95`

`01/!/000:UI_STATE:01:00:00:0:/38`

**Controller sends:**

`01/8/FILTER_LIST:`

**Kaleidescape System sends:**

`01/8/000:/96`

`01/!/000:USER_INPUT:01:Filter by title:./59`

**Controller sends:**

`01/9/KEYBOARD_CHARACTER:S:`

**Kaleidescape System sends:**

`01/9/000:/97`

`01/!/000:USER_INPUT:01:Filter by title:S:/42`

**Controller sends:**

`01/0/KEYBOARD_CHARACTER:E:`

**Kaleidescape System sends:**

`01/0/000:/88`

`01/!/000:USER_INPUT:01:Filter by title:Se:/43`

`01/!/000:HIGHLIGHTED_SELECTION:1.0-u_67a47:/76`

**Controller sends:**

`01/3/BACKSPACE:`



**Kaleidescape System sends:**`01/3/000:/91``01/!/000:USER_INPUT:01:Filter by title:S:/42`

In this example, the controller selects the Movie List view, then sends the `FILTER_LIST` command. The user sends the letters S and E, and a selection starting with Se is highlighted. This is shown by the `HIGHLIGHTED_SELECTION` event message. Subsequently, the user decides to remove a character and sends the `BACKSPACE` command, causing the E to be removed.

**GO\_SEARCH**

**Affects** Any Strato or Alto movie zone

**Command** `GO_SEARCH:`

**Response** `status:`

This command is used to search the currently selected place. If the command is sent while on the OSD store then the content of the store will be searched. When on any library place this command will search the content of the local library. This command causes the onscreen keyboard to be displayed, allowing the entry of a search string. The controller can then send `KEYBOARD_LITERAL` or `KEYBOARD_CHARACTER` and `BACKSPACE` commands or navigation commands to select letters or words on the onscreen keyboard to build a string to search for. Alternatively, the `SET_USER_INPUT_ENTRY` command can be used to send fully formed search strings.

A `CANCEL` command dismisses the onscreen keyboard without submitting the search.

**Example****Controller sends:**`01/1/GO_MOVIE_LIST:`**Kaleidescape System sends:**`01/1/000:/89``01/!/000:UI_STATE:01:00:00:0:/38`**Controller sends:**`01/1/GO_SEARCH:`**Kaleidescape System sends:**`01/1/000:/89``01/!/000:UI_STATE:01:00:09:0:/47``01/!/000:USER_INPUT_PROMPT:01:03:Search:00:256:1:/66``01/!/000:USER_INPUT:01:Search::/14`**Controller sends:**`01/1/KEYBOARD_LITERAL:S:`**Kaleidescape System sends:**`01/1/000:/89``01/!/000:USER_INPUT:01:Search:S:/97`

**Controller sends:**

01/1/KEYBOARD\_LITERAL:e:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:01:Search:Se:/98

**Controller sends:**

01/1/SELECT:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:UI\_STATE:18:00:00:0:/46

01/!/000:USER\_INPUT\_PROMPT:00:00::00:0:1:/55

01/!/000:USER\_INPUT:00:::/15

01/!/000:HIGHLIGHTED\_SELECTION:1ad-0.0-S\_3f08:/76

In this example, the controller selects the Movie List view, then sends the GO\_SEARCH command. The user sends the letters S and e, and submits the search. The search is conducted and the onscreen display switches to the Search results place as indicated by the UI\_STATE value of "18".

**SHUFFLE\_COVER\_ART**

<b>Affects</b>	Any movie zone
<b>Command</b>	SHUFFLE_COVER_ART:
<b>Response</b>	<i>status:</i>

This command shuffles the cover art on the Movie Covers and Music Covers views. Movies or albums similar to the item currently selected are rearranged to surround the selected cover.

If automatic cover shuffle is off, this command is the only way to activate the shuffling. Additionally, if the cover art has been alphabetized by the ALPHABETIZE\_COVER\_ART command, this command removes the alphabetization.

**Example****Controller sends:**

01/6/SHUFFLE\_COVER\_ART:

**Kaleidescape System sends:**

01/6/000:/94

In this example, the SHUFFLE\_COVER\_ART command is sent while on the Movie Covers view. Because the selected item does not change, the controller receives no further response.

**CHILD\_SHUFFLE\_COVER\_ART**

<b>Affects</b>	Any movie zone
<b>Command</b>	CHILD_SHUFFLE_COVER_ART:
<b>Response</b>	<i>status:</i>

If the player is displaying the child user interface, the cover art is shuffled. If the child user interface is not active, activates the child user interface and emits appropriate events to indicate the change. This command has no effect during movie playback.

**Example****Controller sends:**

01/1/CHILD\_SHUFFLE\_COVER\_ART:

**Kaleidescape System sends:**

01/1/000:/89

02/!/000:CHILD\_MODE\_STATE:1:/63

02/!/000:USER\_DEFINED\_EVENT:SELECT\_KALEIDESCAPE\_INPUT:/77

The player was not displaying the child user interface, but after receiving the CHILD\_SHUFFLE\_COVER\_ART command, switched to the child user interface and emitted the appropriate events.

**ALPHABETIZE\_COVER\_ART**

<b>Affects</b>	Any movie zone
<b>Command</b>	ALPHABETIZE_COVER_ART:
<b>Response</b>	<i>status:</i>

Arranges covers alphabetically by title in the Movie Covers or Music Covers view around a highlighted cover. A subsequent SHUFFLE\_COVER\_ART command removes the alphabetization.

**Example****Controller sends:**

01/7/ALPHABETIZE\_COVER\_ART:

**Kaleidescape System sends:**

01/7/000:/95

In this example, the ALPHABETIZE\_COVER\_ART command is sent while on the Movie Covers view. No other messages occur because the selected item does not change.

## DEFAULT\_LEVEL

<b>Affects</b>	Any movie zone
<b>Command</b>	DEFAULT_LEVEL:
<b>Response</b>	<i>status:</i>

Directly sets the parental control level to the default level set in the browser interface. This command provides the same function as accessing the Parental Control view and selecting the appropriate parental control level. See also SAFE\_LEVEL.

### Example

**Controller sends:**

01/4/DEFAULT\_LEVEL:

**Kaleidescape System sends:**

01/4/000:/92

## SAFE\_LEVEL

<b>Affects</b>	Any movie zone
<b>Command</b>	SAFE_LEVEL:
<b>Response</b>	<i>status:</i>

Directly sets the parental control level to the highest level that has no passcode as set in the browser interface. This command provides the same function as accessing the Parental Control view and selecting the appropriate parental control level. See also DEFAULT\_LEVEL.

### Example

**Controller sends:**

01/4/SAFE\_LEVEL:

**Kaleidescape System sends:**

01/4/000:/92

## Page and content details

### DETAILS

<b>Affects</b>	Any movie zone
<b>Command</b>	DETAILS:
<b>Response</b>	<i>status:</i>

Toggles the display of the details page over the current display. The details page shows detailed information for the highlighted selection (movie, album, etc.). A subsequent CANCEL command hides the details page, the same as if the user chooses the [Return](#) option on the details page menu.

**Example****Controller sends:**

01/2/DETAILS:

**Kaleidescape System sends:**

01/2/000:/90

01/!/000:UI\_STATE:01:00:00:0:/38

**Controller sends:**

01/3/DETAILS:

**Kaleidescape System sends:**

01/3/000:/91

01/!/000:UI\_STATE:01:01:00:0:/39

In this example, the onscreen display is on the Movie List view showing a details page for a particular movie. The DETAILS command is sent, causing the details page to disappear, and a UI\_STATE event message to be generated.

The second DETAILS command subsequently restores the details page and produces another UI\_STATE event message that indicates that the details page is displayed.

**DISC\_IN\_TRAY\_TOGGLE**

**Affects** Any movie player with an optical disc drive

**Command** DISC\_IN\_TRAY\_TOGGLE:

**Response** *status:*

Toggles the display of the disc in player page over the current display. The disc in player page shows detailed information about the disc currently in the optical drive of the player

**Example****Controller sends:**

01/1/DISC\_IN\_TRAY\_TOGGLE:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:UI\_STATE:03:01:00:0:/42

01/!/000:HIGHLIGHTED\_SELECTION:1.283ec4aa94a9267d-L10005\_263d:/01

In this example, the onscreen display is on the Movie Covers view.

DISC\_IN\_TRAY\_TOGGLE is sent causing the disk in player popup to appear, as indicated by the UI\_STATE event. A HIGHLIGHTED\_SELECTION message is also generated with the handle of the movie or album in the optical drive. The controller could now send GET\_CONTENT\_DETAILS to retrieve information about the movie or album.

## GET\_CONTENT\_DETAILS

<b>Affects</b>	All components
<b>Command</b>	GET_CONTENT_DETAILS: <i>handle</i> : <i>passcode</i> :
<b>Response</b>	<i>status</i> :CONTENT_DETAILS_OVERVIEW: <i>num_Lines</i> : <i>handle</i> : <i>table</i> :
<b>Response</b>	<i>status</i> :CONTENT_DETAILS: <i>Line</i> : <i>name</i> : <i>value</i> :

This command provides concise information about a movie or album.

### Command parameters

<i>handle</i>	is the identifier for the movie or album for which content details are being requested. This handle can come from a HIGHLIGHTED_SELECTION message, a BROWSE_RESPONSE message, or a MUSIC_TITLE message.
<i>passcode</i>	is used to access content not available on the current parental control level. When blank, only content for the current parental control level can be displayed. Most controllers do not have to use this field.

### Response

The response to this command always includes a CONTENT\_DETAILS\_OVERVIEW message. If the *num\_Lines* field of the message is not 0, several CONTENT\_DETAILS messages follow containing actual information for the content.

#### CONTENT\_DETAILS\_OVERVIEW response

<i>num_Lines</i>	is the number of CONTENT_DETAILS messages following the overview.
<i>handle</i>	is the identifier for the movie or album that was requested in the GET_CONTENT_DETAILS command.
<i>table</i>	is the type of content details information being provided, either movies or albums.

#### CONTENT\_DETAILS response

Each CONTENT\_DETAILS response contains a single name/value pair providing information about the piece of content.

<i>line</i>	identifies the index of this particular CONTENT_DETAILS response among the total number of CONTENT_DETAILS responses being sent. This will count from 1 up to <i>num_Lines</i> .
<i>name</i>	is the name of the value being provided by this CONTENT_DETAILS response. For example, Title.
<i>value</i>	is the actual information associated with the name for this response. For example, Toy Story. If the response contains multiple values, values are separated by a carriage return (\r ASCII 13).

Depending on the table of content details, different name/value pairs are returned. Many common values for content are listed below. A controller must listen for all pertinent values when parsing CONTENT\_DETAILS messages.

**For content in the movies table**

Content_handle	reiterates the handle for this piece of content, as requested in the GET_CONTENT_DETAILS command.
Title	is the title of the movie.
Cover_URL	is a URL for the cover art image, for display on touch panels.
HiRes_cover_URL	is a URL for a 1080p resolution cover art image, for display on touch panels.
Rating	is the parental control rating for the movie, for example, G, PG, PG-13, R.
Rating_reason	is a text string that is reason for the rating, for example, sexual material and language.
Year	is the year that the movie was released.
Running_time	is the running time of the movie in minutes.
Actors	is a carriage return (\r) delimited list of actors and actresses that star in the movie.
Director	is the name of the director of the movie.
Directors	is a carriage return (\r) delimited list of directors that worked on the movie.
Genre	is the genre for the movie.
Genres	is a carriage return (\r) delimited list of genres associated with the movie.
Synopsis	is the synopsis of the movie.
Color_description	indicates whether the movie is in color or black and white.
Country	is the country which produced the movie.
Aspect_ratio	is the aspect ratio of the movie, for example, 2.40.
Disc_location	provides the location of the disc, for example, in the tray in the disc vault "Disc Vault - 0600 00001234."

**Example****Kaleidescape System sends:**

```
01/!/000:HIGHLIGHTED_SELECTION:1.0-S_ca4fb:/77
```

**Controller sends:**

```
01/1/GET_CONTENT_DETAILS:1.0-S_ca4fb::
```

**Kaleidescape System sends:**

```
01/1/000:CONTENT_DETAILS_OVERVIEW:16:1.0-S_ca4fb:movies:/74
```

```
01/1/000:CONTENT_DETAILS:1:Content_handle:1.0-S_ca4fb:/82
```

```
01/1/000:CONTENT_DETAILS:2:Title:The Incredibles:/82
```

```
01/1/000:CONTENT_DETAILS:3:Cover_URL:http:\\/10.100.12.194\\/panelcover  
art\\/b9bca9a6f224fb54\\/3866055.jpg:/53
```



```

01/1/000:CONTENT_DETAILS:4:HiRes_cover_URL:http\:\10.100.12.194\pane
lcoverart\b9bca9a6f224fb54\4254312.jpg:/44
01/1/000:CONTENT_DETAILS:5:Rating:PG:/89
01/1/000:CONTENT_DETAILS:6:Year:2004:/25
01/1/000:CONTENT_DETAILS:7:Running_time:115:/41
01/1/000:CONTENT_DETAILS:8:Actors:Craig T. Nelson\rHolly Hunter\rJason
Lee\rSamuel L. Jackson\rBrad Bird\rSarah Vowell\rSpencer Fox\rWallace
Shawn\rElizabeth Pe\d241a:/34
01/1/000:CONTENT_DETAILS:9:Directors:Brad Bird:/66
01/1/000:CONTENT_DETAILS:10:Genres:Animated\rAction\rComedy\rFamily:/88
01/1/000:CONTENT_DETAILS:11:Rating_reason:action violence:/49
01/1/000:CONTENT_DETAILS:12:Synopsis:A middle-aged hero living in the
suburbs with his super-powered family dusts off his tights to confront a
mysterious threat./22
01/1/000:CONTENT_DETAILS:13:Color_description:Color:/77
01/1/000:CONTENT_DETAILS:14:Country:USA:/62
01/1/000:CONTENT_DETAILS:15:Aspect_ratio:2.40:/16
01/1/000:CONTENT_DETAILS:16:Disc_location::/14

```

### For content in the albums table

Album_content_handle	is the handle for the album, as requested by the GET_CONTENT_DETAILS command.
Album_title	is the title of the album.
Artist	is the artist listed for the album.
Artists	is a carriage return (\r) delimited list of artists associated with the album.
Composer	is the composer for the album.
Composers	is a carriage return (\r) delimited list of composers that are associated with the album.
Performer	is the performer or artist associated with the album.
Performers	is a carriage return (\r) delimited list of performers or artists associated with the album.
Cover_URL	is a URL for the cover art image, for display on touch panels.
HiRes_cover_URL	is a URL for a 1080p resolution cover art image, for display on touch panels.
Year	is the year the album was released.
Running_time	is the length of the album in seconds.
Last_played	future use
Last_played_relative	future use
Genre	is the genre of music associated with the album.
Genres	is a carriage return (\r) delimited list containing the genres associated with the album.

Review	is the first 255 characters of the album review provided by the onscreen display. (Note that this is generally not the full review.)
Disc_location	is a string indicating where the disc is currently located, for example, in the tray.

### Example

**Kaleidescape System sends:**

01/!/000:HIGHLIGHTED\_SELECTION:1.R\_18760:/97

**Controller sends:**

01/1/GET\_CONTENT\_DETAILS:1.R\_18760::

**Kaleidescape System sends:**

01/1/000:CONTENT\_DETAILS\_OVERVIEW:12:1.R\_18760:albums:/75

01/1/000:CONTENT\_DETAILS:1:Album\_content\_handle:1.R\_18760:/26

01/1/000:CONTENT\_DETAILS:2:Album\_title:Greetings from Asbury Park,  
N.J.:/77

01/1/000:CONTENT\_DETAILS:3:Artist:Bruce Springsteen:/54

01/1/000:CONTENT\_DETAILS:4:Cover\_URL:http:\\/\\/10.100.12.194\\/panelcover  
art\\/b9bca9a6f224fb54\\/music\\/f35592zh2ls.jpg:/24

01/1/000:CONTENT\_DETAILS:5:HiRes\_cover\_URL:http:\\/\\/10.100.12.194\\/pane  
lcoverart\\/b9bca9a6f224fb54\\/music\\/ff2237sr35q.jpg:/16

01/1/000:CONTENT\_DETAILS:6:Year:1973:/39

01/1/000:CONTENT\_DETAILS:7:Running\_time:2236:/95

01/1/000:CONTENT\_DETAILS:8:Last\_played:0000-00-00 00\\:00\\:00:/60

01/1/000:CONTENT\_DETAILS:9:Last\_played\_relative::/22

01/1/000:CONTENT\_DETAILS:10:Genres:Pop\\/Rock\\rRock & Roll\\rContemporary  
Pop\\/Rock\\rAlbum Rock:/95

01/1/000:CONTENT\_DETAILS:11:Review:Bruce Springsteen's debut album found  
him squarely in the tradition of Bob Dylan\\: folk-based tunes arranged  
for an electric band featuring piano and organ (plus, in Springsteen's  
case, 1950s-style:/32

01/1/000:CONTENT\_DETAILS:12:Disc\_location::/10

### GET\_HIGHLIGHTED\_SELECTION

**Affects** Any movie zone

**Command** GET\_HIGHLIGHTED\_SELECTION:

**Response/Event** *status*:HIGHLIGHTED\_SELECTION:*handle*:

This message provides the handle for the currently highlighted item in the onscreen display. This message can be used with the GET\_CONTENT\_DETAILS command to get content details for the item. If nothing is highlighted, or if the item does not have content details, HIGHLIGHTED\_SELECTION returns a blank handle.

The event message is generated when the item currently highlighted changes, for example, when the user highlights various movies and albums.

*handle* is an identifier for the currently highlighted item that can be used in other commands, for example, GET\_CONTENT\_DETAILS.

### Example

**Kaleidescape System sends:**

01/!/000:HIGHLIGHTED\_SELECTION:1.R\_18760:/97

**Controller sends:**

01/1/GET\_CONTENT\_DETAILS:1.R\_18760::

In this example, the user is browsing through the music list and rests on a particular album. The controller then uses the HIGHLIGHTED\_SELECTION to request content details for that album.

## Screen saver commands

### GO\_SCREEN\_SAVER

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_SCREEN_SAVER:
<b>Response</b>	<i>status</i> :

Displays the screen saver (has no effect if the screen saver is already active). Any active playback continues without interruption, the video is merely being obscured by the screen saver.

For the user's convenience, the screen saver is removed with the next user input, ignoring the command itself, and returning a success response. (Commands unrelated to user interface or playback, such as GET\_TIME, are generally interpreted without removing the screen saver.)

An explicit STOP\_SCREEN\_SAVER command also removes the screen saver.

A UI\_STATE event message is sent any time the screen saver is activated, whether automatically or by a command.

### Example

**Controller sends:**

01/8/GO\_SCREEN\_SAVER:

**Kaleidescape System sends:**

01/8/000:/96

01/!/000:UI\_STATE:03:00:00:1:/41

This example shows the GO\_SCREEN\_SAVER command sent to the Kaleidescape System. The system generates a UI\_STATE event message indicating that the screen saver is now active.

## STOP\_SCREEN\_SAVER

<b>Affects</b>	Any movie zone
<b>Command</b>	STOP_SCREEN_SAVER:
<b>Response</b>	<i>status:</i>

Removes the screen saver, returning the display to whatever the screen saver was covering. This command has no effect if the screen saver is not active.

For the user's convenience, the screen saver is removed with the next user input, ignoring the command itself and returning a success response. (Commands unrelated to user interface or playback, such as GET\_TIME, are generally interpreted without removing the screen saver.)

A UI\_STATE event message is sent out any time the screen saver is removed, whether by a command or a user action.

The onscreen display activates the screen saver with a GO\_SCREEN\_SAVER command, or automatically after a certain time passes with no user input (the time period can be set in the browser interface).

### Example

**Controller sends:**

01/9/STOP\_SCREEN\_SAVER:

**Kaleidescape System sends:**

01/9/000:/97

01/!/000:UI\_STATE:03:00:00:0:/40

This example shows the STOP\_SCREEN\_SAVER command sent to remove the screen saver. The onscreen display returns to the Movie Covers view and generates a UI\_STATE message indicating the change.

## OSD Playback Control Commands

**Note:** The response code for music related commands will return "Command is not available" or "Invalid request" for products which do not support music.

These commands control movie and music playback, and the user interface. Commands are grouped and a detailed description of each command follows. Table 9 lists playback control commands.

Table 9: Playback control command summary

Command	Description
<b>Playback control</b>	
PLAY	Begins playback of movies and music.
PAUSE	Toggles pause.

Command	Description
STOP	Stops playback.
NEXT and PREVIOUS	Skips forward or backward through chapters or songs.
SCAN_FORWARD and SCAN_REVERSE	Cycles through fast-forward or fast-reverse.
REPLAY	Skips back five seconds during movie playback.
<b>Child Remote playback control</b>	
CHILD_PLAY	If child user interface is active, or if selected movie is in Child collection, plays the selected movie. Otherwise, activates child user interface.
CHILD_PAUSE	Toggles pause and displays child user interface.
CHILD_STOP	Stops playback.
<b>Playback information</b>	
SET_STATUS_CUE_PERIOD	Sets the frequency of PLAY_STATUS and MUSIC_PLAY_STATUS event messages.
GET_PLAY_STATUS	Identifies movie play mode, speed, location and chapter.
GET_PLAYING_TITLE_NAME	Provides the title of the movie currently playing.
GET_MUSIC_NOW_PLAYING_STATUS	Sends the state of the Now Playing list.
GET_MUSIC_PLAY_STATUS	Provides playback information for the currently playing music.
GET_MUSIC_TITLE	Provides information about the song currently playing.
<b>Music playback controls</b>	
MUSIC_RANDOM_ON	Turns on random playback for music.
MUSIC_RANDOM_OFF	Turns off random playback for music.
MUSIC_RANDOM_TOGGLE	Toggles random music playback on and off.
MUSIC_REPEAT_ON	Turns on repeat playback for music.
MUSIC_REPEAT_OFF	Turns off repeat playback for music.

Command	Description
MUSIC_RANDOM_TOGGLE	Toggles repeat music playback on and off.
GET_CONTROLLED_ZONE	Returns the music zone currently under control.
SET_CONTROLLED_ZONE	Changes the music zone controlled by the onscreen display.
<b>DVD/Blu-ray Disc navigation</b>	
DISC_MENU	Displays DVD or Blu-ray Disc menu for the current playback.
DISC_TOP_MENU	Displays the top menu for the DVD or Blu-ray Disc.
DISC_RESUME	Resumes playback from the point of interruption.
START_CHAPTER_ENTRY	Displays a tab to enter chapter number to skip directly to.
START_DISC_TITLE_ENTRY	Displays a tab to enter title number to skip directly to a title.
<b>Movie playback options</b>	
SHOW_NAVIGATION_OVERLAY	During playback, opens the movie overlay to the chapter/title navigation option.
STATUS_AND_SETTINGS	During playback, toggles the display of the movie overlay. Otherwise, brings up the System Status page.
INTERMISSION_ON	Pauses playback and displays intermission screen.
INTERMISSION_OFF	Removes the intermission screen and resumes playback.
INTERMISSION_TOGGLE	Toggles intermission screen on and off.
SET_FAVORITE_SCENE_START	Records a bookmark for the start of a scene.
SET_FAVORITE_SCENE_END	Records a bookmark for the end of a scene.
START_SEND_NUMBER_TO_DISC_ENTRY	Displays a tab to enter a number key to send to a DVD or Blu-ray Disc.
ANGLE_NEXT	Changes to the next camera angle defined for playback.

Command	Description
ANGLE_PREVIOUS	Changes to the previous camera angle defined for playback.
AUDIO_NEXT	Changes to the next audio stream during movie playback.
SUBTITLES_NEXT	Changes to the next subtitle track during playback.
GET_CAMERA_ANGLE	Provides information about the current camera angle.
<b>Blu-ray Disc playback options</b>	
Blu-ray color buttons	Performs actions associated with color buttons.
GET_MOVIE_MEDIA_TYPE	Identifies the type of media being played.
BLURAY_SPECIAL_STOP	Stops Blu-ray Disc playback. Use with caution.
BLURAY_POPUP_MENU_TOGGLE	Toggles display of Blu-ray Disc pop-up menu.

## Playback control

### PLAY

**Affects** Any zone

**Command** PLAY:

**Response** *status:*

Begins playback of movie or music. When sent to a music zone, it resumes (if paused) or restarts music playback if stopped or finished playing.

If sent to a movie zone, begins playing the highlighted movie, album, track, or other playable item (scene, script, etc.). Movies previously stopped via a STOP command resume playback from the stopping point. Other movies begin playback at the start of the feature if bookmarked in the Kaleidescape Movie Guide. If a movie has no feature bookmark, playback begins like a normal DVD or Blu-ray Disc.

During movie playback, this command begins playing the selected item in a DVD or Blu-ray Disc menu, returns playback to regular forward speed, resumes paused playback or turns intermission off. Compare with PAUSE\_OFF and INTERMISSION\_OFF.

During music playback, if the music is paused, PLAY always resumes. In the Now Playing view, PLAY also restarts the music if music has been stopped or has finished playing.

**Example 1****Controller sends:**

01/5/PLAY:

**Kaleidescape System sends:**

01/5/000:/93

03/!/000:UI\_STATE:07:00:00:0:/46

03/!/000:TITLE\_NAME:Serenity:/12

03/!/000:MOVIE\_MEDIA\_TYPE:01:/36

03/!/000:VIDEO\_MODE:02:04:04:/68

In this example, the onscreen display has the movie Serenity highlighted. The PLAY command is sent, and playback begins. The start of playback generates several event messages about the playback.

**Example 2****Controller sends:**

01.01/1/PLAY:

**Kaleidescape System sends:**

01.01/1/000:/32

01.01/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00011:00000:1:0:0000000010::/12

01.01/!/000:PLAYING\_MUSIC\_INFORMATION:R\_4026:Eric Clapton - Time Pieces\ : Best of Eric Clapton:/94

01.01/!/000:MUSIC\_TITLE:I Shot the Sheriff:Eric Clapton:Time Pieces\ :Best of Eric Clapton:1.b9bca9a6f224fb54-t301\_21:1.R\_4026:2.20000:/00

01.01/!/000:MUSIC\_PLAY\_STATUS:2:0:00263:+00000:000.00:/51

In this example, the user has previously stopped playback of the Best of Eric Clapton album. The PLAY command is sent to the music zone, and playback of the album restarts. Playback restart generates several event messages about the music playback.

**PAUSE**

**Affects** Any zone

**Command** PAUSE:  
PAUSE\_ON:  
PAUSE\_OFF:

**Response** *status:*

During movie or music playback, PAUSE\_ON pauses playback, PAUSE\_OFF resumes playback, and PAUSE toggles between pausing and resuming playback of the movie or music.

**Example 1****Controller sends:**

01/8/PAUSE:



**Kaleidescape System sends:**

01/8/000:/96

03/!/000:PLAY\_STATUS:1:0:01:07136:00027:001:00300:00027:/23

In this example, the PAUSE command is sent during movie playback, causing movie playback to pause. This command generated a PLAY\_STATUS event message that indicates the new paused state.

**Example 2****Controller sends:**

01/2/PAUSE:

**Kaleidescape System sends:**

01/2/000:/90

03/!/000:MUSIC\_PLAY\_STATUS:1:0:00144:+00081:056.25:/34

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00012:00000:1:0:0000000033:2.20000:/15

In this example, the PAUSE command is sent during music playback. This command caused music playback to pause, generating a MUSIC\_PLAY\_STATUS event message and a MUSIC\_NOW\_PLAYING\_STATUS event message, with the modified information about the playback.

**STOP**

**Affects** Any zone

**Command** STOP:

**Response** *status:*

During movie playback, stops the movie and displays the last screen of the Kaleidescape user interface that was visible when playback last began. The movie is placed in the Paused collection to be resumed later.

During music playback, stops playback.

**Note:** Some Blu-ray Discs support a special stop command that does not always display the Kaleidescape user interface. See BLURAY\_SPECIAL\_STOP for information about these special stop functions.

**Example****Controller sends:**

01/4/STOP:

**Kaleidescape System sends:**

01/4/000:/92

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00012:00000:1:0:0000000035:2.20000:/17

03/!/000:PLAYING\_MUSIC\_INFORMATION:::/94

03/!/000:MUSIC\_TITLE:::::/47

03/!/000:MUSIC\_PLAY\_STATUS:0:0:00000:+00000:000.00:/97

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00012:00000:1:0:0000000036::/80

This example shows the way the system reacts when the STOP command is sent during music playback. The event messages state that no music is now playing.

### NEXT and PREVIOUS

<b>Affects</b>	Any zone
<b>Command</b>	NEXT: PREVIOUS:
<b>Response</b>	<i>status:</i>

During movie playback, skips forward or backward to the next chapter boundary. A reverse returns to the beginning of the current chapter, not the beginning of the previous chapter. To return to the beginning of the previous chapter, press a [Previous](#) button twice.

During music playback, skips forward or backward to the next track boundary. A reverse returns to the beginning of the current track, not the beginning of the previous track. To return to the beginning of the previous track, press a [Previous](#) button twice.

See also the context-sensitive commands that page through user interface lists (PAGE\_UP\_OR\_PREVIOUS, etc.).

### Example

**Controller sends:**

01/2/PREVIOUS:

**Kaleidescape System sends:**

01/2/000:/90

**Controller sends:**

01/3/PREVIOUS:

**Kaleidescape System sends:**

01/3/000:/91

03/!/000:PLAY\_STATUS:2:0:01:07570:00151:002:00270:00000:/22

**Controller sends:**

01/4/NEXT:

**Kaleidescape System sends:**

01/4/000:/92

03/!/000:PLAY\_STATUS:2:0:01:07570:00422:003:00142:00000:/22

In this example, the PREVIOUS command was sent twice to return to the previous chapter, then a NEXT command was sent to skip forward one chapter.

**SCAN\_FORWARD and SCAN\_REVERSE**

<b>Affects</b>	Any zone
<b>Command</b>	SCAN_FORWARD: SCAN_REVERSE:
<b>Response</b>	<i>status:</i>

During movie playback, cycles through fast-forward or fast-reverse at 2x, 4x, and 8x the speed. To return to normal speed, issue a PLAY command.

During music playback, cycles through fast-forward or fast-reverse at 4x and 16x the speed. To return to normal speed, issue a PLAY command.

**Example****Controller sends:**

01/5/SCAN\_FORWARD:

**Kaleidescape System sends:**

01/5/000:/93

03/!/000:PLAY\_STATUS:4:1:01:07570:00587:004:00314:00022:/43

**Controller sends:**

01/6/SCAN\_FORWARD:

**Kaleidescape System sends:**

01/6/000:/94

03/!/000:PLAY\_STATUS:4:2:01:07570:00594:004:00314:00029:/49

**Controller sends:**

01/7/PLAY:

**Kaleidescape System sends:**

01/7/000:/95

03/!/000:PLAY\_STATUS:2:0:01:07570:00608:004:00314:00042:/36

In this example, the SCAN\_FORWARD command is sent to cause video to fast forward at 4x speed. The updated PLAY\_STATUS messages indicate the change in playback mode. After the appropriate location is reached, the PLAY command is sent, causing playback to return to normal speed, and a PLAY\_STATUS message to be generated.

**REPLAY**

<b>Affects</b>	Any movie zone
<b>Command</b>	REPLAY:
<b>Response</b>	<i>status:</i>

Skips back five seconds during movie playback. At other times, this command has no effect.

**Example****Controller sends:**

01/0/REPLAY:

**Kaleidescape System sends:**

01/0/000:/88

03/!/000:PLAY\_STATUS:2:0:01:07195:00061:001:00070:00061:/29

In this example, the REPLAY command is sent, causing playback status to go back five seconds. A PLAY\_STATUS event message is generated to indicate the change in position.

**CHILD\_PLAY****Affects** Any zone**Command** CHILD\_PLAY:**Response** *status:*

If the child user interface is already active, begins playback of movie. If the child user interface is not active, activates the child user interface.

**Example****Controller sends:**

02/8/CHILD\_PLAY:

**Kaleidescape System sends:**

02/8/000:/97

02/!/000:CHILD\_MODE\_STATE:1:/63

02/!/000:USER\_DEFINED\_EVENT:SELECT\_KALEIDESCAPE\_INPUT:/77

02/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000007:./74

02/!/000:UI\_STATE:07:00:00:0:/45

02/!/000:TITLE\_NAME:Ice Age:/34

The player was not displaying the child user interface, but after receiving the CHILD\_PLAY command, switched to the child user interface, and began playback. This selection was available in the Child collection; otherwise, playback would not begin and a movie from the Child collection would be selected.

**CHILD\_PAUSE****Affects** Any zone**Command** CHILD\_PAUSE:  
CHILD\_PAUSE\_ON:  
CHILD\_PAUSE\_OFF:**Response** *status:*

If the child user interface is active, toggles pause on and off. If not, activates the child user interface.

**CHILD\_STOP****Affects** Any zone**Command** CHILD\_STOP:**Response** *status:*

Stops the movie and displays the child user interface.

## Playback information

**Note:** The response code for music related commands will return “Command is not available” or “Invalid request” for products which do not support music.

### SET\_STATUS\_CUE\_PERIOD

<b>Affects</b>	Any zone
<b>Command</b>	SET_STATUS_CUE_PERIOD: <i>period</i> :
<b>Response</b>	<i>status</i> :STATUS_CUE_PERIOD: <i>period</i> :

Sets the time in seconds between PLAY\_STATUS event messages to *period*.

<i>period</i>	is the time in seconds between PLAY_STATUS and MUSIC_PLAY_STATUS messages.
0	No updates for title and chapter locations are sent.
1	A PLAY_STATUS/MUSIC_PLAY_STATUS event message is sent every second as title and chapter locations change.
<b>Note:</b> Setting the period to a value greater than 1 is not yet implemented.	

Even when the period is set to 0, the PLAY\_STATUS/MUSIC\_PLAY\_STATUS event message is generated when fields, other than the playback time change (for example, playback mode, playback scanning speed, title number, chapter number). This command only affects whether the event is sent when only the time changes.

This command is useful for getting automatic updates of the play status, for example, to display the time remaining on a touch panel.

### Example

#### Controller sends:

```
03:40:28.144 > 01/4/SET_STATUS_CUE_PERIOD:1:
```

#### Kaleidescape System sends:

```
03:40:28.160 01/4/000:STATUS_CUE_PERIOD:0001:/47
03:40:28.473 01/!/000:PLAY_STATUS:2:0:01:07136:00135:
001:00300:00135:/22
03:40:29.473 01/!/000:PLAY_STATUS:2:0:01:07136:00136:001:
00300:00136:/24
```

...

Before this command was sent, movie playback was started. When the SET\_STATUS\_CUE\_PERIOD command is sent, the system responds with the updated STATUS\_CUE\_PERIOD. Subsequently, PLAY\_STATUS messages start being generated once per second.

**Note:** This command replaces the ENABLE\_STATUS\_CUES command (and associated response fields STATUS\_CUES and the period), which is still supported for backward compatibility.

## GET\_PLAY\_STATUS

**Affects** Any movie zone

**Command** GET\_PLAY\_STATUS:

**Response/Event** *status:PLAY\_STATUS:mode:speed:*  
*title\_num:title\_length:title\_loc:*  
*chap\_num:chap\_Len:chap\_Loc:*

This message indicates the current movie play mode and speed, as well as the location in the movie title and chapter structure. The controller can use this information to change, disable/enable, or dim/highlight buttons, or provide other feedback to the user.

This event message is generated when any of the included values changes, typically once per second during playback. This behavior can be changed by SET\_STATUS\_CUE\_PERIOD.

<i>mode</i>	is the current playback mode of the movie.
0	Nothing playing
1	Paused ( <i>speed</i> does not apply) Use GET_MOVIE_LOCATION to distinguish between freeze-frame and intermission.
2	Playing ( <i>speed</i> does not apply)
3	unused
4	Forward scan ( <i>speed</i> applies)
5	unused
6	Reverse scan ( <i>speed</i> applies)
<i>speed</i>	is the speed of the playback scanning and applies only to mode 4 or 6, indicating scan. Value is an integer between 1 (closest to normal playback speed) and 3 (farthest from normal playback speed).
<i>title_num</i>	is a zero-padded, two-digit number identifying the current movie title playing. If there is no title for the movie playing, this value is 00.
<i>title_length</i>	is a zero-padded, five-digit number providing the total length (in seconds) of the title. If there is no current title, or the value cannot be determined, the value is 00000.
<i>title_loc</i>	is a zero-padded, five-digit number providing the current location into the title (in seconds). If there is no current title, or the value cannot be determined, the value is 00000.

<i>chap_num</i>	is a zero-padded, three-digit number identifying the current chapter playing. If no chapter is playing, this value is 000.
<i>chap_Length</i>	is a zero-padded, five-digit number providing the total length in seconds of the chapter. If there is no current chapter, or the value cannot be determined, the value is 00000.
<i>chap_Loc</i>	is a zero-padded, five-digit number providing the current location into the chapter. If there is no current chapter, or the value cannot be determined, the value is 00000.

### Example

#### Kaleidescape System sends:

```
01/!/000:PLAY_STATUS:2:0:01:05343:01175:004:00600:00034:/25
```

This event message indicates that the movie is playing (2), in the first title (01), and the title is 5343 seconds long. Playback is 1175 seconds into the title. The current chapter is the fourth chapter (004), which is 600 seconds long. Playback is 34 seconds into the current chapter.

### GET\_PLAYING\_TITLE\_NAME

**Affects** Any movie zone

**Command** GET\_PLAYING\_TITLE\_NAME:

**Response/Event** *status*:TITLE\_NAME:*title*:

This message provides the title of the movie currently playing. The event message is sent any time playback begins or ends for a new movie.

<i>title</i>	is the title of the movie currently playing. This is the same title displayed in the Kaleidescape user interface. If there is no active playback the title field is empty.
--------------	--

The controller can display the title of the movie currently playing on a touch screen, for example.

Received messages for escaped characters must always be processed, and it is especially important for TITLE\_NAME commands because these commands often contain embedded colons. See [Message character set](#) on page 22 for details.

### Example

#### Controller sends:

```
01/0/GET_PLAYING_TITLE_NAME:
```

#### Kaleidescape System sends:

```
01/0/000:TITLE_NAME:Serenity:/25
```

In this example, the title name for the film currently playing is explicitly requested by the `GET_PLAYING_TITLE_NAME` command. The result indicates that the title is *Serenity*.

**Note:** This command replaces the `GET_TITLE_NAME` command which returns a similar response, but without the `TITLE_NAME` field, which makes the `GET_TITLE_NAME` command harder to parse.

## GET\_MUSIC\_NOW\_PLAYING\_STATUS

**Affects** Any premiere music zone

**Command** `GET_MUSIC_NOW_PLAYING_STATUS:`

**Response/Event** `status:MUSIC_NOW_PLAYING_STATUS:total:  
location:repeat:random:generation:  
now_playing_handle:`

This event represents the state of the Now Playing list.

<i>total</i>	is the number of tracks in the list, as a zero-padded, five-digit number.
<i>location</i>	is the index of the song currently playing, with 0 representing the first position. Provided as a zero-padded, five-digit number.
<i>repeat</i>	indicates if repeat is on or off. 0 is off; 1 is on.
<i>random</i>	indicates if random is on or off. 0 is off; 1 is on.
<i>generation</i>	is a number that changes when the text-based music list accessed by BROWSE protocol changes. The number will change for changes in both the static library and the now playing list. The number is a zero-padded, 10 digit number.  The actual value is not as useful as the change alert which can be used to determine whether to refresh the list of music playing.
<i>now_playing_handle</i>	is a handle unique to the track currently playing.

## Example

### Controller sends:

`01.01/4/GET_MUSIC_NOW_PLAYING_STATUS:`

### Kaleidescape System sends:

`01.01/4/000:MUSIC_NOW_PLAYING_STATUS:00002:00000:1:0:0000000123:2.205cd:/82`

The response to `GET_MUSIC_NOW_PLAYING_STATUS` indicates that two songs are listed to play, and the first song is currently playing. Repeat is on, while random playback is off. The generation number is 123, and the song currently playing is identified by the handle `2.205cd`.



**GET\_MUSIC\_PLAY\_STATUS****Affects** Any premiere music zone**Command** GET\_MUSIC\_PLAY\_STATUS:**Response/Event** *status:MUSIC\_PLAY\_STATUS:mode:speed:  
Length:position:progress:*

This message identifies the current playback mode, scan speed, track length, position in the current track, and the percentage of progress through the track.

The event message is generated when any of the included values changes, typically once per second. This behavior can be changed by the SET\_STATUS\_CUE\_PERIOD message.

When music is not playing, all fields are zero.

<i>mode</i>	is the current playback mode for the music and has the following values when music is playing.
1	Paused
2	Normal play
4	Fast forward
6	Fast reverse
<i>speed</i>	Indicates the speed with which music playback is fast forwarding or reversing. Normally has a value of 0. In fast forward and fast reverse speed can be 2 or 3 to represent 4x or 16x speed, respectively.
<i>Length</i>	is the length of the current track, in seconds, as a zero-padded, five-digit number.
<i>position</i>	is the position within the track, also in seconds as a zero-padded, five-digit number. The position is prepended by a + or – sign. Position can be negative if the song is about to start.
<i>progress</i>	is the percentage of the way through the track, and is between 000.00 and 100.00.

**Example****Controller sends:**

01.01/6/GET\_MUSIC\_PLAY\_STATUS:

**Kaleidescape System sends:**

01.01/6/000:MUSIC\_PLAY\_STATUS:1:0:00298:+00036:012.08:/99

**Controller sends:**

01/7/PLAY:

**Kaleidescape System sends:**

01/7/000:/95

03/!/000:MUSIC\_PLAY\_STATUS:2:0:00298:+00036:012.08:/38

In this example, the first MUSIC\_PLAY\_STATUS response indicates that music is paused. Then the PLAY command is sent, and in response, a MUSIC\_PLAY\_STATUS event is sent indicating that music is playing normally.

Additionally, the second MUSIC\_PLAY\_STATUS message indicates that the track is 298 seconds long, and that playback is 36 seconds into the track, or 12.08 percent of the way through.

## GET\_MUSIC\_TITLE

**Affects** Any premiere music zone

**Command** GET\_MUSIC\_TITLE:

**Response/Event** *status:MUSIC\_TITLE:track:artist:album:*  
*track\_handle:album\_handle:*  
*now\_playing\_handle:*

This message provides useful information about the currently playing music track, such as the album it is associated with, the artist that wrote it, etc.

The event message is generated when the song currently playing changes. If no song is playing, all of the fields are empty.

*track* is the name of the song playing.

*artist* is the name of the track artist.

*album* is the name of the album that contains the song.

*track\_handle* and *album\_handle*

are handles for the track and the album with that track that can be passed to GET\_CONTENT\_DETAILS to get more information about the track or album.

*now\_playing\_handle* represents the track as it is positioned in the Now Playing list. The *now\_playing\_handle* can be passed to the PERFORM\_ACTION command to jump to that track in the list.

The *track\_handle*, *album\_handle*, and *now\_playing\_handle* values are unique. For example, if the same track is in the Now Playing list twice, the track has the same *track\_handle* but different *now\_playing* handles.

## Example

### Controller sends:

01.01/0/GET\_MUSIC\_TITLE:

### Kaleidescape System sends:

01.01/0/000:MUSIC\_TITLE:Rubber Soul:The Beatles:Nowhere Man:  
1.96de0c01d6fd4a9e-t30c\_1951:1.R\_955059:2.205cd:/97

The response to this GET\_MUSIC\_TITLE command indicates that the current track is called Nowhere Man by the Beatles from their Rubber Soul album. The handles provided can be used to get more information to display on a controller, for example, cover art.

## Music playback controls

**Note:** The response code for music related commands will return “Command is not available” or “Invalid request” for products which do not support music.

### MUSIC\_RANDOM\_ON

**Affects** Any premiere music zone  
**Command** MUSIC\_RANDOM\_ON:  
**Response** *status*:

Turns on random music playback in the zone. When random music playback is on, songs play in a random order. The state of random persists across component reboots. Random music playback can also be set in the Now Playing view on the user interface.

See also MUSIC\_RANDOM\_TOGGLE and MUSIC\_RANDOM\_OFF.

#### Example

**Controller sends:**

01.01/5/MUSIC\_RANDOM\_ON:

**Kaleidescape System sends:**

01.01/5/000:/36

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:1:0000000007::/76

This example shows random music playback being turned on. The subsequent MUSIC\_NOW\_PLAYING\_STATUS event message confirms this status in the appropriate field.

### MUSIC\_RANDOM\_OFF

**Affects** Any premiere music zone  
**Command** MUSIC\_RANDOM\_OFF:  
**Response** *status*:

Turns off random music playback in the zone. The state of random persists across component reboots. Random music playback can also be set in the Now Playing view of the user interface.

See also MUSIC\_RANDOM\_TOGGLE and MUSIC\_RANDOM\_ON.

#### Example

**Controller sends:**

01.01/6/MUSIC\_RANDOM\_OFF:

**Kaleidescape System sends:**

01.01/6/000:/37

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000008::/76

This example shows random music playback being turned off. The subsequent MUSIC\_NOW\_PLAYING\_STATUS event message confirms this status in the appropriate field.

## MUSIC\_RANDOM\_TOGGLE

<b>Affects</b>	Any premiere music zone
<b>Command</b>	MUSIC_RANDOM_TOGGLE:
<b>Response</b>	<i>status:</i>

Toggles random music playback of the zone on and off. When random music playback is on, songs play in a random order. The state of random persists across component reboots. Random music playback can also be set in the Now Playing view of the user interface.

See also MUSIC\_RANDOM\_ON and MUSIC\_RANDOM\_OFF.

### Example

**Controller sends:**

01.01/7/MUSIC\_RANDOM\_TOGGLE:

**Kaleidescape System sends:**

01.01/7/000:/38

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:1:0000000009::/78

**Controller sends:**

01.01/8/MUSIC\_RANDOM\_TOGGLE:

**Kaleidescape System sends:**

01.01/8/000:/39

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000010::/69

In this example, the first MUSIC\_RANDOM\_TOGGLE command turns the random play feature on, confirmed by the subsequent MUSIC\_NOW\_PLAYING\_STATUS message. The next MUSIC\_RANDOM\_TOGGLE command turns the random play feature back off and generates another MUSIC\_NOW\_PLAYING\_STATUS message.

## MUSIC\_REPEAT\_ON

<b>Affects</b>	Any premiere music zone
<b>Command</b>	MUSIC_REPEAT_ON:
<b>Response</b>	<i>status:</i>

Turns on repeat music playback in the zone. If repeat music playback is on when music playback ends, music playback starts again at the beginning. The state of repeat persists across component reboots. Repeat music playback can also be set in the Now Playing view of the user interface.

See also MUSIC\_REPEAT\_TOGGLE and MUSIC\_REPEAT\_OFF.

### Example

**Controller sends:**

01.01/3/MUSIC\_REPEAT\_ON:

**Kaleidescape System sends:**

01.01/3/000:/34

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000012::/71

This example shows repeat music playback being turned on, and the resulting MUSIC\_NOW\_PLAYING\_STATUS event message with the results.

### MUSIC\_REPEAT\_OFF

**Affects** Any premiere music zone

**Command** MUSIC\_REPEAT\_OFF:

**Response** *status:*

Turns off repeat music playback in the zone. The state of repeat persists across component reboots. Repeat music playback can also be set in the Now Playing view of the user interface.

See also MUSIC\_REPEAT\_TOGGLE and MUSIC\_REPEAT\_ON.

### Example

**Controller sends:**

01.01/8/MUSIC\_REPEAT\_OFF:

**Kaleidescape System sends:**

01.01/8/000:/39

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00002:00000:0:0:0000000133::/76

This example shows repeat music playback being turned off. Subsequently a MUSIC\_NOW\_PLAYING\_STATUS event message is generated to confirm that repeat is off.

### MUSIC\_REPEAT\_TOGGLE

**Affects** Any premiere music zone

**Command** MUSIC\_REPEAT\_TOGGLE:

**Response** *status:*

Toggles repeat music playback on and off for the zone. If repeat music playback is on when music playback ends, playback starts again from the beginning. The state of repeat persists across component reboots. Repeat music playback can also be set in the Now Playing view of the user interface.

See also MUSIC\_REPEAT\_ON and MUSIC\_REPEAT\_OFF.

### Example

**Controller sends:**

01.01/4/MUSIC\_REPEAT\_TOGGLE:

**Kaleidescape System sends:**

01.01/4/000:/35

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:0:0:0000000013::/71

**Controller sends:**

01.01/5/MUSIC\_REPEAT\_TOGGLE:

**Kaleidescape System sends:**

01.01/5/000:/36

03/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000014::/73

In this example, the first MUSIC\_REPEAT\_TOGGLE command turns music repeat off, which generates a MUSIC\_NOW\_PLAYING\_STATUS event message, indicating the change. The next command turns repeat back on and generates a new MUSIC\_NOW\_PLAYING\_STATUS event message with the change.

**GET\_CONTROLLED\_ZONE****Affects** Any movie zone**Command** GET\_CONTROLLED\_ZONE:**Response** *status:CONTROLLED\_ZONE:#sn.zn:*

A movie zone can control any music zone in the system. This command can be used by a controller to provide feedback on which music zone is currently being controlled.

The currently controlled music zone can be changed by sending a SET\_CONTROLLED\_ZONE command or through the onscreen display on the Now Playing view.

*sn* is the serial number of the component with the music zone being controlled.

*zn* is the music zone (01–04) being controlled.

**Example****Controller sends:**

01/6/GET\_CONTROLLED\_ZONE:

**Kaleidescape System sends:**

01/6/000:CONTROLLED\_ZONE:#0000000019A.01:/60

The response to the GET\_CONTROLLED\_ZONE command indicates that the movie zone on the attached component is currently controlling the first music zone on the component with serial number 0000 0000019A.

**SET\_CONTROLLED\_ZONE**

<b>Affects</b>	Any movie zone
<b>Command</b>	SET_CONTROLLED_ZONE:#sn.zn:
<b>Response</b>	status:

A movie zone can control any music-only zone in the system. This command can be used to change which music zone is currently being controlled by the onscreen display.

The currently controlled music zone can also be changed through the onscreen display on the Now Playing view.

Remote music zone control must be enabled for this command to function, otherwise an error is generated. To enable remote music zone control, go to the browser interface, select the **General** tab, and select the appropriate option next to **Music Zone Control**.

<i>sn</i>	is the serial number of the component to be controlled.
<i>zn</i>	is the music zone (01–04) to be controlled.

**Example****Controller sends:**

```
01/1/SET_CONTROLLED_ZONE:#000000120B91.02:
```

**Kaleidescape System sends:**

```
01/1/000:CONTROLLED_ZONE:#000000120B91.02:/60
```

In this example, the controlled music zone for the connected component is set to the second music zone of the component with serial number 0000 00120B91. The CONTROLLED\_ZONE response confirms this change.

**DVD/Blu-ray Disc navigation****DISC\_MENU**

<b>Affects</b>	Any movie zone
<b>Command</b>	DISC_MENU:
<b>Response</b>	status:

During movie playback, displays the DVD or Blu-ray Disc menu for the current playback context (which might not be the top level menu). At other times, this command has no effect, i.e., this command does not begin playing the disc. To display the top level menu for the disc, send a DISC\_TOP\_MENU command.

To resume playback while in the disc menu, use the DISC\_RESUME or PLAY command.

If the controller has room for separate menu buttons for the Kaleidescape System and DVD/Blu-ray Disc, use this command. Otherwise, use the context-sensitive DISC\_OR\_KALEIDESCAPE\_MENU command.

**Example 1****Controller sends:**

01/3/DISC\_MENU:

**Kaleidescape System sends:**

01/3/000:/91

03/!/000:PLAY\_STATUS:2:0:00:00000:00000:000:00000:00000:/84

In this example, DISC\_MENU stopped playback of a DVD movie and displayed the DVD menu. The PLAY\_STATUS event message confirms that playback has halted.

**Example 2****Controller sends:**

01/0/DISC\_MENU:

**Kaleidescape System sends:**

01/0/000:/88

03/!/000:PLAY\_STATUS:2:0:01:07195:00070:002:00077:00000:/30

03/!/000:PLAY\_STATUS:2:0:01:07195:00070:002:00076:00000:/29

In the second example, DISC\_MENU was sent while a Blu-ray movie was playing and playback continued while the menu was overlaid. This behavior can be the same that BLURAY\_POPUP\_MENU\_TOGGLE causes as shown by the PLAY\_STATUS event messages.

**Note:** This command replaces the DVD\_MENU command which is still supported.

In the case of downloaded content this command is the equivalent of [STATUS\\_AND\\_SETTINGS](#).

**DISC\_TOP\_MENU**

<b>Affects</b>	Any movie zone
<b>Command</b>	DISC_TOP_MENU:
<b>Response</b>	<i>status:</i>

During playback, displays the menu for the DVD or Blu-ray Disc as a whole, rather than any menus defined for specific playback. At other times, this command has no effect, i.e., this command does not begin playing the disc. To display the disc menu for the current playback (which might not be the top level menu), send a DISC\_MENU command. To resume playback from the menu, use the DISC\_RESUME or PLAY commands.

**Example****Controller sends:**

01/5/DISC\_TOP\_MENU:

**Kaleidescape System sends:**

01/5/000:/93

03/!/000:PLAY\_STATUS:2:0:00:00000:00000:000:00000:00000:/84)



In this example, the DISC\_TOP\_MENU command stops playback of a DVD movie and causes the DVD menu to be displayed. The PLAY\_STATUS event message confirms the change.

**Note:** This command replaces the DVD\_TOP\_MENU command which is still supported.

In the case of downloaded content this command is the equivalent of [STATUS\\_AND\\_SETTINGS](#).

## DISC\_RESUME

<b>Affects</b>	Any movie zone
<b>Command</b>	DISC_RESUME:
<b>Response</b>	<i>status:</i>

If a DVD or Blu-ray Disc menu is active, resumes playback from the point of interruption. At other times, this command has no effect. For most discs a PLAY command has the same effect.

### Example

**Controller sends:**

01/1/DISC\_RESUME:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:PLAY\_STATUS:2:0:01:07152:00692:003:00163:00002:/30

In this example, DVD playback is currently halted, and the DVD menu is displayed. The DISC\_RESUME command causes the menu to be dismissed and playback to resume, as evidenced by the PLAY\_STATUS event message.

**Note:** This command replaces the DVD\_RESUME command, which is still supported.

## START\_CHAPTER\_ENTRY

<b>Affects</b>	Any movie zone
<b>Command</b>	START_CHAPTER_ENTRY:
<b>Response</b>	<i>status:</i>

During movie playback, displays a tab indicating that the user can enter a chapter number to skip directly to that chapter.

Follow this command with KEYBOARD\_CHARACTER commands to supply the number to skip to, and a SELECT command to end entry and make the jump.

If no subsequent digits, or the select command, are received within a few seconds, this command times out and automatically jumps to the specified chapter number as though SELECT had been pressed. See also START\_DISC\_TITLE\_ENTRY.

**Example****Controller sends:**

01/1/START\_CHAPTER\_ENTRY:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:02:Jump to Chapter::/31

**Controller sends:**

01/1/KEYBOARD\_CHARACTER:5:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:02:Jump to Chapter:5:/84

**Controller sends:**

01/1/SELECT:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:00:::/15

01/!/000:PLAY\_STATUS:2:0:01:07152:01226:005:00271:00000:/24

In this example, the START\_CHAPTER\_ENTRY command is sent during movie playback, causing the prompt to appear. Because the system is requesting user input, a USER\_INPUT event message is sent with the appropriate prompt. The controller sends the number 5 to the system to indicate that chapter 5 is required. The system responds with an updated USER\_INPUT event message. The controller finally sends the SELECT command to confirm the chapter number, causing playback to jump to that chapter, as shown by the PLAY\_STATUS event message containing the new chapter update. The USER\_INPUT event message is then generated to indicate that user input is no longer required.

**START\_DISC\_TITLE\_ENTRY**

**Affects** Any movie zone

**Command** START\_DISC\_TITLE\_ENTRY:

**Response** *status:*

Some movies have various titles that can be selected during playback. Titles can be episodes, menus, trailers, etc. The main movie is usually title number 1. This command displays a tab so the user can enter a title number to skip directly to that title.

Follow this command with KEYBOARD\_CHARACTER commands to supply the number to skip to, and a SELECT command to end entry and make the jump.

If no subsequent digits, or the SELECT command, are received within a few seconds, this command times out and automatically jumps to the specified title as though SELECT had been pressed.

Users are unlikely to need to jump to a numbered title, but this feature can be useful for calibration discs that have several titles. Users often prefer to access different chapters, which can be enabled with the `START_CHAPTER_ENTRY` command.

### Example

**Controller sends:**

01/1/START\_DISC\_TITLE\_ENTRY:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:02:Jump to Title:./34

**Controller sends:**

01/1/KEYBOARD\_CHARACTER:1:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:02:Jump to Title:1:/83

**Controller sends:**

01/1/SELECT:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_INPUT:00:./15

01/!/000:PLAY\_STATUS:2:0:01:07152:00000:001:00394:00000:/15

In this example, the `START_DISC_TITLE_ENTRY` command is sent during movie playback, causing the prompt to appear. Because the system is requesting user input, a `USER_INPUT` event message is sent with the appropriate prompt. The controller sends the number 1 to the system to indicate that title 1 is required. The system responds with an updated `USER_INPUT` event message. The controller finally sends the `SELECT` command to confirm the chapter number, causing playback to jump to that title, as shown by the `PLAY_STATUS` event message containing the new chapter update. The `USER_INPUT` event message is then generated to indicate that user input is no longer required.

**Note:** This command replaces the `START_DVD_TITLE_ENTRY` command.

## Movie playback options

### SHOW\_NAVIGATION\_OVERLAY

<b>Affects</b>	Any movie zone
<b>Command</b>	SHOW_NAVIGATION_OVERLAY:
<b>Response</b>	<i>status:</i>

During movie playback, this command brings up the movie overlay showing the chapter/title navigation option. This command brings up the same overlay as the `STATUS_AND_SETTINGS` command, just on a different page. At other times, this command has no effect.

**Example****Controller sends:**

01/4/SHOW\_NAVIGATION\_OVERLAY:

**Kaleidescape System sends:**

01/4/000:/92

03/!/000:UI\_STATE:07:03:00:0:/49

This example shows the results of the SHOW\_NAVIGATION\_OVERLAY command. The command was sent during playback, causing the UI\_STATE event message to be generated, indicating that navigation option of the movie overlay is now active.

**STATUS\_AND\_SETTINGS**

<b>Affects</b>	Any movie zone
<b>Command</b>	STATUS_AND_SETTINGS:
<b>Response</b>	<i>status:</i>

During movie playback, toggles display of the movie overlay. The movie overlay has a status page showing the title of the movie currently playing, remaining playing time, and other information. Pressing the left and right arrow buttons displays other options of the movie overlay, for example, audio, subtitles, navigation, scenes.

When not playing back a movie, this command displays the System Status view (see [GO\\_SYSTEM\\_STATUS](#)).

**Example****Controller sends:**

01/2/STATUS\_AND\_SETTINGS:

**Kaleidescape System sends:**

01/2/000:/90

03/!/000:UI\_STATE:07:02:00:0:/48

**Controller sends:**

01/3/STATUS\_AND\_SETTINGS:

**Kaleidescape System sends:**

01/3/000:/91

03/!/000:UI\_STATE:07:00:00:0:/46

In this example, the STATUS\_AND\_SETTINGS command is sent during playback, causing the movie overlay to appear. A UI\_STATE message is generated to show that the status page is displayed. The second STATUS\_AND\_SETTINGS command hides the movie overlay and causes another UI\_STATE event message to be generated showing the change.

## INTERMISSION\_ON

<b>Affects</b>	Any movie zone
<b>Command</b>	INTERMISSION_ON:
<b>Response</b>	<i>status:</i>

Pauses any active playback and displays the Kaleidescape intermission screen, which shows the cover of the currently playing movie. When playing back a script, the intermission feature can be customized to show other cover art, scenes, or content. At other times, this command has no effect.

See also INTERMISSION\_OFF and INTERMISSION\_TOGGLE.

### Example

**Controller sends:**

01/4/INTERMISSION\_ON:

**Kaleidescape System sends:**

01/4/000:/92

03/!/000:MOVIE\_LOCATION:04:/71

03/!/000:PLAY\_STATUS:1:0:05:05700:00638:001:00887:00638:/58

This example shows the results of sending the INTERMISSION\_ON command. Movie playback stops, generating a PLAY\_STATUS event message. Additionally, a MOVIE\_LOCATION event message is generated to indicate that the intermission screen is displayed, which can be used to trigger lighting and other events to coincide with the intermission.

## INTERMISSION\_OFF

<b>Affects</b>	Any movie zone
<b>Command</b>	INTERMISSION_OFF:
<b>Response</b>	<i>status:</i>

During movie playback when the intermission screen is displayed, removes the intermission screen and resumes playback. At other times, this command has no effect.

See also INTERMISSION\_ON and INTERMISSION\_TOGGLE.

### Example

**Controller sends:**

01/5/INTERMISSION\_OFF:

**Kaleidescape System sends:**

01/5/000:/93

03/!/000:MOVIE\_LOCATION:03:/70

03/!/000:PLAY\_STATUS:2:0:05:05700:00638:001:00887:00638:/59

This example shows the results after sending the `INTERMISSION_OFF` command when intermission is active. The intermission screen vanishes, returning to movie playback, generating a `MOVIE_LOCATION` event message. Additionally, the `PLAY_STATUS` event message is generated to show that playback has been resumed.

### **INTERMISSION\_TOGGLE**

<b>Affects</b>	Any movie zone
<b>Command</b>	<code>INTERMISSION_TOGGLE:</code>
<b>Response</b>	<code>status:</code>

During movie playback, toggles display of the Kaleidescape intermission screen. At other times, this command has no effect.

See also `INTERMISSION_OFF` and `INTERMISSION_ON`.

#### **Example**

**Controller sends:**

`01/0/INTERMISSION_TOGGLE:`

**Kaleidescape System sends:**

`01/0/000:/88`

`03/!/000:MOVIE_LOCATION:04:/71`

`03/!/000:PLAY_STATUS:1:0:05:05700:00684:001:00887:00684:/60`

**Controller sends:**

`01/1/INTERMISSION_TOGGLE:`

**Kaleidescape System sends:**

`01/1/000:/89`

`03/!/000:MOVIE_LOCATION:03:/70`

`03/!/000:PLAY_STATUS:2:0:05:05700:00684:001:00887:00684:/61`

In this example, the first `INTERMISSION_TOGGLE` command activates intermission. This generates a `MOVIE_LOCATION` message and a `PLAY_STATUS` message showing that playback has paused. The second `INTERMISSION_TOGGLE` command removes the intermission screen and returns to playback, generating new `MOVIE_LOCATION` and `PLAY_STATUS` event messages.

### **SET\_FAVORITE\_SCENE\_START**

<b>Affects</b>	Any movie zone
<b>Command</b>	<code>SET_FAVORITE_SCENE_START:</code>
<b>Response</b>	<code>status:</code>

During movie playback, records a bookmark marking the start of a scene at the time the movie zone receives the command. If a start of a scene bookmark already exists, the original bookmark is replaced with the new time. At other times, this command has no effect.

If the current movie has an end of scene bookmark (see SET\_FAVORITE\_SCENE\_END), the end bookmark is erased. A scene with no end bookmark continues playing to the end of the movie.

A movie can have one unnamed scene. Scenes are named using the movie details page or the overlay during playback, to allow several scenes per movie. Scenes can be played in sequences with the scripts feature. See the PLAY\_SCRIPT command.

Start and end bookmarks for scenes can also be set from the movie overlay during playback, accessed by sending the STATUS\_AND\_SETTINGS command.

### Example

**Controller sends:**

01/2/SET\_FAVORITE\_SCENE\_START:

**Kaleidescape System sends:**

01/2/000:/90

**Note:** This command replaces the SET\_FAVORITE\_SCENE command.

## SET\_FAVORITE\_SCENE\_END

<b>Affects</b>	Any movie zone
<b>Command</b>	SET_FAVORITE_SCENE_END:
<b>Response</b>	<i>status:</i>

During movie playback, records a bookmark marking the end of a scene at the time the movie zone receives the command. If a bookmark indicating the end of a scene already exists, the original is replaced with the new time.

The start of a scene must be defined before the end of scene can be defined. (See SET\_FAVORITE\_SCENE\_START.) A scene with no ending bookmark continues playing to the end of the movie.

At other times, or if a bookmark marking the start of a scene has not been saved, this command has no effect. Scenes can be played in sequences with the scripts feature. See the PLAY\_SCRIPT command.

Start and end bookmarks for scenes can also be set from the movie overlay during playback, accessed by sending the STATUS\_AND\_SETTINGS command.

### Example

**Controller sends:**

01/3/SET\_FAVORITE\_SCENE\_END:

**Kaleidescape System sends:**

01/3/000:/91

**START\_SEND\_NUMBER\_TO\_DISC\_ENTRY**

<b>Affects</b>	Any movie zone
<b>Command</b>	START_SEND_NUMBER_TO_DISC_ENTRY:
<b>Response</b>	<i>status:</i>

Some DVD and Blu-ray Discs require number keys to access part of the content. These keys are usually reserved for interactive DVDs and Blu-ray Discs that allow entering numbers to select from lists, as well as hidden Easter eggs on these discs.

To send a number key to the disc, use this command during movie playback. A tab appears onscreen to prompt the user to enter a number. Subsequent KEYBOARD\_CHARACTER commands show in this tab, after which a SELECT command removes the tab and sends the number to the disc. A CANCEL command removes the tab without sending the number.

**Example****Controller sends:**

```
01/2/START_SEND_NUMBER_TO_DISC_ENTRY:
```

**Kaleidescape System sends:**

```
01/2/000:/90
```

```
03/!/000:USER_INPUT:02:Send Number to Disc::/40
```

**Controller sends:**

```
01/3/KEYBOARD_CHARACTER:2:
```

**Kaleidescape System sends:**

```
01/3/000:/91
```

```
03/!/000:USER_INPUT:02:Send Number to Disc:2:/90
```

**Controller sends:**

```
01/4/SELECT:
```

**Kaleidescape System sends:**

```
01/4/000:/92
```

In this example, the START\_SEND\_NUMBER\_TO\_DISC\_ENTRY command is sent during movie playback. The system displays a tab prompting the user to enter a character and a USER\_INPUT event message is generated indicating the need for the keypad. The KEYBOARD\_CHARACTER command sends the number 2, generating a new USER\_INPUT event message with the new data. The final SELECT command then sends the number to the disc.

**Note:** This command replaces the START\_SEND\_NUMBER\_TO\_DVD\_ENTRY command.



## ANGLE\_NEXT

<b>Affects</b>	Any movie zone
<b>Command</b>	ANGLE_NEXT:
<b>Response</b>	<i>status:</i>

Changes to the next camera angle defined for video playback, looping back to the first camera angle if at the last camera angle. See also ANGLE\_PREVIOUS and GET\_CAMERA\_ANGLE.

### Example

**Controller sends:**

01/5/ANGLE\_NEXT:

**Kaleidescape System sends:**

01/5/000:/93

## ANGLE\_PREVIOUS

<b>Affects</b>	Any movie zone
<b>Command</b>	ANGLE_PREVIOUS:
<b>Response</b>	<i>status:</i>

Changes to the previous camera angle defined for video playback, looping to the last camera angle if currently at the first camera angle. See also ANGLE\_NEXT and GET\_CAMERA\_ANGLE.

### Example

**Controller sends:**

01/6/ANGLE\_PREVIOUS:

**Kaleidescape System sends:**

01/6/000:/94

## AUDIO\_NEXT

<b>Affects</b>	Any movie zone
<b>Command</b>	AUDIO_NEXT:
<b>Response</b>	<i>status:</i>

During movie playback, changes to the next audio stream. At other times, this command has no effect. The user can also change audio streams through the overlay displayed by the STATUS\_AND\_SETTINGS command, or through the current DVD or Blu-ray Disc menu.

### Example

**Controller sends:**

01/7/AUDIO\_NEXT:

**Kaleidescape System sends:**

01/7/000:/95

## SUBTITLES\_NEXT

<b>Affects</b>	Any movie zone
<b>Command</b>	SUBTITLES_NEXT:
<b>Response</b>	<i>status</i> :

During playback, changes to the next subtitle stream. At other times, this command has no effect. The user can also change subtitle streams through the overlay displayed by the STATUS\_AND\_SETTINGS command or through current DVD or Blu-ray Disc menu.

### Example

**Controller sends:**

01/9/SUBTITLES\_NEXT:

**Kaleidescape System sends:**

01/9/000:/97

## GET\_CAMERA\_ANGLE

<b>Affects</b>	Any movie zone
<b>Command</b>	GET_CAMERA_ANGLE:
<b>Response/Event</b>	<i>status</i> :CAMERA_ANGLE: <i>cur_angle</i> : <i>num_angles</i> : <i>in_angle_block</i> :

This message provides information about the current camera angle and what camera angles are available. Information is generated as an event message when the current camera angle changes, or if the number of available camera angles changes.

<i>cur_angle</i>	is a single digit from 1–9 that indicates which angle is currently active.
<i>num_angles</i>	is a single digit from 1–9 that indicates how many angles are available at the current playback location. A controller can use these fields to provide information to the user about available camera angles.
<i>in_angle_block</i>	indicates whether multiple camera angles are available. If set to 0, there are no extra camera angles and the other fields are meaningless. If set to 1, there are multiple camera angles available and the other fields indicate the current and available camera angles. A controller can use this field to enable or disable buttons to switch between camera angles. (See the ANGLE_NEXT and ANGLE_PREVIOUS commands.)

### Example

**Controller sends:**

01/1/GET\_CAMERA\_ANGLE:

**Kaleidescape System sends:**  
01/1/000:CAMERA\_ANGLE:1:1:0:/46

In this example, the response to the GET\_CAMERA\_ANGLE command indicates that there is only one angle available, and that it is currently active.

**Blu-ray Disc playback options**

**Blu-ray color buttons**

RED_PRESS	RED_RELEASE	RED
GREEN_PRESS	GREEN_RELEASE	GREEN
BLUE_PRESS	BLUE_RELEASE	BLUE
YELLOW_PRESS	YELLOW_RELEASE	YELLOW

<b>Affects</b>	Any movie zone
<b>Command</b>	RED_PRESS: (same for other color button commands)
<b>Response</b>	<i>status:</i>

During Blu-ray Disc playback, performs actions associated with the color button.

These actions are defined by the disc itself and can vary from disc to disc. It is recommended, but not necessary, that these buttons are displayed to the user in a row, in the following order: Red, Green, Blue, Yellow.

The \_PRESS and \_RELEASE command pairs allow compatible Blu-ray Discs to detect when the user is holding down the associated color button. Use the \_PRESS and \_RELEASE commands instead of the plain color button commands (the right most column above) if the controller supports press and release handling.

Send a \_PRESS command when the corresponding button is first pressed and a \_RELEASE when that button is released.

The plain color button commands, RED, GREEN, BLUE, and YELLOW, are available for controllers that do not support press and release handling. Each plain color command represents a single button press of the colored button.

**Example**

**Controller sends:**  
01/0/RED:  
  
**Kaleidescape System sends:**  
01/0/000:/88

**GET\_MOVIE\_MEDIA\_TYPE**

<b>Affects</b>	Any movie zone
<b>Command</b>	GET_MOVIE_MEDIA_TYPE:
<b>Response/Event</b>	<i>status:MOVIE_MEDIA_TYPE:media_type:</i>

This message indicates the type of media currently being played. The event message is generated when the media type changes.

<i>media_type</i>	shows the media type currently being played.
00	No media playing
01	DVD
02	Video stream
03	Blu-ray Disc

This information can be used to change the controls made available to the user. For example, during Blu-ray Disc playback, the Blu-ray color buttons can be displayed to the user. During video stream playback, disc menu keys can be hidden because these streams do not have menus.

**Example**

**Controller sends:**  
01/9/GET\_MOVIE\_MEDIA\_TYPE:  
  
**Kaleidescape System sends:**  
01/9/000:MOVIE\_MEDIA\_TYPE:01:/58

This example response to the GET\_MOVIE\_MEDIA\_TYPE command indicates that a DVD is currently being played.

**BLURAY\_SPECIAL\_STOP**

**Affects** Any movie zone  
**Command** BLURAY\_SPECIAL\_STOP:  
**Response** *status*:

During Blu-ray playback, sends the BLURAY\_SPECIAL\_STOP command to the disc currently playing. For all other content, this command behaves like the STOP command.



**CAUTION**

USING THIS COMMAND CAN TRAP THE USER.  
Depending on how the disc was authored, this command does not always return the user to a Kaleidescape movie view. Some discs use this command to access special features. If used as the only stop command, the controller must provide another mechanism to return to the Kaleidescape menu or a Kaleidescape movie view.

---

**Example**

**Controller sends:**  
01/8/BLURAY\_SPECIAL\_STOP:  
  
**Kaleidescape System sends:**  
01/8/000:/96

**BLURAY\_POPUP\_MENU\_TOGGLE**

**Affects** Any movie zone  
**Command** BLURAY\_POPUP\_MENU\_TOGGLE :  
**Response** *status* :

During Blu-ray Disc playback, toggles the display of the Blu-ray Disc pop-up menu. The specific function of this command is defined by the disc itself and can vary from disc to disc. For many discs, this command functions the same as the DISC\_MENU command.

**Example**

**Controller sends:**  
 01/4/BLURAY\_POPUP\_MENU\_TOGGLE :  
**Kaleidescape System sends:**  
 01/4/000:/92

## Context-Sensitive Commands

Context-sensitive commands behave differently when used playing a movie or when in the user interface. These commands are especially useful when space is limited on a touch panel or when using an IR remote. Table 10 lists context-sensitive commands.

Table 10: Context-sensitive command summary

Command	Description
<a href="#">STOP_OR_CANCEL</a>	Behaves like <b>STOP</b> during movie playback or when sent directly to a music zone. Behaves like <b>CANCEL</b> in the user interface.
<a href="#">DISC_OR_KALEIDESCAPE_MENU</a>	Behaves like <b>DISC_MENU</b> during movie or music playback. Behaves like <b>KALEIDESCAPE_MENU_TOGGLE</b> in user interface.
<a href="#">Paging and skipping</a>	Behave like <b>NEXT</b> or <b>PREVIOUS</b> during movie playback. Behave like <b>PAGE_UP</b> or <b>PAGE_DOWN</b> in the user interface.

**STOP\_OR\_CANCEL**

**Affects** Any zone  
**Command** STOP\_OR\_CANCEL :  
**Response** *status* :

- ▶ Behaves like **STOP** during movie playback, in the Now Playing view, or when sent directly to a music zone.

- ▶ Behaves like CANCEL in the user interface.

The **Stop** button on remote controls is usually mapped to this command.

### Example 1 During movie playback

**Controller sends:**

01/9/STOP\_OR\_CANCEL:

**Kaleidescape System sends:**

01/9/000:/97

03/!/000:UI\_STATE:03:00:00:0:/42

...

03/!/000:PLAY\_STATUS:0:0:00:00000:00000:000:00000:00000:/82

In this example, the STOP\_OR\_CANCEL command acts as a STOP command, causing the onscreen display to return to the Movie Covers view, which is confirmed by the UI\_STATE message.

### Example 2 In the user interface

**Controller sends:**

01/2/STOP\_OR\_CANCEL:

**Kaleidescape System sends:**

01/2/000:/90

03/!/000:UI\_STATE:09:00:00:0:/48

In this second example, the onscreen display is in the Music List view showing the details page for an album. When the STOP\_OR\_CANCEL command is sent, the details page is dismissed and a UI\_STATE event message is generated with the updated state.

## DISC\_OR\_KALEIDESCAPE\_MENU

**Affects** Any movie zone

**Command** DISC\_OR\_KALEIDESCAPE\_MENU:

**Response** *status:*

- ▶ Behaves like DISC\_MENU during movie playback.
- ▶ Behaves like KALEIDESCAPE\_MENU\_TOGGLE in the user interface.

The **Menu** button on a remote control is usually mapped to this command.

### Example 1 During movie playback

**Controller sends:**

01/5/DISC\_OR\_KALEIDESCAPE\_MENU:

**Kaleidescape System sends:**

01/5/000:/93

03/!/000:PLAY\_STATUS:2:0:00:00000:00000:000:00000:00000:/84

In the first example, the DISC\_OR\_KALEIDESCAPE\_MENU command is sent during movie playback, causing the movie menu to be displayed and a PLAY\_STATUS event message is generated.

### Example 2 In the user interface

**Controller sends:**

01/1/DISC\_OR\_KALEIDESCAPE\_MENU:

**Kaleidescape System sends:**

01/1/000:/89

03/!/000:UI\_STATE:09:00:01:0:/49

In the second example, no movie is playing when the DISC\_OR\_KALEIDESCAPE\_MENU command is sent. The Kaleidescape menu is displayed and a UI\_STATE event message is generated with updated information.

**Note:** This command replaces the DVD\_OR\_KALEIDESCAPE\_MENU command, which is still supported

### Paging and skipping

**Affects** Any movie zone

**Command** PAGE\_DOWN\_OR\_NEXT:  
PAGE\_DOWN\_OR\_NEXT\_PRESS:  
PAGE\_DOWN\_OR\_NEXT\_RELEASE:  
PAGE\_DOWN\_OR\_PREVIOUS:  
PAGE\_DOWN\_OR\_PREVIOUS\_PRESS:  
PAGE\_DOWN\_OR\_PREVIOUS\_RELEASE:  
PAGE\_UP\_OR\_NEXT:  
PAGE\_UP\_OR\_NEXT\_PRESS:  
PAGE\_UP\_OR\_NEXT\_RELEASE:  
PAGE\_UP\_OR\_PREVIOUS:  
PAGE\_UP\_OR\_PREVIOUS\_PRESS:  
PAGE\_UP\_OR\_PREVIOUS\_RELEASE:

**Response** *status:*

These commands are used when mapping [Next/Previous](#) buttons on a remote or small touch panel.

- ▶ Behaves like the NEXT and PREVIOUS commands during movie playback or in the Now Playing view.
- ▶ Behaves like the PAGE\_UP and PAGE\_DOWN commands in the user interface.

Each command has a single-shot version, which should be avoided, and \_PRESS and \_RELEASE versions, which are preferred because these commands allow the user to page through long lists.

Use either the UP/PREVIOUS and DOWN/NEXT pair, or use the UP/NEXT and DOWN/PREVIOUS pair depending on the physical configuration of the remote control or touch panel buttons. For example, it is a common for a remote control to have these buttons placed vertically with the top button labeled with a plus sign and the bottom button with a minus sign. The top (plus) button must skip to the next track or chapter, but because the button is located on top, this button must also page up. In that case, map the top button to UP/NEXT and the bottom button to DOWN/PREVIOUS.

In a horizontal layout, it is more practical to map the left button to UP/PREVIOUS and the right button to DOWN/NEXT. Layout has to be what feels more natural including the labeling involved.

**Note:** The UP/PREVIOUS commands replace the SKIP\_REVERSE command; and the DOWN/NEXT commands replace the SKIP\_FORWARD command.

## Standalone Music Control (SATP and Keypad)

These commands provide the ability to control music playback without the Kaleidescape onscreen display. These commands are used for two control paradigms: text-based music browsing interface

(SATP) and keypads. SATP (Standalone Touch Panel Control) is used for controlling music with a graphical interface, for example, a touch panel or personal computer. Keypad control is used where there is no graphical display available. All the messages in this section can be sent to and from a music zone. Commands are grouped with a detailed description of each command. Table 11 lists control commands for SATP and keypads.

Music Control is only available in Premiere products.

**Note:** The response code for music related commands will return “Command is not available” or “Invalid request” for products which do not support music.

Table 11: Standalone music control command summary

Command	Description
<b>Text-based music browsing interface (SATP)</b>	
BROWSE	Used to navigate the text-based music browsing interface (SATP).
PERFORM_ACTION	Performs a specified action on a music handle.



**Keypad collections and presets**

<code>PLAY_FIRST_IN_MUSIC_COLLECTION</code>	Plays the first item in a music collection.
<code>PLAY_NEXT_IN_MUSIC_COLLECTION</code>	Plays the next item in a music collection.
<code>PLAY_PREVIOUS_IN_MUSIC_COLLECTION</code>	Plays the previous item in a music collection.
<code>ASSIGN_PLAYING_MUSIC_TO_PRESET</code>	Assigns a preset tag to the music item currently playing.
<code>PLAY_MUSIC_PRESET</code>	Plays the music item associated with a preset tag.
<code>GET_MUSIC_PRESET_INFORMATION</code>	Provides detailed information about a music preset.
<code>GET_PLAYING_MUSIC_INFORMATION</code>	Provides information about music currently playing.

## Text-based music browsing interface (SATP)

### Overview

Kaleidescape music zones support a text-based interface for browsing the music library and controlling music playback. This interface allows a controller with a text display to control the music zone without requiring access to the Kaleidescape onscreen display.

The interface is organized as a hierarchical tree of nodes that contain lines of text to display on the controller. Figure 8 illustrates the node hierarchy.

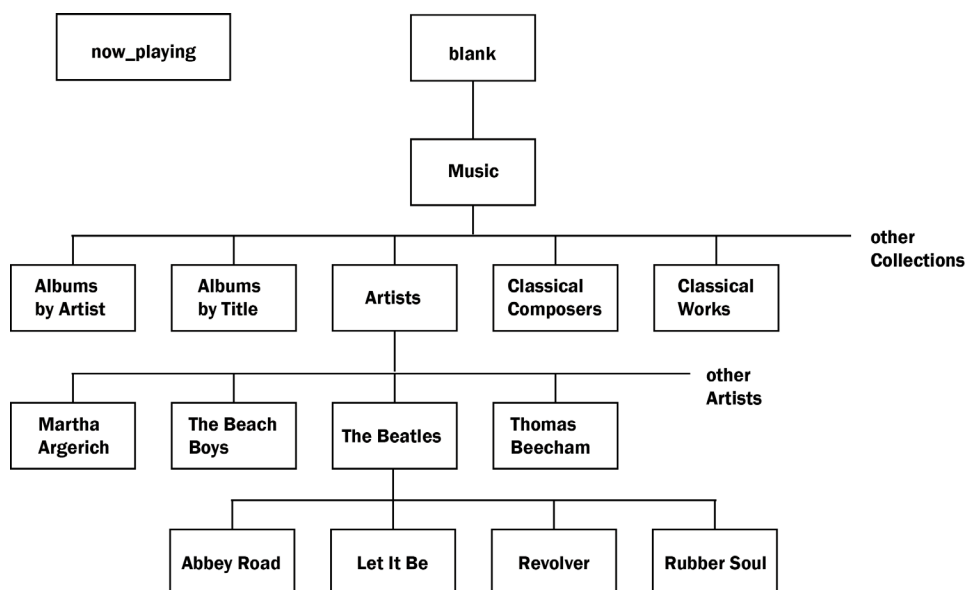


Figure 8: Node hierarchy

For example, the user can start with the top level music view, which can have the following selections.



The user selects **Artists**, going to the next level in the hierarchy.



Then the user selects **The Beatles**, going down another level to display a list of albums by The Beatles.



Selecting **Abbey Road** displays a list of songs from the album.



The user then selects **Come Together** to begin playback of that song. Selecting any line on this node starts playback for that song.

**Note:** If an individual song is selected, only that song is added to the now playing queue. No other songs from the album are added. For example, if the user selected **Come Together** from the list, after playback of that song is finished, the system simply stops playback. The system does not move on to **Something** or any other song in the album.

To play several songs from an album, the user must either select **Play album** or add songs individually to the playback queue.

Each node in the hierarchy has a unique handle that identifies it to the system. The BROWSE command is used to retrieve the information for a given node. Because a given node can have more lines than can be displayed on a controller, the BROWSE command is usually used to request a subset of the total lines for the node.

Figure 9 shows the **Artists** node for a particular system. Although the node has more than eleven lines, starting with **Play all music** and continuing past **Michael Bubl  **, the controller can only display five lines. The controller has requested a window of five lines starting with the fifth line, **The Beatles**. As the user scrolls up and down, the controller will request different windows starting at different locations for the user display.

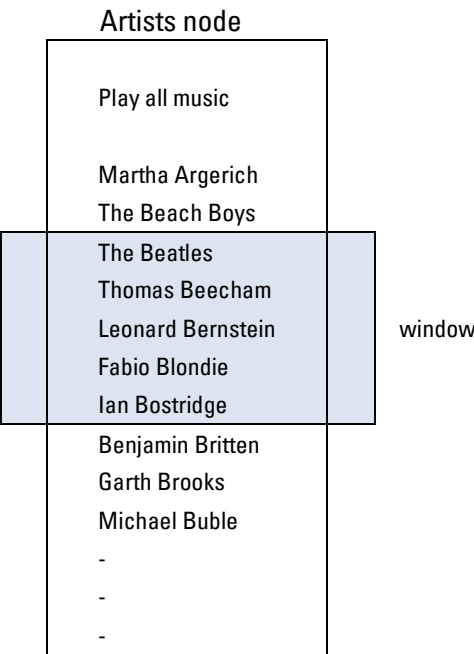


Figure 9: Example Artists node

Each line for a given node contains more information than simply the text for display. Lines also include technical information about how a controller should handle the line. For example, lines usually contain actions that can be performed on the line, information about whether or not the line is playing, etc. This interface does not support browsing the movie library.

## BROWSE

<b>Affects</b>	Any premiere music zone
<b>Command</b>	<code>BROWSE:browse_handle:passcode:lines:flags:</code>
<b>Response</b>	<code>status:BROWSE_RESULTS_OVERVIEW: browse_handle:title:response_lines:total_lines: [first_line_index:playing_line_index:]</code>
<b>Response</b>	<code>status:BROWSE_RESULT: relative_line:absolute_line:text:play_status: default_label:default_behavior:default_handle:default _pop: action1_label:action1_behavior:action1_handle:action1 _pop: action2_label:action2_behavior:action2_handle:action2 _pop: action3_label:action3_behavior:action3_handle:action3 _pop: action4_label:action4_behavior:action4_handle:action4 _pop:</code>

The BROWSE command is used to load a window of information from a given node in the text-based music browsing hierarchy. The command includes the handle for the given node, along with the window of lines to be retrieved from the node. Flags can be set to filter the results for a given node, or allow the Kaleidescape System to suggest a location.

### BROWSE parameters

<code>browse_handle</code>	is the handle of the node being requested.  Generally, this handle comes from a given line in a BROWSE_RESULT message. However, there are special nodes that can be reached only by explicit names.
<code>[blank]</code>	Refers to the topmost node in the browsing tree. This currently has only the top level music node as its child.
<code>music</code>	Refers to the top level music node. Contains all the predefined and user-defined collections in the system, such as Artists, Albums by Title, Albums by Artist, etc.
<code>now_playing</code>	Refers to the top level node for the now playing queue.  The <b>Now Playing</b> node is separate from the rest of the browsing tree nodes. This special node is used to view the list of what is currently queued for playback.

**Note:** The `music` and `now_playing` handles are text literals that must be entered exactly; `blank` should not be literal.

**Note:** Browse handles are usually different from the selection handles used for GET\_CONTENT\_DETAILS.

<i>passcode</i>	is unused, leave blank.
<i>lines</i>	specifies the window of lines to be retrieved from the indicated node. For example, 1-10 returns lines 1 through 10, inclusive; 5-10 returns lines 5 through 10, inclusive. Note that this parameter is partially ignored when using the suggest flag.

**Note:** The number of lines returned is limited to a maximum of 100.

<i>flags</i>	are used to modify the BROWSE request in several ways. Multiple flags must be separated by a semi-colon. Two flags are currently supported: filter and suggest.
--------------	---

<i>filter</i>	is used to apply a filter to the lines being returned so that only those lines that match the filter are displayed. This flag should be entered as filter="searchstring" where searchstring is the string to be filtered.
---------------	---

For example, a user searching for **The Beatles** in the **Artists** node might use filter="Bea".

The search string supports any alphanumeric character, therefore a full keyboard is recommended to provide the best experience. For situations where a full keyboard is not practical, the filter tag supports a keyboard where individual keys stand for more than one letter. The user types normally, but key presses are added to the search string as multiple characters enclosed in square brackets, instead of raw characters.

For example, a user is searching for **The Beatles** on the **Artists** node using a limited alphanumeric keypad with the standard telephone letter configuration, (i.e., 2 = abc, 3=def, etc.) To enter Bea for the search, the user types 232. The controller then sends the corresponding filter tag of filter="[abc][def][abc]". This tag returns a list of artists that match both the Bea string, as well as all other possible permutations of the three characters.

<i>suggest</i>	When this flag is used, the Kaleidescape System ignores the specific window provided in the <i>lines</i> parameter, and returns a page of results centered on the item currently playing. The page of results has the same number of lines as the window defined in the <i>lines</i> parameter. This flag is useful when displaying the now playing queue, because the controller can jump directly to the currently playing item.
----------------	--

When the suggest flag is used, the BROWSE\_RESULTS\_OVERVIEW returns two additional fields indicating the *absolute\_line* of the first item in the list, as well as the *absolute\_line* index of the line that is currently playing.

Every BROWSE command is followed by a BROWSE\_RESULTS\_OVERVIEW response and several BROWSE\_RESULT messages, if the node is not empty.

Example BROWSE bcommand

This is an example of a typical BROWSE command.

```
01.01/1/BROWSE:1.7.1.2.0::1-5:filter="Bo":
```

The following table describes each field in the example command.

device_id	sequence	command name	browse handle	passcode	lines	flags
01.01	1	BROWSE	1.7.1.2.0		1-5	filter="Bo"

This command browses to the node with the handle 1.7.1.2.0. The command is requesting lines 1 through 5 of the node. The flags field of filter="Bo" states that the content of the node should be filtered using the string "Bo".

BROWSE\_RESULTS\_OVERVIEW

The BROWSE\_RESULTS\_OVERVIEW response provides general information about the node, including title, size, and the number of BROWSE\_RESULT messages that follow.

- browse\_handle* is the same *browse\_handle* specified in the BROWSE command. Used to confirm that this is the correct result.
- title* is a plain text description of the node. For example, the [Artists](#) node has Artists as its title.
- response\_lines* indicates the total number of lines being returned. This number is always equal to or less than the number of lines requested in the BROWSE command. BROWSE\_RESULT messages equaling this number are sent subsequent to this response.
- total\_lines* indicates the total number of lines that are present in this node.

The following two fields appear when the suggest flag is used in the BROWSE command. These fields do not appear otherwise.

<i>first_line_index</i>	is the index of the first line, relative to the entire node. This index matches the <i>absolute_Line</i> value of the first BROWSE_RESULT response.
<i>playing_line_index</i>	is the index of the line that is being played. This index matches the <i>absolute_Line</i> value of the BROWSE_RESULT that corresponds to the line.

**BROWSE\_RESULTS\_OVERVIEW example**

This is an example of a typical BROWSE\_RESULTS\_OVERVIEW message.

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:now_playing:Now
Playing:5:15:9:11:/52
```

The following tables describe each field in the example command.

device_id	sequence	status code	message name	browse handle
01.01	1	000	BROWSE_RESULTS_OVERVIEW	now_playing

title	response lines	total lines	first line index	playing line index
Now Playing	5	15	9	11

This message shows the overview information for the node with handle [now\\_playing](#). The title that should be displayed on top of the controller interface is [Now Playing](#). There are [15](#) lines in the node, and [5](#) lines will be returned. The first line in the window is line [9](#) in the node, and the index of the currently playing line is [11](#).

**BROWSE\_RESULT**

Each BROWSE\_RESULT message represents a single line to display on the controller. The message contains all of the information required to display the message, as well as actions that can be performed.

<i>relative_Line</i>	is the index of the line relative to the window being requested, ranging from <a href="#">1</a> to the <i>response_Lines</i> field of the BROWSE_RESULTS_OVERVIEW. <b>Example:</b> A controller requests lines 6-11 from a given node. The <i>relative_Line</i> value of the BROWSE_RESULT responses goes from 1 through to 5.
----------------------	---

<i>absolute_line</i>	is the index of the line relative to the entire node. This ranges from <b>1</b> to the <i>total_lines</i> field in the BROWSE_RESULTS_OVERVIEW message. <b>Example:</b> A controller requests lines 6-11 from a given node. The <i>absolute_line</i> value of the BROWSE_RESULT responses starts at 6 and counts up to 11.						
<i>text</i>	is the plain text displayed to the user for this line.						
<i>play_status</i>	indicates whether this line is playing or paused. This field is primarily used when displaying the now playing queue, to show which line is currently active. <table> <tr> <td>0</td><td>Not playing</td></tr> <tr> <td>1</td><td>Playing</td></tr> <tr> <td>2</td><td>Playing but currently paused</td></tr> </table>	0	Not playing	1	Playing	2	Playing but currently paused
0	Not playing						
1	Playing						
2	Playing but currently paused						

### Action Tuples

Five action tuples follow the first four fields of a BROWSE\_RESULT message. These action tuples represent different actions that can be taken on the line.

- ▶ The first action represents the default action for the line, what should be done when the line is selected or activated.
- ▶ Some lines can have other actions available, with different functions. The only action that is currently used is the **play** action, which can be used to tell the Kaleidescape System to play the contents of the associated line.

Each action tuple consists of 4 values.

<i>action_label</i>	specifies the type of action. Can be used as a label for the available actions for a line. <table> <tr> <td>0</td><td>No specific action</td></tr> <tr> <td>1</td><td>Browse</td></tr> <tr> <td>2</td><td>Details</td></tr> <tr> <td>3</td><td>Play</td></tr> <tr> <td>4</td><td>OK</td></tr> </table>	0	No specific action	1	Browse	2	Details	3	Play	4	OK
0	No specific action										
1	Browse										
2	Details										
3	Play										
4	OK										
<i>action_behavior</i>	indicates how the controller executes this action. <table> <tr> <td>0</td><td>No action, do nothing</td></tr> <tr> <td>1</td><td>Call BROWSE with the designated handle</td></tr> <tr> <td>2</td><td>Call GET_CONTENT_DETAILS with the designated handle</td></tr> <tr> <td>3</td><td>Call PERFORM_ACTION with the designated handle</td></tr> </table>	0	No action, do nothing	1	Call BROWSE with the designated handle	2	Call GET_CONTENT_DETAILS with the designated handle	3	Call PERFORM_ACTION with the designated handle		
0	No action, do nothing										
1	Call BROWSE with the designated handle										
2	Call GET_CONTENT_DETAILS with the designated handle										
3	Call PERFORM_ACTION with the designated handle										
<i>action_handle</i>	is the handle associated with the action. What to do with the handle is specified by the <i>action_behavior</i> field.										



*action\_pop* is the number of nodes to move up the browse hierarchy after executing the action, i.e., how many times the controller should activate the back button after executing this action.

A pop value of 1 indicates that the controller should load the parent node upon completing the action.

A pop value of 2 indicates that the controller should load the parent's parent, and so on.

### BROWSE\_RESULT example

This is an example of a typical BROWSE\_RESULT message.

```
01.01/1/000:BROWSE_RESULT:3:3:Martha Argerich:0:1:1.7.1.2.2.Q_9457.0:
0:3:3:1.Q_9457;1=1:0:::::::::::::/86
```

The following tables describe each field in this example command.

device_id	sequence	status code	message name	relative line	absolute line	text	play status
01.01	1	000	BROWSE_RESULT	3	3	Martha Argerich	0

default action	action 1	action 2	action 3	action 4
1:1:1.7.1.2.2.Q_9457.0:0	3:3:1.Q_9457;1=1:0			

This example BROWSE\_RESULT message states that this is the third line sent in the requested window, and the third line in the node overall. The text to display to the user is [Martha Argerich](#), and the line is not playing.

The default action is 1:1:1.7.1.2.2.Q\_9457.0:0, which can be expanded to the following sections.

label	behavior	handle	pop
1	1	1.7.1.2.2.Q_9457.0	0

Which means that the label for this action is [Browse](#) and that to execute this action, the controller should send a BROWSE command with the handle 1.7.1.2.2.Q\_9457.0. Once the command is executed, no popping is required.

The first action is 3:3:1.Q\_9457;1=1:0, which can be expanded to the following sections.

label	behavior	handle	pop
3	3	1.Q_9457;1=1	0

The label for this action is [Play](#) and that to execute this action, the controller should send a `PERFORM_ACTION` command with the handle `1.Q_9457;1=1`.

Once the command is executed, no popping is required.

There are no other actions associated with this line.

**PERFORM\_ACTION**

<b>Affects</b>	Any premiere music zone
<b>Command</b>	<code>PERFORM_ACTION:handle:passcode:action:</code>
<b>Response</b>	<code>status:ACTION_PERFORMED:text:</code>

This command performs a specified action on the handle. Only music handles (albums and tracks), not movies, are supported by this command.

For the `PERFORM_ACTION` command:

<i>handle</i>	is a unique identifier specifying the content to receive action. Handles can be content handles such as those provided by <code>HIGHLIGHTED_SELECTION</code> , or handles that combine action with a link to content, for example, handles provided by a <code>BROWSE_RESULT</code> message.
<i>passcode</i>	must be blank.
<i>action</i>	is the action to be performed, and can be blank if the handle is passed from a <code>BROWSE_RESULT</code> message.

For the `ACTION_PERFORMED` response:

<i>text</i>	is a plain text description describing the action that has just occurred, suitable for display to a user. This text usually matches the text displayed in the upper right corner of the onscreen display, for example, <a href="#">Playing album</a> or <a href="#">Song will play later</a> .
-------------	--

When using the text-based music browsing protocol, handles containing an action are sometimes returned by `BROWSE_RESULT` messages. If the behavior field of one of these messages is [3](#), then the handle provided contains a combined action and content handle. In this situation, the action field of the `PERFORM_ACTION` command is ignored and can be left blank.

**Example**

```
Controller sends:
03.01/1/PERFORM_ACTION:1.96de0c01d6fd4a9e-t30c_1951;1=1:::

Kaleidescape System sends:
03.01/1/000:ACTION_PERFORMED:Playing Home:
```

In this example, an action is performed on the handle 1.96DE0C01D6FD4A9E-T30C\_1951;1=1. This is an action handle returned by the BROWSE\_RESULT message, so no action has to be specified. This handle causes the album Home to begin playback. The response to the PERFORM\_ACTION command is the ACTION\_PERFORMED message, describing the action that occurred as Playing Home.

## Implementation and examples

When using the text-based music browsing interface, the controller is expected to manage the behavior and navigation of the interface, unlike the OSD paradigm. A typical interface implements a method to switch between the music browsing hierarchy and the now playing queue, a **back** button, a way to apply a filter (i.e., a search) to a given node, the ability to scroll up and down in a given node, and an indicator showing where the controller is in a given node.

The control panel in the browser interface has an excellent example of this interface. See Figure 10.

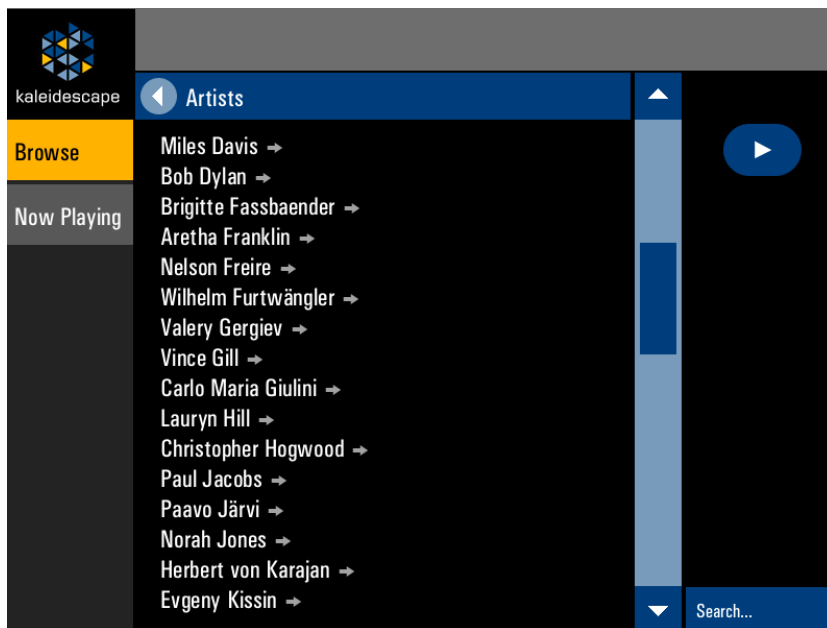


Figure 10: Browser interface control panel

The following examples assume that a controller has been designed to support these features, and describe the actual text sent back and forth. In these examples, the controller only supports 5 lines.

## Music browsing fundamentals

Browsing the music hierarchy usually starts with the top level music node with handle music.

### Controller sends:

```
01.01/1/BROWSE:music::1-5::
```

### Kaleidescape System sends:

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:music:Music:5:8:/38
```

```
01.01/1/000:BROWSE_RESULT:1:1:Albums by Artist:
0:1:1:1.7.1.1.0:0:3:3:1.0-a_690008;1=1:0:::/:33
01.01/1/000:BROWSE_RESULT:2:2:Albums by Title:
0:1:1:1.7.1.d.0:0:3:3:1.0-a_690008;1=1:0:::/:69
01.01/1/000:BROWSE_RESULT:3:3:Artists:
0:1:1:1.7.1.2.0:0:3:3:1.0-a_690008;1=1:0:::/:58
01.01/1/000:BROWSE_RESULT:4:4:Classical Composers:
0:1:1:1.7.1.c.0:0:3:3:1.D_12117;1=1:0:::/:80
01.01/1/000:BROWSE_RESULT:5:5:Classical Works:
0:1:1:1.7.1.b.0:0:3:3:1.D_12117;1=1:0:::/:60
```

After the controller has processed the response, the following display might be shown to the user.



The BROWSE\_RESULTS\_OVERVIEW response indicates that these items are the results for the music node, as requested, and that the title that should be displayed to the user is **Music**. The response also shows that there are **8** lines in this node, and that there are five BROWSE\_RESULT responses following this message.

The controller uses each BROWSE\_RESULT response to determine what to put on the controller’s display. For example, this is the BROWSE\_RESULT message that describes the Artists line.

```
01.01/1/000:BROWSE_RESULT:3:3:Artists:0:1:1:1.7.1.2.0:0:3:3:
1.0-a_690008;1=1:0:::/:58
```

The text field of the line indicates that Artists be placed on the screen, and that the line is not currently playing. When the user selects this line, the default action tuple describes what the controller should do.

label	behavior	handle	pop
1	1	1.7.1.1.0	0

A behavior 1 indicates that the controller should call the BROWSE command with the handle 1.7.1.2.0 to execute this action.

**Controller sends:**  
01.01/1/BROWSE:1.7.1.2.0::1-5::

### Kaleidescape System sends:

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:65:/12  
01.01/1/000:BROWSE_RESULT:1:1:Play all music:0:3:3:  
1.0-a_690008;1=1:0::::::::::::::::::/55  
01.01/1/000:BROWSE_RESULT:2:2::0::::::::::::::::::/70  
01.01/1/000:BROWSE_RESULT:3:3:Martha Argerich:0:1:1:1.7.1.2.2.Q_9457.0:  
0:3:3:1.Q_9457;1=1:0::::::::::::::::::/86  
01.01/1/000:BROWSE_RESULT:4:4:The Beach Boys:0:1:1:1.7.1.2.2.P_3640.0:  
0:3:3:1.P_3640;1=1:0::::::::::::::::::/53  
01.01/1/000:BROWSE_RESULT:5:5:The Beatles:0:1:1:1.7.1.2.2.P_3644.0:  
0:3:3:1.P_3644;1=1:0::::::::::::::::::/55
```

After processing, the display is.



Note that this display is slightly different from the previous display, not all the lines have angle brackets. This change is based on a decision made by the programmer to display angle brackets next to lines that lead to further nodes.

The **Play all music** line does not contain an angle bracket. This is because this line default action does not lead to a new node. The tuple is described in this following table.

label	behavior	handle	pop
3	3	1.0-a_690008;1=1	0

A behavior 3 means that the controller should send the handle to the music zone using the `PERFORM_ACTION` command to activate this action. This does not lead to any new nodes, so this line is not displayed with a terminating angle bracket.

Meanwhile, the line with the text **The Beatles** does have an angle bracket. The following table shows its default action tuple.

label	behavior	handle	pop
1	1	1.7.1.2.2.P_3640.0	0

The behavior 1 means that to execute this action, the controller should call BROWSE with the indicated handle and display the results on the screen. This leads to a new node, so the controller places an angle bracket at the end of the line.

The user selects this line, and the controller sends the appropriate command to the music zone.

**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.2.P_3644.0::1-5::
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.0:The Beatles:
5:6:/64
01.01/1/000:BROWSE_RESULT:1:1:Play The Beatles:
0:3:3:1.P_3644;1=1:0:...../78
01.01/1/000:BROWSE_RESULT:2:2:0:...../70
01.01/1/000:BROWSE_RESULT:3:3:Abbey Road:0:1:1:
1.7.1.2.2.P_3644.2.R_1525.0:0:3:3:1.R_1525;1=1:0:...../53
01.01/1/000:BROWSE_RESULT:4:4:Let It Be [Collector's Crate White]:
0:1:1:1.7.1.2.2.P_3644.2.R_1663460.0:0:3:3:1.R_1663460;1=1:0:.....:
:/54
01.01/1/000:BROWSE_RESULT:5:5:Revolver:0:1:1:1.7.1.2.2.P_3644.2.R_1518.0
:
0:3:3:1.R_1518;1=1:0:...../09
```



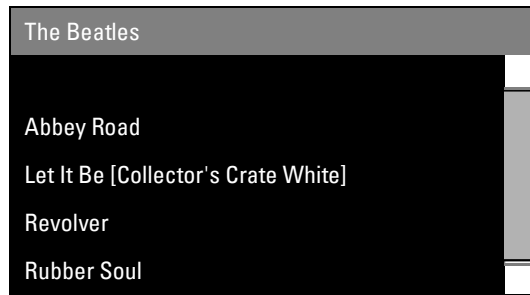
The user wants to access the album [Rubber Soul](#), which is not visible on the screen. In this example, the user can tell that there are more items below this window by looking at the scrollbar. The user scrolls down one line.

**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.2.P_3644.0::2-6::
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.0:The Beatles:
5:6:/64
01.01/1/000:BROWSE_RESULT:1:2:0:...../69
01.01/1/000:BROWSE_RESULT:2:3:Abbey Road:
0:1:1:1.7.1.2.2.P_3644.2.R_1525.0:0:3:3:1.R_1525;1=1:0:...../52
01.01/1/000:BROWSE_RESULT:3:4:Let It Be [Collector's Crate White]:
0:1:1:1.7.1.2.2.P_3644.2.R_1663460.0:0:3:3:1.R_1663460;1=1:
0:...../53
01.01/1/000:BROWSE_RESULT:4:5:Revolver:0:1:1:
1.7.1.2.2.P_3644.2.R_1518.0:0:3:3:1.R_1518;1=1:0:...../08
01.01/1/000:BROWSE_RESULT:5:6:Rubber Soul:
0:1:1:1.7.1.2.2.P_3644.2.R_1515.0:0:3:3:1.R_1515;1=1:0:...../12
```



Note that the BROWSE command in this example uses the same handle as the previous request for this node, but has updated the lines field to specify a different window to view for the node, in this case, lines 2-6.

Note that the scrollbar has moved. The scrollbar is rendered using three pieces of information.

- ▶ The number of lines returned, found in the BROWSE\_RESULTS\_OVERVIEW (5 for this example)
- ▶ The total number of lines in the node, also found in the BROWSE\_RESULTS\_OVERVIEW (6 for this example)
- ▶ The starting point for the window, found in the first BROWSE\_RESULT, *absolute\_line* (2 in this example)

This information is used to determine what percentage of the total view is displayed, and create an appropriate scrollbar for the results.

The user selects **Rubber Soul**.

**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.2.P_3644.2.R_1515.0::1-5::
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.2.R_1515.0:
The Beatles - Rubber Soul:5:16:/06
```

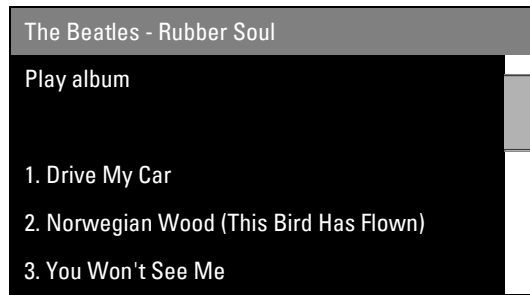
```
01.01/1/000:BROWSE_RESULT:1:1:Play album:
0:3:3:1.R_1515;1=1:0::::::::::::::::::/79
```

```
01.01/1/000:BROWSE_RESULT:2:2:0::::::::::::::::::/70
```

```
01.01/1/000:BROWSE_RESULT:3:3:1. Drive My Car:
0:3:3:1.b9bca9a6f224fb54-t301_22;1=1:0::::::::::::::::::/28
```

```
01.01/1/000:BROWSE_RESULT:4:4:2. Norwegian Wood (This Bird Has Flown):
0:3:3:1.b9bca9a6f224fb54-t302_22;1=1:0::::::::::::::::::/69
```

```
01.01/1/000:BROWSE_RESULT:5:5:3. You Won't See Me:
0:3:3:1.b9bca9a6f224fb54-t303_22;1=1:0::::::::::::::::::/29
```



Finally, the user selects **Drive My Car** to begin playback. This selection executes the default action for the line, so the controller examines the default action information to decide what to do.

label	behavior	handle	pop
3	3	1.b9bca9a6f224fb54-t301_22;1=1	0

The behavior is 3, indicating that to execute this action, the controller must send the `PERFORM_ACTION` command with the designated handle.

**Controller sends:**

01.01/1/PERFORM\_ACTION:1.b9bca9a6f224fb54-t301\_22;1=1:::

**Kaleidescape System sends:**

```
01.01/1/000:ACTION_PERFORMED:Playing Drive My Car:/67
01.01/!/000:MUSIC_TITLE:Drive My Car:The Beatles:Rubber Soul:
1.b9bca9a6f224fb54-t301_22:1.R_1515:2.202e9:/13
01.01/!/000:MUSIC_PLAY_STATUS:2:0:00150:+00000:000.00:/46
01.01/!/000:MUSIC_NOW_PLAYING_STATUS:00001:00000:1:0:0000002278:
2.202e9:/31
01.01/!/000:PLAYING_MUSIC_INFORMATION:b9bca9a6f224fb54-t301_22:
Drive My Car - The Beatles:/35
```

The music zone responds by beginning playback of the track **Drive My Car** which generates several event messages describing the start of playback.

## Adding music to the queue

Continuing the previous example, the user decides to play the entire **Rubber Soul** album instead of playing an individual song.

The user looks at the screen, which had just reloaded the **Rubber Soul** node after the `PERFORM ACTION` command was sent.

**Controller sends:**

01.01/1/BROWSE:1.7.1.2.2.P 3644.2.R 1515.0::1-5::

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.2.R_1515.0:  
The Beatles - Rubber Soul:5:16:/06  
01.01/1/000:BROWSE_RESULT:1:1:Play album:  
0:1:1:1.7.1.2.2.P_3644.2.R_1515.1.a.0:0:.....:/03
```

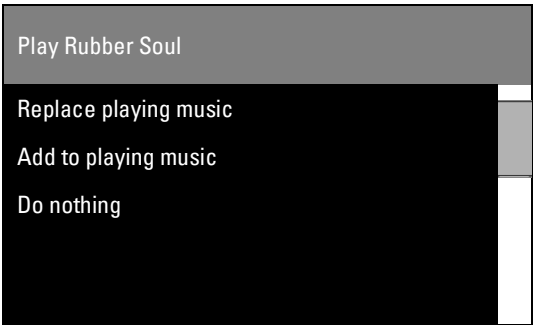


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**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.2.R_1515.1.a.0:
Play Rubber Soul:3:3:/94
01.01/1/000:BROWSE_RESULT:1:1:Replace playing music:
0:3:3:1.R_1515;1=1:1:...../78
01.01/1/000:BROWSE_RESULT:2:2:Add to playing music:
0:3:3:1.R_1515;1=3:1:...../06
01.01/1/000:BROWSE_RESULT:3:3:Do nothing:0:3:3:
1.0-a 690009;1=1:1:...../03
```



label	behavior	handle	pop
3	3	1.R_1515;1=1	1

**Controller sends:**

```
01.01/1/PERFORM ACTION:1.R 1515;1=1:::
```

**Kaleidescape System sends:**

```
01.01/1/000:ACTION_PERFORMED:Playing Rubber Soul:/82
01.01/!/000:MUSIC_PLAY_STATUS:2:0:00150:+00000:000.00:/46
01.01/!/000:MUSIC_NOW_PLAYING_STATUS:00014:00000:1:0:0000002281:
2.202ea:/69
01.01/!/000:PLAYING_MUSIC_INFORMATION:R_1515:
The Beatles - Rubber Soul:/11
```

The controller remains on the browsing page and must reload the page. However, this action had a pop value of 1, different than other actions that have been executed so far in this example.

A pop value of 1 means that the controller should not reload the current node, but rather, should load the parent of the current node. This is like pressing a back button once. To facilitate this action and to support a back button, Kaleidescape recommends that controllers implement a history stack to store the handles for nodes that have previously been visited. When the back button is pressed, or when a pop value is greater than 0, simply pop the handle off the stack and re-request that handle using the BROWSE command. In this case, the controller re-requests the node for the [Rubber Soul](#) album.

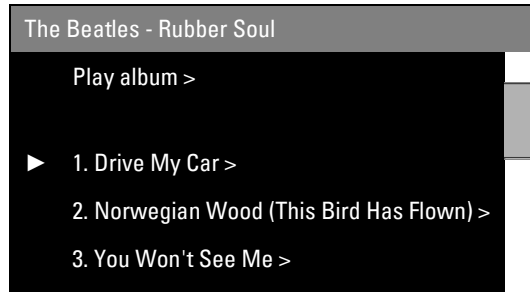
**Controller sends:**

01.01/1/BROWSE:1.7.1.2.2.P 3644.2.R 1515.0::1-5::

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.2.P_3644.2.R_1515.0:  
The Beatles - Rubber Soul:5:16:/06  
01.01/1/000:BROWSE_RESULT:1:1:Play album:  
0:1:1:1.7.1.2.2.P_3644.2.R_1515.1.a.0:0:.....:/03  
01.01/1/000:BROWSE_RESULT:2:2:0:.....:/70
```

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Playback for the entire album has now begun.

## The Now Playing queue

Continuing the previous example, the user listens to several tracks and decides to change the currently active track. The user instructs the controller to go to the now playing place, probably by pressing a button marked **Now Playing**.

To fulfill this request, the controller must BROWSE to the special **Now Playing** node. This node uses the handle `now_playing`.

The BROWSE command for this would be the following command.

```
01.01/1/BROWSE:now_playing::1-5::
```

But the controller in this example is programmed to display the item currently playing to the user immediately when the controller switches to the now playing place. The controller adds a suggest flag to the BROWSE command. So the actual BROWSE command sent follows.

**Controller sends:**

01.01/1/BROWSE:now\_playing::1-5:suggest:

**Kaleidescape System sends:**

01.01/1/000:BROWSE\_RESULTS\_OVERVIEW:now\_playing:Now  
Playing:5:15:9:11:/52

01.01/1/000:BROWSE\_RESULT:1:9: 8. What Goes On:  
0:3:3:2.202f1;1=1:0::::::::::::::::::/56

```
01.01/1/000:BROWSE_RESULT:2:10: 9. Girl:
0:3:3:2.202f2;1=1:0:::::::::::::/42
```

```
01.01/1/000:BROWSE_RESULT:3:11: 10. I'm Looking Through You:  
1:3:3:2.202f3;1=1:0:.....:/82
```

```
01.01/1/000:BROWSE_RESULT:4:12: 11. In My Life:
0:3:3:2.202f4;1=1:0:::/:20
```

```
01.01/1/000:BROWSE_RESULT:5:13: 12. Wait:
0:3:3:2.202f5;1=1:0:../../../../00
```



Although the controller specified a window of 1-5 in the original BROWSE command, the music zone responded with lines 9 through 12. When the suggest flag is used, the Kaleidescape System ignores the requested window and replaces the window with a window centered on the currently playing item, which in this case is 10. I'm Looking Through You.

The user can now select other tracks to skip to by touching the tracks, causing an appropriate `PERFORM_ACTION` command to be generated. This action is identical to the examples above.

## The play action

Continuing the example, the user now decides to listen to the Beach Boys instead of the Beatles. The user switches back to the music browsing hierarchy and presses the back button several times to load previous nodes until reaching the **Artists** node.

The controller switches to the appropriate history stack and begins popping handles off the stack until the user is satisfied. The following example skips that process and jumps right to the **Artists** node.

**Controller sends:**

01.01/1/BROWSE:1.7.1.2.0::1-5::

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:65:/12
01.01/1/000:BROWSE_RESULT:1:1:Play all music:
0:3:3:1.0-a_690008;1=1:0:.....:/55
01.01/1/000:BROWSE_RESULT:2:2:0:.....:/70
01.01/1/000:BROWSE_RESULT:3:3:Martha Argerich:
0:1:1:1.7.1.2.2.Q_9457.0:0:3:3:1.Q_9457;1=1:0:.....:/86
01.01/1/000:BROWSE_RESULT:4:4:The Beach Boys:
0:1:1:1.7.1.2.2.P_3640.0:0:3:3:1.P_3640;1=1:0:.....:/53
01.01/1/000:BROWSE_RESULT:5:5:The Beatles:
0:1:1:1.7.1.2.2.P_3644.0:0:3:3:1.P_3644;1=1:0:.....:/55
```



In this example, the controller has been programmed to support a highlight that can be moved around the screen. The controller also has a **Play** button programmed to activate the play action for the highlighted line when pressed.

The user wants to play **The Beach Boys**, but does not want to bother drilling down into the **Beach Boys** node to start playback. Instead, the user can highlight the **Beach Boys** line and press **Play** on the controller.

To determine the correct action, the controller looks for the line action with a play label.

label	behavior	handle	pop
3	3	1.P_3640;1=1	0

The label 3 indicates that this is the play action for the line. The behavior indicates that the controller should send a PERFORM\_ACTION command with the handle 1.P\_3640;1=1.

#### Controller sends:

```
01.01/1/PERFORM_ACTION:1.P_3640;1=1::
```

#### Kaleidescape System sends:

```
01.01/1/000:ACTION_PERFORMED:Playing The Beach Boys:/54
01.01/!/000:MUSIC_NOW_PLAYING_STATUS:00000:00000:1:0:0000002297::/29
01.01/!/000:MUSIC_NOW_PLAYING_STATUS:00051:00000:1:1:0000002298::/37
01.01/!/000:PLAYING_MUSIC_INFORMATION:P_3640:The Beach Boys:/48
01.01/!/000:MUSIC_TITLE:Let's Go Away for While[Stereo Mix]:The Beach
Boys:Pet Sounds:1.b9bca9a6f224fb54-t314_36:1.R_485904:2.202f8:/66
01.01/!/000:MUSIC_PLAY_STATUS:2:0:00144:+00000:000.00:/49
```

If there were no play action for the line, the controller would simply have executed the default action.

label	behavior	handle	pop
1	1	1.7.1.2.2.P_3640.0	0

### Searching a node

Continuing the example, after listening to **The Beatles** for a while, the user decides to listen to some Bob Dylan. The user returns to the Artists page.

**Controller sends:**

01.01/1/BROWSE:1.7.1.2.0::1-5::

### Kaleidescape System sends:

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:65:/12
01.01/1/000:BROWSE_RESULT:1:1:Play all music:
0:3:3:1.0-a_690008;1=1:0:.....:/55
01.01/1/000:BROWSE_RESULT:2:2:0:.....:/70
01.01/1/000:BROWSE_RESULT:3:3:Martha Argerich:
0:1:1:1.7.1.2.2.Q_9457.0:0:3:3:1.Q_9457;1=1:0:...../86
01.01/1/000:BROWSE_RESULT:4:4:The Beach Boys:
0:1:1:1.7.1.2.2.P_3640.0:0:3:3:1.P_3640;1=1:0:...../53
01.01/1/000:BROWSE_RESULT:5:5:The Beatles:
0:1:1:1.7.1.2.2.P_3644.0:0:3:3:1.P_3644;1=1:0:...../55
```



Observe that Bob Dylan does not appear on the screen. To avoid the need to scroll through the entire list looking for Bob Dylan, the user presses the **search** button. This action causes the controller to display a full keyboard, on which the user begins typing the word **Bob**, starting with the letter B.

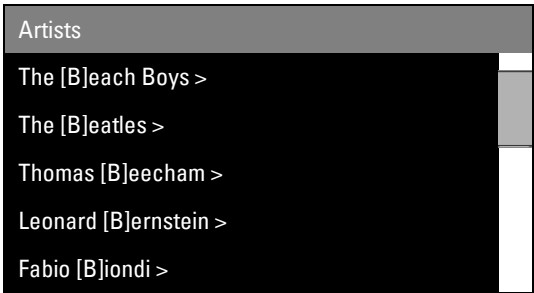
The controller modifies the BROWSE command to include a filter on the **Artists** node. The filter just has the character B, so the filter is formatted as `filter="B"`.

**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.0::1-5:filter="B":
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:13:/05
01.01/1/000:BROWSE_RESULT:1:1:The [B]each Boys:
0:1:1:1.7.1.2.2.P_3640.0:0:3:3:1.P_3640;1=1:0:...../31
01.01/1/000:BROWSE_RESULT:2:2:The [B]eatles:
0:1:1:1.7.1.2.2.P_3644.0:0:3:3:1.P_3644;1=1:0:...../33
01.01/1/000:BROWSE_RESULT:3:3:Thomas [B]eecham:
0:1:1:1.7.1.2.2.Q_8214.0:0:3:3:1.Q_8214;1=1:0:...../37
01.01/1/000:BROWSE_RESULT:4:4:Leonard [B]ernstein:
0:1:1:1.7.1.2.2.Q_7057.0:0:3:3:1.Q_7057;1=1:0:...../97
01.01/1/000:BROWSE_RESULT:5:5:Fabio [B]iondi:
0:1:1:1.7.1.2.2.Q_13362.0:0:3:3:1.Q_13362;1=1:0:...../18
```



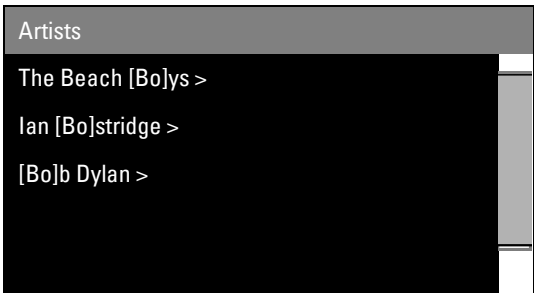
The BROWSE\_RESULTS\_OVERVIEW message identifies 13 responses, and a visual inspection shows that Bob Dylan is not visible in the window. The user types another character, o. Note that the handle remains the same.

**Controller sends:**

01.01/1/BROWSE:1.7.1.2.0::1-5:filter="Bo":

**Kaleidescape System sends:**

01.01/1/000:BROWSE\_RESULTS\_OVERVIEW:1.7.1.2.0:Artists:3:3:/54  
01.01/1/000:BROWSE\_RESULT:1:1:The Beach [Bo]ys:  
0:1:1:1.7.1.2.2.P\_3640.0:0:3:3:1.P\_3640;1=1:0:...../31  
01.01/1/000:BROWSE\_RESULT:2:2:Ian [Bo]stridge:  
0:1:1:1.7.1.2.2.Q\_14299.0:0:3:3:1.Q\_14299;1=1:0:...../65  
01.01/1/000:BROWSE\_RESULT:3:3:[Bo]b Dylan:  
0:1:1:1.7.1.2.2.P\_4147.0:0:3:3:1.P\_4147;1=1:0:...../19



Bob Dylan is now visible on the screen, and the user can select **Bob Dylan** to begin playing music.

**Note:** The letters searched for in this example appear bracketed and can appear at the beginning of any word in the artist's name.

**Searching a node with an alphanumeric keypad**

The previous examples suppose that the controller provides the user with a full keyboard. Sometimes the user is limited to a small alphanumeric keypad similar to that found on a telephone.

1	2 (ABC)	3 (DEF)
4 (GHI)	5 (JKL)	6 (MNO)

7 (PQRS)	8 (TUV)	9 (WXYZ)
----------	---------	----------

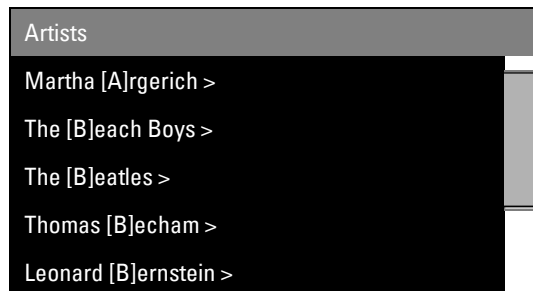
In this case, the user can begin searching for Bob Dylan by typing 2. The controller represents this 2 as [abc] and sends the appropriate filter to the music zone.

**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.0::1-5:filter="[abc]":
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:25:/08
01.01/1/000:BROWSE_RESULT:1:1:Martha [A]rgerich:
0:1:1:1.7.1.2.2.Q_9457.0:0:3:3:1.Q_9457;1=1:0:...../66
01.01/1/000:BROWSE_RESULT:2:2:The [B]each Boys:
0:1:1:1.7.1.2.2.P_3640.0:0:3:3:1.P_3640;1=1:0:...../33
01.01/1/000:BROWSE_RESULT:3:3:The [B]eatles:
0:1:1:1.7.1.2.2.P_3644.0:0:3:3:1.P_3644;1=1:0:...../35
01.01/1/000:BROWSE_RESULT:4:4:Thomas [B]eecham:
0:1:1:1.7.1.2.2.Q_8214.0:0:3:3:1.Q_8214;1=1:0:...../39
01.01/1/000:BROWSE_RESULT:5:5:Leonard [B]ernstein:
0:1:1:1.7.1.2.2.Q_7057.0:0:3:3:1.Q_7057;1=1:0:...../99
```



Bob Dylan is not present, and the BROWSE\_RESULTS\_OVERVIEW message shows 25 items that match this string. The user continues the search by adding a 6, representing MNO.

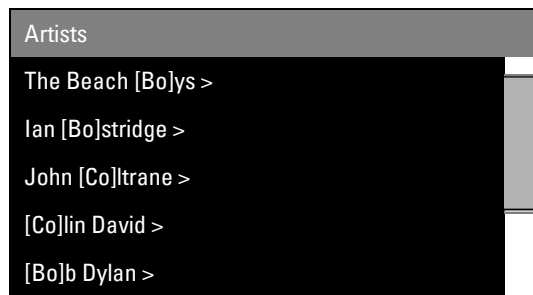
**Controller sends:**

```
01.01/1/BROWSE:1.7.1.2.0::1-5:filter="[abc][mno]":
```

**Kaleidescape System sends:**

```
01.01/1/000:BROWSE_RESULTS_OVERVIEW:1.7.1.2.0:Artists:5:5:/58
01.01/1/000:BROWSE_RESULT:1:1:The Beach [Bo]ys:
0:1:1:1.7.1.2.2.P_3640.0:0:3:3:1.P_3640;1=1:0:...../31
01.01/1/000:BROWSE_RESULT:2:2:Ian [Bo]stridge:
0:1:1:1.7.1.2.2.Q_14299.0:0:3:3:1.Q_14299;1=1:0:...../65
01.01/1/000:BROWSE_RESULT:3:3:John [Co]ltrane:
0:1:1:1.7.1.2.2.P_65851.0:0:3:3:1.P_65851;1=1:0:...../77
01.01/1/000:BROWSE_RESULT:4:4:[Co]lin Davis:
0:1:1:1.7.1.2.2.Q_8172.0:0:3:3:1.Q_8172;1=1:0:...../52
01.01/1/000:BROWSE_RESULT:5:5:[Bo]b Dylan:
0:1:1:1.7.1.2.2.P_4147.0:0:3:3:1.P_4147;1=1:0:...../23
```





The user has found Bob Dylan. Notice that even though the user intends to type Bo, the music zone is returning results for Co as well.

## Keypad collections and presets

### PLAY\_FIRST\_IN\_MUSIC\_COLLECTION

<b>Affects</b>	Any premiere music zone
<b>Command</b>	PLAY_FIRST_IN_MUSIC_COLLECTION: <i>collection</i> :
<b>Response</b>	<i>status</i> :

Plays the first item in a collection which always corresponds to the first BROWSE\_RESULT, usually the topmost selectable item on the onscreen display. Because that selection is usually a music mix, the order of the songs from that collection is random.

*collection* is the name of the collection whose next item is to be played, for example, Artists or Albums by Title.

This command is useful for programming keypads that only support direction and select keys (and not presets). Direction keys can be used to obtain the name of the next/previous collection, and the PLAY\_FIRST\_IN\_MUSIC\_COLLECTION can be used to play the contents of that collection.

### Example

#### Controller sends:

```
01.01/0/PLAY_FIRST_IN_MUSIC_COLLECTION:Artists:
```

#### Kaleidescape System sends:

```
01.01/0/000:/31
```

```
03/!/000:MUSIC_NOW_PLAYING_STATUS:00000:00000:1:0:0000000022::/72
```

```
03/!/000:MUSIC_NOW_PLAYING_STATUS:00051:00000:1:1:0000000023::/80
```

```
03/!/000:PLAYING_MUSIC_INFORMATION:0-a_690008:All Music:/16
```

This example shows the PLAY\_FIRST\_IN\_MUSIC\_COLLECTION command used to start playback of the **Artists** collection. Because the first item in the collection is **Play all music**, this command has the effect of beginning playback of all music, as shown by the PLAYING\_MUSIC\_INFORMATION event message generated. The MUSIC\_NOW\_PLAYING\_STATUS event messages confirm that music is playing back.

**PLAY\_NEXT\_IN\_MUSIC\_COLLECTION**

<b>Affects</b>	Any premiere music zone
<b>Command</b>	PLAY_NEXT_IN_MUSIC_COLLECTION: <i>collection</i> :
<b>Response</b>	<i>status</i> :

Plays the item after either the currently playing or the last item played in a collection.

*collection* is the name of the collection whose first item is to be played, for example, Artists or Albums by Title.

This command is useful for keypads that have up and down keys. PLAY\_NEXT\_IN\_MUSIC\_COLLECTION can be used for the up key, and PLAY\_PREVIOUS\_IN\_MUSIC\_COLLECTION can be used for the down key.

**Note:** To determine the music currently playing, see the GET\_PLAYING\_MUSIC\_INFORMATION command.

**Example****Controller sends:**

01.01/1/PLAY\_NEXT\_IN\_MUSIC\_COLLECTION:Artists:

**Kaleidescape System sends:**

01.01/1/000:/32

01.01/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00051:00000:1:1:0000001732::/29

01.01/!/000:PLAYING\_MUSIC\_INFORMATION:P\_3640:The Beach Boys:/48

01.01/!/000:MUSIC\_TITLE:Pet Sounds:The Beach Boys:Pet Sounds:1.b9bca9a6f224fb54-t30c\_36:1.R\_485904:2.2007c:/07

01.01/!/000:MUSIC\_PLAY\_STATUS:2:0:00143:+00000:000.00:/48

In this example, the next item in the **Artists** collection is activated. The PLAYING\_MUSIC\_INFORMATION event message is generated to indicate that **The Beach Boys** are the music item playing, and the MUSIC\_TITLE, MUSIC\_PLAY\_STATUS, and MUSIC\_NOW\_PLAYING\_INFORMATION event messages are generated with new playback information for this content.

**PLAY\_PREVIOUS\_IN\_MUSIC\_COLLECTION**

<b>Affects</b>	Any premiere music zone
<b>Command</b>	PLAY_PREVIOUS_IN_MUSIC_COLLECTION: <i>collection</i> :
<b>Response</b>	<i>status</i> :

Plays the next item before either the item currently playing or last item played in the collection.

*collection* is the name of the collection, for example, Albums by Artist.

This command is useful for keypads that have up and down keys. PLAY\_NEXT\_IN\_MUSIC\_COLLECTION can be used for the up key, and PLAY\_PREVIOUS\_IN\_MUSIC\_COLLECTION can be used for the down key.

## Example

**Controller sends:**

```
01.01/1/PLAY_PREVIOUS_IN_MUSIC_COLLECTION:Artists:
```

**Kaleidescape System sends:**

```
01.01/1/000:/32
```

```
01.01/!/000:MUSIC_NOW_PLAYING_STATUS:00051:00000:1:1:0000001738::/35
```

```
01.01/!/000:PLAYING_MUSIC_INFORMATION:Q_9457:Martha Argerich:/70
```

```
01.01/!/000:MUSIC_TITLE:Piano Concerto No. 3 in C minor, Op. 37\:/2.
Largo:Ludwig van Beethoven:Piano Concerto No. 3 in C minor, Op.
37:1.b9bca9a6f224fb54-t302_6d:1.W_121665:2.200b2:/66
```

```
01.01/!/000:MUSIC_PLAY_STATUS:2:0:00621:+00000:000.00:/49
```

In this example, the previous item in the [Artists](#) collection is activated. The PLAYING\_MUSIC\_INFORMATION event message is generated identifying [Martha Argerich](#) as the music playing. The MUSIC\_NOW\_PLAYING\_STATUS, MUSIC\_TITLE, and MUSIC\_PLAY\_STATUS event messages are generated with new playback information for the new track.

## ASSIGN\_PLAYING\_MUSIC\_TO\_PRESET

**Affects** Any premiere music zone

**Command** ASSIGN\_PLAYING\_MUSIC\_TO\_PRESET:tag:

**Response** status:

This command is used to store a music item into a preset by associating the currently playing music item to a preset tag that can be accessed from anywhere in the system.

The tag is an arbitrary string that a controller uses to recall the preset with the PLAY\_MUSIC\_PRESET command. The tag can indicate which button is pressed, for example, [Bedroom Button 1](#), or the nature of the preset, for example, [Bob's Favorites](#). These tags might be made available to the user through the onscreen display later, so name the tags appropriately.

Music items that can be assigned are artists, genres, albums, tracks, mix albums, or even all music.

Kaleidescape suggests that buttons using this command be implemented like a car stereo, i.e., when the button is held down for a period of time, the controller sends the command.

When a music preset is changed, a MUSIC\_PRESET\_INFORMATION event message is generated with the new settings.

tag is an identifier to use in PLAY\_MUSIC\_PRESET later.

## Example

**Controller sends:**

```
01.01/8/ASSIGN_PLAYING_MUSIC_TO_PRESET:Fav:
```

**Kaleidescape System sends:**

```
01/!/000:MUSIC_PRESET_INFORMATION:Fav:R_650407:Puffy AmiYumi - Nice:/12
```

01.01/8/000:/39

In this example, the `ASSIGN_PLAYING_MUSIC_TO_PRESET` command is used to assign the music currently playing to the preset tag Fav. Because the currently playing information is the Puffy AmiYumi album Nice, this is assigned to the preset. The `MUSIC_PRESET_INFORMATION` event message confirms the event change.

### PLAY\_MUSIC\_PRESET

**Affects** Any premiere music zone  
**Command** `PLAY_MUSIC_PRESET:tag:`  
**Response** `status:`

Plays the music item associated with the preset tag.

Presets can be set to play back all music, genres, artists, albums, tracks, and mix albums using the `ASSIGN_PLAYING_MUSIC_TO_PRESET` command.

Music preset tags are usually associated to music items that play as music mixes.

When the `PLAY_MUSIC_PRESET` command is sent for a given tag, a new random element from the music item is selected for playback. Therefore, to skip an undesired song in a preset, simply send the command again.

Kaleidescape recommends this command be implemented like a car stereo, i.e., when the button is held down for a period of time, the controller sends the command.

*tag* indicates which preset to play, must correspond to the tag assigned earlier with the `ASSIGN_PLAYING_MUSIC_TO_PRESET` command.

### Example

**Controller sends:**

01.01/0/PLAY\_MUSIC\_PRESET:Fav:

**Kaleidescape System sends:**

01.01/0/000:/31

01/!/000:PLAYING\_MUSIC\_INFORMATION:R\_650407:Puffy AmiYumi - Nice:/02

In this example, the preset Fav is recalled by the `PLAY_MUSIC_PRESET` command. This causes the information stored in the preset, specifically the album Nice by Puffy AmiYumi, to begin playback. This is seen in the `PLAYING_MUSIC_INFORMATION` event message.

### GET\_MUSIC\_PRESET\_INFORMATION

**Affects** Any premiere music zone  
**Command** `GET_MUSIC_PRESET_INFORMATION:tag:`  
**Response** `status:MUSIC_PRESET_INFORMATION:tag:`  
`handle:label:`

This message provides detailed information about a preset. The event message is sent when any preset tag is reassigned to a new music item.

<i>tag</i>	is a controller-assigned unique identifier for a preset. Must match the string used in the ASSIGN_PLAYING_MUSIC_TO_PRESET command to identify the preset.
<i>handle</i>	is a short text string that identifies the associated music item. The controller can compare this handle against the handle returned by the PLAYING_MUSIC_INFORMATION command to determine if the preset music item is playing. A controller can use this information to identify a preset button as active.
<i>Label</i>	is a plain text description of the music item assigned to the preset (for example, Jazz, The Beatles, Tattoo You – The Rolling Stones, or Bach).  Label text can be provided on keypad character displays and touch panels.

### Example

**Controller sends:**

01.01/2/GET\_MUSIC\_PRESET\_INFORMATION:Fav:

**Kaleidescape System sends:**

01.01/2/000:MUSIC\_PRESET\_INFORMATION:Fav:R\_650407:  
Puffy AmiYumi - Nice:/72

In this example, information is requested for the music preset tag Fav. The MUSIC\_PRESET\_INFORMATION response indicates that the preset is associated with the album Nice by Puffy AmiYumi. The response also indicates that the handle is R\_650407, which can be compared with the handle returned by the PLAYING\_MUSIC\_INFORMATION message to determine if the preset Fav is active.

### GET\_PLAYING\_MUSIC\_INFORMATION

**Affects** Any premiere music zone

**Command** GET\_PLAYING\_MUSIC\_INFORMATION:

**Response** *status:PLAYING\_MUSIC\_INFORMATION:handle:Label:*

This message provides keypad related information about the music currently playing. This message can be used with the MUSIC\_PRESET\_INFORMATION message to identify which presets are active and which are not.

The event message is generated when the currently playing music item changes.

The music being played back can be a specific genre, artist, album, or mix album. The music item can also be an individual track or represent all music. For example, when playing back the genre Jazz, the music item currently playing is Jazz, not the specific song currently playing.

<i>handle</i>	is a unique identifier that represents the associated music item. The controller can compare this <i>handle</i> against handles returned in MUSIC_PRESET_INFORMATION events to determine which presets are assigned to the music item currently playing.
<i>Label</i>	is a plain text description of the item currently playing (for example, Jazz, The Beatles, Tattoo You – The Rolling Stones, or Bach).  Label text can be provided on keypad character displays and touch panels.

### Example

**Controller sends:**

01.01/5/GET\_PLAYING\_MUSIC\_INFORMATION:

**Kaleidescape System sends:**

01.01/5/000:PLAYING\_MUSIC\_INFORMATION:R\_650407:Puffy AmiYumi - Nice:/65

In this example, the currently playing information is returned as the album Nice by Puffy AmiYumi, which has the handle R\_650407. The controller can match this handle against presets used by the controller to determine if any match and can be set as active.

## Advanced Integration

These commands provide additional capabilities that are useful when integrating a Kaleidescape component with lighting systems, masking systems, projectors, and other third-party equipment. Table 12 lists onscreen display control commands

Table 12: Advanced integration command summary

Command/Event	Description
<b>Lighting, screen masking, video settings</b>	
GET_MOVIE_LOCATION	Identifies the location in the movie, whether in the main content, intermission, or end credits.
GO_CALIBRATE_MASKING	Calibrates the top and bottom values for screen masking.
GO_CALIBRATE_MASKING_OVERSCAN	Defines the position of the overscan in a movie zone.
GET_CINEMASCAPE_MASK	Provides aspect ratio when a player is in a CinemaScope mode.
GET_SCREEN_MASK	Provides aspect ratio and masking information for the current video image.

Command/Event	Description
GET_SCREEN_MASK2	Provides masking information based on aspect ratio and overscan area.
SET_SCREEN_MASK	Used to inform the Kaleidescape System that a masking system is in use.
GET_VIDEO_MODE	Identifies the video mode currently active.
GET_CINEMASCAPE_MODE	Identifies the CinemaScope mode currently active.
SET_CINEMASCAPE_MODE	Sets the CinemaScope mode. Useful for players whose video output can be switched from a 2:35 theater to another room with a non-CinemaScope friendly display.
GET_SCALE_MODE	Indicates whether the image from the player requires horizontal scaling, vertical and horizontal scaling, or does not require scaling.
<b>Scripts</b>	
PLAY_SCRIPT	Executes one of the scripts created in the browser interface.
<b>User-defined events</b>	
USER_DEFINED_EVENT	Custom event message that can be set to be generated by scripts created in the browser interface, sent from another controller, or triggered by system events.
SEND_EVENT	Emits a user-defined event to controllers with enabled event messages.
SELECT_KALEIDESCAPE_INPUT	Sent when selecting Kaleidescape input, for example, when the child user interface is activated.
<b>Child mode</b>	
GET_CHILD_MODE_STATE	Used to determine if the onscreen display is displaying the child user interface.
ENTER_CHILD_MODE	Displays the child user interface.
LEAVE_CHILD_MODE	Exits the child user interface and displays covers view.

## Lighting, screen masking, and video settings

### GET\_MOVIE\_LOCATION

**Affects** Any movie zone

**Command** GET\_MOVIE\_LOCATION:

**Response/Event** *status:MOVIE\_LOCATION:Location:*

Provides information about the current location in the movie, whether playback is in the main content, intermission, or end credits. The event message is generated when this location changes.

This command is useful for triggering lighting systems and other events based on the current location within the movie. For example, during intermission, the controller could raise the lights and activate a popcorn machine.

It should be noted that the response 06 DVD/Blu-ray Disc Menu has limited functionality for Blu-Ray discs. Only a small subset of discs emits underlying information that is sufficient to report the disc menu state correctly. For Blu-ray discs unable to report the disc menu state properly the command will return 03 Main content.

<i>Location</i>	is a two-digit numeric code indicating the general location of movie playback.
00	In the Kaleidescape interface or location unknown
01	unused
02	unused
03	Main content (feature, episode, bonus material, DVD/Blu-ray Disc menu)
04	Intermission (see INTERMISSION_ON)
05	End credits
06	DVD/Blu-ray Disc Menu

### Example

**Controller sends:**

01/6/GET\_MOVIE\_LOCATION:

**Kaleidescape System sends:**

01/6/000:MOVIE\_LOCATION:03:/89

This response to GET\_MOVIE\_LOCATION shows that movie playback is currently in the main content.



**GO\_CALIBRATE\_MASKING**

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_CALIBRATE_MASKING:
<b>Response</b>	<i>status:</i>

Displays the Calibrate Masking page. This page is used to calibrate the *top\_calibrated* and *bottom\_calibrated* values in the GET\_SCREEN\_MASK2 command.

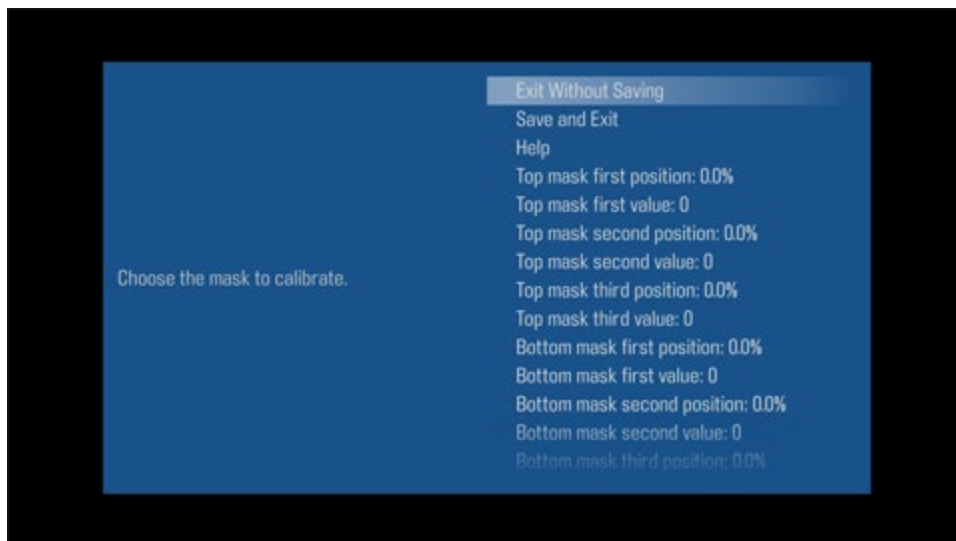


Figure 11: Calibrate Masking page

To calibrate masking, enter values for three positions in the range of motion of the top and bottom screen masks and assign a value to each position. For example, if the screen mask expects 0 for fully closed and 128 for fully extended, set the top mask first value to 0, the top mask second value to a midpoint of 64, and the top mask third value to 128. The zone interpolates the value of all positions in this range from these three values and returns the exact value required by the masking system without additional calculations by the controller.

To get accurate information, first calibrate the masking overscan using the GO\_CALIBRATE\_MASKING\_OVERSCAN command.

**Note:** This page is not accessible through the menus on the onscreen display. The only way to display this page is to use this command.

**Example****Controller sends:**

01/7/GO\_CALIBRATE\_MASKING:

**Kaleidescape System sends:**

01/7/000:/95

## GO\_CALIBRATE\_MASKING\_OVERSCAN

<b>Affects</b>	Any movie zone
<b>Command</b>	GO_CALIBRATE_MASKING_OVERSCAN:
<b>Response</b>	<i>status:</i>

Displays the Calibrate Masking Overscan page. This page is used to define the position of the overscan extension into the Kaleidescape movie zone. This overscan data is used in calculating the values returned by the GET\_SCREEN\_MASK2 command. These values are not used to adjust the position of the screen.

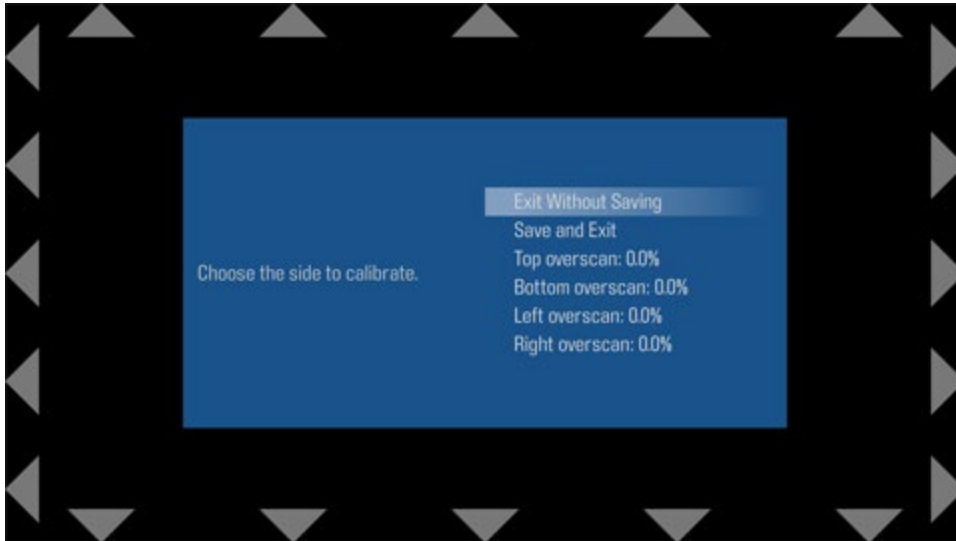


Figure 12: Calibrate Masking Overscan page

To calibrate the masking overscan, adjust the top, bottom, left, and right overscan percentage values until the associated set of arrows is directly at the edge of the viewing area. When in the correct position, the entire arrow should be visible at the edge of the screen with no blank space between the arrow and the edge of the screen.

Masking overscan must be calibrated before calibrating the masking values with GO\_CALIBRATE\_MASKING to get accurate values.

**Note:** This page is not accessible through the menus on the onscreen display. The only way to display this page is to use this command.

### Example

**Controller sends:**

01/3/GO\_CALIBRATE\_MASKING\_OVERSCAN:

**Kaleidescape System sends:**

01/3/000:/91

**GET\_CINEMASCAPE\_MASK****Affects** Any movie zone**Command** GET\_CINEMASCAPE\_MASK:**Response/Event** *status*:CINEMASCAPE\_MASK:*frame\_ratio*:

When in CinemaScape mode, provides information about the frame aspect ratio. The event message is generated whenever the CinemaScape mode is changed or when the player is set to any of the CinemaScape modes and the aspect ratio changes, e.g., starting/ending movie playback and displaying the Kaleidescape user interface.

*frame\_ratio* is a zero-padded, three-digit number between 000 and 999, in hundredths of the ratio of the frame width to the frame height. The parameter can have the following values: 133, 166, 178, 237, 240. Future revisions of kOS may support additional aspect ratios.

**Note:** This event and the command only work when in CinemaScape mode. If GET\_CINEMASCAPE\_MASK is issued when not in a CinemaScape mode, the response will be error code 028, with the text Incompatible video configuration.

**Example 1****Controller sends:****01/1/GET\_CINEMASCAPE\_MASK:****Kaleidescape System sends:**

01/1/000:CINEMASCAPE\_MASK:133:/23

In this example, the CINEMASCAPE\_MASK is set for 4:3 video.

**Example 2****Kaleidescape System sends:**

01/!/000:CINEMASCAPE\_MASK:178:/53

In this example, the CINEMASCAPE\_MASK is set for 16:9 video. A *frame\_ratio* value of 178 is also emitted for movies with an aspect ratio of 1.85 or 2.20.

## GET\_SCREEN\_MASK

**Affects** Any movie zone

**Command** GET\_SCREEN\_MASK:

**Response/Event** *status:SCREEN\_MASK:image\_ratio:*  
*top\_trim\_rel:bottom\_trim\_rel:*  
*conservative\_ratio:top\_mask\_abs:*  
*bottom\_mask\_abs:*

This message contains information about the aspect ratio and masking for the current video image. The aspect ratio information is kept simple for basic mask controller programming, while the trim/mask fields contain precise information for fine adjustments to masks. If the controller adjusts screen masks, the controller should react to this event message with a SET\_SCREEN\_MASK message.

The event message is generated whenever the aspect ratio of the video output changes.

This message provides all information needed by masking controllers of varying capabilities, some of which can be redundant depending on the masking controller.

Generally, a controller needs to use only a subset of the information, depending on the capabilities of the masking system.

- ▶ Masking controllers with presets and fine-tuning adjustments should use *image\_ratio*, *top\_trim\_rel*, and *bottom\_trim\_rel* together.
- ▶ Masking controllers with absolute positioning should use *top\_mask\_abs* and *bottom\_mask\_abs*.
- ▶ Masking controllers with presets alone will choose based upon the type of masks.
- ▶ 16:9 or 4:3 screens with top and bottom masks should use just *conservative\_ratio*.
- ▶ 2.35:1 screens with side masks should use just *image\_ratio*.

**Note:** GET\_SCREEN\_MASK does not take overscan into account. This command provides values based on the full frame of the video image. See GET\_SCREEN\_MASK2 for more information.

<i>image_ratio</i>	<p>is the actual aspect ratio of the video content (as opposed to the full-frame content stored on the DVD). This parameter can have the following values.</p> <ul style="list-style-type: none"><li>00 No image aspect ratio specified (not in playback, Kaleidescape user interface is displayed), or image aspect ratio unknown (often the case with trailers and supplemental material). The controller cannot make any assumptions about the projected video, and so should open up the masks.</li><li>01 Image aspect ratio is 1.33 (4:3)</li><li>02 Image aspect ratio is 1.66</li><li>03 Image aspect ratio is 1.78 (16:9)</li><li>04 Image aspect ratio is 1.85</li><li>05 Image aspect ratio is 2.35</li></ul>
<i>top_trim_rel</i> <i>bottom_trim_rel</i>	<p>indicate top and bottom trim values, relative to the aspect ratio specified by <i>image_ratio</i>. The value of each is a signed, zero-padded, three-digit number between -999 and +999, in tenths of a percent of the screen height.</p> <p>Positive values indicate adjustment towards the center of the screen, negative toward the edge. For example, +010 means adjust a mask inward by 1% of the screen height, and -005 means adjust the mask outward by 0.5% of the screen height.</p> <p>The value always includes a plus or minus sign.</p>
<i>conservative_ratio</i>	<p>has the same possible values as the <i>image_ratio</i> field, but represents a more conservative estimate of the image aspect ratio. This value never goes too far into the actual picture.</p> <p><b>Note:</b> This field is designed for 16:9 and 4:3 screens that have top and bottom masks without trim capability. This field should not be used on 2.35:1 screens with side masks, because it can cause the masks to move too far into the picture.</p>
<i>top_mask_abs</i> <i>bottom_mask_abs</i>	<p>describe the position for the top and bottom masks in absolute terms, measured from the top and bottom of the screen, respectively. These fields are each zero-padded, four-digit numbers between 0000 and 1000, in tenths of a percent of the screen height.</p> <p>For example, a <i>top_mask_abs</i> value of 0200, means that the corresponding mask should be located 20% from the top of the screen.</p>

**Example 1 A 2.35 movie on a 16:9 screen****Kaleidescape System sends:**

```
01/!/000:SCREEN_MASK:05:+000:+000:05:0121:0121:/90
```

This event message example shows that the image ratio is 05, which represents a 2.35 aspect ratio movie. No relative trim is indicated, and the conservative image ratio is also set to 05. The absolute positions indicate that the masks should be in 12.1% from both the top and bottom.

**Example 2 A 2.35 movie on a 4:3 screen****Kaleidescape System sends:**

```
01/!/000:SCREEN_MASK:05:+000:+000:05:0216:0216:/00
```

This event message is similar to the previous example, except that the absolute positions are 21.6% instead of 12.1%. This is because a 2.35 movie on a 4:3 frame has larger letterboxes. The adjustments (the relative ratios) are not affected by the frame ratio.

**GET\_SCREEN\_MASK2**

**Affects** Any movie zone

**Command** GET\_SCREEN\_MASK2:

**Response/Event** *status:SCREEN\_MASK2:*  
*top\_mask\_abs:bottom\_mask\_abs:*  
*top\_calibrated:bottom\_calibrated:*

This message provides masking information based on aspect ratio and overscan area. This information depends on the calibration parameters entered in the Calibrate Masking Overscan and Calibrate Masking pages accessed when the GO\_CALIBRATE\_MASKING\_OVERSCAN and GO\_CALIBRATE\_MASKING commands are issued.

**Note:** To receive meaningful data, set calibration parameters first.

*top\_mask\_abs*

*bottom\_mask\_abs*

describe the position for the top and bottom masks in absolute terms, relative to the aspect ratio and accounting for overscan as set in on the Calibrate Masking Overscan page accessed when a GO\_CALIBRATE\_MASKING\_OVERSCAN command is issued.

These fields are zero-padded, four-digit numbers between 0000 and 1000, in tenths of a percent of the screen height.

For example, a *top\_mask\_abs* value of 0200, means that the corresponding mask should be located 20% from the top of the screen.

*top\_calibrated**bottom\_calibrated*

contain masking positions calculated by the movie zone based on values entered in the Calibrate Masking page accessed through the GO\_CALIBRATE\_MASKING command.

These fields return the top and bottom trim values as a zero-padded, five-digit number between 00000 and 99999.

To calibrate the masking overscan, adjust the top, bottom, left, and right overscan percentage values until the associated set of arrows is directly at the edge of the viewing area. When in the correct position, the entire arrow is visible at the edge of the screen with no blank space between the arrow and the edge of the screen.

**Note:** Masking overscan should be calibrated using the GO\_CALIBRATE\_MASKING\_OVERSCAN command before calibrating the masking with the GO\_CALIBRATE\_MASKING command.

To calibrate masking, enter values for three positions in the range of motion of the top and bottom screen masks and assign a value to each position. For example, if the screen mask expects 0 for fully closed and 128 for fully extended, set the top mask first value to 0, the top mask second value to a midpoint of 64, and the top mask third value to 128. The zone interpolates the value of all positions in this range from these three values and returns the exact value required by the masking system without additional calculations by the controller.

### Example

**Controller sends:**

01/7/GET\_SCREEN\_MASK2:

**Kaleidescape System sends:**

01/7/000:SCREEN\_MASK2:0121:0123:00000:00000:/52

This response to the GET\_SCREEN\_MASK2 command indicates that the absolute position for the top mask would be 12.1% from the top of the screen. The bottom mask should be 12.3% from the bottom. There are no calibrated masking values in this response.

### SET\_SCREEN\_MASK

**Affects**

Any movie zone

**Command**

SET\_SCREEN\_MASK:*flag*:

**Response**

*status*:SCREEN\_MASK:*image\_ratio*:  
*top\_trim\_rel*:*bottom\_trim\_rel*:  
*conservative\_ratio*:  
*top\_mask\_abs*:*bottom\_mask\_abs*:

This command is used to tell the movie zone whether or not a masking system is being used.

If a masking system is in use, the movie zone automatically adjusts the position of onscreen elements such as drop-down menus to appear in the unmasked portion of the display. If a masking system is not in use, these elements are displayed at the edges of the screen, possibly in letterbox areas.

<i>flag</i>	indicates whether or not a masking system is in use.
0	Instructs the movie zone not to compensate for masking.
1	Instructs the movie zone to compensate for masking.

A controller should send this message when the controller starts up, or when the player restarts. The response to this command includes the current screen masking as described under GET\_SCREEN\_MASK.

Example

```
Controller sends:
01/0/SET_SCREEN_MASK:1:

Kaleidescape System sends:
01/0/000:SCREEN_MASK:05:+000:+001:05:0121:0123:/08
```

In this example, the controller is instructing the movie zone to compensate for masking system when positioning various elements of the screen. The response provides the latest screen masking information.

GET\_VIDEO\_MODE

<b>Affects</b>	Any movie zone
<b>Command</b>	GET_VIDEO_MODE:
<b>Response/Event</b>	<i>status:VIDEO_MODE:composite:component:HDMI:</i>

This message provides information about the video outputs for the composite, component, and HDMI video outputs. Controllers can use this information to configure external scalers, video processors, display devices, and screen masks.

The event message is generated whenever the video mode of any video output changes.

<i>composite</i>	is the video mode of the composite and S-Video analog video outputs.
<i>component</i>	is the video mode of the component analog video output.
<i>HDMI</i>	is video mode of the HDMI digital video output.

These fields can have the following values:

00	No output
01	480i60 4:3
02	480i60 16:9
03	480p60 4:3



04	480p60 16:9
05	576i50 4:3
06	576i50 16:9
07	576p50 4:3
08	576p50 16:9
09	720p60 NTSC HD
10	720p50 PAL HD
11	1080i60 16:9
12	1080i50 16:9
13	1080p60 16:9
14	1080p50 16:9
15	reserved
16	reserved
17	1080p24 16:9
18	reserved
19	480i60 64:27
20	576i50 64:27
21	1080i60 64:27
22	1080i50 64:27
23	1080p60 64:27
24	1080p50 64:27
25	1080p24 64:27
26	1080p24 64:27
27	3840x 2160p24 16:9
28	3840x 2160p24 64:27
29	3840x 2160p30 16:9
30	3840x 2160p30 64:27
31	3840x 2160p60 16:9
32	3840x 2160p60 64:27
33	3840x 2160p25 16:9
34	3840x 2160p25 64:27
35	3840x 2160p50 16:9
36	3840x 2160p50 64:27
37	3840x 2160p24 16:9
38	3840x 2160p24 64:27

### Example

**Controller sends:**

01/4/GET\_VIDEO\_MODE:

**Kaleidescape System sends:**  
01/4/000:VIDEO\_MODE:02:02:04:/83

The response to this GET\_VIDEO\_MODE command shows that both the composite and component video outputs are displaying 480i60 16:9. The HDMI video output is outputting 480p60 16:9.

**GET\_VIDEO\_COLOR**

**Affects** Any Strato or Alto movie zone  
**Command** GET\_VIDEO\_COLOR:  
**Response/Event** *status:VIDEO\_COLOR:EOTF:color\_space:color\_depth:color\_sampling:*

This message provides color information about the current video output. Controllers can use this information to configure external scalers, video processors, and display devices.

The event message is generated whenever the video mode of any video output changes.

*EOTF* is the Electro-Optical Transfer Function standard of the currently playing content.

This field can have the following values:

- 00 unknown
- 01 SDR
- 02 HDR
- 03 SMPTE ST 2084

*color\_space* is the standard which defines the color space of the playing media.

This field can have the following values:

- 00 default
- 01 RGB
- 02 BT.601
- 03 BT.709
- 04 BT.2020

*color\_depth* is the number of bits used to define the color of each image pixel.

This field can have the following values:

- 24 24 bits
- 30 30 bits
- 36 36 bits

*color\_sampling* is the chroma color sampling standard of the currently playing media.

This field can have the following values:

- 00 NONE
- 01 RGB
- 02 YCbCr 4:2:2
- 03 YCbCr 4:4:4
- 04 YCbCr 4:2:0

**Example**

**Controller sends:**

01/4/GET\_VIDEO\_COLOR:

**Kaleidescape System sends:**

01/4/000:VIDEO\_COLOR:01:00:24:03:/93

The response to this GET\_VIDEO\_COLOR command shows that video output is Standard Dynamic Range using the default color space. It has a color depth of 24 bits and uses the color sampling standard of YCbCr 4:4:4.

**GET\_CONTENT\_COLOR**

**Affects** Any Strato or Alto movie zone

**Command** GET\_CONTENT\_COLOR:

**Response/Event** *status:CONTENT\_COLOR:EOTF:color\_space:color\_depth:color\_sampling:*

This message provides color details encoded in the currently playing content. Controllers can use this information to configure external scalers, video processors, and display devices.

*EOTF* is the Electro-Optical Transfer Function standard of the currently playing content. This field can have the following values:

- 00 unknown
- 01 SDR
- 02 HDR
- 03 SMPTE ST 2084

<i>color_space</i>	is the standard which defines the color space of the playing media. This field can have the following values:  <table><tr><td>00</td><td>default</td></tr><tr><td>01</td><td>RGB</td></tr><tr><td>02</td><td>BT.601</td></tr><tr><td>03</td><td>BT.709</td></tr><tr><td>04</td><td>BT.2020</td></tr></table>	00	default	01	RGB	02	BT.601	03	BT.709	04	BT.2020
00	default										
01	RGB										
02	BT.601										
03	BT.709										
04	BT.2020										
<i>color_depth</i>	is the number of bits used to define the color of each image pixel. This field can have the following values:  <table><tr><td>24</td><td>24 bits</td></tr><tr><td>30</td><td>30 bits</td></tr><tr><td>36</td><td>36 bits</td></tr></table>	24	24 bits	30	30 bits	36	36 bits				
24	24 bits										
30	30 bits										
36	36 bits										
<i>color_sampling</i>	is the chroma color sampling standard of the currently playing media. This field can have the following values:  <table><tr><td>00</td><td>NONE</td></tr><tr><td>01</td><td>RGB</td></tr><tr><td>02</td><td>YCbCr 4:2:2</td></tr><tr><td>03</td><td>YCbCr 4:4:4</td></tr><tr><td>04</td><td>YCbCr 4:2:0</td></tr></table>	00	NONE	01	RGB	02	YCbCr 4:2:2	03	YCbCr 4:4:4	04	YCbCr 4:2:0
00	NONE										
01	RGB										
02	YCbCr 4:2:2										
03	YCbCr 4:4:4										
04	YCbCr 4:2:0										

### Example

**Controller sends:**

01/1/GET\_CONTENT\_COLOR:

**Kaleidescape System sends:**

01/1/000:CONTENT\_COLOR:03:04:30:04:/94

The response to this GET\_CONTENT\_COLOR command shows that the content is encoded to the SMPTE ST 2084 standard with BT.2020 color space. It has a color depth of 30 bits with a chroma mode of YCbCr of 4:2:0.

## GET\_CINEMASCAPE\_MODE

**Affects** Any movie zone

**Command** GET\_CINEMASCAPE\_MODE:

**Response/Event** *status:CINEMASCAPE\_MODE:mode:*

The command provides information about the CinemaScape mode of the zone. This information is useful for installations that can switch player video output from a 2:35 theater to another room with a non-CinemaScape friendly display.

<i>mode</i>	This parameter can have the following values.
0	Not in CinemaScape mode
1	CinemaScape 2.35 Anamorphic
2	CinemaScape 2.35 Letterbox
3	CinemaScape Native 2.35 Display

**Example****Controller sends:**

```
01/1/GET_CINEMASCAPE_MODE:/4C
```

**Kaleidescape System sends:**

```
01/1/000:CINEMASCAPE_MODE:0:/59
```

**SET\_CINEMASCAPE\_MODE**

**Affects** Any movie zone

**Command** SET\_CINEMASCAPE\_MODE:*mode*:

**Response/Event** *status*:CINEMASCAPE\_MODE:*mode*:

The command sets the CinemaScape mode of the zone. This command is useful for installations that can switch player video output from a 2:35 theater to another room with a non-CinemaScape friendly display.

<i>mode</i>	This parameter can have the following values.
0	Not in CinemaScape mode
1	CinemaScape 2.35 Anamorphic
2	CinemaScape 2.35 Letterbox
3	CinemaScape Native 2.35 Display

**Example****Controller sends:**

```
01/1/SET_CINEMASCAPE_MODE:2:/2B
```

**Kaleidescape System sends:**

```
01/1/000:CINEMASCAPE_MODE:2:/59
```

In this example, the CinemaScape mode is set to CinemaScape 2.35 Letterbox.

**GET\_SCALE\_MODE**

**Affects** Any movie zone

**Command** GET\_SCALE\_MODE:

**Response/Event** *status*:SCALE\_MODE:*mode*:

This command provides information about the video image output from an M-Class player, which allows triggering of an anamorphic lens or zoom mode when using a native 2.35:1 projector when CinemaScape mode is enabled. This command returns 0 when CinemaScape mode is not enabled.

<i>Mode</i>	This parameter can have the following values.
0	No scaling required
1	Image requires anamorphic scaling
2	Reserved
3	Image requires zoom

## Scripts

### PLAY\_SCRIPT

<b>Affects</b>	Any movie zone
<b>Command</b>	PLAY_SCRIPT: <i>script_name</i> :
<b>Response</b>	<i>status</i> :

Begins playback of the script named by the *script\_name*. Scripts are set up in the user pages of the browser interface and can be used to combine movies, scenes, cover art, and other actions into a single playback item.

*script\_name* is the case-sensitive name of the script to be played.

#### Example

**Controller sends:**

01/4/PLAY\_SCRIPT:Great Vistas:

**Kaleidescape System sends:**

01/4/000:/92

01/!/000:TITLE\_NAME::/59

In this example, the script named Great Vistas is set to begin playback. This command causes various event messages to occur as the script runs through its steps.

## User-defined events

### SEND\_EVENT

<b>Affects</b>	Any zone
<b>Command</b>	SEND_EVENT: <i>message</i> :
<b>Response</b>	<i>status</i> :

This command causes a USER\_DEFINED\_EVENT to be emitted to all controllers with enabled event messages from the component.

*message* is the string emitted in the USER\_DEFINED\_EVENT.

#### Example

**Controller sends:**

02/1/SEND\_EVENT:my\_custom\_event:

**Kaleidescape System sends:**

02/1/000:/90

02/!/000:USER\_DEFINED\_EVENT:my\_custom\_event:/13

## USER\_DEFINED\_EVENT

**Affects** Any zone, any controller

**Event** *status:USER\_DEFINED\_EVENT:event\_message:*

This special event message can be used to trigger lighting, switch input sources, and more. User-defined events can be used to facilitate communication between controllers. Often *event\_message* is a command for the controller. The Kaleidescape System sends a USER\_DEFINED\_EVENT event message when one of five cases occurs.

1. A player executes a script step configured to send a command to the control system (scripts are created and managed in the user pages of the browser interface).

*event\_message* is the command string configured in a script step.

2. The child user interface is activated, whether by a button press on the Child Remote or by sending a child command (e.g., CHILD\_PLAY, ENTER\_CHILD\_MODE). Controllers can listen for this message and select the Kaleidescape player as the active source device.

*event\_message* is hard coded to SELECT\_KALEIDESCAPE\_INPUT.

3. A user presses volume buttons on a Kaleidescape Remote. Kaleidescape Remotes (KREMOTE-10 and KREMOTE-20) shipped prior to July 2011 do not have the IR codes programmed for volume or mute functions. For information on adding on adding IR codes to these remotes consult [www.kaleidescape.com/go/remote-volume](http://www.kaleidescape.com/go/remote-volume)

*event\_message* is hard coded to VOLUME\_DOWN\_PRESS, VOLUME\_UP\_PRESS, VOLUME\_DOWN\_RELEASE, VOLUME\_UP\_RELEASE, or TOGGLE\_MUTE.

4. A controller issues a SEND\_EVENT command.

*event\_message* is the string provided by the controller issuing the command.

5. The volume capabilities of one of the Kaleidescape Apps are enabled.

*event\_message* is hard coded to VOLUME\_QUERY, VOLUME\_UP, VOLUME\_DOWN, TOGGLE\_MUTE.

### Example 1 Script step event

After invoking a user-created script named User Event, the script executed the step "Send command to control system: My User Event."

**Controller sends:**

01/2/PLAY\_SCRIPT:User Event:

**Kaleidescape System sends:**

01/2/000:/90

01/!/000:UI\_STATE:12:00:00:0:/40

01/!/000:UI\_STATE:07:00:00:0:/44

01/!/000:USER\_DEFINED\_EVENT:My User Event:/72

**Example 2    SELECT\_KALEIDESCAPE\_INPUT**

A user presses a button on the Child Remote. The onscreen display switches to the child user interface.

**Kaleidescape System sends:**

```
01/!/000:UI_STATE:01:00:00:0:/38
01/!/000:USER_DEFINED_EVENT:SELECT_KALEIDESCAPE_INPUT:/76
01/!/000:UI_STATE:03:00:00:0:/40
```

**Example 3    Kaleidescape Remote volume control event**

A user presses (and releases) the **Volume Down** button on the Kaleidescape Remote.

**Kaleidescape System sends:**

```
02/!/000:USER_DEFINED_EVENT:VOLUME_DOWN_PRESS:/51
02/!/000:USER_DEFINED_EVENT:VOLUME_DOWN_RELEASE:/67
```

**Example 4    SEND\_EVENT command**

A controller sends the command `SEND_EVENT:Bedroom Controller Started:` to the player, and the player issues the `USER_DEFINED_EVENT` to all listening controllers.

**Controller sends:**

```
02/4/SEND_EVENT:Bedroom Controller Started:
```

**Kaleidescape System sends:**

```
02/4/000:/93
02/!/000:USER_DEFINED_EVENT:Bedroom Controller Started:/43
```

## Kaleidescape Mobile App and Kaleidescape App for iPad

Kaleidescape provides two portable apps for controlling a Kaleidescape System: The new Kaleidescape Mobile App and the Kaleidescape App for iPad. These will be referred to as the Kaleidescape Apps unless an event or command is specific to one app or another.

To provide volume control and feedback, these Kaleidescape Apps use `USER_DEFINED_EVENTS` events to communicate with a control system. The controller responds with `SEND_EVENT` commands.

**Event                    USER\_DEFINED\_EVENT:VOLUME\_QUERY:**

This event message is sent by the Kaleidescape Apps when a new zone is selected or playback on the selected zone is initiated. The controller should respond to a volume query with `SEND_EVENT` commands issuing `VOLUME_CAPABILITIES`, `VOLUME_LEVEL`, and `MUTE_ON_FB/MUTE_OFF_FB` messages. If two modules are controlling the same zone, and the audio path is the same for both uses of the player's zone, then only one module should respond to the volume query.



**Event** USER\_DEFINED\_EVENT:VOLUME\_UP:  
USER\_DEFINED\_EVENT:VOLUME\_DOWN:

These event messages are sent by the Kaleidescape Apps when a volume button (**Volume Up** or **Volume Down**) is pressed on the app. The event message repeats until the volume button is released.

**Event** USER\_DEFINED\_EVENT:SET\_VOLUME\_LEVEL=*Level* :

This event message is sent by the Kaleidescape Mobile App when the volume slider is adjusted upwards or downwards on the app.

*Level* Is the desired volume level to set, specified as a percentage.

**Event** USER\_DEFINED\_EVENT:TOGGLE\_MUTE:

This event message is sent by the Kaleidescape Apps when the **Mute** button is tapped on the app.

**Command** SEND\_EVENT:VOLUME\_CAPABILITIES=*flag*:

This command is used by the controller to set the volume capabilities of the Kaleidescape Apps.

*flag* Is the sum of capabilities of the audio system:

0	No volume control or feedback
1	Volume up/down control
2	Mute Control
4	Volume level feedback
8	Mute feedback
16	Volume level set

For example, if the control system supports adjusting the volume level up and down, supports mute, and can report feedback for the volume level and mute, flag would be set to:  $1+2+4+8 = 15$

**Command** SEND\_EVENT:VOLUME\_LEVEL=*vol\_percent*:

This command is used by the controller to send the volume level to the Kaleidescape Apps. The value of *vol\_percent* should be between 0 and 100.

**Command** SEND\_EVENT:MUTE\_ON\_FB:  
SEND\_EVENT:MUTE\_OFF\_FB:

These commands are used by the controller to show the active state of the **Mute** button on the Kaleidescape Apps when mute feedback is enabled (*flag* = 8 above).

The controller should update the feedback on the Kaleidescape Apps using VOLUME\_LEVEL and MUTE\_ON\_FB/MUTE\_OFF\_FB messages whenever the audio processor indicates a change in volume level or mute status.

## Example

The controller is connected directly to a player (CPDID 01). The controller uses command routing to communicate with other players (e.g., CPDID 02). The controller is listening for event messages from all players (see [ENABLE\\_EVENTS](#)). The controller communicates with other A/V components (e.g., the audio processors).

A user opens one of the Kaleidescape Apps to control the directly connected player (CPDID 01). The app sends a volume query about the player.

### **Kaleidescape System sends:**

```
01/!/000:USER_DEFINED_EVENT:VOLUME_QUERY:/52
```

The controller is listening for volume queries and responds to the volume query with SEND\_EVENT commands (with VOLUME\_CAPABILITIES, VOLUME\_LEVEL, and MUTE\_ON\_FB/MUTE\_OFF\_FB messages) to initialize volume settings. First, the controller tells the app about the volume capabilities. In this case, the controller can control volume and mute with feedback.

### **Controller sends:**

```
01/1/SEND_EVENT:VOLUME_CAPABILITIES=15:
```

### **Kaleidescape System sends:**

```
01/1/000:/89
```

```
01/!/000:USER_DEFINED_EVENT:VOLUME_CAPABILITIES=15:/83
```

Next, the controller provides feedback to the app about the state of the [Mute](#) button. In this case, the [Mute](#) button is off.

### **Controller sends:**

```
01/1/SEND_EVENT:MUTE_OFF_FB:
```

### **Kaleidescape System sends:**

```
01/1/000:/89
```

```
01/!/000:USER_DEFINED_EVENT:MUTE_OFF_FB:/39
```

Next, the controller provides feedback about the volume level. In this case, the volume level is 25%.

### **Controller sends:**

```
01/1/SEND_EVENT:VOLUME_LEVEL=25:
```

### **Kaleidescape System sends:**

```
01/1/000:/89
```

```
01/!/000:USER_DEFINED_EVENT:VOLUME_LEVEL=25:/86
```

Now the user starts to use the app. The user taps the [Mute](#) button. The Kaleidescape System sends an event.

### **Kaleidescape System sends:**

```
01/!/000:USER_DEFINED_EVENT:TOGGLE_MUTE:/39
```

The controller should use the Kaleidescape event as a trigger to send commands to another device (the audio processor) to control the volume. The controller sends feedback to the app that the [Mute](#) button should be on.

**Controller sends:**

01/1/SEND\_EVENT:MUTE\_ON\_FB:

**Kaleidescape System sends:**

01/1/000:/89

01/!/000:USER\_DEFINED\_EVENT:MUTE\_ON\_FB:/77

The app displays the active state of the **Mute** button indicating the zone is muted.

Next, the user selects a different zone. The app sends a volume query.

**Kaleidescape System sends:**

02/!/000:USER\_DEFINED\_EVENT:VOLUME\_QUERY:/53

The controller should now initialize the volume settings in the new zone with SEND\_EVENT commands to device ID 02 with VOLUME\_CAPABILITIES, VOLUME\_LEVEL, and MUTE\_ON\_FB/MUTE\_OFF\_FB messages.

## Child user interface

### GET\_CHILD\_MODE\_STATE

<b>Affects</b>	Any movie zone
<b>Command</b>	GET_CHILD_MODE_STATE:
<b>Response</b>	<i>status</i> :CHILD_MODE_STATE: <i>child_mode</i> :

This command is used to determine if the onscreen display is displaying the child user interface.

<i>child_mode</i>	indicates whether or not the child user interface is active.
0	The child user interface is not active.
1	The child user interface is active.

### Example

**Controller sends:**

02/1/GET\_CHILD\_MODE\_STATE:

**Kaleidescape System sends:**

02/1/000:CHILD\_MODE\_STATE:0:/78

The child user interface is not active because the *child\_mode* parameter is 0.

### ENTER\_CHILD\_MODE

<b>Affects</b>	Any movie zone
<b>Command</b>	ENTER_CHILD_MODE:
<b>Response</b>	<i>status</i> :

This command causes the onscreen display to show the child user interface. Does not stop movie playback.

**Example****Controller sends:**

02/1/ENTER\_CHILD\_MODE:

**Kaleidescape System sends:**

02/1/000:/90

02/!/000:CHILD\_MODE\_STATE:1:/63

02/!/000:USER\_DEFINED\_EVENT:SELECT\_KALEIDESCAPE\_INPUT:/77

**LEAVE\_CHILD\_MODE****Affects** Any movie zone**Command** LEAVE\_CHILD\_MODE:**Response** *status*:

If the child user interface is displayed, the onscreen display exits the child user interface and shows the Movie Covers view. Does not stop movie playback.

**Example****Controller sends:**

02/1/LEAVE\_CHILD\_MODE:

**Kaleidescape System sends:**

02/1/000:/90

02/!/000:CHILD\_MODE\_STATE:0:/62

## Other Commands

These commands are not described in other sections and can be useful in some installations. Table 13 lists these commands.

Table 13: Command summary for other commands

Command	Description
GET_NETWORK_SETTINGS	Returns component network settings.
SET_NETWORK_SETTINGS	Changes network settings.
GET_SYSTEM_CAPABILITIES	Returns whether or not the system has movie/music licenses.
GET_TIME	Displays current date and time.
GET_ZONE_CAPABILITIES	Provides summary of zone features.

**GET\_NETWORK\_SETTINGS****Affects** All components**Command** GET\_NETWORK\_SETTINGS:**Response** *status:NETWORK\_SETTINGS:static:ip\_address:*  
*subnet\_mask:gateway:dns1:dns2:***Parameters:**

<i>static</i>	is the component IP address (dynamic or static). 0        Component uses DHCP to obtain an IP address. 1        Component has a statically-assigned IP address.
<i>ip_address</i>	is the IP address of the component formatted as a string with four zero-padded, three-digit numbers between 000 and 255, separated by periods. For example, the IP address 10.200.1.120, is given as the string 010.200.001.120.
<i>subnet_mask</i>	is the subnet mask used by the component in the same format as the <i>ip_address</i> .
<i>gateway</i>	is the IP address of the default gateway used by the component, in the same format as the <i>ip_address</i> .
<i>dns1</i>	is the IP address of the primary DNS server currently used by the component, in the same format as the <i>ip_address</i> .
<i>dns2</i>	is the IP address of the secondary DNS server used by the component, in the same format as the <i>ip_address</i> . If no secondary DNS server is set, this field is ????.????.???.

**Example****Controller sends:**

01/1/GET\_NETWORK\_SETTINGS:

**Kaleidescape System sends:**01/1/000:NETWORK\_SETTINGS:0:010.100.012.194:255.255.252.000:  
010.100.012.001:010.100.000.092:010.100.000.018:/69

This example shows a setup where the component is set to DHCP and currently has an IP address of 10.100.12.194. The subnet mask is 255.255.252.000 and the default gateway is 10.100.12.1. This component is using 10.100.0.92 and 10.100.0.18 as the DNS servers.

**SET\_NETWORK\_SETTINGS**

<b>Affects</b>	All components
<b>Command</b>	SET_NETWORK_SETTINGS:static:ip_address:subnet: gateway:dns1:dns2:
<b>Response</b>	status:NETWORK_SETTINGS:static:ip_address: subnet_mask:gateway:dns1:dns2:

This command is used to change network settings for a component. The NETWORK\_SETTINGS response contains all the new network settings for the component. See GET\_NETWORK\_SETTINGS for more information on this command.

Blank fields in this command are ignored, allowing only partial changes to be made.

<i>static</i>	0 Sets component to use DHCP to obtain an IP address. When DHCP is used, all other network fields in the command are ignored.
	1 Sets component to use a static IP address. Use the value of the <i>ip_address</i> in this field.
<i>ip_address</i>	is a static IP address, as a string with four numbers between 0 and 255, separated by periods. No need to use zero-padding for the numbers. Leave this field blank if <i>static</i> is 0, or to keep the static IP address at its current setting.
<i>subnet_mask</i>	is the subnet mask used by the component, in the same format as the <i>ip_address</i> . Leave this field blank if <i>static</i> is 0, or to keep the subnet mask at its current setting.
<i>gateway</i>	is the IP address of the default gateway, in the same format as the <i>ip_address</i> . Leave this field blank if <i>static</i> is 0, or to keep the default gateway address at the current setting.
<i>dns1</i>	is the IP address of the primary DNS server, in the same format as the <i>ip_address</i> . Leave this field blank if <i>static</i> is 0, or to keep the primary DNS server address at the current setting.
<i>dns2</i>	is the IP address of the secondary DNS server, in the same format as the <i>ip_address</i> . Leave this field blank if <i>static</i> is 0, or to keep the secondary DNS server address at the current setting.

**Example****Controller sends:**

```
01/1/SET_NETWORK_SETTINGS:1:10.100.12.194::10.100.12.1:
10.100.0.92:10.100.0.18:
```

**Kaleidescape System sends:**

```
01/1/000:NETWORK_SETTINGS:1:010.100.012.194:255.255.252.000:
010.100.012.001:010.100.000.092:010.100.000.018:/70
```

In this example, the network settings are set to static IP address 10.100.12.194. The gateway is set to 10.100.12.1, and the DNS addresses are 10.100.0.92 and 10.100.0.18. Note that the subnet field has been left blank, telling the Kaleidescape System to use the prior settings.

## GET\_SYSTEM\_CAPABILITIES

<b>Affects</b>	All components
<b>Command</b>	GET_SYSTEM_CAPABILITIES:
<b>Response</b>	<i>status:SYSTEM_CAPABILITIES:movies:music:</i> <i>:::::::::</i>

Provides information about the capabilities of the system.

<i>movies</i>	indicates whether the system supports movies.
	Y      System supports movies.
	N      System does not support movies.
<i>music</i>	indicates whether the system supports music.
	Y      System supports music.
	N      System does not support music.

The remaining eight fields are blank in this version of the protocol, and are reserved for future use. The response to this command indicates system capabilities, and is therefore identical on all components in a system.

## Example

### Controller sends:

01/1/GET\_SYSTEM\_CAPABILITIES:

### Kaleidescape System sends:

01/1/000:SYSTEM\_CAPABILITIES:Y:Y:::::::::/59

This is a typical response for most systems, indicating support for both movies and music.

## GET\_ZONE\_CAPABILITIES

<b>Affects</b>	Any Strato or Alto movie zone
<b>Command</b>	GET_ZONE_CAPABILITIES:
<b>Response</b>	<i>status:ZONE_CAPABILITIES:osd:movies:music:store:</i> <i>search:::::::</i>

Provides information about the capabilities of the current zone.

<i>osd</i>	indicates whether the zone has OSD available
Y	Zone has OSD capabilities.
N	Zone has no OSD capabilities.
<i>movies</i>	indicates whether the zone supports movies.
Y	Zone supports movies.
N	Zone does not support movies.
<i>music</i>	indicates whether the zone supports music.
Y	Zone supports music.
N	Zone does not support music.
<i>store</i>	indicates whether the zone supports OSD store.
Y	Zone supports OSD store.
N	Zone does not support OSD store.
<i>search</i>	indicates whether the zone supports OSD library search.
Y	Zone supports OSD library search.
N	Zone does not support OSD library search.

The remaining five fields are blank in this version of the protocol and are reserved for future use. The response to this command indicates zone capabilities and is therefore specific to each player in a system.

### Example

**Controller sends:**

01/1/GET\_ZONE\_CAPABILITIES:

**Kaleidescape System sends:**

01/1/000:ZONE\_CAPABILITIES:Y:Y:N:Y:Y:::::/59

This is a response for a Strato system player that has OSD capabilities, supports movies, does not support music, supports the OSD store, and supports OSD library search.

GET\_TIME

**Affects** All components

**Command** GET\_TIME:

**Response** *status:TIME:yyyy:mm:dd:hh:mm:ss:timezone:*

The response contains the current date and time in the following fields.

<i>yyyy</i>	is a four-digit year.
<i>mm</i>	is a zero-padded two digit month, starting at 01 for January.
<i>dd</i>	is a zero-padded, two digit day of the month, starting at 01 for the first day.



<i>hh</i>	is a 24-hour clock hour as a zero-padded, two-digit number; 00 is midnight or 12 a.m., 23 is 11 p.m.
<i>mm</i>	is a zero-padded, two-digit minute from 0 to 59.
<i>ss</i>	are the clock seconds as a two-digit number from 0 to 59.
<i>timezone</i>	is a three-letter time zone abbreviation, including the daylight savings letter. For example, PST is Pacific Standard Time and PDT is Pacific Daylight Time. The time zone can be set in the browser interface.

### Example

**Controller sends:**

01/1/GET\_TIME:

**Kaleidescape System sends:**

01/1/000:TIME:2015:05:01:11:23:00:PDT:/93

This response returns the current date is May 1, 2015 and that the current time is 11:23:00 a.m. in Pacific Daylight Time.

**Note:** This command replaces GET\_DATE\_TIME command which is still available, but GET\_TIME is preferred.

## Getting Additional Support

Kaleidescape provides software for AMX, Crestron, Control4, Philips Pronto, Universal Remote Control, and ELAN control systems, including drivers, modules, touch panel templates and sample programs, as well as databases and codes for popular IR remotes. Software and documentation are available for download. See [www.kaleidescape.com/support/control-systems](http://www.kaleidescape.com/support/control-systems).

If a problem occurs when programming a controller, or for additional help, contact Kaleidescape Support.

- ▶ See online resources at [www.kaleidescape.com/support](http://www.kaleidescape.com/support).
- ▶ Contact Kaleidescape Support at [support@kaleidescape.com](mailto:support@kaleidescape.com) or +1 (650) 625-6160.

When contacting Kaleidescape Support, be prepared to provide the serial number of the Kaleidescape server. The serial number label is located behind the front panels of servers, and on the back of all components except mini players – it is on the bottom of these players.

## Appendix A: Command Summary and Status Codes

### Commands

<b>A</b>	
ALPHABETIZE_COVER_ART	Arranges covers alphabetically.
ANGLE_NEXT	Changes to the next camera angle defined for playback.
ANGLE_PREVIOUS	Changes to the previous camera angle defined for playback.
Arrow commands CHILD_UP CHILD_UP_PRESS CHILD_UP_RELEASE CHILD_DOWN CHILD_DOWN_PRESS CHILD_DOWN_RELEASE CHILD_LEFT CHILD_LEFT_PRESS CHILD_LEFT_RELEASE CHILD_RIGHT CHILD_RIGHT_PRESS CHILD_RIGHT_RELEASE DOWN DOWN_PRESS DOWN_RELEASE LEFT LEFT_PRESS LEFT_RELEASE RIGHT RIGHT_PRESS RIGHT_RELEASE UP UP_PRESS UP_RELEASE	Used to navigate the onscreen display.
ASSIGN_PLAYING_MUSIC_TO_PRESET	Assigns a preset tag to the music item current playing.
AUDIO_NEXT	Changes to the next audio stream during movie playback.
<b>B</b>	
BACKSPACE	Erases the last character entered.

Blu-ray color buttons BLUE BLUE_PRESS BLUE_RELEASE GREEN_PRESS GREEN_RELEASE GREEN RED RED_PRESS RED_RELEASE YELLOW_PRESS YELLOW_RELEASE YELLOW	Performs actions associated with color buttons.
BLURAY_POPUP_MENU_TOGGLE	Toggles display of Blu-ray Disc pop-up menu.
BLURAY_SPECIAL_STOP	Stops Blu-ray Disc playback. Use with caution.
BROWSE	Used to navigate the text-based music browsing interface (SATP).
<b>C</b>	
CANCEL	Dismisses a page, dialog, or text entry.
CHILD_PLAY	If the child user interface is already active, plays the selected movie. If not, activates the child user interface.
CHILD_PAUSE	If the child user interface is already active, pauses the movie. If not, activates the child user interface.
CHILD_SELECT	If child user interface is already active, plays the highlighted movie. If not, activates the child user interface.
CHILD_SHUFFLE_COVER_ART	If the child user interface is already active, shuffles the cover art. If not, activates the child user interface.
CHILD_STOP	If the child user interface is already active, stops movie playback. If not, activates the child user interface.

<b>D</b>	
DEFAULT_LEVEL	Changes the parental control level to the default level.
DETAILS	Toggles between the details page and the current display.
DISABLE_EVENTS	Disables event messages from a specified movie or music zone.
DISC_IN_TRAY_TOGGLE	Toggles the disc in player sheet in the OSD.
DISC_MENU	Displays DVD or Blu-ray Disc menu for the current playback.
DISC_OR_KALEIDESCAPE_MENU	Behaves like DISC_MENU during movie or music playback. Behaves like KALEIDESCAPE_MENU_TOGGLE in user interface.
DISC_RESUME	Resumes playback from the point of interruption.
DISC_TOP_MENU	Displays the top menu for the DVD or Blu-ray Disc.
<b>E</b>	
ENABLE_EVENTS	Enables event messages from a specified movie or music zone.
ENTER_CHILD_MODE	Displays the child user interface.
ENTER_STANDBY	Puts component into standby.
<b>F</b>	
FILTER_LIST	Filters the list view to entered criteria.
<b>G</b>	
GET_ACTIVE_PROTOCOL	Returns the control protocol version set for the current session.
GET_AVAILABLE_DEVICES	Returns a list of device IDs for all system components powered on.

GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER	Returns a list containing the serial number device identifiers of all components in the system.
GET_CAMERA_ANGLE	Provides information about the current camera angle.
GET_CINEMASCAPE_MASK	Provides aspect ratio when a player is in a CinemaScope mode.
GET_CINEMASCAPE_MODE	Identifies the CinemaScope mode currently active.
GET_CONTENT_COLOR	Provides information about a movie color mode and related color details.
GET_CONTENT_DETAILS	Provides information about a movie or album selected on the user interface.
GET_CHILD_MODE_STATE	Used to determine if the onscreen display is displaying the child user interface.
GET_CONTROLLED_ZONE	Returns the music zone currently under control.
GET_DEVICE_INFO	Returns component device type, serial number, device ID, and IP address.
GET_DEVICE_POWER_STATE	Returns power state of a component.
GET_DEVICE_TYPE_NAME	Returns component type.
GET_FRIENDLY_NAME	Returns name of component or music zone.
GET_FRIENDLY_SYSTEM_NAME	Returns the name of the System the component is part of.
GET_HIGHLIGHTED_SELECTION	Specifies the handle of the movie or album currently selected on the user interface.
GET_MOVIE_LOCATION	Identifies the location in the movie, whether in the main content, intermission, or end credits.
GET_MOVIE_MEDIA_TYPE	Identifies the type of media being played.
GET_MUSIC_NOW_PLAYING_STATUS	Sends the state of the Now Playing list.

GET_MUSIC_PLAY_STATUS	Provides playback information for the currently playing music.
GET_MUSIC_PRESET_INFORMATION	Provides detailed information about a music preset.
GET_MUSIC_TITLE	Provides detailed information about the music currently playing.
GET_NETWORK_SETTINGS	Returns component network settings.
GET_NUM_ZONES	Returns number of zones in a component.
GET_PLAY_STATUS	Identifies movie play mode, speed, location and chapter.
GET_PLAYING_MUSIC_INFORMATION	Provides information about music currently playing.
GET_PLAYING_TITLE_NAME	Provides the title of the movie currently playing.
GET_PROTOCOL	Returns protocol version number.
GET_SCALE_MODE	Indicates whether the image from the player requires horizontal scaling, vertical and horizontal scaling, or does not require scaling.
GET_SCREEN_MASK	Provides aspect ratio and masking information for the current video image.
GET_SCREEN_MASK2	Provides masking information based on aspect ratio and overscan area.
GET_SYSTEM_CAPABILITIES	Returns whether or not the system has movie/music licenses.
GET_SYSTEM_READINESS_STATE	Returns the idle mode of Strato players or Cinema One (2 <sup>nd</sup> generation).
GET_SYSTEM_VERSION	Returns protocol version number and the version of kOS.
GET_TIME	Displays current date and time.
GET_UI_STATE	Provides details about the current state of the user interface.

GET_USER_INPUT	Provides information about user input requested from the user interface.
GET_USER_INPUT_PROMPT	Returns user input prompt info and properties currently shown on screen.
GET_VIDEO_COLOR	Returns details of the current video output.
GET_VIDEO_MODE	Identifies the video mode currently active.
GET_ZONE_CAPABILITIES	Provides information about the current zone.
GO_CALIBRATE_MASKING	Calibrates the top and bottom values for screen masking.
GO_CALIBRATE_MASKING_OVERSCAN	Defines the position of the overscan in a movie zone.
GO_MOVIE_COLLECTION	Displays a specific collection in the Movie Collections view.
GO_MOVIE_COLLECTIONS	Displays the Movie Collections view.
GO_MOVIE_COVERS	Displays the Movie Covers view.
GO_MOVIE_LIST	Displays the Movie List view.
GO_MOVIE_STORE	Displays the Movie Store view.
GO_MOVIES	Changes the interface from a music view to a movie view.
GO_MUSIC	Changes the interface from a movie view to a music view.
GO_MUSIC_COLLECTION	Displays a specific collection in the Music Collections view.
GO_MUSIC_COLLECTIONS	Displays the Music Collections view.
GO_MUSIC_COVERS	Displays the Music Covers view.
GO_MUSIC_LIST	Displays the Music List view.
GO_NOW_PLAYING	Displays the Now Playing view.
GO_PARENTAL_CONTROL	Displays the Parental Control view.
GO_SCREEN_SAVER	Displays the screen saver.

<code>GO_SEARCH</code>	Searches the local library or the OSD store.
<code>GO_SYSTEM_STATUS</code>	Displays the System Status view.
<code>GO_VAULT_SUMMARY</code>	Displays the Vault Summary view
<b>I</b>	
<code>INTERMISSION_OFF</code>	Removes the intermission screen and resumes playback.
<code>INTERMISSION_ON</code>	Pauses playback and displays intermission screen.
<code>INTERMISSION_TOGGLE</code>	Toggles intermission screen on and off.
<b>K</b>	
<code>KALEIDESCAPE_MENU_OFF</code>	Removes Kaleidescape menu.
<code>KALEIDESCAPE_MENU_ON</code>	Displays Kaleidescape menu.
<code>KALEIDESCAPE_MENU_TOGGLE</code>	Toggles Kaleidescape menu on and off.
<code>KEYBOARD_CHARACTER</code>	Sends a single character to the onscreen display.
<code>KEYBOARD_LITERAL</code>	Sends a single character to the onscreen keyboard.
<b>L</b>	
<code>LEAVE_CHILD_MODE</code>	Exits the child user interface and displays covers view.
<code>LEAVE_IDLE_MODE</code>	Takes Strato players or Cinema One (2 <sup>nd</sup> generation) out of idle mode.
<code>LEAVE_STANDBY</code>	Takes component out of standby. For Strato products this command will also leave idle mode.
<b>M</b>	
<code>MUSIC_RANDOM_OFF</code>	Turns off random playback for music.
<code>MUSIC_RANDOM_ON</code>	Turns on random playback for music.



MUSIC_RANDOM_TOGGLE	Toggles on/off random playback for music.
MUSIC_REPEAT_OFF	Turns off repeat playback for music.
MUSIC_REPEAT_ON	Turns on repeat playback for music.
MUSIC_REPEAT_TOGGLE	Toggles on/off repeat playback for music.
<b>N</b>  NEXT and PREVIOUS	  NEXT command skips forward through chapters or songs.
<b>P</b>  Page up/down commands PAGE_DOWN PAGE_DOWN_PRESS PAGE_DOWN_RELEASE PAGE_UP PAGE_UP_PRESS PAGE_UP_RELEASE	  Used to navigate by pages on the onscreen display.
Paging and skipping PAGE_DOWN_OR_NEXT PAGE_DOWN_OR_NEXT_PRESS PAGE_DOWN_OR_NEXT_RELEASE PAGE_DOWN_OR_PREVIOUS PAGE_DOWN_OR_PREVIOUS_PRESS PAGE_DOWN_OR_PREVIOUS_RELEASE PAGE_UP_OR_NEXT PAGE_UP_OR_NEXT_PRESS PAGE_UP_OR_NEXT_RELEASE PAGE_UP_OR_PREVIOUS PAGE_UP_OR_PREVIOUS_PRESS PAGE_UP_OR_PREVIOUS_RELEASE	Behaves like NEXT or PREVIOUS during movie playback Behaves like PAGE_UP or PAGE_DOWN in the user interface.
PAUSE	Toggles pause.
PERFORM_ACTION	Performs a specified action on a music handle.
PLAY	Begins playback of movies and music.
PLAY_FIRST_IN_MUSIC_COLLECTION	Plays the first item in a music collection.
PLAY_MUSIC_PRESET	Plays the music item associated with a preset tag.
PLAY_NEXT_IN_MUSIC_COLLECTION	Plays the next item in the collection.

PLAY_PREVIOUS_IN_MUSIC_COLLECTION	Plays the item previous item in the collection.
PLAY_SCRIPT	Executes one of the scripts created in the browser interface.
PLAYER_RESTART	Event message stating that a player has just been restarted.
POSITION_SELECT	Transmits touch screen interaction to the onscreen display.
PREVIOUS (see NEXT and PREVIOUS)	PREVIOUS command skips backward through chapters or songs.
<b>R</b>	
REPLAY	Skips back five seconds during movie playback.
<b>S</b>	
SAFE_LEVEL	Changes parental control to highest level without a passcode.
SCAN_FORWARD and SCAN_REVERSE	Cycles through fast-forward or fast-reverse.
SELECT	Selects the highlighted item in the onscreen display.
SELECT_KALEIDESCAPE_INPUT	Selects the Kaleidescape input.
SEND_EVENT	Emits a user-defined event to controllers with enabled event messages.
SEND_TO_SYSLOG	Posts a message to Kaleidescape System logs.
SET_CINEMASCAPE_MODE	Sets the CinemaScape mode. Useful when video output is distributed to displays with different aspect ratios.
SET_CONTROLLED_ZONE	Changes the music zone controlled by the onscreen display.
SET_FAVORITE_SCENE_END	Records a bookmark for the end of a scene.
SET_FAVORITE_SCENE_START	Records a bookmark for the start of a scene.

SET_FRIENDLY_NAME	Renames component or music zone.
SET_NETWORK_SETTINGS	Changes network settings.
SET_PROTOCOL_SETTINGS	Changes protocol syntax.
SET_SCREEN_MASK	Used to inform the Kaleidescape System that a masking system is in use.
SET_STATUS_CUE_PERIOD	Sets the frequency of PLAY_STATUS and MUSIC_PLAY_STATUS event messages.
SET_SUPPORTED_PROTOCOL	Sets the control protocol version to use for a session.
SET_USER_INPUT_ENTRY	Sends string to the current on screen user entry prompt.
SHOW_NAVIGATION_OVERLAY	During playback, opens the navigation option of the movie overlay to the chapter/title navigation page.
SHUFFLE_COVER_ART	Shuffles cover art on covers view.
START_CHAPTER_ENTRY	Displays a tab to enter chapter number to skip directly to.
START_DISC_TITLE_ENTRY	Displays a tab to enter title number to skip directly to a title.
START_SEND_NUMBER_TO_DISC_ENTRY	Displays a tab to enter a number key to send to a DVD or Blu-ray Disc.
STATUS_AND_SETTINGS	During playback, toggles the display of the navigation option of the movie overlay. Otherwise, brings up the System Status page.
STOP	Stops playback.
STOP_OR_CANCEL	Behaves like STOP during movie playback or when sent directly to a music zone. Behaves like CANCEL in the user interface.
STOP_SCREEN_SAVER	Removes screen saver.
SUBTITLES_NEXT	Changes to the next subtitle track during playback.

<b>U</b>  <b>USER_DEFINED_EVENT</b>	Custom event message that can be set to be generated by scripts created in the browser interface, sent by another controller, initiated by an infrared volume command, or automatically generated based on system events.
---	---

## Status codes

Status Code	Name	Description
000	Success	Command was accepted and executed without error.
001	Message too long	Command is larger than the maximum frame size of 1024 characters.
002	Message contains invalid character	Character in the command is outside the supported character set from decimal ASCII value 32 (space) to decimal ASCII value 126 (tilde (~)).
003	Checksum error	Message checksum does not match calculated checksum.
004	Invalid device	Device identifier is invalid.
005	Device unavailable	There is no component available with that device identifier. Component can be turned off, disconnected, or misconfigured; or the device identifier in the message is incorrect.
006	Invalid zone syntax	Music zone identifier (the part of the device identifier after the period) was not specified correctly and must be two digits.
007	Invalid zone	Music zone identifier (the part of the device identifier after the period) is invalid. Use <b>GET_NUM_ZONES</b> to determine the range of valid identities for a given component.
010	Invalid request	Command name is unknown to the target device (possibly corrupted).
011	Invalid number of parameters	Command body contains an incorrect number of fields for the message name.
012	Invalid parameter	One or more values in the command field is invalid.

Status Code	Name	Description
013	Device identifier conflict	More than one Kaleidescape component in the server group has the same routable (02–99) device identifier in the command. Note that a message to device ID 01 always goes to the directly connected component.
014	Invalid sequence number	Sequence number is invalid.
015	Unused	
016	Invalid passcode	Passcode required to access specified content is invalid.
017	Invalid content handle	Content handle specified is not valid. This situation occurs if content is deleted, or if the server with the content is turned off.
018	Network error	Network connectivity issues exist between Kaleidescape components. Check network configuration.
019	Invalid serial syntax	Serial number specified for the device identifier is improperly formatted.
020	Device is in standby	Component specified by the device identifier is currently in standby and cannot respond to most control protocol requests.
999	Other error	Undetermined error occurred, or the command cannot be handled because of hardware limitations.

## Appendix B: Revision History

### Changes in document revision 13 (Kaleidescape software version 10.12 and 8.8)

#### New commands

The following new command has been added:

GO\_SEARCH

#### Other

- ▶ Incremented latest protocol version to 17
- ▶ Added “search” field to GET\_ZONE\_CAPABILITIES
- ▶ Updated enumeration list for UI\_STATE
- ▶ Updated FILTER\_LIST to differentiate its behavior from GO\_SEARCH

### Changes in document revision 12 (Kaleidescape software version 10.11 and 8.7)

- ▶ Fixed scope of support for GET\_VIDEO\_COLOR and GET\_CONTENT\_COLOR
- ▶ Corrected formatting errors.

### Changes in document revision 11 (Kaleidescape software version 10.11 and 8.7)

- ▶ Improved descriptions of Strato idle mode commands  
GET\_SYSTEM\_READINESS\_STATE, LEAVE\_IDLE\_MODE, LEAVE\_STANDBY
- ▶ Limited music commands to apply only to Premiere music zones.
- ▶ Changed mentions of Encore to Strato

### Changes in document revision 10 (Kaleidescape software version 10.4 and 8.4)

#### New commands

The following new commands have been added:

SET\_SUPPORTED\_PROTOCOL  
GET\_USER\_INPUT\_PROMPT  
SET\_USER\_INPUT\_ENTRY  
GET\_ZONE\_CAPABILITIES

## Other

- ▶ Updated GET\_CONTENT\_DETAILS documentation to properly set Last\_played and Last\_played\_relative as future use as they have not been implemented yet. Also added HiRes\_overURL Entry.
- ▶ Updated GET\_MOVIE\_LOCATION to include the protocol rev 16 change defining 06 as Disc Menu. Prior revisions included it in 03.
- ▶ Updated Kaleidescape App for iPad section to be inclusive of the new Kaleidescape Mobile App.

## Changes in document revision 9 (Kaleidescape software version 10.2 and 8.1)

### New commands

The following new commands have been added:

```
GET_CONTENT_COLOR  
GET_FRIENDLY_SYSTEM_NAME  
GET_VIDEO_COLOR  
GO_MOVIE_STORE  
KEYBOARD_LITERAL
```

## Other

- ▶ Updated UI\_STATE to include additional reponse codes.
- ▶ Updated GET\_VIDEO\_MODE with new status codes.
- ▶ Changed references of Alto to be inclusive of all Strato players where appropriate.

## Changes in document revision 8 (Kaleidescape software version 6.1)

### New commands

No new commands or messages have been added.

## Other

- ▶ Updated GET\_DEVICE\_TYPE\_NAME, GET\_FRIENDLY\_NAME, and SET\_FRIENDLY\_NAME for Alto.
- ▶ Clarifications to differentiate between Cinema One (1<sup>st</sup> generation) and Cinema One (2<sup>nd</sup> generation).

## Changes in document revision 7 (Kaleidescape software version 6.0)

### New commands

The following new commands have been added:

```
GET_SYSTEM_READINESS_STATE  
LEAVE_IDLE_MODE  
DISC_IN_TRAY_TOGGLE
```

The following new messages have been added:

```
SYSTEM_READINESS_STATE  
GET_SCALE_MODE
```

### Other

- ▶ The protocol version as reported by GET\_PROTOCOL is now 13.

## Changes in document revision 6 (Kaleidescape software version 4.3)

### New commands

The following new commands have been added:

```
GET_CINEMASCAPE_MODE  
SET_CINEMASCAPE_MODE  
GET_CINEMASCAPE_MASK  
GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER  
GET_SYSTEM_VERSION
```

### Other

- ▶ The protocol version as reported by GET\_PROTOCOL is now 11.
- ▶ Updated GET\_VIDEO\_MODE with outputs for CinemaScape mode.

## Changes in document revision 5 (Kaleidescape software version 4.1)

Commands have been reorganized depending on application. A command usage section was added with brief explanations of how commands work together. All parameters are defined with command examples.

### New commands

The following new commands have been added:

```
SEND_TO_SYSLOG  
SEND_EVENT  
GO_VAULT_SUMMARY  
TOGGLE_MUTE
```



VOLUME_UP	VOLUME_DOWN
VOLUME_UP_PRESS	VOLUME_UP_RELEASE
VOLUME_DOWN_PRESS	VOLUME_DOWN_RELEASE
GET_CHILD_MODE_STATE	ENTER_CHILD_MODE
LEAVE_CHILD_MODE	CHILD_PLAY
CHILD_STOP	CHILD_PAUSE
SHUFFLE_COVER_ART	CHILD_SELECT
CHILD_UP	CHILD_UP_PRESS
CHILD_UP_RELEASE	CHILD_DOWN
CHILD_DOWN_PRESS	CHILD_DOWN_RELEASE
CHILD_LEFT	CHILD_LEFT_PRESS
CHILD_LEFT_RELEASE	CHILD_RIGHT
CHILD_RIGHT_PRESS	CHILD_RIGHT_RELEASE

### Commands removed

The following commands have been removed:

GET_ASPECT_RATIO	GET_SQUEEZE_OF_4X3_ON_16X9
GO_DEMO	SET_SQUEEZE_OF_4X3_ON_16X9
GO_DEMO_LOOP	

### Other

- ▶ Status codes have been added to Appendix A.
- ▶ The BROWSE command has been expanded with examples.

## Changes in document revision 4.6 (Kaleidescape software version 4.0)

### New commands

The following new commands have been added:

GO_CALIBRATE_MASKING	RED_PRESS
GO_CALIBRATE_MASKING_OVERSCAN	RED_RELEASE

BLURAY_SPECIAL_STOP	BLUE_PRESS
BLURAY_POPUP_MENU_TOGGLE	BLUE_RELEASE
GET_MOVIE_MEDIA_TYPE	GREEN_PRESS
RED	GREEN_RELEASE
BLUE	YELLOW_PRESS
GREEN	YELLOW_RELEASE
YELLOW	

Renamed commands

The following commands have been renamed to support both DVDs and Blu-ray Discs in the Kaleidescape library. The old commands are still supported, but are deprecated.

New Command	Deprecated Command
DISC_MENU	DVD_MENU
DISC_TOP_MENU	DVD_TOP_MENU
DISC_RESUME	DVD_RESUME
START_DISC_TITLE_ENTRY	START_DVD_TITLE_ENTRY
START_SEND_NUMBER_TO_DISC_ENTRY	START_SEND_NUMBER_TO_DVD_ENTRY
DISC_OR_KALEIDESCAPE_MENU	DVD_OR_KALEIDESCAPE_MENU

Other

- ▶ Changed protocol version as reported by GET\_PROTOCOL to 10.
- ▶ Changed terminology based on introduction of M-Class players.
- ▶ Updated GET\_VIDEO\_MODE with new status codes.

Changes in document revision 4.5  
(Kaleidescape software version 3.7)

New commands

The following new commands have been added:

GET\_NUM\_ZONES

GET\_DEVICE\_TYPE\_NAME

GET\_DEVICE\_POWER\_STATE

## New status codes

The following new status code was added:

Status Code	Name	Description
020	Device is in standby	The component specified by the device identifier is currently in standby. Component does not respond to most control protocol requests.

## Other

- ▶ The protocol version as reported by GET\_PROTOCOL is now 09.
- ▶ The device\_type field in the response to GET\_DEVICE\_INFO has been deprecated in favor of using GET\_NUM\_ZONES and GET\_DEVICE\_TYPE\_NAME.
- ▶ Added filter and suggest flags to BROWSE command.
- ▶ Added play action to BROWSE\_RESULT responses.
- ▶ Numerous terminology changes with the introduction of the Kaleidescape Cinema One.

## Changes in document revision 4.4 (Kaleidescape software version 3.6)

### New commands

The following new commands have been added:

GO\_MOVIES\_COLLECTION

GET\_SCREEN\_MASK2

GO\_MUSIC\_COLLECTION

SET\_PROTOCOL\_SETTINGS

## Changes in document revision 4.3 (Kaleidescape software version 3.5)

### New commands

The following new commands have been added:

GO\_MOVIES

GET\_MUSIC\_PRESET\_INFORMATION

GO\_MUSIC

GET\_PLAYING\_MUSIC\_INFORMATION

## **Changes in document revision 4.2 (Kaleidescape software version 3.4)**

### **New commands**

The following new commands have been added:

ASSIGN\_PLAYING\_PLAYING\_MUSIC\_TO\_PRESET

PLAY\_MUSIC\_PRESET

PLAY\_FIRST\_IN\_MUSIC\_COLLECTION

PLAY\_NEXT\_IN\_MUSIC\_COLLECTION

PLAY\_PREVIOUS\_IN\_MUSIC\_COLLECTION

## **Changes in document revision 4.1 (Kaleidescape software version 3.3)**

### **New commands**

The following new commands have been added:

GET\_CONTROLLED\_ZONE

SET\_CONTROLLED\_ZONE

## **Changes in document revision 4.0**

### **New commands**

The following new commands have been added:

BROWSE

PREVIOUS

GET\_CONTENT\_DETAILS

NEXT

PERFORM\_ACTION

PAGE\_UP\_OR\_NEXT

STOP\_OR\_CANCEL

PAGE\_DOWN\_OR\_PREVIOUS

GET\_MUSIC\_TITLE

PAGE\_UP\_OR\_PREVIOUS

GET_MUSIC_PLAY_STATUS	PAGE_DOWN_OR_NEXT
MUSIC_REPEAT_ON	MUSIC_RANDOM_ON
MUSIC_REPEAT_OFF	MUSIC_RANDOM_OFF
MUSIC_REPEAT_TOGGLE	MUSIC_RANDOM_TOGGLE
GET_USER_INPUT	GET_SYSTEM_CAPABILITIES
GO_MUSIC_LIST	GET_MUSIC_NOW_PLAYING_STATUS
GO_MUSIC_COVERS	GO_NOW_PLAYING
GO_MUSIC_COLLECTIONS	

### Deprecated commands

The following commands have been deprecated. Use the context-sensitive page up/down commands instead (e.g., PAGE\_UP\_OR\_NEXT).

SKIP\_FORWARD  
SKIP\_REVERSE

### Other

- ▶ The protocol version as reported by GET\_PROTOCOL is now 05.
- ▶ The device ID can be specified as a serial number preceded by a pound sign.
- ▶ The device ID can include a zone ID to control a specific music zone.

## Changes in document revision 3.3.1

### Commands that have been replaced

The following commands have been replaced. The GET\_SCREEN\_MASK and GET\_VIDEO\_MODE commands provide more detailed information. New control programs should use these commands instead.

ASPECT\_RATIO  
GET\_ASPECT\_RATIO

### Other

- ▶ The protocol version as reported by GET\_PROTOCOL is now 04.

- ▶ The instructions for configuring the control protocol device ID were corrected.

## **Changes in document revision 3.3 (Kaleidescape software version 2.4)**

### **New commands**

The following new commands have been added:

GET_FRIENDLY_NAME	USER_DEFINED_EVENT
GET_VIDEO_MODE	USER_INPUT
PLAY_SCRIPT	VIDEO_MODE
SET_FRIENDLY_NAME	

### **Commands that have been replaced**

The following commands have been replaced. The scripts feature provides more flexibility in organizing and presenting automated sequences of favorite scenes. New control programs should use the PLAY\_SCRIPT command instead.

GO\_DEMO  
GO\_DEMO\_LOOP

## **Changes in document revision 3.2 (Kaleidescape software version 2.2)**

### **New commands**

The following new command has been added:

POSITION\_SELECT

### **Other**

- ▶ The protocol version as reported by GET\_PROTOCOL is now 03.

## **Changes in document revision 3.1 (Kaleidescape software version 2.1)**

### **New commands**

The following new commands have been added:

ANGLE_NEXT	DEFAULT_LEVEL
------------	---------------

ANGLE\_PREVIOUS

GET\_CAMERA\_ANGLE

START\_SEND\_NUMBER\_TO\_DVD\_ENTRY

CAMERA\_ANGLE

## Other

- ▶ The second value of the ASPECT\_RATIO event command now represents the aspect ratio of the video frame that the Kaleidescape Movie Player outputs, rather than that of the frame in the DVD. These values will be different if the Movie Player is performing internal adaptation between 4:3 and 16:9. The new behavior is more useful as it allows a controller to use the value directly to run an external scaler or projector.
- ▶ The GET\_SQUEEZE\_OF\_4X3\_ON\_16X9 and SET\_SQUEEZE\_OF\_4X3\_ON\_16X9 commands are now deprecated, as the Movie Player provides options for many more combinations of media format and video aspect ratio, controllable through the browser interface. Changing this setting has no effect.
- ▶ The SQUEEZE\_OF\_4X3\_ON\_16X9 command description has been removed. This event message is never sent by the Movie Player.

## Changes in document revision 3.0.1

### Corrections

- ▶ The PLAY\_STATUS command listed incorrect values for the mode field. The values have been corrected
- ▶ The UI\_STATE command listed the screen field value 06 as “Screen Saver”. This value is unused.

## Changes in document revision 3.0 (Kaleidescape software version 2.0)

### Changes

- ▶ Control Protocol version incremented  
The control protocol version, as returned by the GET\_PROTOCOL command, is now 02 to reflect the added features of TCP/IP and addressable devices.
- ▶ Support for TCP/IP  
The Kaleidescape device control protocol is now supported over Ethernet using TCP/IP connections.
- ▶ Support for addressable devices

A single controller connection, whether serial or TCP/IP, can now be used to send commands to any device in a Kaleidescape System. Device identifier 01 has been defined to target the device to which a connection has been directly established; device identifiers above 01 can be assigned to individual devices.

▶ ISO Latin-1 character set support

The control protocol now accepts unescaped, accented Latin-1 characters (those from decimal 128 to 255).

▶ New Status Codes

The following new status codes were added:

Status Code	Name	Description
005	Device Unavailable	There is no device available with the indicated device identifier. It can be turned off, disconnected, or configured incorrectly; or the device identifier in the command was incorrect.
013	Device Identifier Conflict	Multiple Kaleidescape components in the server group share the routable (02–99) device identifier in the command. Note that a command to device ID 01 always goes to the local device (the one with a direct connection).
014	Invalid sequence number	The sequence number is invalid.
999	Other error	An undetermined error occurred or the request could not be handled because of hardware limitations.

## New and deprecated commands

The following new commands have been added, in some cases replacing existing commands with ambiguous responses:



New Command	Deprecated Command
GET_PLAYING_TITLE_NAME	GET_TITLE_NAME
GET_PROTOCOL	GET_PROTOCOL_VERSION
GET_TIME	GET_DATE_TIME
GO_COLLECTIONS	GO_FAVORITES
SET_SCREEN_MASK	SCREEN_MASK_USED
SET_STATUS_CUE_PERIOD	ENABLE_STATUS_CUES
SHOW_NAVIGATION_OVERLAY	

## Other

The following corrections and amendments have been made to this document:

- ▶ There is no NETWORK\_SETTINGS event command; this is a response only to a GET\_NETWORK\_SETTINGS request command.
- ▶ The full-frame aspect ratio in the ASPECT\_RATIO response now indicates the aspect ratio of the video frame output by the Movie Player, and not necessarily that encoded on the DVD itself. The two aspect ratios can be different, as when the Movie Player is doing internal scaling from 4:3 to 16:9 or vice versa.

## Notices

Document Title: Kaleidescape System Control Protocol Reference Manual

Document Number: 101-0005 Rev 13

Publication Date: January 2022

Permanent Link: [www.kaleidescape.com/go/control-protocol](http://www.kaleidescape.com/go/control-protocol)

This document revision corresponds to Kaleidescape software version 10.12 & 8.8.

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