for Kaleidescape Systems

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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 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 7 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 17 for complete information on message syntax.

See
Appendix A: Command Summary and Status Codes on page 197 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,

![Control Tab](image)

**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.

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

<table>
<thead>
<tr>
<th>Serial Parameter</th>
<th>Player</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (baud)</td>
<td>19200</td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Stop bits</td>
<td>1</td>
</tr>
<tr>
<td>Flow control</td>
<td>None</td>
</tr>
</tbody>
</table>
1. Open PuTTY on the computer.

2. Select the Serial radio button in the Connection type section as shown in the following figure.

![Putty Serial Selection](image)

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.

![Putty Serial Line Text Box](image)

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

![Click Serial](image1.png)

**Figure 5: Serial option**

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

![Select None](image2.png)

**Figure 6: Flow control setting**

7. Click **Open**. A terminal session window appears.

8. 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.

- **01** is the device ID for the component receiving the command. The value 01 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 01.
- **1** 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.
- **DOWN** is the message body, which indicates the action the component is to perform. In this example, the DOWN 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.

- **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.
- **1** is the sequence number. This number is the same number as the command so that responses can be matched to commands.
- **000** is the message body which starts with the three-digit status code that indicates whether or not the command was handled successfully. The value 000 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
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](image)

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>
<thead>
<tr>
<th>Serial Parameter</th>
<th>Server</th>
<th>Player</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (baud)</td>
<td>115200</td>
<td>19200</td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Parity bits</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Stop bits</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Flow control</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Flow control**

Kaleidescope 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>
<thead>
<tr>
<th>Flow Control Option</th>
<th>Line Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Component ignores CTS. Sends data at any time, and keeps RTS asserted, indicating that component is always ready to accept data.</td>
</tr>
<tr>
<td>RTS/CTS</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Character echo**

To avoid overloading the serial link, Kaleidescope components do not echo characters back to the sender. Error detection is handled through checksums. See **Error detection** on page 26 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

<table>
<thead>
<tr>
<th>Speed</th>
<th>Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>9600</td>
<td>3.2 seconds</td>
</tr>
<tr>
<td>19200</td>
<td>1.6 seconds</td>
</tr>
<tr>
<td>38400</td>
<td>0.8 seconds</td>
</tr>
<tr>
<td>57600</td>
<td>0.5 seconds</td>
</tr>
</tbody>
</table>

### 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]
```

- **device_id** identifies the Kaleidescape component sending or receiving a message. This is usually the control protocol device ID (CPID) of the Kaleidescape component.
- **seq** is a sequence number used to match a response from the component with the original command sent by the controller.
- **message_body** contains the message name and other data. Message fields are delimited by colons and order dependent. See [Message body](#) on page 21.
- **checksum** 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 55 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.
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 (1st 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 (1st 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:

Kaleidescape System sends:

02/1/000:NUM_ZONES:01:03:/94

Controller sends:

01/1/GET_NUM_ZONES:

Kaleidescape System sends:

01/1/000:NUM_ZONES:01:01:/91

Controller sends:

01/1/000:NUM_ZONES:01:03:/91

Kaleidescape System sends:

01/1/000:NUM_ZONES:01:01:/91
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 hexadecimals. For example,

#0000000144B/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 57.

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 197 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)
 01/1/000:UI_STATE:03:00:00:0:/40 (event message)
01/2/PLAY:
 01/2/000:/90                  (response)
 01/1/000:UI_STATE:03:02:00:0:/42 (event message)
 01/1/000:TITLE_NAME:Almost Famous:/34 (event message)
...
01/3/PAUSE:
 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 207.

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

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

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.

\[
\text{checksum} = 0 \\
\text{for each character in the full message before the checksum segment} \\
\quad \text{checksum} = \text{checksum} + (\text{current character decimal value}) \\
\quad \text{checksum} = \text{checksum} \mod 100 \\
\text{end for}
\]
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
- PLAY_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 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 (2nd 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 (2nd 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**

- GET_SYSTEM_VERSION
- GET_NUM_ZONES
- GET_DEVICE_TYPE_NAME
- GET_TIME
- GET_AVAILABLE_DEVICES
- GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER

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**

- GET_PROTOCOL
- SET_PROTOCOL_SETTINGS
- GET_ACTIVE_PROTOCOL
- SET_SUPPORTED_PROTOCOL

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 GETDEVICEINFO 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 GETDEVICEINFO 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
Navigation

Commands

Arrow commands Page up/down commands
SELECT POSITION_SELECT
BACK Paging and skipping
CHILD_SELECT

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 BACK command.

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

KALEIDESCAPE_MENU_ON KALEIDESCAPE_MENU_TOGGLE
KALEIDESCAPE_MENU_OFF DISC_OR_KALEIDESCAPE_MENU

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**

- GET_UI_STATE
- GO_MUSIC
- GO_MOVIES
- GO_MUSIC_LIST
- GO_MOVIE_LIST
- GO_MUSIC_COVERS
- GO_MOVIE_COVERS
- GO_MUSIC_COLLECTIONS
- GO_MOVIE_COLLECTIONS
- GO_MUSIC_COLLECTION
- GO_MOVIE_STORE
- GO_NOW_PLAYING
- GO_PARENTAL_CONTROL
- GO_SYSTEM_STATUS
- DISC_IN_TRAY_TOGGLE
- GO_VAULT_SUMMARY

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
- BACK
- 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 BACK command is used to cancel user input.

When user input is not being requested, KEYBOARD_CHARACTER commands act differently.

**View-specific commands**

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTER_LIST</td>
<td>KEYBOARD_CHARACTER</td>
</tr>
<tr>
<td>DEFAULT_LEVEL</td>
<td>KEYBOARD_LITERAL</td>
</tr>
<tr>
<td>SAFE_LEVEL</td>
<td>BACKSPACE</td>
</tr>
<tr>
<td>SHUFFLE_COVER_ART</td>
<td>SELECT</td>
</tr>
<tr>
<td>ALPHABETIZE_COVER_ART</td>
<td>BACK</td>
</tr>
<tr>
<td>GET_USER_INPUT</td>
<td>GET_USER_INPUT_PROMPT</td>
</tr>
<tr>
<td>SET_USER_INPUT_ENTRY</td>
<td>GO_PARENTAL_CONTROL</td>
</tr>
<tr>
<td>CHILD_SHUFFLE_COVER_ART</td>
<td>GO_SEARCH</td>
</tr>
</tbody>
</table>

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 BACK 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 BACK 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 BACK 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**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAY</td>
<td>Paging and skipping</td>
</tr>
<tr>
<td>PAUSE</td>
<td>Kaleidescape menu commands</td>
</tr>
<tr>
<td>STOP</td>
<td>INTERMISSION_ON</td>
</tr>
<tr>
<td>REPLAY</td>
<td>INTERMISSION_OFF</td>
</tr>
<tr>
<td>NEXT and PREVIOUS</td>
<td>INTERMISSION_TOGGLE</td>
</tr>
<tr>
<td>CHILD_STOP</td>
<td>SCAN_FORWARD and SCAN_REVERSE</td>
</tr>
<tr>
<td>CHILD_PLAY</td>
<td>CHILD_PAUSE</td>
</tr>
<tr>
<td>PLAY_OR_PAUSE</td>
<td></td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET_STATUS_CUE_PERIOD</td>
<td>GET_UI_STATE</td>
</tr>
<tr>
<td>GET_PLAY_STATUS</td>
<td>GET_MOVIE_LOCATION</td>
</tr>
<tr>
<td>GET_PLAYING_TITLE_NAME</td>
<td></td>
</tr>
</tbody>
</table>
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
- MUSIC_REPEAT_OFF
- MUSIC_RANDOM_TOGGLE
- MUSIC_REPEAT_ON
- MUSIC_REPEAT_OFF
- MUSIC_REPEAT_TOGGLE
- GET_CONTROLLED_ZONE
- SET_CONTROLLED_ZONE
- GET_MUSIC_NOW_PLAYING_STATUS
- GET_MUSIC_PLAY_STATUS
- GET_MUSIC_TITLE

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

<table>
<thead>
<tr>
<th>DISC_MENU</th>
<th>START_CHAPTER_ENTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISC_TOP_MENU</td>
<td>START_DISC_TITLE_ENTRY</td>
</tr>
<tr>
<td>DISC_RESUME</td>
<td>KEYBOARD_CHARACTER</td>
</tr>
<tr>
<td>DISC_OR_KALEIDESCAPE_MENU</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SHOW_NAVIGATION_OVERLAY</th>
<th>START_SEND_NUMBER_TO_DISC_ENTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS_AND_SETTINGS</td>
<td>ANGLE_NEXT</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_START</td>
<td>ANGLE_PREVIOUS</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_END</td>
<td>AUDIO_NEXT</td>
</tr>
<tr>
<td>SUBTITLES_NEXT</td>
<td>GET_CAMERA_ANGLE</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Blu-ray color buttons</th>
<th>BLURAY_SPECIAL_STOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET_MOVIE_MEDIA_TYPE</td>
<td>BLURAY_POPUP_MENU_TOGGLE</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAY</td>
<td>REPLAY</td>
</tr>
<tr>
<td>PAUSE</td>
<td>STOP</td>
</tr>
<tr>
<td>NEXT and PREVIOUS</td>
<td>SCAN_FORWARD and SCAN_REVERSE</td>
</tr>
<tr>
<td>GET_MUSIC_TITLE</td>
<td>GET_MUSIC_NOW_PLAYING_STATUS</td>
</tr>
<tr>
<td>SET_STATUS_CUE_PERIOD</td>
<td>MUSIC_RANDOM_TOGGLE</td>
</tr>
<tr>
<td>GET_MUSIC_PLAY_STATUS</td>
<td>MUSIC_REPEAT_TOGGLE</td>
</tr>
</tbody>
</table>

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 39 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**

<table>
<thead>
<tr>
<th>GET_CINEMASCAPE_MASK</th>
<th>GO_CALIBRATE_MASKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET_CINEMASCAPE_MODE</td>
<td>GO_CALIBRATE_MASKING_OVERSCAN</td>
</tr>
<tr>
<td>GET_MOVIE_LOCATION</td>
<td>SET_CINEMASCAPE_MODE</td>
</tr>
<tr>
<td>GET_SCALE_MODE</td>
<td>SET_SCREEN_MASK</td>
</tr>
<tr>
<td>GET_SCREEN_MASK</td>
<td>GET_SCREEN_MASK2</td>
</tr>
<tr>
<td>GET_VIDEO_COLOR</td>
<td></td>
</tr>
</tbody>
</table>

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-CinemaScape friendly display, the CINEMASCAPE_MODE message provides information on the CinemaScape 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 CinemaScape 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 (2nd 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

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power commands</strong></td>
<td></td>
</tr>
<tr>
<td>GET_DEVICE_POWER_STATE</td>
<td>Returns power state of a component.</td>
</tr>
<tr>
<td>PLAYER_RESTART</td>
<td>Event message stating that a player has just been restarted.</td>
</tr>
<tr>
<td>ENTER_STANDBY</td>
<td>Puts component into standby.</td>
</tr>
<tr>
<td>LEAVE_STANDBY</td>
<td>Takes component out of standby. For Strato products this command will also leave idle mode.</td>
</tr>
<tr>
<td><strong>Idle Mode</strong></td>
<td></td>
</tr>
<tr>
<td>GET_SYSTEM_READINESS_STATE</td>
<td>Returns the idle mode of Strato Movie Player or Cinema One (2nd generation). Idle mode is not supported on Premiere line products.</td>
</tr>
<tr>
<td>LEAVE_IDLE_MODE</td>
<td>Takes Strato Movie Player or Cinema One (2nd generation) out of idle mode.  Idle mode is not supported on Premiere line products.</td>
</tr>
<tr>
<td><strong>Verification</strong></td>
<td></td>
</tr>
<tr>
<td>GET_AVAILABLE_DEVICES</td>
<td>Returns a list of CPDIDs for all system components powered on.</td>
</tr>
<tr>
<td>GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER</td>
<td>Returns list containing the serial number device identifiers of all components in the system.</td>
</tr>
<tr>
<td>GET_DEVICE_TYPE_NAME</td>
<td>Returns component type.</td>
</tr>
<tr>
<td>GET_NUM_ZONES</td>
<td>Returns number of zones in a component.</td>
</tr>
<tr>
<td>GET_SYSTEM_VERSION</td>
<td>Returns protocol version number and the version of kOS.</td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td></td>
</tr>
<tr>
<td>GET_PROTOCOL</td>
<td>Returns protocol version number.</td>
</tr>
<tr>
<td>SET_PROTOCOL_SETTINGS</td>
<td>Changes protocol syntax.</td>
</tr>
<tr>
<td>SET_SUPPORTED_PROTOCOL</td>
<td>Changes Protocol version for the session.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GET_ACTIVE_PROTOCOL</td>
<td>Returns the current protocol for the session.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Event message registration</td>
<td></td>
</tr>
<tr>
<td>ENABLE_EVENTS</td>
<td>Enables event messages from a specified movie or music zone.</td>
</tr>
<tr>
<td>DISABLE_EVENTS</td>
<td>Disables event messages from a specified movie or music zone.</td>
</tr>
<tr>
<td>GET_DEVICE_INFO</td>
<td>Returns component device type, serial number, device ID, and IP address.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Module registration</td>
<td></td>
</tr>
<tr>
<td>SEND_TO_SYSLOG</td>
<td>Posts message to Kaleidescape System logs.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendly name</td>
<td></td>
</tr>
<tr>
<td>GET_FRIENDLY_NAME</td>
<td>Returns name of component or music zone.</td>
</tr>
<tr>
<td>SET_FRIENDLY_NAME</td>
<td>Renames component or music zone.</td>
</tr>
<tr>
<td>GET_FRIENDLY_SYSTEM_NAME</td>
<td>Returns the system name.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Power commands</td>
<td></td>
</tr>
<tr>
<td>GET_DEVICE_POWER_STATE</td>
<td></td>
</tr>
<tr>
<td>Affects</td>
<td>All components</td>
</tr>
<tr>
<td>Command</td>
<td>GET_DEVICE_POWER_STATE:</td>
</tr>
<tr>
<td>Response/Event</td>
<td>status:DEVICE_POWER_STATE:power_state:</td>
</tr>
<tr>
<td></td>
<td>[zone_1_state:...zone_n_state:]</td>
</tr>
</tbody>
</table>

A component responds with the component’s current power state.
power_state has the following values.
0 component is in standby
1 component is powered on

zone_1_state ... zone_n_state 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 (1st 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 \texttt{SET\_STATUS\_CUE\_PERIOD}, and get the current state of the system through messages such as \texttt{GET\_UI\_STATE} and \texttt{GET\_MOVIE\_LOCATION}.

\textbf{Note:} This event message does not contain a status code.

\textbf{ENTER\_STANDBY}

<table>
<thead>
<tr>
<th>Affects</th>
<th>Any component with zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>\texttt{ENTER_STANDBY}</td>
</tr>
<tr>
<td>Response</td>
<td>\texttt{status}</td>
</tr>
</tbody>
</table>

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

Use the \texttt{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 \texttt{DEVICE\_POWER\_STATE} message while the controller reconnects to the player. These players do not return a response to the \texttt{ENTER\_STANDBY} command.

\textbf{Example}

\textbf{Controller sends:}

\texttt{01/1/ENTER\_STANDBY:}

\textbf{Kaleidescape System sends:}

\texttt{01/1/000:/89}  
\texttt{01/!/000:DEVICE\_POWER\_STATE:0:0:/47}  
\texttt{01/!/000:VIDEO\_MODE:00:00:00:/56}  
\texttt{01/!/000:MUSIC\_NOW\_PLAYING\_STATUS:00000:00000:1:0:0000000046::/76}  
\texttt{01/!/000:HIGHLIGHTED\_SELECTION::/63}

In this example, the \texttt{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

Affects Any component with zones
Command LEAVE_STANDBY:
Response status:

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 (1st 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 (1st 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 (2nd 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 (2nd 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\textsuperscript{nd} generation)

Command   LEAVE_IDLE_MODE:

This command causes Strato player or Cinema One (2\textsuperscript{nd} 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

**GETAVAILABLE_DEVICES**

Affects All components

Command GETAVAILABLE_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 GETAVAILABLE_DEVICESBY_SERIALNUMBER 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/GETAVAILABLE_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 GETAVAILABLE_DEVICES command executed later.
**GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER**

**Affects**
All components

**Command**
GET_AVAILABLE_DEVICES_BY_SERIAL_NUMBER:

**Response**
status:AVAILABLE_DEVICES_BY_SERIAL_NUMBER:sn1:
[sn2:...]

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**

**Affects**
All components

**Command**
GET_DEVICE_TYPE_NAME:

**Response**
status:DEVICE_TYPE_NAME:device_name:

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

Affects: All components
Command: GET_NUM_ZONES:
Response: status:NUM_ZONES:num_movie_zones:
             num_music_zones:

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

num_movie_zones is 01 if there is an onscreen display associated with
the component, and 00 if there is not.

num_music_zones 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

Affects: All components
Command: GET_SYSTEM_VERSION:
Response: status:SYSTEM_VERSION:control_protocol_version:
            kOS_version:

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.

k0S_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:delimiter_type:character_set:
Response status:

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 (unescape).

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.

delimiter_type

<table>
<thead>
<tr>
<th>PRINTABLE_DELIMITERS</th>
<th>Sends messages with the default printable characters, slash (/), colon (:), and carriage return (\r\n).</th>
</tr>
</thead>
<tbody>
<tr>
<td>BINARY_DELIMITERS</td>
<td>Sends messages with the binary delimiters SOH, STX, and EOT.</td>
</tr>
</tbody>
</table>

character_set

| LATIN-1              | Text fields can contain any printable character (ISO 8859-1). |
Table 7: Delimiter functions

<table>
<thead>
<tr>
<th>Printable delimiter</th>
<th>Binary delimiter</th>
<th>Function</th>
</tr>
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<tbody>
<tr>
<td>/</td>
<td>SOH \x01</td>
<td>Delimits the segments of a Kaleidescape control message.</td>
</tr>
<tr>
<td>:</td>
<td>STX \x02</td>
<td>Delimits the fields within the message body of a control message.</td>
</tr>
<tr>
<td>\r\n</td>
<td>EOT \x04</td>
<td>Delimits individual control messages.</td>
</tr>
</tbody>
</table>

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:BINARY_DELIMITERS: 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 ENABLEEVENTS command for each zone. The GETNUMZONES and GETAVAILABLE_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/GETAVAILABLE_DEVICES:

**Kaleidescape System sends:**
01/1/000:AVAILABLE_DEVICES:01:09:/16

**Controller sends:**
01/2/GETNUMZONES:

**Kaleidescape System sends:**
01/2/000:NUMZONES:00:00:/90

**Controller sends:**
09/3/GETNUMZONES:

**Kaleidescape System sends:**
09/3/000:NUMZONES:01:01:/01

**Controller sends:**
01/4/ENABLEEVENTS:09:

The first field of the NUMZONES 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 ENABLEEVENTS 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/ENABLEEVENTS:#144B:
Events from the device directly connected are normally prefaced by the CPID, or CPID 01 if the device does not have an assigned CPID. 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 CPID, 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 CPID 35, to which the controller is directly connected, issue this command.

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

The 35 in the field is the CPID of the directly connected component (the M500 Player). The 01 is the music zone identifier. Note that this example does not use CPID 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**

**Affects**

All components

**Command**

`DISABLE_EVENTS:target_device_id:`

**Response**

`status:`

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

`target_device_id` 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:
cpid: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.

cpid is the assigned device identifier of the component.

ip_address is the network TCP/IP address of the component.

**Note**: The returned cpid 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

Affects: All components

Command: SEND_TO_SYSLOG:INFORMATION:message:

Response: status

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

Affects: Any zone

Command: GET_FRIENDLY_NAME:

Response: status:FRIENDLY_NAME:name:

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 (2nd 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

Affects
Any zone

Command
SET_FRIENDLY_NAME:name:

Response
status:FRIENDLY_NAME:name:

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 (2nd 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.

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<td>Page up/down commands</td>
<td>Used to navigate by pages on the onscreen display.</td>
</tr>
<tr>
<td>SELECT</td>
<td>Selects the highlighted item in the onscreen display.</td>
</tr>
<tr>
<td>BACK</td>
<td>Context-sensitive back. Dismisses a page, dialog, or text entry. Stops movie playback.</td>
</tr>
<tr>
<td>CANCEL</td>
<td>Dismisses a page, dialog, or text entry.</td>
</tr>
<tr>
<td>POSITION_SELECT</td>
<td>Transmits touch screen interaction to the onscreen display.</td>
</tr>
<tr>
<td>CHILD_SELECT</td>
<td>Selects the highlighted item in the onscreen display. Also activates the child user interface.</td>
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<tr>
<td><strong>Kaleidescape menu</strong></td>
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<td>Displays Kaleidescape menu.</td>
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<td>Removes Kaleidescape menu.</td>
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<td>KALEIDESCAPE_MENU_TOGGLE</td>
<td>Toggles Kaleidescape menu on and off.</td>
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<tr>
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<td>Displays the Movie List view.</td>
</tr>
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<td>GO_MOVIE_COVERS</td>
<td>Displays the Movie Covers view.</td>
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<tr>
<td>GO_MOVIE_COLLECTIONS</td>
<td>Displays the Movie Collections view.</td>
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<td>Command</td>
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<td>-----------------------------------------------------------------------------</td>
</tr>
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<td><strong>Music views</strong></td>
<td></td>
</tr>
<tr>
<td>GO_MUSIC</td>
<td>Changes the interface from a movie view to the corresponding music view.</td>
</tr>
<tr>
<td>GO_MUSIC_LIST</td>
<td>Displays the Music List view.</td>
</tr>
<tr>
<td>GO_MUSIC_COVERS</td>
<td>Displays the Music Covers view.</td>
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<tr>
<td>GO_MUSIC_COLLECTIONS</td>
<td>Displays the Music Collections view.</td>
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<td>GO_MUSIC_COLLECTION</td>
<td>Displays a specific collection in the Music Collections view.</td>
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<tr>
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<td>Displays the Parental Control view.</td>
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<tr>
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<td>Displays the System Status view.</td>
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<td>Displays the Vault Summary view.</td>
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<tr>
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<tr>
<td>GET_USER_INPUT</td>
<td>Provides information about user input requested from the user interface.</td>
</tr>
<tr>
<td>GET_USER_INPUT_PROMPT</td>
<td>Returns user input prompt details currently shown on screen.</td>
</tr>
<tr>
<td>SET_USER_INPUT_ENTRY</td>
<td>Sends a complete string to the on-screen prompt.</td>
</tr>
<tr>
<td>KEYBOARD_CHARACTER</td>
<td>Sends a single character to the onscreen display.</td>
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<td>KEYBOARD_LITERAL</td>
<td>Sends a single character to the onscreen keyboard.</td>
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<td>GO_SEARCH</td>
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<tr>
<td>SHUFFLE_COVER_ART</td>
<td>Shuffles cover art on the covers view.</td>
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<tr>
<td>Command</td>
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<td>---------------------------------</td>
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<tr>
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<td>Shuffles cover art on the child user interface if the child user interface is displayed. If not, displays child user interface.</td>
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<tr>
<td>ALPHABETIZE_COVER_ART</td>
<td>Arranges covers alphabetically.</td>
</tr>
<tr>
<td>DEFAULT_LEVEL</td>
<td>Changes the parental control level to the default level.</td>
</tr>
<tr>
<td>SAFE_LEVEL</td>
<td>Changes parental control to highest level without a passcode.</td>
</tr>
<tr>
<td><strong>Page and content details</strong></td>
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<tr>
<td>DETAILS</td>
<td>Toggles between the details page and the current display.</td>
</tr>
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<td>DISC_IN_TRAY_TOGGLE</td>
<td>Toggles the disc in player details</td>
</tr>
<tr>
<td>GET_CONTENT_DETAILS</td>
<td>Provides information about a movie or album selected.</td>
</tr>
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<td>Returns the handle of the movie or album currently selected on the user interface.</td>
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<tr>
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<td></td>
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**Basic navigation commands**

**Arrow commands**

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<th>LEFT_PRESS</th>
<th>RIGHT_PRESS</th>
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<th>CHILD_DOWN_PRESS</th>
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<th>CHILD_RIGHT_PRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP</td>
<td>DOWN</td>
<td>LEFT</td>
<td>RIGHT</td>
<td>CHILD_UP</td>
<td>CHILD_DOWN</td>
<td>CHILD_LEFT</td>
<td>CHILD_RIGHT</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Command</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAGE_UP_PRESS</td>
<td>status</td>
</tr>
<tr>
<td>PAGE_UP_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN</td>
<td></td>
</tr>
</tbody>
</table>

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
02/1/000: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.
### BACK

**Affects**: Any movie zone  
**Command**: BACK:  
**Response**: status:

This command replaces CANCEL, and supersedes most uses of STOP_OR_CANCEL.

Navigates back based on the current context. In the onscreen display, this includes dismissing a page, dialog, or text entry. During movie playback, behaves like STOP. It does not interact with music playback in the Now Playing view.

**Example 1**  
**In the user interface**

Controller sends:

01/4/BACK:

Kaleidescape System sends:

01/4/000:/92  
01/!/000:UI_STATE:01:00:00:0:/38

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

**Example 2**  
**During movie playback**

Controller sends:

01/9/BACK:

Kaleidescape System sends:

01/9/000:/97  
01/!/000:UI_STATE:01:00:00:0:/38  
...  
01/!/000:PLAY_STATUS:0:0:0:0:00000:00000:00000:00000:00000:00000:80

In this second example, BACK causes the onscreen display to return to the Movie List view, which is confirmed by the UI_STATE message.

### CANCEL

**Affects**: Any movie zone  
**Command**: CANCEL:  
**Response**: status:

Legacy command that is now an alias for BACK.

In the onscreen display, dismisses a page, dialog, or text entry. See the BACK command above for additional functionality and examples. 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

Affects Any movie zone

Command POSITION_SELECT:x_loc:y_loc:

Response status:

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**

**Affects** Any movie zone  
**Command** CHILD_SELECT:  
**Response** status:

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**

**Affects** Any movie zone  
**Command** KALEIDESCAPE_MENU_ON:  
**Response** status:

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**

**Affects** Any movie zone
**Command** KALEIDESCAPE_MENU_OFF:
**Response** status:

Removes the Kaleidescape menu if onscreen; otherwise has no effect. In either case a status message is returned. If the menu is already displayed, BACK, 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**

**Affects** Any movie zone
**Command** KALEIDESCAPE_MENU_TOGGLE:
**Response** status:

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 KALEIDESCAPE_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
screen 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)
**popup** 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)

**dialog** 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

**saver** 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

Affects Any movie zone
Command GO_MOVIE_LIST:
Response status:

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
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**

**Affects** Any movie zone

**Command** GO_MOVIE_COLLECTION:collection_name:

**Response** status:

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**

**Affects**  Any movie zone

**Command**  GO_MUSIC:

**Response**  

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**

**Affects**  Any movie zone

**Command**  GO_MUSIC_LIST:

**Response**  status:

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

Affects: Any movie zone
Command: GO_NOW_PLAYING:
Response: status:

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

Affects: Any Strato movie zone
Command: GO_MOVIE_STORE:
Response: status:

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

Affects: Any movie zone
Command: GO_SYSTEM_STATUS:
Response: status:

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

Affects: Any movie zone
Command: GO_PARENTAL_CONTROL:
Response: status:

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_PARENTALCONTROL 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

**Affects**
Any movie zone

**Command**
GO_VAULT_SUMMARY:

**Response**
status:

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:

```plaintext
02/1/GO_VAULT_SUMMARY:
```

Kaleidescope System sends:

```plaintext
02/1/000:/90
02/!/000:UI_STATE:14:00:00:0:/43
02/!/000:HIGHLIGHTED_SELECTION::/64
```

User input

GET_USER_INPUT

**Affects**
Any movie zone

**Command**
GET_USER_INPUT:

**Response/Event**
status:USER_INPUT:type:prompt:entry:

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.

- **type**
  - 00: No prompt
  - 01: Alphanumeric prompt (full keyboard required)
  - 02: Numeric prompt (numeric keypad required)

- **prompt**
  specifies the query, such as Search for title.

- **entry**
  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:

```plaintext
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**

<table>
<thead>
<tr>
<th>Affects</th>
<th>Any movie zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request</td>
<td>KEYBOARD_CHARACTER:character:</td>
</tr>
<tr>
<td>Response</td>
<td>status:</td>
</tr>
</tbody>
</table>

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::
- 01/1/000:/89
- 01/2/KEYBOARD_CHARACTER:::
- 01/2/012:/93

**Example 1**

**Controller sends:**
01/4/KEYBOARD_CHARACTER:r:

**Kaleidescape System sends:**
01/4/000:/92
02/1/000:HIGHLIGHTED_SELECTION:1.W_22033:/91

**Controller sends:**
01/5/KEYBOARD_CHARACTER:o:

**Kaleidescape System sends:**
01/5/000:/93
02/1/000: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**

<table>
<thead>
<tr>
<th>Affects</th>
<th>Any movie zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request</td>
<td><code>KEYBOARD_LITERAL:character:</code></td>
</tr>
<tr>
<td>Response</td>
<td><code>status:</code></td>
</tr>
</tbody>
</table>

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` (incorrect format)
- `01/2/KEYBOARD_LITERAL:::` (incorrect format)
- `01/2/012:/93` (incorrect format)

**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:o:

Kaleidescape System sends:
01/1/000:/89
01/!/000:USER_INPUT:01:Name:rO:/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 O was sent, resulting in a capital O appearing next to r in the onscreen text box and the USER_INPUT status was updated to rO.

**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.
**type**

specifies the type of prompt.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>No prompt</td>
</tr>
<tr>
<td>01</td>
<td>Alphanumeric prompt (full keyboard required)</td>
</tr>
<tr>
<td>02</td>
<td>Numeric prompt (numeric keypad required)</td>
</tr>
</tbody>
</table>

**icon**

## Current icon displayed in the prompt

**prompt**

specifies the query, such as Search for title.

**displayed**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Entry not displayed</td>
</tr>
<tr>
<td>1</td>
<td>Entry is displayed</td>
</tr>
</tbody>
</table>

**char_limit**

Character limit for input

**valid**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Current entry is not valid</td>
</tr>
<tr>
<td>1</td>
<td>Current entry is valid</td>
</tr>
</tbody>
</table>

**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_ENTRY:mypassword:

**Kaleidescape System sends:**

01/1/000:/89
View-specific commands

FILTER_LIST

Affects Any movie zone
Command FILTER_LIST:
Response status:

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 BACK 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 BACK 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**

**Affects**
Any movie zone

**Command**
SHUFFLE_COVER_ART:

**Response**
status:

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

Affects: Any movie zone
Command: CHILD_SHUFFLE_COVER_ART:
Response: status:

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

Affects: Any movie zone
Command: ALPHABETIZE_COVER_ART:
Response: status:

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

Affects Any movie zone
Command DEFAULT_LEVEL:
Response status:

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

Affects Any movie zone
Command SAFE_LEVEL:
Response status:

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

Affects Any movie zone
Command DETAILS:
Response status:

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 BACK 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_TOGGL

Affects Any movie player with an optical disc drive
Command DISC_IN_TRAY_TOGGL:
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_TOGGL:

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_TOGGL 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_CONTENTDETAILS to retrieve information about the movie or album.
GET_CONTENT_DETAILS

Affects: All components

Command: GET_CONTENT_DETAILS: handle: passcode:

Response: status: CONTENT_DETAILS_OVERVIEW:
    num_lines: handle: table:

Response: status: CONTENT_DETAILS: line: name: value:

This command provides concise information about a movie or album.

Command parameters

handle 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.

passcode 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

num_lines is the number of CONTENT_DETAILS messages following the overview.

handle is the identifier for the movie or album that was requested in the GET_CONTENT_DETAILS command.

table 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.
*line* 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 *num_lines*.

*name* is the name of the value being provided by this CONTENT_DETAILS response. For example, *Title*.

*value* 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 0001234."

**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\/panelcoverart\b9bca9a6f224fb54\3866055.jpg:/53
For content in the albums table

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Album_content_handle</td>
<td>is the handle for the album, as requested by the GET_CONTENTDETAILS command.</td>
</tr>
<tr>
<td>Album_title</td>
<td>is the title of the album.</td>
</tr>
<tr>
<td>Artist</td>
<td>is the artist listed for the album.</td>
</tr>
<tr>
<td>Artists</td>
<td>is a carriage return (\r) delimited list of artists associated with the album.</td>
</tr>
<tr>
<td>Composer</td>
<td>is the composer for the album.</td>
</tr>
<tr>
<td>Composers</td>
<td>is a carriage return (\r) delimited list of composers associated with the album.</td>
</tr>
<tr>
<td>Performer</td>
<td>is the performer or artist associated with the album.</td>
</tr>
<tr>
<td>Performers</td>
<td>is a carriage return (\r) delimited list of performers associated with the album.</td>
</tr>
<tr>
<td>Cover_URL</td>
<td>is a URL for the cover art image, for display on touch panels.</td>
</tr>
<tr>
<td>HiRes_cover_URL</td>
<td>is a URL for a 1080p resolution cover art image, for display on touch panels.</td>
</tr>
<tr>
<td>Year</td>
<td>is the year the album was released.</td>
</tr>
<tr>
<td>Running_time</td>
<td>is the length of the album in seconds.</td>
</tr>
<tr>
<td>Last_played</td>
<td>future use</td>
</tr>
<tr>
<td>Last_played_relative</td>
<td>future use</td>
</tr>
<tr>
<td>Genre</td>
<td>is the genre of music associated with the album.</td>
</tr>
<tr>
<td>Genres</td>
<td>is a carriage return (\r) delimited list containing the genres associated with the album.</td>
</tr>
</tbody>
</table>
**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:**
```
01/1/000: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\/panelcoverart\/b9bca9a6f224fb54\/_music_\/_f35552zh21s.jpg:/24
01/1/000:CONTENT_DETAILS:5:HiRes_cover_URL:http:\/\/10.100.12.194\/panelcoverart\/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\rRock\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**

Affects Any movie zone

Command `GO_SCREEN_SAVER`:

Response `status`:

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

Affects Any movie zone
Command STOP_SCREEN_SAVER:
Response status:

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

<table>
<thead>
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<th>Command</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
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<td>Begins playback of movies and music.</td>
</tr>
<tr>
<td>PAUSE</td>
<td>Toggles pause.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>STOP</td>
<td>Stops playback.</td>
</tr>
<tr>
<td>PLAY_OR_PAUSE</td>
<td>Begins playback of movies, or toggles pause.</td>
</tr>
<tr>
<td>NEXT and PREVIOUS</td>
<td>Skips forward or backward through chapters or songs.</td>
</tr>
<tr>
<td>SCAN_FORWARD and SCAN_REVERSE</td>
<td>Cycles through fast-forward or fast-reverse.</td>
</tr>
<tr>
<td>REPLAY</td>
<td>Skips back ten seconds during movie playback.</td>
</tr>
</tbody>
</table>

**Child Remote playback control**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD_PLAY</td>
<td>If child user interface is active, or if selected movie is in Child collection, plays the selected movie. Otherwise, activates child user interface.</td>
</tr>
<tr>
<td>CHILD_PAUSE</td>
<td>Toggles pause and displays child user interface.</td>
</tr>
<tr>
<td>CHILD_STOP</td>
<td>Stops playback.</td>
</tr>
</tbody>
</table>

**Playback information**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET_STATUS_CUE_PERIOD</td>
<td>Sets the frequency of PLAY_STATUS and MUSIC_PLAY_STATUS event messages.</td>
</tr>
<tr>
<td>GET_PLAY_STATUS</td>
<td>Identifies movie play mode, speed, location and chapter.</td>
</tr>
<tr>
<td>GET_PLAYING_TITLE_NAME</td>
<td>Provides the title of the movie currently playing.</td>
</tr>
<tr>
<td>GET_MUSIC_NOW_PLAYING_STATUS</td>
<td>Sends the state of the Now Playing list.</td>
</tr>
<tr>
<td>GET_MUSIC_PLAY_STATUS</td>
<td>Provides playback information for the currently playing music.</td>
</tr>
<tr>
<td>GET_MUSIC_TITLE</td>
<td>Provides information about the song currently playing.</td>
</tr>
</tbody>
</table>

**Music playback controls**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>MUSIC_RANDOM_ON</td>
<td>Turns on random playback for music.</td>
</tr>
<tr>
<td>MUSIC_RANDOM_OFF</td>
<td>Turns off random playback for music.</td>
</tr>
<tr>
<td>MUSIC_RANDOM_TOGGLE</td>
<td>Toggles random music playback on and off.</td>
</tr>
<tr>
<td>MUSIC_REPEAT_ON</td>
<td>Turns on repeat playback for music.</td>
</tr>
<tr>
<td>MUSIC_REPEAT_OFF</td>
<td>Turns off repeat playback for music.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MUSIC_RANDOM_TOGGLE</td>
<td>Toggles repeat music playback on and off.</td>
</tr>
<tr>
<td>GET_CONTROLLED_ZONE</td>
<td>Returns the music zone currently under control.</td>
</tr>
<tr>
<td>SET_CONTROLLED_ZONE</td>
<td>Changes the music zone controlled by the onscreen display.</td>
</tr>
<tr>
<td><strong>DVD/Blu-ray Disc navigation</strong></td>
<td></td>
</tr>
<tr>
<td>DISC_MENU</td>
<td>Displays DVD or Blu-ray Disc menu for the current playback.</td>
</tr>
<tr>
<td>DISC_TOP_MENU</td>
<td>Displays the top menu for the DVD or Blu-ray Disc.</td>
</tr>
<tr>
<td>DISC_RESUME</td>
<td>Resumes playback from the point of interruption.</td>
</tr>
<tr>
<td>STARTCHAPTER_ENTRY</td>
<td>Displays a tab to enter chapter number to skip directly to.</td>
</tr>
<tr>
<td>START_DISC_TITLE_ENTRY</td>
<td>Displays a tab to enter title number to skip directly to a title.</td>
</tr>
<tr>
<td><strong>Movie playback options</strong></td>
<td></td>
</tr>
<tr>
<td>SHOW_NAVIGATION_OVERLAY</td>
<td>During playback, opens the movie overlay to the chapter/title navigation option.</td>
</tr>
<tr>
<td>STATUS_AND_SETTINGS</td>
<td>During playback, toggles the display of the movie overlay. Otherwise, brings up the System Status page.</td>
</tr>
<tr>
<td>INTERMISSION_ON</td>
<td>Pauses playback and displays intermission screen.</td>
</tr>
<tr>
<td>INTERMISSION_OFF</td>
<td>Removes the intermission screen and resumes playback.</td>
</tr>
<tr>
<td>INTERMISSION_TOGGLE</td>
<td>Toggles intermission screen on and off.</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_START</td>
<td>Records a bookmark for the start of a scene.</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_END</td>
<td>Records a bookmark for the end of a scene.</td>
</tr>
<tr>
<td>START_SEND_NUMBER_TO_DISC_ENTRY</td>
<td>Displays a tab to enter a number key to send to a DVD or Blu-ray Disc.</td>
</tr>
<tr>
<td>ANGLE_NEXT</td>
<td>Changes to the next camera angle defined for playback.</td>
</tr>
<tr>
<td>ANGLE_PREVIOUS</td>
<td>Changes to the previous camera angle defined for playback.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AUDIO_NEXT</td>
<td>Changes to the next audio stream during movie playback.</td>
</tr>
<tr>
<td>SUBTITLES_NEXT</td>
<td>Changes to the next subtitle track during playback.</td>
</tr>
<tr>
<td>GET_CAMERA_ANGLE</td>
<td>Provides information about the current camera angle.</td>
</tr>
</tbody>
</table>

**Blu-ray Disc playback options**

- **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_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.

**PLAY_OR_PAUSE**

Affects Any Strato movie zone

Command PLAY_OR_PAUSE:

Response status:

If movie playback is not ongoing, begins playing the highlighted movie or other playable item (scene, script, etc.). See the PLAY command for more details.

During movie playback, toggles between pausing and resuming playback, like PAUSE.

**Example 1**

Controller sends:
01/8/PLAY_OR_PAUSE:

Kaleidescape System sends:
01/8/000:/96
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_OR_PAUSE command is sent, and playback begins. The start of playback generates several event messages about the playback.

**Example 2**

Controller sends:
01/2/PLAY_OR_PAUSE:

Kaleidescape System sends:
01/2/000:/90
03/!/000:PLAY_STATUS:1:0:01:07136:00027:001:00300:00027:/23
In this example, the PLAY_OR_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.

**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:00012:00000:1:0:000000035:2.20000:/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:00012:00000:1:0:000000036::/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**

Affects: Any zone  
Command: NEXT: PREVIOUS:  
Response: status:

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

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

Affects
Any zone

Command
SCAN_FORWARD:
SCAN_REVERSE:

Response
status:

During movie playback, cycles through fast-forward or fast-reverse at 2×, 4×, and 8× the speed. To return to normal speed, issue a PLAY command.

During music playback, cycles through fast-forward or fast-reverse at 4× and 16× 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

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**

**Affects** Any movie zone

**Command** REPLAY:

**Response** status:

Skips back ten 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 ten 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
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**

Affects: Any zone
Command: SET_STATUS_CUE_PERIOD:period:

Response: status:STATUS_CUE_PERIOD:period:

Sets the time in seconds between PLAY_STATUS event messages to period.
**period** is the time in seconds between PLAY_STATUS and MUSIC_PLAY_STATUS messages.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No updates for title and chapter locations are sent.</td>
</tr>
<tr>
<td>1</td>
<td>A PLAY_STATUS/MUSIC_PLAY_STATUS event message is sent every second as title and chapter locations change.</td>
</tr>
</tbody>
</table>

**Note:** 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
...```

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 \texttt{SET\_STATUS\_CUE\_PERIOD}.

- **mode** is the current playback mode of the movie.
  - 0: Nothing playing
  - 1: Paused (\textit{speed} does not apply)
  - 2: Playing (\textit{speed} does not apply)
  - 3: unused
  - 4: Forward scan (\textit{speed} applies)
  - 5: unused
  - 6: Reverse scan (\textit{speed} applies)

- **speed** 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).

- **title\_num** 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 \texttt{00}.

- **title\_length** 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 \texttt{00000}.

- **title\_loc** 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 \texttt{00000}.

- **chap\_num** is a zero-padded, three-digit number identifying the current chapter playing. If no chapter is playing, this value is \texttt{000}.

- **chap\_length** 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 \texttt{00000}.

- **chap\_loc** 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 \texttt{00000}.

**Example**

\textbf{Kaleidescape System sends:}

\texttt{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.

`title` 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 23 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.
**total** is the number of tracks in the list, as a zero-padded, five-digit number.

**Location** is the index of the song currently playing, with 0 representing the first position. Provided as a zero-padded, five-digit number.

**repeat** indicates if repeat is on or off. 0 is off; 1 is on.

**random** indicates if random is on or off. 0 is off; 1 is on.

**generation** 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.

**now_playing_handle** 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:00002:00000:1:0:000000123:2.205cd:
/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.
**mode** 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

**speed** 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.

**Length** is the length of the current track, in seconds, as a zero-padded, five-digit number.

**Position** 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.

**progress** 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_handle** 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**

**Affects** Any premiere music zone

**Command** MUSIC_RANDOM_TOGGLE:

**Response** *status*:

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**

**Affects** Any premiere music zone

**Command** MUSIC_REPEAT_ON:

**Response** *status*:

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:00000:00000:1:0:000000012::/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 000019A.
**SET_CONTROLLED_ZONE**

**Affects**
Any movie zone

**Command**
SET_CONTROLLED_ZONE:\#sn.\zn:

**Response**
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.

sn is the serial number of the component to be controlled.

zn 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**

**Affects**
Any movie zone

**Command**
DISC_MENU:

**Response**
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:2:0:01:07195:00000:00000:000:00000:00000:/30

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

Affects: Any movie zone
Command: DISC_TOP_MENU:
Response: status:

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**

Affects: Any movie zone  
Command: DISC_RESUME:  
Response: status:

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**

Affects: Any movie zone  
Command: START_CHAPTER_ENTRY:  
Response: status:

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 STARTCHAPTERENTRY 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**

**Affects** Any movie zone

**Command** SHOW_NAVIGATION_OVERLAY:

**Response** status:

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

Affects Any movie zone
Command STATUS_AND_SETTINGS:
Response status:

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**

**Affects** Any movie zone

**Command** INTERMISSION_ON:

**Response** status:

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**

**Affects** Any movie zone

**Command** INTERMISSION_OFF:

**Response** status:

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**

**Affects** Any movie zone  
**Command** INTERMISSION_TOGGLE:  
**Response** status:

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**

**Affects** Any movie zone  
**Command** SET_FAVORITE_SCENE_START:  
**Response** status:

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:**

```plaintext
01/2/SET_FAVORITE_SCENE_START:
```

**Kaleidescape System sends:**

```plaintext
01/2/000:/90
```

**Note:** This command replaces the **SET_FAVORITE_SCENE** command.

**SET_FAVORITE_SCENE_END**

**Affects** Any movie zone

**Command** `SET_FAVORITE_SCENE_END:

**Response** `status:

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:**

```plaintext
01/3/SET_FAVORITE_SCENE_END:
```

**Kaleidescape System sends:**

```plaintext
01/3/000:/91
```
START_SEND_NUMBER_TO_DISC_ENTRY

Affects Any movie zone
Command START_SEND_NUMBER_TO_DISC_ENTRY:
Response status:

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 BACK 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**

Affects: Any movie zone  
Command: ANGLE_NEXT:  
Response: status:

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**

Affects: Any movie zone  
Command: ANGLE_PREVIOUS:  
Response: status:

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**

Affects: Any movie zone  
Command: AUDIO_NEXT:  
Response: status:

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**

**Affects** Any movie zone  
**Command** SUBTITLES_NEXT:  
**Response** status:

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**

**Affects** Any movie zone  
**Command** GET_CAMERA_ANGLE:  
**Response/Event** status:CAMERA_ANGLE:cur_angle:  
num_angles:in_angle_block:

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.

- **cur_angle** is a single digit from 1–9 that indicates which angle is currently active.
- **num_angles** 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.
- **in_angle_block** 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**

<table>
<thead>
<tr>
<th>RED_PRESS</th>
<th>RED_RELEASE</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN_PRESS</td>
<td>GREEN_RELEASE</td>
<td>GREEN</td>
</tr>
<tr>
<td>BLUE_PRESS</td>
<td>BLUE_RELEASE</td>
<td>BLUE</td>
</tr>
<tr>
<td>YELLOW_PRESS</td>
<td>YELLOW_RELEASE</td>
<td>YELLOW</td>
</tr>
</tbody>
</table>

**Affects** Any movie zone  
**Command** RED_PRESS: (same for other color button commands)  
**Response** status: 

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**

<table>
<thead>
<tr>
<th>Affects</th>
<th>Any movie zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>GET_MOVIE_MEDIA_TYPE:</td>
</tr>
<tr>
<td>Response/Event</td>
<td>status:MOVIE_MEDIA_TYPE:media_type:</td>
</tr>
</tbody>
</table>

This message indicates the type of media currently being played. The event message is generated when the media type changes.
media_type 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**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>STOP_OR_CANCEL</code></td>
<td>Behaves like STOP during movie playback or when sent directly to a music zone. Behaves like CANCEL in the user interface.</td>
</tr>
<tr>
<td><code>DISC_OR_KALEIDESCAPE_MENU</code></td>
<td>Behaves like DISC_MENU during movie or music playback. Behaves like KALEIDESCAPE_MENU_TOGGLE in user interface.</td>
</tr>
</tbody>
</table>

**Paging and skipping**

Behave like NEXT or PREVIOUS during movie playback. Behave like PAGE_UP or PAGE_DOWN 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.

The BACK command replaces all aspects of this command except for interactions with music playback.

**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:0:0:0:00000:00000:000:00000:/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**

<table>
<thead>
<tr>
<th>Affects</th>
<th>Any movie zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>DISC_OR_KALEIDESCAPE_MENU:</td>
</tr>
<tr>
<td>Response</td>
<td>status:</td>
</tr>
</tbody>
</table>

- 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
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

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Text-based music browsing interface (SATP)</strong></td>
<td></td>
</tr>
<tr>
<td>BROWSE</td>
<td>Used to navigate the text-based music browsing interface (SATP).</td>
</tr>
<tr>
<td>PERFORM_ACTION</td>
<td>Performs a specified action on a music handle.</td>
</tr>
<tr>
<td><strong>Keypad collections and presets</strong></td>
<td></td>
</tr>
<tr>
<td>PLAY_FIRST_IN_MUSIC_COLLECTION</td>
<td>Plays the first item in a music collection.</td>
</tr>
<tr>
<td>PLAY_NEXT_IN_MUSIC_COLLECTION</td>
<td>Plays the next item in a music collection.</td>
</tr>
</tbody>
</table>
PLAY_PREVIOUS_IN_MUSIC_COLLECTION  Plays the previous item in a music collection.

ASSIGN_PLAYING_MUSIC_TO_PRESET  Assigns a preset tag to the music item currently playing.

PLAY_MUSIC_PRESET  Plays the music item associated with a preset tag.

GET_MUSIC_PRESET_INFORMATION  Provides detailed information about a music preset.

GET_PLAYING_MUSIC_INFORMATION  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 Bublé**, 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](image)

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**

**Affects**
Any premiere music zone

**Command**
BROWSE:browse_handle:passcode:lines:flags:

**Response**
status:BROWSE_RESULTS_OVERVIEW:
browse_handle:title:response_lines:total_lines:
[first_line_index:playing_line_index:]

**Response**
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:

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**

- **browse_handle**
  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.

- **[blank]**
  Refers to the topmost node in the browsing tree. This currently has only the top level music node as its child.

- **music**
  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.

- **now_playing**
  Refers to the top level node for the now playing queue. The Now_Playing 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.
**passcode** is unused, leave blank.

**lines** 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.

**flags** 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.

**filter** 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.

**suggest** When this flag is used, the Kaleidescape System ignores the specific window provided in the Lines 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 Lines 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.

<table>
<thead>
<tr>
<th>device_id</th>
<th>sequence</th>
<th>command name</th>
<th>browse handle</th>
<th>passcode</th>
<th>lines</th>
<th>flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.01</td>
<td>1</td>
<td>BROWSE</td>
<td>1.7.1.2.0</td>
<td></td>
<td>1-5</td>
<td>filter=&quot;Bo&quot;</td>
</tr>
</tbody>
</table>

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.
first_line_index is the index of the first line, relative to the entire node. This index matches the absolute_line value of the first BROWSE_RESULT response.

playing_line_index is the index of the line that is being played. This index matches the absolute_line 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.

<table>
<thead>
<tr>
<th>device_id</th>
<th>sequence</th>
<th>status</th>
<th>code</th>
<th>message name</th>
<th>browse handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.01</td>
<td>1</td>
<td>000</td>
<td></td>
<td>BROWSE_RESULTS_OVERVIEW</td>
<td>now_playing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>title</th>
<th>response lines</th>
<th>total lines</th>
<th>first line index</th>
<th>playing line index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Now Playing</td>
<td>5</td>
<td>15</td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>

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.

relative_line is the index of the line relative to the window being requested, ranging from 1 to the response_lines field of the BROWSE_RESULTS_OVERVIEW.

**Example:** A controller requests lines 6-11 from a given node. The relative_line value of the BROWSE_RESULT responses goes from 1 through to 5.
**absolute_line**
is the index of the line relative to the entire node. This ranges from 1 to the `total_lines` field in the BROWSE_RESULTS_OVERVIEW message.

**Example:** A controller requests lines 6-11 from a given node. The `absolute_line` value of the BROWSE_RESULT responses starts at 6 and counts up to 11.

**text**
is the plain text displayed to the user for this line.

**play_status**
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>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

**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.

**action_label**
specifies the type of action. Can be used as a label for the available actions for a line.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

**action_behavior**
indicates how the controller executes this action.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

**action_handle**
is the handle associated with the action. What to do with the handle is specified by the `action_behavior` 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.

<table>
<thead>
<tr>
<th>device_id</th>
<th>sequence</th>
<th>status code</th>
<th>message name</th>
<th>relative line</th>
<th>absolute line</th>
<th>text</th>
<th>play status</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.01</td>
<td>1</td>
<td>000</td>
<td>BROWSE_RESULT</td>
<td>3</td>
<td>3</td>
<td>Martha Argerich</td>
<td>0</td>
</tr>
</tbody>
</table>

The default action is 1:1:1.7.1.2.2.Q_9457.0:0, which can be expanded to the following sections.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.7.1.2.2.Q_9457.0</td>
<td>0</td>
</tr>
</tbody>
</table>

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.

The first action is 3:3:1.Q_9457;1=1:0, which can be expanded to the following sections.
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**

**Affects**
Any premiere music zone

**Command**
`PERFORM_ACTION:handle:passcode:action:`

**Response**
`status:ACTION_PERFORMED:text:`

This command performs a specified action on the handle. Only music handles (albums and tracks), not movies, are supported by this command.

**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](image)

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.

```
Music
Albums by Artist >
Albums by Title >
Artists >
Classical Composers >
Classical Works >
```

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:0:1:1.7.1.2.0:0:3:3:1.0-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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.7.1.2.0</td>
<td>0</td>
</tr>
</tbody>
</table>

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:0:1:1.7.1.2.2.Q_9457.0:
0:3:3:1.Q_9457;1=1:0:......................:/86
01.01/1/000:BROWSE_RESULT:4:4:The Beach Boys:0:1:1.7.1.2.2.P_3640.0:
0:3:3:1.P_3640;1=1:0:......................:/53
01.01/1/000:BROWSE_RESULT:5:5:The Beatles:0:1:1.7.1.2.2.P_3644.0:
0:3:3:1.P_3644;1=1:0:......................:/55

After processing, the display is.

Music

Play all music

Martha Argerich >
The Beach Boys >
The Beatles >

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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>1.0-a_690008;1=1</td>
<td>0</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.7.1.2.2.P_3640.0</td>
<td>0</td>
</tr>
</tbody>
</table>

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:
0:1:1.7.1.2.2.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]:
0:1:1.7.1.2.2.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:
0:1:1.7.1.2.2.P_3644.2.R_1518.0:
0:3:3:1.R_1518;1=1:0:..............:/09

The Beatles
Play The Beatles
Abbey Road
Let It Be [Collector's Crate White]
Revolver

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:
0:1:1.7.1.2.2.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]:
0:1:1.7.1.2.2.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:
0:1:1.7.1.2.2.P_3644.2.R_1518.0:
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:
0:1:1.7.1.2.2.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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>1.b9bca9a6f224fb54-t301_22;1=1</td>
<td>0</td>
</tr>
</tbody>
</table>

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
01.01/1/000:MUSIC_TITLE:Drive My Car:The Beatles:Rubber Soul:
1.b9bca9a6f224fb54-t301_22:1.R_1515:2.202e9:/13
01.01/1/000:MUSIC_PLAY_STATUS:2:0:00150:+0000:000.00:/46
01.01/1/000:MUSIC_NOW_PLAYING_STATUS:00001:00000:1:0:0000002278:
2.202e9:/31
01.01/1/000: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:
0:1:1.7.1.2.2.P_3644.2.R_1515.1.a:0:0::::::::::::::::/03
```
Note that the play_status field for the line labeled **1. Drive My Car** has been updated to show that the line is playing back. In this example, the controller puts a play icon next to the line to indicate that track is playing.

Note that all the lines have angle brackets now. This was not the case before beginning playback because the default action behavior was 3 for all the lines. Now, the default action behavior is 1, indicating that the default action for the line is to **BROWSE** to a new node.

The reason for this change is that the music zone must now present the user with a choice when selecting music for playback. The user can decide either to add the selected item to the now playing list, or replace the now playing list with the selected item. This choice is accomplished by loading a new node with the relevant choices.

The user still wants to put the entire album in the now playing list, so the user selects **Play album**. The controller sends out the BROWSE command.

**Controller sends:**

01.01/1/BROWSE:1.7.1.2.2.P_3644.2.R_1515.1.a.0::1-5::

**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=1:1:1::1-5:::78
01.01/1/000:BROWSE_RESULT:2:2:Add to playing music: 0:3:3:1.R_1515;1=3:1:1:1::1-5:::06
01.01/1/000:BROWSE_RESULT:3:3:Do nothing:0:3:3: 1.0-a_690009;1=1:1:1::1-5:::03
The user wants to replace the playing music and selects Replace playing music. The controller inspects the default action for this line.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>1.R_1515;1=1</td>
<td>1</td>
</tr>
</tbody>
</table>

Another PERFORM_ACTION command is required. The controller sends the command.

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:00014:00000:1:0:000002281:2.202ea:/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:
0:1:1.7.1.2.2.P_3644.2.R_1515.1.a.0:0:...............:/03
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.

```plaintext
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:**

```plaintext
01.01/1/BROWSE:now_playing::1-5:suggest:
```

**Kaleidescape System sends:**

```plaintext
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
```
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:
0:1:1.7.1.12.2.Q_9457.0:0:3:3:1.Q_9457;1=1:0:............:/86
01.01/1/000:BROWSE_RESULT:4:4:The Beach Boys:
0:1:1.7.1.12.2.P_3640.0:0:3:3:1.P_3640;1=1:0:............:/53
01.01/1/000:BROWSE_RESULT:5:5:The Beatles:
0:1:1.7.1.12.2.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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>1.P_3640;1=1</td>
<td>0</td>
</tr>
</tbody>
</table>

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:0000:0000:1:0:0000002297:/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.

<table>
<thead>
<tr>
<th>label</th>
<th>behavior</th>
<th>handle</th>
<th>pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.7.1.2.2.P_3640.0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

Artists

Play all music
Martha Argerich >
The Beach Boys >
The Beatles >

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 world 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]ioni:
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.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 (ABC)</td>
<td>3 (DEF)</td>
</tr>
<tr>
<td>4 (GHI)</td>
<td>5 (JKL)</td>
<td>6 (MNO)</td>
</tr>
</tbody>
</table>
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:66
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:33
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:35
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:39
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:99
```

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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:31
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:65
01.01/1/000:BROWSE_RESULT:3:3:John [Co]ltran:
0:1:1:1.7.1.2.2.P_65851.0:0:3:3:1.P_65851;1=1:0:0:0:0:0:0:0:0:0:0:0:0:0:77
01.01/1/000:BROWSE_RESULT:4:4:[Co]l Davis:
0:1:1:1.7.1.2.2.Q_8172.0:0:3:3:1.Q_8172;1=1:0:0:0:0:0:0:0:0:0:0:0:0:0:52
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=1:0:0:0:0:0:0:0:0:0:0:0:0:0:23
```
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**

*affected by:* Any premiere music zone  
*command:* `PLAY_FIRST_IN_MUSIC_COLLECTION:collection:`  
*response:* `status:`

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
03/1/000:MUSIC_NOW_PLAYING_STATUS:00000:0000:1:0:0000000022::/72
03/1/000:MUSIC_NOW_PLAYING_STATUS:00051:00000:1:1:0000000023::/80
03/1/000: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

**Affects**  Any premiere music zone

**Command**  PLAY_NEXT_IN_MUSIC_COLLECTION:collection:

**Response**  status:

Plays the item after either the currently playing or the last item played in a collection.

The **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

**Affects**  Any premiere music zone

**Command**  PLAY_PREVIOUS_IN_MUSIC_COLLECTION:collection:

**Response**  status:

Plays the next item before either the item currently playing or last item played in the collection.

The **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:00051:0000:1:1:0000001738::/35
01.01/!/000:PLAYING_MUSIC_INFORMATION:Q_9457:Martha Argerich:/70
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
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.
**tag** 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.

**handle** 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.

**Label** 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.
**handle** is a unique identifier that represents the associated music item. The controller can compare this `handle` against handles returned in `MUSIC_PRESET_INFORMATION` events to determine which presets are assigned to the music item currently playing.

**Label** 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>
<thead>
<tr>
<th>Command/Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lighting, screen masking, video settings</strong></td>
<td></td>
</tr>
<tr>
<td><code>GET_MOVIE_LOCATION</code></td>
<td>Identifies the location in the movie, whether in the main content, intermission, or end credits.</td>
</tr>
<tr>
<td><code>GO_CALIBRATE_MASKING</code></td>
<td>Calibrates the top and bottom values for screen masking.</td>
</tr>
<tr>
<td><code>GO_CALIBRATE_MASKING_OVERSCAN</code></td>
<td>Defines the position of the overscan in a movie zone.</td>
</tr>
<tr>
<td><code>GET_CINEMASCAPE_MASK</code></td>
<td>Provides aspect ratio when a player is in a CinemaScape mode.</td>
</tr>
<tr>
<td><code>GET_SCREEN_MASK</code></td>
<td>Provides aspect ratio and masking information for the current video image.</td>
</tr>
<tr>
<td>Command/Event</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GET_SCREEN_MASK2</td>
<td>Provides masking information based on aspect ratio and overscan area.</td>
</tr>
<tr>
<td>SET_SCREEN_MASK</td>
<td>Used to inform the Kaleidescape System that a masking system is in use.</td>
</tr>
<tr>
<td>GET_VIDEO_MODE</td>
<td>Identifies the video mode currently active.</td>
</tr>
<tr>
<td>GET_CINEMASCAPE_MODE</td>
<td>Identifies the CinemaScape mode currently active.</td>
</tr>
<tr>
<td>SET_CINEMASCAPE_MODE</td>
<td>Sets the CinemaScape mode. Useful for players whose video output can be switched from a 2:35 theater to another room with a non-CinemaScape friendly display.</td>
</tr>
<tr>
<td>GET_SCALE_MODE</td>
<td>Indicates whether the image from the player requires horizontal scaling, vertical and horizontal scaling, or does not require scaling.</td>
</tr>
<tr>
<td>Scripts</td>
<td></td>
</tr>
<tr>
<td>PLAY_SCRIPT</td>
<td>Executes one of the scripts created in the browser interface.</td>
</tr>
<tr>
<td>User-defined events</td>
<td></td>
</tr>
<tr>
<td>USER_DEFINED_EVENT</td>
<td>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.</td>
</tr>
<tr>
<td>SEND_EVENT</td>
<td>Emits a user-defined event to controllers with enabled event messages.</td>
</tr>
<tr>
<td>SELECT_KALEIDESCAPE_INPUT</td>
<td>Sent when selecting Kaleidescape input, for example, when the child user interface is activated.</td>
</tr>
<tr>
<td>Child mode</td>
<td></td>
</tr>
<tr>
<td>GET_CHILD_MODE_STATE</td>
<td>Used to determine if the onscreen display is displaying the child user interface.</td>
</tr>
<tr>
<td>ENTER_CHILD_MODE</td>
<td>Displays the child user interface.</td>
</tr>
<tr>
<td>LEAVE_CHILD_MODE</td>
<td>Exits the child user interface and displays covers view.</td>
</tr>
</tbody>
</table>
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.

Location 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**

**Affects**
Any movie zone

**Command**
`GO_CALIBRATE_MASKING:`

**Response**
`status:`

Displays the Calibrate Masking page. This page is used to calibrate the `top_calibrated` and `bottom_calibrated` values in the GETSCREEN_MASK2 command.

![Calibrate Masking page](image)

**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_MASKINGlovakov 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**

Affects Any movie zone

Command GO_CALIBRATE_MASKING_OVERSCAN:

Response status:

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.

![Calibrate Masking Overscan page](image)

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.
**image_ratio** 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.

- **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.
- **01**: Image aspect ratio is 1.33 (4:3)
- **02**: Image aspect ratio is 1.66
- **03**: Image aspect ratio is 1.78 (16:9)
- **04**: Image aspect ratio is 1.85
- **05**: Image aspect ratio is 2.35

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.

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.

The value always includes a plus or minus sign.

**top_trim_rel** and **bottom_trim_rel** indicate top and bottom trim values, relative to the aspect ratio specified by **image_ratio**. 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.

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.

**conservative_ratio** has the same possible values as the **image_ratio** field, but represents a more conservative estimate of the image aspect ratio. This value never goes too far into the actual picture.

**Note**: 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.

**top_mask_abs** and **bottom_mask_abs** 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.

For example, a **top_mask_abs** value of 0200, means that the corresponding mask should be located 20% from the top of the screen.
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* and *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.

flag 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

Affects Any movie zone
Command GET_VIDEO_MODE:
Response/Event status:VIDEO_MODE:composite:component:HDMI:

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.

composite is the video mode of the composite and S-Video analog video outputs.
component is the video mode of the component analog video output.
HDMI is video mode of the HDMI digital video output.

These fields can have the following values:

00 No output
01 480i60 4:3
02 480p60 16:9
03 480p60 4:3
<table>
<thead>
<tr>
<th></th>
<th>Resolution</th>
<th>Aspect Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>480p60</td>
<td>16:9</td>
</tr>
<tr>
<td>05</td>
<td>576i50</td>
<td>4:3</td>
</tr>
<tr>
<td>06</td>
<td>576i50</td>
<td>16:9</td>
</tr>
<tr>
<td>07</td>
<td>576p50</td>
<td>4:3</td>
</tr>
<tr>
<td>08</td>
<td>576p50</td>
<td>16:9</td>
</tr>
<tr>
<td>09</td>
<td>720p60 NTSC HD</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>720p50 PAL HD</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1080i60</td>
<td>16:9</td>
</tr>
<tr>
<td>12</td>
<td>1080i50</td>
<td>16:9</td>
</tr>
<tr>
<td>13</td>
<td>1080p60</td>
<td>16:9</td>
</tr>
<tr>
<td>14</td>
<td>1080p50</td>
<td>16:9</td>
</tr>
<tr>
<td>15</td>
<td>reserved</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>reserved</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1080p24</td>
<td>16:9</td>
</tr>
<tr>
<td>18</td>
<td>reserved</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>480i60</td>
<td>64:27</td>
</tr>
<tr>
<td>20</td>
<td>576i50</td>
<td>64:27</td>
</tr>
<tr>
<td>21</td>
<td>1080i60</td>
<td>64:27</td>
</tr>
<tr>
<td>22</td>
<td>1080i50</td>
<td>64:27</td>
</tr>
<tr>
<td>23</td>
<td>1080p60</td>
<td>64:27</td>
</tr>
<tr>
<td>24</td>
<td>1080p50</td>
<td>64:27</td>
</tr>
<tr>
<td>25</td>
<td>1080p24</td>
<td>64:27</td>
</tr>
<tr>
<td>26</td>
<td>1080p24</td>
<td>64:27</td>
</tr>
<tr>
<td>27</td>
<td>3840x 2160p24</td>
<td>16:9</td>
</tr>
<tr>
<td>28</td>
<td>3840x 2160p24</td>
<td>64:27</td>
</tr>
<tr>
<td>29</td>
<td>3840x 2160p30</td>
<td>16:9</td>
</tr>
<tr>
<td>30</td>
<td>3840x 2160p30</td>
<td>64:27</td>
</tr>
<tr>
<td>31</td>
<td>3840x 2160p60</td>
<td>16:9</td>
</tr>
<tr>
<td>32</td>
<td>3840x 2160p60</td>
<td>64:27</td>
</tr>
<tr>
<td>33</td>
<td>3840x 2160p25</td>
<td>16:9</td>
</tr>
<tr>
<td>34</td>
<td>3840x 2160p25</td>
<td>64:27</td>
</tr>
<tr>
<td>35</td>
<td>3840x 2160p50</td>
<td>16:9</td>
</tr>
<tr>
<td>36</td>
<td>3840x 2160p50</td>
<td>64:27</td>
</tr>
<tr>
<td>37</td>
<td>3840x 2160p24</td>
<td>16:9</td>
</tr>
<tr>
<td>38</td>
<td>3840x 2160p24</td>
<td>64:27</td>
</tr>
</tbody>
</table>

**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 SMTE 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** SMTEPE 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:

```
01/1/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 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.
mode

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.

mode

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.
### Mode

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**

**Affects**

Any movie zone

**Command**

`PLAY_SCRIPT:script_name`

**Response**

`status`

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**

**Affects**

Any zone

**Command**

`SEND_EVENT:message`

**Response**

`status`

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_DEFINEDEVENT` 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 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:

<table>
<thead>
<tr>
<th>Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No volume control or feedback</td>
</tr>
<tr>
<td>1</td>
<td>Volume up/down control</td>
</tr>
<tr>
<td>2</td>
<td>Mute Control</td>
</tr>
<tr>
<td>4</td>
<td>Volume level feedback</td>
</tr>
<tr>
<td>8</td>
<td>Mute feedback</td>
</tr>
<tr>
<td>16</td>
<td>Volume level set</td>
</tr>
</tbody>
</table>

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**

Affects: Any movie zone

Command: GET_CHILD_MODE_STATE:

Response: status:CHILD_MODE_STATE:child_mode:

This command is used to determine if the onscreen display is displaying the child user interface.

child_mode 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**

Affects: Any movie zone

Command: ENTER_CHILD_MODE:

Response: status:

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

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET_NETWORK_SETTINGS</td>
<td>Returns component network settings.</td>
</tr>
<tr>
<td>SET_NETWORK_SETTINGS</td>
<td>Changes network settings.</td>
</tr>
<tr>
<td>GET_SYSTEM_CAPABILITIES</td>
<td>Returns whether or not the system has movie/music licenses.</td>
</tr>
<tr>
<td>GET_TIME</td>
<td>Displays current date and time.</td>
</tr>
<tr>
<td>GET_ZONE_CAPABILITIES</td>
<td>Provides summary of zone features.</td>
</tr>
</tbody>
</table>
**GET_NETWORK_SETTINGS**

**Affects**  
All components

**Command**  
GET_NETWORK_SETTINGS:

**Response**  
status:NETWORK_SETTINGS:static:ip_address:
subnet_mask:gateway:dns1:dns2:

**Parameters:**

*static*  
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.

*ip_address*  
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.

*subnet_mask*  
is the subnet mask used by the component in the same format as the *ip_address*.

*gateway*  
is the IP address of the default gateway used by the component, in the same format as the *ip_address*.

*dns1*  
is the IP address of the primary DNS server currently used by the component, in the same format as the *ip_address*.

*dns2*  
is the IP address of the secondary DNS server used by the component, in the same format as the *ip_address*. 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

**Affects**
All components

**Command**
```
SET_NETWORK_SETTINGS: static:ip_address:subnet:
gateway:dns1:dns2:
```

**Response**
```
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.

- **static**
  - 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 `ip_address` in this field.

- **ip_address**
  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 `static` is 0, or to keep the static IP address at its current setting.

- **subnet_mask**
  is the subnet mask used by the component, in the same format as the `ip_address`. Leave this field blank if `static` is 0, or to keep the subnet mask at its current setting.

- **gateway**
  is the IP address of the default gateway, in the same format as the `ip_address`. Leave this field blank if `static` is 0, or to keep the default gateway address at the current setting.

- **dns1**
  is the IP address of the primary DNS server, in the same format as the `ip_address`. Leave this field blank if `static` is 0, or to keep the primary DNS server address at the current setting.

- **dns2**
  is the IP address of the secondary DNS server, in the same format as the `ip_address`. Leave this field blank if `static` 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**

**Affects** All components

**Command** GET_SYSTEM_CAPABILITIES:

**Response**

```
status:SYSTEM_CAPABILITIES:Y:Y::::
```

Provides information about the capabilities of the system.

- **movies** indicates whether the system supports movies.
  - Y System supports movies.
  - N System does not support movies.

- **music** 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**

**Affects** Any Strato or Alto movie zone

**Command** GET_ZONE_CAPABILITIES:

**Response**

```
status:ZONE_CAPABILITIES:osd:movies:music:store:
search:::::::
```

Provides information about the capabilities of the current zone.
osd indicates whether the zone has OSD available
Y Zone has OSD capabilities.
N Zone has no OSD capabilities.

movies indicates whether the zone supports movies.
Y Zone supports movies.
N Zone does not support movies.

music indicates whether the zone supports music.
Y Zone supports music.
N Zone does not support music.

store indicates whether the zone supports OSD store.
Y Zone supports OSD store.
N Zone does not support OSD store.

search 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.

yyyy is a four-digit year.
mm is a zero-padded two digit month, starting at 01 for January.

dd is a zero-padded, two digit day of the month, starting at 01 for the first day.
hh 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.

mm is a zero-padded, two-digit minute from 0 to 59.

ss are the clock seconds as a two-digit number from 0 to 59.

timezone 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.

If a problem occurs when programming a controller, or for additional help, contact Kaleidescape Support.

- See online resources at www.kaleidescape.com/support.
- Contact Kaleidescape Support at 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

<table>
<thead>
<tr>
<th>Command Sequence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>A</td>
<td>ALPHABETIZE_COVER_ART</td>
</tr>
<tr>
<td></td>
<td>ANGLE_NEXT</td>
</tr>
<tr>
<td></td>
<td>ANGLE_PREVIOUS</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>ASSIGN_PLAYING_MUSIC_TO_PRESET</td>
</tr>
<tr>
<td></td>
<td>AUDIO_NEXT</td>
</tr>
<tr>
<td>B</td>
<td>BACK</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>BACKSPACE</td>
<td>Erases the last character entered.</td>
</tr>
<tr>
<td>BLU-RAY COLOR BUTTONS</td>
<td>Performs actions associated with color buttons.</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE_PRESS</td>
</tr>
<tr>
<td>GREEN</td>
<td>GREEN_PRESS</td>
</tr>
<tr>
<td>RED</td>
<td>RED_PRESS</td>
</tr>
<tr>
<td>YELLOW</td>
<td>YELLOW_PRESS</td>
</tr>
<tr>
<td>BLURAY_POPUP_MENU_TOGGLE</td>
<td>Toggles display of Blu-ray Disc pop-up menu.</td>
</tr>
<tr>
<td>BLURAY_SPECIAL_STOP</td>
<td>Stops Blu-ray Disc playback. Use with caution.</td>
</tr>
<tr>
<td>BROWSE</td>
<td>Used to navigate the text-based music browsing interface (SATP).</td>
</tr>
<tr>
<td>C</td>
<td>CANCEL</td>
</tr>
<tr>
<td>CHILD_PLAY</td>
<td>If the child user interface is already active, plays the selected movie. If not, activates the child user interface.</td>
</tr>
<tr>
<td>CHILD_PAUSE</td>
<td>If the child user interface is already active, pauses the movie. If not, activates the child user interface.</td>
</tr>
<tr>
<td>CHILD_SELECT</td>
<td>If child user interface is already active, plays the highlighted movie. If not, activates the child user interface.</td>
</tr>
<tr>
<td>CHILD_SHUFFLE_COVER_ART</td>
<td>If the child user interface is already active, shuffles the cover art. If not, activates the child user interface.</td>
</tr>
<tr>
<td>CHILD_STOP</td>
<td>If the child user interface is already active, stops movie playback. If not, activates the child user interface.</td>
</tr>
<tr>
<td></td>
<td>Command</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>D</td>
<td>DEFAULT_LEVEL</td>
</tr>
<tr>
<td></td>
<td>DETAILS</td>
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<tr>
<td></td>
<td>DISABLE_EVENTS</td>
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<tr>
<td></td>
<td>DISC_IN_TRAY_TOGGLE</td>
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<tr>
<td></td>
<td>DISC_MENU</td>
</tr>
<tr>
<td></td>
<td>DISC_OR_KALEIDESCAPE_MENU</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DISC_RESUME</td>
</tr>
<tr>
<td></td>
<td>DISC_TOP_MENU</td>
</tr>
<tr>
<td>E</td>
<td>ENABLE_EVENTS</td>
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<tr>
<td></td>
<td>ENTER_CHILD_MODE</td>
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<td></td>
<td>ENTER_STANDBY</td>
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<tr>
<td>F</td>
<td>FILTER_LIST</td>
</tr>
<tr>
<td>G</td>
<td>GET_ACTIVE_PROTOCOL</td>
</tr>
<tr>
<td></td>
<td>GET_AVAILABLE_DEVICES</td>
</tr>
<tr>
<td><strong>GETAVAILABLE_DEVICES_BY_SERIALNUMBER</strong></td>
<td>Returns a list containing the serial number device identifiers of all components in the system.</td>
</tr>
<tr>
<td><strong>GETCAMERA ANGLE</strong></td>
<td>Provides information about the current camera angle.</td>
</tr>
<tr>
<td><strong>GETCINEMASCAPEMASK</strong></td>
<td>Provides aspect ratio when a player is in a CinemaScape mode.</td>
</tr>
<tr>
<td><strong>GETCINEMASCAPEMODE</strong></td>
<td>Identifies the CinemaScape mode currently active.</td>
</tr>
<tr>
<td><strong>GETCONTENTCOLOR</strong></td>
<td>Provides information about a movie color mode and related color details.</td>
</tr>
<tr>
<td><strong>GETCONTENTDETAILS</strong></td>
<td>Provides information about a movie or album selected on the user interface.</td>
</tr>
<tr>
<td><strong>GETCHILDMODESTATE</strong></td>
<td>Used to determine if the onscreen display is displaying the child user interface.</td>
</tr>
<tr>
<td><strong>GETCONTROLLEDZONE</strong></td>
<td>Returns the music zone currently under control.</td>
</tr>
<tr>
<td><strong>GETDEVICEINFO</strong></td>
<td>Returns component device type, serial number, device ID, and IP address.</td>
</tr>
<tr>
<td><strong>GETDEVICEPOWERSTATE</strong></td>
<td>Returns power state of a component.</td>
</tr>
<tr>
<td><strong>GETDEVICETYPENAME</strong></td>
<td>Returns component type.</td>
</tr>
<tr>
<td><strong>GETFRIENDLYNAME</strong></td>
<td>Returns name of component or music zone.</td>
</tr>
<tr>
<td><strong>GETFRIENDLYSYSTEMNAME</strong></td>
<td>Returns the name of the System the component is part of.</td>
</tr>
<tr>
<td><strong>GETHIGHLIGHTEDSELECTION</strong></td>
<td>Specifies the handle of the movie or album currently selected on the user interface.</td>
</tr>
<tr>
<td><strong>GETMOVIELLOCATION</strong></td>
<td>Identifies the location in the movie, whether in the main content, intermission, or end credits.</td>
</tr>
<tr>
<td><strong>GETMOVIEMEDIATYPE</strong></td>
<td>Identifies the type of media being played.</td>
</tr>
<tr>
<td><strong>GETMUSICNOWPLAYINGSTATUS</strong></td>
<td>Sends the state of the Now Playing list.</td>
</tr>
<tr>
<td><strong>GETMUSICPLAYSTATUS</strong></td>
<td>Provides playback information for the currently playing music.</td>
</tr>
<tr>
<td>Function</td>
<td>Description</td>
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<td>----------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GET_MUSIC_PRESET_INFORMATION</td>
<td>Provides detailed information about a music preset.</td>
</tr>
<tr>
<td>GET_MUSIC_TITLE</td>
<td>Provides detailed information about the music currently playing.</td>
</tr>
<tr>
<td>GET_NETWORK_SETTINGS</td>
<td>Returns component network settings.</td>
</tr>
<tr>
<td>GET_NUM_ZONES</td>
<td>Returns number of zones in a component.</td>
</tr>
<tr>
<td>GET_PLAY_STATUS</td>
<td>Identifies movie play mode, speed, location and chapter.</td>
</tr>
<tr>
<td>GET_PLAYING_MUSIC_INFORMATION</td>
<td>Provides information about music currently playing.</td>
</tr>
<tr>
<td>GET_PLAYING_TITLE_NAME</td>
<td>Provides the title of the movie currently playing.</td>
</tr>
<tr>
<td>GET_PROTOCOL</td>
<td>Returns protocol version number.</td>
</tr>
<tr>
<td>GET_SCALE_MODE</td>
<td>Indicates whether the image from the player requires horizontal scaling, vertical and horizontal scaling, or does not require scaling.</td>
</tr>
<tr>
<td>GET_SCREEN_MASK</td>
<td>Provides aspect ratio and masking information for the current video image.</td>
</tr>
<tr>
<td>GET_SCREEN_MASK2</td>
<td>Provides masking information based on aspect ratio and overscan area.</td>
</tr>
<tr>
<td>GET_SYSTEM_CAPABILITIES</td>
<td>Returns whether or not the system has movie/music licenses.</td>
</tr>
<tr>
<td>GET_SYSTEM_READINESS_STATE</td>
<td>Returns the idle mode of Strato players or Cinema One (2nd generation).</td>
</tr>
<tr>
<td>GET_SYSTEM_VERSION</td>
<td>Returns protocol version number and the version of kOS.</td>
</tr>
<tr>
<td>GET_TIME</td>
<td>Displays current date and time.</td>
</tr>
<tr>
<td>GET_UI_STATE</td>
<td>Provides details about the current state of the user interface.</td>
</tr>
<tr>
<td>GET_USER_INPUT</td>
<td>Provides information about user input requested from the user interface.</td>
</tr>
<tr>
<td>GET_USER_INPUT_PROMPT</td>
<td>Returns user input prompt info and properties currently shown on screen.</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GET_VIDEO_COLOR</td>
<td>Returns details of the current video output.</td>
</tr>
<tr>
<td>GET_VIDEO_MODE</td>
<td>Identifies the video mode currently active.</td>
</tr>
<tr>
<td>GET_ZONE_CAPABILITIES</td>
<td>Provides information about the current zone.</td>
</tr>
<tr>
<td>GO_CALIBRATE_MASKING</td>
<td>Calibrates the top and bottom values for screen masking.</td>
</tr>
<tr>
<td>GO_CALIBRATE_MASKING_OVERSCAN</td>
<td>Defines the position of the overscan in a movie zone.</td>
</tr>
<tr>
<td>GO_MOVIE_COLLECTION</td>
<td>Displays a specific collection in the Movie Collections view.</td>
</tr>
<tr>
<td>GO_MOVIE_COLLECTIONS</td>
<td>Displays the Movie Collections view.</td>
</tr>
<tr>
<td>GO_MOVIE_COVERS</td>
<td>Displays the Movie Covers view.</td>
</tr>
<tr>
<td>GO_MOVIE_LIST</td>
<td>Displays the Movie List view.</td>
</tr>
<tr>
<td>GO_MOVIE_STORE</td>
<td>Displays the Movie Store view.</td>
</tr>
<tr>
<td>GO_MOVIES</td>
<td>Changes the interface from a music view to a movie view.</td>
</tr>
<tr>
<td>GO_MUSIC</td>
<td>Changes the interface from a movie view to a music view.</td>
</tr>
<tr>
<td>GO_MUSIC_COLLECTION</td>
<td>Displays a specific collection in the Music Collections view.</td>
</tr>
<tr>
<td>GO_MUSIC_COLLECTIONS</td>
<td>Displays the Music Collections view.</td>
</tr>
<tr>
<td>GO_MUSIC_COVERS</td>
<td>Displays the Music Covers view.</td>
</tr>
<tr>
<td>GO_MUSIC_LIST</td>
<td>Displays the Music List view.</td>
</tr>
<tr>
<td>GO_MUSIC_LIST</td>
<td>Displays the Music List view.</td>
</tr>
<tr>
<td>GO_NOW_PLAYING</td>
<td>Displays the Now Playing view.</td>
</tr>
<tr>
<td>GO_PARENTAL_CONTROL</td>
<td>Displays the Parental Control view.</td>
</tr>
<tr>
<td>GO_SCREEN_SAVER</td>
<td>Displays the screen saver.</td>
</tr>
<tr>
<td>GO_SEARCH</td>
<td>Searches the local library or the OSD store.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GO_SYSTEM_STATUS</td>
<td>Displays the System Status view.</td>
</tr>
<tr>
<td>GO_VAULT_SUMMARY</td>
<td>Displays the Vault Summary view.</td>
</tr>
<tr>
<td>INTERMISSION_OFF</td>
<td>Removes the intermission screen and resumes playback.</td>
</tr>
<tr>
<td>INTERMISSION_ON</td>
<td>Pauses playback and displays intermission screen.</td>
</tr>
<tr>
<td>INTERMISSION_TOGGLE</td>
<td>Toggles intermission screen on and off.</td>
</tr>
<tr>
<td>KALEIDESCAPE_MENU_OFF</td>
<td>Removes Kaleidescape menu.</td>
</tr>
<tr>
<td>KALEIDESCAPE_MENU_ON</td>
<td>Displays Kaleidescape menu.</td>
</tr>
<tr>
<td>KALEIDESCAPE_MENU_TOGGLE</td>
<td>Toggles Kaleidescape menu on and off.</td>
</tr>
<tr>
<td>KEYBOARD_CHARACTER</td>
<td>Sends a single character to the onscreen display.</td>
</tr>
<tr>
<td>KEYBOARD_LITERAL</td>
<td>Sends a single character to the onscreen keyboard.</td>
</tr>
<tr>
<td>LEAVE_CHILD_MODE</td>
<td>Exits the child user interface and displays covers view.</td>
</tr>
<tr>
<td>LEAVE_IDLE_MODE</td>
<td>Takes Strato players or Cinema One (2nd generation) out of idle mode.</td>
</tr>
<tr>
<td>LEAVE_STANDBY</td>
<td>Takes component out of standby, For Strato products this command will also leave idle mode.</td>
</tr>
<tr>
<td>MUSIC_RANDOM_OFF</td>
<td>Turns off random playback for music.</td>
</tr>
<tr>
<td>MUSIC_RANDOM_ON</td>
<td>Turns on random playback for music.</td>
</tr>
<tr>
<td>MUSIC_RANDOM_TOGGLE</td>
<td>Toggles on/off random playback for music.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MUSIC_REPEAT_OFF</td>
<td>Turns off repeat playback for music.</td>
</tr>
<tr>
<td>MUSIC_REPEAT_ON</td>
<td>Turns on repeat playback for music.</td>
</tr>
<tr>
<td>MUSIC_REPEAT_TOGGLE</td>
<td>Toggles on/off repeat playback for music.</td>
</tr>
<tr>
<td>N</td>
<td>NEXT and PREVIOUS</td>
</tr>
<tr>
<td></td>
<td>NEXT command skips forward through chapters or songs.</td>
</tr>
<tr>
<td>P</td>
<td>Page up/down commands</td>
</tr>
<tr>
<td>PAGE_DOWN</td>
<td>Used to navigate by pages on the onscreen display.</td>
</tr>
<tr>
<td>PAGE_DOWN_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_RELEASE</td>
<td></td>
</tr>
<tr>
<td>Paging and skipping</td>
<td>Behaves like NEXT or PREVIOUS during movie playback</td>
</tr>
<tr>
<td>PAGE_DOWN_OR_NEXT</td>
<td>Behaves like PAGE_UP or PAGE_DOWN in the user interface.</td>
</tr>
<tr>
<td>PAGE_DOWN_OR_NEXT_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_OR_NEXT_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_OR_PREVIOUS</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_OR_PREVIOUS_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_DOWN_OR_PREVIOUS_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_OR_NEXT</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_OR_NEXT_PRESS</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_OR_NEXT_RELEASE</td>
<td></td>
</tr>
<tr>
<td>PAGE_UP_OR_PREVIOUS</td>
<td></td>
</tr>
<tr>
<td>PAUSE</td>
<td>Toggles pause.</td>
</tr>
<tr>
<td>PERFORM_ACTION</td>
<td>Performs a specified action on a music handle.</td>
</tr>
<tr>
<td>PLAY</td>
<td>Begins playback of movies and music.</td>
</tr>
<tr>
<td>PLAY_FIRST_IN_MUSIC_COLLECTION</td>
<td>Plays the first item in a music collection.</td>
</tr>
<tr>
<td>PLAY_MUSIC_PRESET</td>
<td>Plays the music item associated with a preset tag.</td>
</tr>
<tr>
<td>PLAY_NEXT_IN_MUSIC_COLLECTION</td>
<td>Plays the next item in the collection.</td>
</tr>
<tr>
<td>PLAY_OR_PAUSE</td>
<td>Begins playback of movies, or toggles pause.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>PLAY_PREVIOUS_IN_MUSIC_COLLECTION</td>
<td>Plays the item previous item in the collection.</td>
</tr>
<tr>
<td>PLAY_SCRIPT</td>
<td>Executes one of the scripts created in the browser interface.</td>
</tr>
<tr>
<td>PLAYER_RESTART</td>
<td>Event message stating that a player has just been restarted.</td>
</tr>
<tr>
<td>POSITION_SELECT</td>
<td>Transmits touch screen interaction to the onscreen display.</td>
</tr>
<tr>
<td>PREVIOUS (see NEXT and PREVIOUS)</td>
<td>PREVIOUS command skips backward through chapters or songs.</td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>REPLAY</td>
<td>Skips back ten seconds during movie playback.</td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>SAFE_LEVEL</td>
<td>Changes parental control to highest level without a passcode.</td>
</tr>
<tr>
<td>SCAN_FORWARD and SCAN_REVERSE</td>
<td>Cycles through fast-forward or fast-reverse.</td>
</tr>
<tr>
<td>SELECT</td>
<td>Selects the highlighted item in the onscreen display.</td>
</tr>
<tr>
<td>SELECT_KALEIDESCAPE_INPUT</td>
<td>Selects the Kaleidescape input.</td>
</tr>
<tr>
<td>SEND_EVENT</td>
<td>Emits a user-defined event to controllers with enabled event messages.</td>
</tr>
<tr>
<td>SEND_TO_SYSLOG</td>
<td>Posts a message to Kaleidescape System logs.</td>
</tr>
<tr>
<td>SET_CINEMASCAPE_MODE</td>
<td>Sets the CinemaScape mode. Useful when video output is distributed to displays with different aspect ratios.</td>
</tr>
<tr>
<td>SET_CONTROLLED_ZONE</td>
<td>Changes the music zone controlled by the onscreen display.</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_END</td>
<td>Records a bookmark for the end of a scene.</td>
</tr>
<tr>
<td>SET_FAVORITE_SCENE_START</td>
<td>Records a bookmark for the start of a scene.</td>
</tr>
<tr>
<td>SET_FRIENDLY_NAME</td>
<td>Renames component or music zone.</td>
</tr>
<tr>
<td><strong>Command</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SET_NETWORK_SETTINGS</td>
<td>Changes network settings.</td>
</tr>
<tr>
<td>SET_PROTOCOL_SETTINGS</td>
<td>Changes protocol syntax.</td>
</tr>
<tr>
<td>SET_SCREEN_MASK</td>
<td>Used to inform the Kaleidescape System that a masking system is in use.</td>
</tr>
<tr>
<td>SET_STATUS_CUE_PERIOD</td>
<td>Sets the frequency of PLAY_STATUS and MUSIC_PLAY_STATUS event messages.</td>
</tr>
<tr>
<td>SET_SUPPORTED_PROTOCOL</td>
<td>Sets the control protocol version to use for a session.</td>
</tr>
<tr>
<td>SET_USER_INPUT_ENTRY</td>
<td>Sends string to the current on screen user entry prompt.</td>
</tr>
<tr>
<td>SHOW_NAVIGATION_OVERLAY</td>
<td>During playback, opens the navigation option of the movie overlay to the chapter/title navigation page.</td>
</tr>
<tr>
<td>SHUFFLECOVER_ART</td>
<td>Shuffles cover art on covers view.</td>
</tr>
<tr>
<td>START CHAPTER ENTRY</td>
<td>Displays a tab to enter chapter number to skip directly to.</td>
</tr>
<tr>
<td>START_DISC_TITLE_ENTRY</td>
<td>Displays a tab to enter title number to skip directly to a title.</td>
</tr>
<tr>
<td>START_SEND_NUMBER_TO_DISC_ENTRY</td>
<td>Displays a tab to enter a number key to send to a DVD or Blu-ray Disc.</td>
</tr>
<tr>
<td>STATUS_AND_SETTINGS</td>
<td>During playback, toggles the display of the navigation option of the movie overlay. Otherwise, brings up the System Status page.</td>
</tr>
<tr>
<td>STOP</td>
<td>Stops playback.</td>
</tr>
<tr>
<td>STOP_ORCANCEL</td>
<td>Behaves like STOP during movie playback or when sent directly to a music zone.</td>
</tr>
<tr>
<td>STOP_SCREEN_SAVER</td>
<td>Removes screen saver.</td>
</tr>
<tr>
<td>SUBTITLES_NEXT</td>
<td>Changes to the next subtitle track during playback.</td>
</tr>
</tbody>
</table>
USER_DEFINED_EVENT

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

<table>
<thead>
<tr>
<th>Status Code</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>Success</td>
<td>Command was accepted and executed without error.</td>
</tr>
<tr>
<td>001</td>
<td>Message too long</td>
<td>Command is larger than the maximum frame size of 1024 characters.</td>
</tr>
<tr>
<td>002</td>
<td>Message contains invalid character</td>
<td>Character in the command is outside the supported character set from decimal ASCII value 32 (space) to decimal ASCII value 126 (tilde (~)).</td>
</tr>
<tr>
<td>003</td>
<td>Checksum error</td>
<td>Message checksum does not match calculated checksum.</td>
</tr>
<tr>
<td>004</td>
<td>Invalid device</td>
<td>Device identifier is invalid.</td>
</tr>
<tr>
<td>005</td>
<td>Device unavailable</td>
<td>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.</td>
</tr>
<tr>
<td>006</td>
<td>Invalid zone syntax</td>
<td>Music zone identifier (the part of the device identifier after the period) was not specified correctly and must be two digits.</td>
</tr>
<tr>
<td>007</td>
<td>Invalid zone</td>
<td>Music zone identifier (the part of the device identifier after the period) is invalid. Use GET_NUM_ZONES to determine the range of valid identities for a given component.</td>
</tr>
<tr>
<td>010</td>
<td>Invalid request</td>
<td>Command name is unknown to the target device (possibly corrupted).</td>
</tr>
<tr>
<td>011</td>
<td>Invalid number of parameters</td>
<td>Command body contains an incorrect number of fields for the message name.</td>
</tr>
<tr>
<td>012</td>
<td>Invalid parameter</td>
<td>One or more values in the command field is invalid.</td>
</tr>
<tr>
<td>Status Code</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>013</td>
<td>Device identifier conflict</td>
<td>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.</td>
</tr>
<tr>
<td>014</td>
<td>Invalid sequence number</td>
<td>Sequence number is invalid.</td>
</tr>
<tr>
<td>015</td>
<td>Unused</td>
<td></td>
</tr>
<tr>
<td>016</td>
<td>Invalid passcode</td>
<td>Passcode required to access specified content is invalid.</td>
</tr>
<tr>
<td>017</td>
<td>Invalid content handle</td>
<td>Content handle specified is not valid. This situation occurs if content is deleted, or if the server with the content is turned off.</td>
</tr>
<tr>
<td>018</td>
<td>Network error</td>
<td>Network connectivity issues exist between Kaleidescape components. Check network configuration.</td>
</tr>
<tr>
<td>019</td>
<td>Invalid serial syntax</td>
<td>Serial number specified for the device identifier is improperly formatted.</td>
</tr>
<tr>
<td>020</td>
<td>Device is in standby</td>
<td>Component specified by the device identifier is currently in standby and cannot respond to most control protocol requests.</td>
</tr>
<tr>
<td>999</td>
<td>Other error</td>
<td>Undetermined error occurred, or the command cannot be handled because of hardware limitations.</td>
</tr>
</tbody>
</table>
Appendix B: Revision History

Changes in document revision 15
(Kaleidescape software version 10.15 and 8.11)

New commands
The following new commands have been added:

BACK
PLAY_OR_PAUSE

Other

- CANCEL command is now an alias for BACK, which has all the existing interactions as well as the ability to stop movie playback
- References to the CANCEL command have been changed to BACK
- STOP_OR_CANCEL command is unchanged, but has been superseded by BACK for most use cases

Changes in document revision 14
(Kaleidescape software version 10.14 and 8.10)

- REPLAY command now skips backward ten seconds rather than five

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 (1st generation) and Cinema One (2nd 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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEND_TO_SYSLOG</td>
<td></td>
</tr>
<tr>
<td>GO_VAULT_SUMMARY</td>
<td></td>
</tr>
<tr>
<td>SEND_EVENT</td>
<td></td>
</tr>
<tr>
<td>TOGGLE_MUTE</td>
<td></td>
</tr>
<tr>
<td>VOLUME_UP</td>
<td></td>
</tr>
<tr>
<td>VOLUME_DOWN</td>
<td></td>
</tr>
<tr>
<td>VOLUME_UP_PRESS</td>
<td></td>
</tr>
<tr>
<td>VOLUME_UP_RELEASE</td>
<td></td>
</tr>
<tr>
<td>VOLUME_DOWN_PRESS</td>
<td></td>
</tr>
<tr>
<td>VOLUME_DOWN_RELEASE</td>
<td></td>
</tr>
<tr>
<td>GET_CHILD_MODE_STATE</td>
<td></td>
</tr>
<tr>
<td>ENTER_CHILD_MODE</td>
<td></td>
</tr>
<tr>
<td>LEAVE_CHILD_MODE</td>
<td></td>
</tr>
<tr>
<td>CHILD_PLAY</td>
<td></td>
</tr>
<tr>
<td>CHILD_STOP</td>
<td></td>
</tr>
<tr>
<td>CHILD_PAUSE</td>
<td></td>
</tr>
<tr>
<td>SHUFFLE_COVER_ART</td>
<td></td>
</tr>
<tr>
<td>CHILD_SELECT</td>
<td></td>
</tr>
<tr>
<td>CHILD_UP</td>
<td></td>
</tr>
<tr>
<td>CHILD_UP_PRESS</td>
<td></td>
</tr>
<tr>
<td>CHILD_UP_RELEASE</td>
<td></td>
</tr>
<tr>
<td>CHILD_DOWN</td>
<td></td>
</tr>
<tr>
<td>CHILD_DOWN_PRESS</td>
<td></td>
</tr>
<tr>
<td>CHILD_DOWN_RELEASE</td>
<td></td>
</tr>
<tr>
<td>CHILD_LEFT</td>
<td></td>
</tr>
<tr>
<td>CHILD_LEFT_PRESS</td>
<td></td>
</tr>
<tr>
<td>CHILD_LEFT_RELEASE</td>
<td></td>
</tr>
<tr>
<td>CHILD_RIGHT</td>
<td></td>
</tr>
<tr>
<td>CHILD_RIGHT_PRESS</td>
<td></td>
</tr>
<tr>
<td>CHILD_RIGHT_RELEASE</td>
<td></td>
</tr>
</tbody>
</table>

Commands removed

The following commands have been removed:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET_ASPECT_RATIO</td>
<td></td>
</tr>
<tr>
<td>GET_SQUEEZE_OF_4X3_ON_16X9</td>
<td></td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>New Command</th>
<th>Deprecated Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>GO_DEMO</td>
<td>SET_SQUEEZE_OF_4X3_ON_16X9</td>
</tr>
<tr>
<td>GO_DEMO_LOOP</td>
<td></td>
</tr>
<tr>
<td>GO_CALIBRATE_MASKING RED_PRESS</td>
<td></td>
</tr>
<tr>
<td>GO_CALIBRATE_MASKING_OVERSCAN RED_RELEASE</td>
<td></td>
</tr>
<tr>
<td>BLURAY_SPECIAL_STOP BLUE_PRESS</td>
<td></td>
</tr>
<tr>
<td>BLURAY_POPUP_MENU_TOGGLE BLUE_RELEASE</td>
<td></td>
</tr>
<tr>
<td>GET_MOVIE_MEDIA_TYPE GREEN_PRESS</td>
<td></td>
</tr>
<tr>
<td>RED GREEN_Release</td>
<td></td>
</tr>
<tr>
<td>BLUE YELLOW_PRESS</td>
<td></td>
</tr>
<tr>
<td>GREEN YELLOW_Release</td>
<td></td>
</tr>
<tr>
<td>YELLOW</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>New Command</th>
<th>Deprecated Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISC_MENU</td>
<td>DVD_MENU</td>
</tr>
<tr>
<td>DISC_TOP_MENU</td>
<td>DVD_TOP_MENU</td>
</tr>
<tr>
<td>DISC_RESUME</td>
<td>DVD_RESUME</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Status Code</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>020</td>
<td>Device is in standby</td>
<td>The component specified by the device identifier is currently in standby. Component does not respond to most control protocol requests.</td>
</tr>
</tbody>
</table>

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
- GET_CONTENT_DETAILS
- PERFORM_ACTION
- STOP_OR_CANCEL
- GET_MUSIC_TITLE
- GET_MUSIC_PLAY_STATUS
- MUSIC_REPEAT_ON
- MUSIC_REPEAT_OFF
- MUSIC_REPEAT_TOGGLE
- GET_USER_INPUT
- GO_MUSIC_LIST
- GO_MUSIC_COVERS
- GO_MUSIC_COLLECTIONS
- PREVIOUS
- NEXT
- PAGE_UP_OR_NEXT
- PAGE_DOWN_OR_PREVIOUS
- PAGE_UP_OR_PREVIOUS
- PAGE_DOWN_OR_NEXT
- MUSIC_RANDOM_ON
- MUSIC_RANDOM_OFF
- MUSIC_RANDOM_TOGGLE
- GET_SYSTEM_CAPABILITIES
- GET_MUSIC_NOW_PLAYING_STATUS
- GO_NOW_PLAYING

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:

<table>
<thead>
<tr>
<th>Status Code</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>005</td>
<td>Device Unavailable</td>
<td>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.</td>
</tr>
<tr>
<td>013</td>
<td>Device Identifier Conflict</td>
<td>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).</td>
</tr>
<tr>
<td>014</td>
<td>Invalid sequence number</td>
<td>The sequence number is invalid.</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>New Command</th>
<th>Deprecated Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET_PLAYING_TITLE_NAME</td>
<td>GET_TITLE_NAME</td>
</tr>
<tr>
<td>GET_PROTOCOL</td>
<td>GET_PROTOCOL_VERSION</td>
</tr>
<tr>
<td>GET_TIME</td>
<td>GET_DATE_TIME</td>
</tr>
<tr>
<td>GO_COLLECTIONS</td>
<td>GO_FAVORITES</td>
</tr>
<tr>
<td>SET_SCREEN_MASK</td>
<td>SCREEN_MASK_USED</td>
</tr>
<tr>
<td>SET_STATUS_CUE_PERIOD</td>
<td>ENABLE_STATUS_CUES</td>
</tr>
<tr>
<td>SHOW_NAVIGATION_OVERLAY</td>
<td></td>
</tr>
</tbody>
</table>

**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

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