

Kaleido Remote Control Protocol (Gateway)

User's Guide
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Multi-Image
Display
Processor

Kaleido Remote Control
Protocol (Gateway)

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Kaleido Remote Control Protocol (Gateway)

1 Introduction

Kaleido-K2, Kaleido Alto/Quad/Quad-Dual, Kaleido-X, Kaleido-X16, and KMV-3901/3911 multi-viewers can execute commands received via a gateway, allowing third-party developers and individual users remote access to some functions of the multi-viewer's operating system. This document describes the Gateway functionality, and defines the commands that are available.

In this document, the term *Kaleido* is used to describe features common to the Kaleido-K2, Kaleido-Alto/Quad/Quad-Dual, and Kaleido-X series of multi-viewers. The term *Kaleido-X series* refers to the Kaleido-X, Kaleido-X16, and KMV-3901/3911 multi-viewer models. Features exclusive to any one of these products will be described using the full product name (e.g. Kaleido-K2, Kaleido-Alto/Quad/Quad-Dual, Kaleido-X, Kaleido-X16, or KMV-3901/3911).

1.1 Software Versions

The information in this document applies to software released up to the date of publication, beginning with the versions given here for each Kaleido product:

Kaleido-X series:	Kaleido-X Software version 3.00 or later (see Appendix: Kaleido-X Series Support History on page 30 for a detailed breakdown by command and multi-viewer model)
Kaleido-Alto/Quad/Quad-Dual:	Kaleido-Alto/Quad/Quad-Dual Software version 3.01 or later
Kaleido-K2:	Kaleido Software version 5.30 or later

1.2 Remote Operation of the Kaleido-X Series or Kaleido-Alto/Quad/Quad-Dual Multi-Viewers

For remote operation, the Ethernet port of the Kaleido-Alto/Quad/Quad-Dual and Kaleido-X series is continuously available to communicate with a remote computer. The functionality is similar to the internal gateway on the Kaleido-K2, but on a Kaleido-Alto/Quad/Quad-Dual or Kaleido-X series multi-viewer, the Ethernet port is always *ON* and no configuration is required.

Kaleido-Alto/Quad/Quad-Dual and Kaleido-X series multi-viewer systems can execute XML commands received via TCP/IP (Transmission Control Protocol/Internet Protocol). To send commands, you can use a Terminal Emulation (telnet) program or create your own application using the language of your choice (C++, Visual Basic, Java...). In Section 3 below, the use of HyperTerminal software will be described. HyperTerminal is a Windows application that is typically installed on every Windows computer. (From the **Start** menu, point to **All Programs > Accessories > Communications**, and then click **HyperTerminal**.) This program will communicate with the multi-viewer system using communications port 13000.

1.3 Gateway Options for the Kaleido-K2

Two gateways are available for use with the Kaleido-K2:

- The internal gateway is implemented within the Kaleido-K2 software

- The MT-Gateway runs as a Windows service on the Kaleido-K2's operating system

Note: The internal gateway is the preferred gateway, and Miranda strongly recommends that it be used instead of the MT-Gateway, as it is more robust. The MT-Gateway might be used for legacy applications (the internal gateway was not available in early versions of the software), or in specific situations based on design considerations, but its use is deprecated.

It is important to note that **only one gateway can be operating at a time**, and the user must manage the gateway resources to ensure that this is the case.

1.3.1 Internal Gateway

The internal gateway is implemented in the Kaleido-K2 software itself, and is therefore internal to and exclusively functional with a specific Kaleido-K2 frame.

The internal gateway is configured through the `Kaleido.properties` file, and is turned on or off by editing that file. Here is how to do it:

1. From your Kaleido-K2's desktop, double-click the icon **My Computer**.
2. Navigate to `C:\iControl\Startup\` and open the file `Kaleido.properties` using Notepad (right-click the `Kaleido.properties` file, and then select **Notepad** from the **Open With** menu).
3. Search the file for either of the following lines:
 - `activateInternalGateway=TRUE`
 - `activateInternalGateway=FALSE`

If `activateInternalGateway` is `TRUE`, the internal gateway is ON by default at startup. Disable the internal gateway at startup by replacing `TRUE` with `FALSE` in this line.

If `activateInternalGateway` is `FALSE`, the internal gateway is OFF by default at startup. Enable the internal gateway at startup by replacing `FALSE` with `TRUE` in this line.

4. On the **File** menu, click **Save** to save your changes.
5. Close the Notepad editor.
6. Restart the Kaleido-K2.

The internal gateway supports all Kaleido/Gateway commands when connected via port 13000, and supports only the `<listnodes/>` command when connected via port 10001. (The `<listnodes/>` command is available on the Kaleido-K2 systems only.)

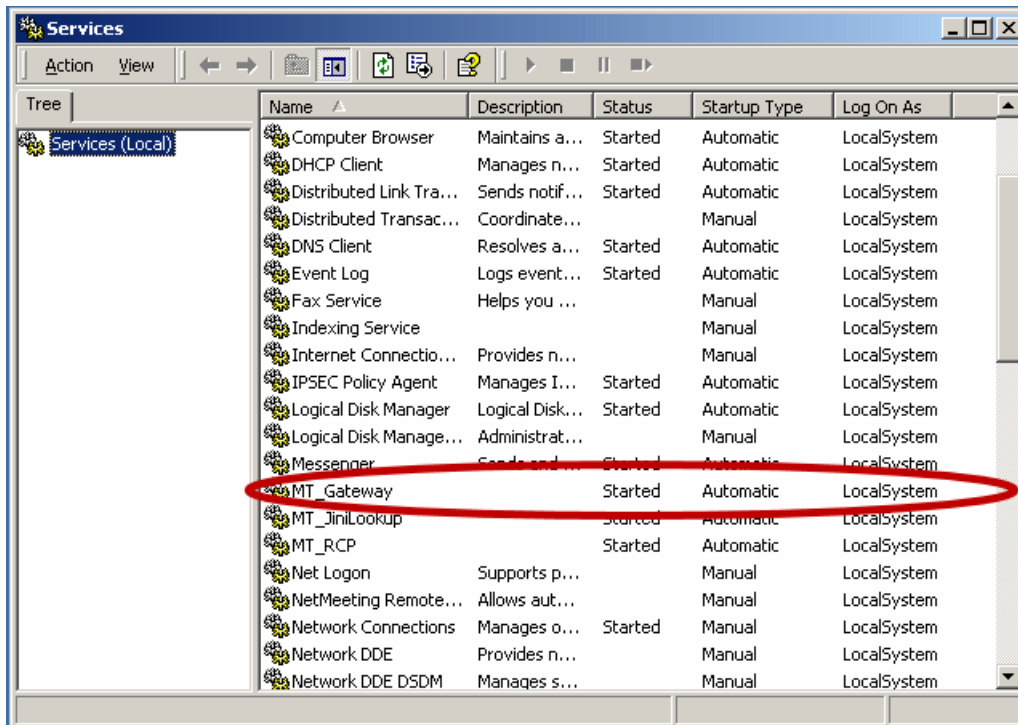
1.3.2 MT-Gateway

The MT-Gateway is shipped with current versions of the Kaleido-K2 in support of legacy applications, but its use is not recommended.

As the MT-Gateway must not be running when you are using the internal gateway, verify that it is turned off as follows:

1. On the Kaleido-K2, display the desktop (use the desktop icon on the menu bar).

2. Double-click the **Services** icon. The **Services** management console will appear. You can see if the MT-Gateway service is running, and whether it is configured to start automatically when the Kaleido-K2 is booted.
3. Right-click **MT_Gateway** and then click **Properties** on the shortcut menu.
4. Select **Manual** as the startup type, and then click **OK**.
5. Click the **Stop Service** button on the toolbar to turn the gateway off.



1.4 Remote Operation of the Kaleido-K2 via the Gateway

Kaleido-K2 can execute XML commands received via either the internal gateway (preferred) or the MT-gateway (deprecated). In an environment containing many Kaleido-K2s, there is a gateway running on each Kaleido-K2. Remember that in such an environment you should configure your system to have at most two lookups running (please refer to the "How to configure the Kaleido-K2 in systems including more than two units and application servers?" section of the Kaleido-K2 documentation for more information).

Commands are sent to the gateway via TCP/IP (Transmission Control Protocol/Internet Protocol), so you can use a Terminal Emulation (telnet) program or create your own application using the language of your choice (C++, Visual Basic, Java ...). In section 3 below, the use of HyperTerminal software will be described. HyperTerminal is a Windows application that is typically installed on every Windows computer. (From the **Start** menu, point to **All Programs > Accessories > Communications**, and then click **HyperTerminal**.) This program will communicate with the machine on which the gateway is running using communications port 13000.

2 Gateway Commands

Kaleido multi-viewers support the following commands through the Gateway access. Most of these apply to all Kaleido multi-viewer models, but some only apply to one platform, as indicated in the list. Furthermore, there may be differences in the use or syntax of some commands depending on the platform. All of these points are clarified in the detailed description of each command that follows.

Note: All gateway commands must be followed by a carriage return. In scripts, add `\n` at the end of each gateway command.

2.1 Index of Gateway Commands

The applicable Kaleido systems are indicated as follows:

Code	System	Multi-Viewer Models
KX	Kaleido-X Software	Kaleido-X, Kaleido-X16, KMV-3901/3911
K2	Kaleido-K2 Software	Kaleido-K2
AQ	Kaleido-Alto/Quad/Quad-Dual	Kaleido-Alto, Kaleido-Quad, Kaleido-Quad-Dual

The star (★) symbol indicates a new command, or a command with new parameters.

Command	Applies to			Description	Page
openID	KX	K2	AQ	Opens a session with the specified Kaleido	6
closeID	KX	K2	AQ	Closes a previously opened session	7
getParameterInfo	KX			Gets the system name, or its software version	8
getKCurrentLayout	KX	K2	AQ	Gets the name of the current layout	8
setKCurrentLayout	KX	K2	AQ	Loads a specific layout	9
getKLayoutList	KX	K2	AQ	Gets the list of available layouts	9
getKRoom	KX			Gets information on how the heads are positioned within the specified room	10
getKRoomList	KX			Gets the list of available rooms	12
setKStatusMessage	KX	K2	AQ	Sets a Gateway alarm to the specified state	12
setKUnlatch	KX			Acknowledges the global alarm for the specified source (channel)	13
setKChannel	KX	K2	AQ	Associates a source (channel) to the specified monitor	13

Command	Applies to			Description	Page
setKDynamicText	KX	K2	AQ	Sends text to the specified layout element	14
getKDynamicText	KX			Retrieves text from the specified layout element	14
getKMetaData		K2		Gets metadata from a MultiData component	15
setKTimer	KX	K2	AQ	Configures the specified countdown timer	16
setKTimer2	KX	K2		Configures the specified timer	16
setKTimerTrigger	KX	K2	AQ	Starts, stops or resets a countdown timer	17
setKFireAction	KX	K2	AQ	Fires the specified action	18
getKActionList	KX			Gets the list of available actions	18
setKEnableAlarmGroup	KX	K2		Enables an alarm group	18
setKDisableAlarmGroup	KX	K2		Disables an alarm group	19
setKSaveLayout		K2	AQ	Saves the current layout	19
getKAudioOut	KX	K2	AQ	Identifies the current audio output	19
setKAudioOut	KX	K2	AQ	Selects the audio to be monitored	20
getKAudioOutVolume	KX	K2	AQ	Gets the current audio monitoring output volume	22
setKAudioOutVolume	KX	K2	AQ	Sets the volume of the audio monitoring output	22
getKAudioOutMode	KX	K2	AQ	Gets the current audio monitoring output mode	22
setKAudioOutMode	KX	K2	AQ	Sets the audio monitoring output mode	23
setKVerticalOffset			AQ	Offsets the graphic from display	23
setKlcontrolMode			AQ	Enables/Disables mouse color keying over video	23
setKMouseColorA			AQ	Sets the mouse color to be keyed over the video	24
setKMouseColorB			AQ	Sets the mouse color to be keyed over the video	24
setKMouseColorC			AQ	Sets the mouse color to be keyed over the video	25

2.2 Document Conventions

Each command in this document is presented in the following format:

[Command Name]	[Applicable Kaleido Systems]
Command description.	
The proper command syntax with variables.	
Gateway Response – a list of possible answers:	
a) For a successful execution of the command	
b) For an unsuccessful execution of the command	
Special notes for the command or specific platform.	

2.3 Gateway Command Descriptions

Please note that the syntax must be exactly replicated when sending a command. Use the UTF-8 format to send Unicode text messages via the Gateway.

openID	KX K2 AQ
This command opens a session with the specified Kaleido.	
Note: It is not necessary to open a session every time you want to send a command to the Gateway. Since opening a session takes a few seconds, it is recommended that you keep a session open as long as commands need to be sent.	
<code><openID>IP_ADDRESS_0_4_0_0</openID></code>	
On a Kaleido-X series multi-viewer:	
To open a session without room context:	
<code><openID/></code>	
OR to open a session with a room context:	
<code><openID>ROOM_NAME</openID></code>	
OR to open a session with user privilege validation with MD5 password hash:	
<code><openID>mirandagateway://USERNAME:PASSWORD_MD5_HASH@SYSTEM_NAME/ROOM_NAME</openID></code>	

OR to open a session with user privilege validation without MD5 password hash:

```
<openID>mirandagateway://USERNAME:CLEAR_PASSWORD
@SYSTEM_NAME/ROOM_NAME</openID>
```

Where:

- *IP_ADDRESS* is the IP address of your destination Kaleido frame.
- *ROOM_NAME* is the room context for the session (see *getKCurrentLayout*, *setKCurrentLayout* and *getKLayoutList*).
- *USERNAME* is the username that will be used to validate permissions.
- *PASSWORD_MD5_HASH* is the md5 hash of the user password, encoded in base 64.
- For information on md5 see <http://www.ietf.org/rfc/rfc1321.txt>.
- For information on base 64 see RFC 3548.
- *CLEAR_PASSWORD* is the user password.
- *SYSTEM_NAME* is the system name as specified in XAdmin.

Gateway response:

- <ack/>: The command was recognized by the Gateway.
- <nack/>:
 - The Gateway was not able to recognize the command OR
 - The room name was invalid OR
 - The username does not match the provided password OR
 - The system name was invalid.
 - The IP_ADDRESS parameter is wrong.

closeID

KX K2 AQ

This command closes a session with the specified Kaleido.

On a Kaleido-X series multi-viewer:

```
<closeID/>
```

On a Kaleido-K2 or Kaleido-Alto/Quad/Quad-Dual multi-viewer:

```
<closeID>IP_ADDRESS_0_4_0_0</closeID>
```

Where *IP_ADDRESS* is the IP address of the Kaleido-K2 or Kaleido-Alto/Quad/Quad-Dual.

Gateway response:

- <ack/>: The command was recognized by the Gateway.

- `<nack/>`: The Gateway was not able to recognize the command.

Note: This command closes the current connection to the client via port 13000. This connection must be re-established before another session can be opened. If you are using HyperTerminal, it will automatically re-establish the previous connection if you begin typing new commands, but other clients may require you to manually reconnect.

getParameterInfo

KX

This command serves two purposes: it can retrieve the current system's name, or the version of the Kaleido-X Software installed on this system.

To obtain the software version, the command is:

```
<getParameterInfo>get key="softwareVersion"</getParameterInfo>
```

Gateway response:

- `<kParameterInfo>softwareVersion="Software Version"</kParameterInfo>`
- `<nack/>`: The Gateway was not able to recognize the command.

Example:

```
<kParameterInfo>softwareVersion="4.XX-build.102"</kParameterInfo>
```

To obtain the system name, the command is:

```
<getParameterInfo>get key="systemName"</getParameterInfo>
```

Gateway response:

- `<kParameterInfo>systemName="System Name"</kParameterInfo>`
- `<nack/>`: The Gateway was not able to recognize the command.

Example:

```
<kParameterInfo>systemName="Cougar-X"</kParameterInfo>
```

getKCurrentLayout

KX K2 AQ

This command retrieves the name of the current layout.

```
<getKCurrentLayout/>
```

Gateway response:

For a Kaleido-Alto/Quad/Quad-Dual multi-viewer:

- `<kCurrentLayout>Currentlayout.xml</kCurrentLayout>`

For a Kaleido-K2 or a Kaleido-X series multi-viewer:

- `<kCurrentLayout>name="CurrentLayout.kg2"</kCurrentLayout>`
- `<nack/>`: The Gateway was not able to recognize the command.

Where *CurrentLayout.kg2* is the name of the Layout currently in use by the Kaleido-K2 or Kaleido-X series multi-viewer. For a Kaleido-Alto/Quad/Quad-Dual, the layout suffix is ".xml" instead of ".kg2".

Note: On a Kaleido-X series multi-viewer, the session must have a room context for the command to be used. If the session was opened using the `<openID/>` command the gateway will return `<nack/>`.

setKCurrentLayout

KX K2 AQ

This command loads the specified layout.

```
<setKCurrentLayout>set LayoutToLoad.kg2</setKCurrentLayout>
```

Where *LayoutToLoad* is the name of the layout to load.

Notes:

- This Layout must have been exported to the Kaleido prior to executing this command.
- You can use the `getKLayoutList` command to retrieve the available layouts before sending this command.
- For a Kaleido-Alto/Quad/Quad-Dual multi-viewer, the layout suffix is ".xml" instead of ".kg2".
- For a Kaleido-X series multi-viewer, if the session does not have a room context, the layout name must be prefixed with the room name and a "/".
Ex: `<setKCurrentLayout>set Room1/Layout1.kg2</setKCurrentLayout>`

Gateway response:

- `<ack/>`: The command was recognized by the Gateway and the layout has been fully loaded.
- `<nack/>`: The Gateway was not able to recognize the command or the layout could not be found.

getKLayoutList

KX K2 AQ

This command returns the list of layouts that can be used on the Kaleido.

```
<getKLayoutList/>
```

Gateway response:

- `<kLayoutList> Layout1.kg2 Layout2.kg2 ... AnAvailableLayout.kg2</kLayoutList>`
Where: *Layout1*, *Layout2* and *AnAvailableLayout* are the names of the layouts that are available on the Kaleido system.

- `<nack/>`: The Gateway was not able to recognize the command.

Notes:

- For a Kaleido-X series multi-viewer, if the session does not have a room context, the layout names will be prefixed with the room name and a "/". If the session has a room context, only layouts for that room will be returned and the layout names won't be prefixed with the room name.
Example:
`<kLayoutList>Room1/MAIN.kg2 Room1/BACKUP1.kg2
Room2/MAIN.kg2</kLayoutList>`
- For a Kaleido-Alto/Quad/Quad-Dual multi-viewer, the layout suffix is ".xml" instead of ".kg2".

getKRoom

KX

This command is used to obtain information on how the heads are positioned relative to each other within the specified room. For a session without room context, the command is:

```
<getKRoom>ROOM_NAME</getKRoom>
```

For a session with a room context, the command is:

```
<getKRoom/>
```

Gateway response:

- The response is the specified room exactly as it is stored in the database but without the XML header.

Example:

```
<room UUID="4afa6407-a753-11dc-9fb9-e3bbad2712e5"  
beanType="monako.data.rooms" createTime="1197313709663"  
currentLayoutUrl="miranda.data.access:MultiHeadLayoutBean/d8b14b99-  
8321-11dd-8648-49f166ea7203" friendlyName="Room1"  
lastModifiedTime="1228233770264" path="/" readOnly="false"  
version="824" xmlVersion="273114">  
  
<defaultRoomPreferences>  
  
<preferences>  
  
<preference editable="true" editablePerUser="true" type="audioOut"  
uid="audioOut"  
value="miranda.monako.daq://local/data/master/9/card/head:0/port:Ana  
log%20AES%20Audio%20Out"/>  
  
<preference editable="true" editablePerUser="true" type="Preset"  
uid="MultiHeadLayoutBean.10"  
value="miranda.data.access:MultiHeadLayoutBean/3aadaaff-df2b-11dc-  
86c6-b5c2f6a72665"/>  
  
<preference editable="false" editablePerUser="true"  
type="useLargeCursor" uid="useLargeCursor" value="true"/>
```

```
<preference editable="true" editablePerUser="true" type="Preset"
uid="MultiHeadLayoutBean.9"
value="miranda.data.access:MultiHeadLayoutBean/5a475f81-df1b-11dc-
a920-9d4ecc32cf8e"/>
```

```
...
```

```
</preferences>
```

```
</defaultRoomPreferences>
```

```
<heads>
```

```
<head allowDashboard="true" frameName="Cougar-X"
friendlyName="Default Display" headID="23" headNumber="1"
id="Cougar-X.23" logicalID="2" resolutionSettingsUuid="8af91a81-
0af1-11dd-a25a-f534b3d6b0d3" rotated="false" rotation="normal"
slotNumber="11">
```

```
<dimension x="1398" y="874"/>
```

```
<position x="4408" y="32"/>
```

```
<resolution height="1200" width="1920"/>
```

```
<rotDimension x="1398" y="874"/>
```

```
<rotResolution height="1200" width="1920"/>
```

```
</head>
```

```
<head allowDashboard="true" frameName="Cougar-X"
friendlyName="Default Display" headID="21" headNumber="1"
id="Cougar-X.21" logicalID="1" resolutionSettingsUuid="9016b92b-
cdbe-11db-ae68-a122768fdb0" rotated="false" rotation="normal"
slotNumber="10">
```

```
<dimension x="1400" y="875"/>
```

```
...
```

```
</head>
```

```
...
```

```
</heads>
```

```
</room>
```

- `<nack/>`: The Gateway was not able to recognize the command.

getKRoomList**KX**

This command is used to obtain the list of rooms known to your multi-viewer system.

```
<getKRoomList/>
```

Gateway response:

- `<kRoomList><room>Room A</room><room>Room B</room></kRoomList>`
- `<nack/>`: The Gateway was not able to recognize the command.

setKStatusMessage**KX K2 AQ**

This command associates an Alarm state with an ID. The Kaleido can be configured to listen to alarm status messages from the Gateway, and thus report the state it receives. This is a convenient way of reporting Alarms to the Kaleido.

```
<setKStatusMessage>set id="ID" status="Status"
message="Message"</setKStatusMessage>
```

Where:

- *ID* is the identifier that will receive the new state.
Note: Kaleido-Alto/Quad/Quad-Dual will only accept numeric values for this parameter, in the range 0 to 1024. The Kaleido-K2 and Kaleido-X series do not have this limitation.
- *Status* is any of the available statuses:

Status	Alternate (legacy) status	Kaleido-X Series	Kaleido-K2/Alto/Quad/Quad-Dual
<i>DISABLE</i>	<i>DISABLE</i>	Disabled	Disabled
<i>NORMAL</i>	<i>OK</i>	Normal	OK
<i>MINOR</i>	<i>WARNING</i>	Minor	Warning
<i>MAJOR</i>	<i>MAJOR</i>	Major	(not supported)
<i>CRITICAL</i>	<i>ERROR</i>	Critical	Error

- *TheMessage* is reserved for future use, and is ignored.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKUnlatch**KX**

This command is used to acknowledge the global alarm for a given source (channel). It can also be used to acknowledge specific alarms.

The command supports three parameter types: *channelName*, *id* or *uri*:

- If *channelName* is specified, the global alarm associated with the specified source (channel) will be acknowledged.
- If *uri* is specified, the alarm with the specified URI will be acknowledged.
- If *id* is specified then the gateway alarm with the specified ID will be acknowledged.

Note: Only one parameter can be specified, otherwise the Gateway will return `<nack/>`.

- `<setKUnlatch>set channelName="ChannelName"</setKUnlatch>`
- `<setKUnlatch> set uri="AlarmURI"</setKUnlatch>`
- `<setKUnlatch>set id="AlarmName"</setKUnlatch>`

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

Examples:

- `<setKUnlatch>set channelName="/Input A/Channel 01"</setKUnlatch>`
- `<setKUnlatch>set uri="miranda.monako.daq://local/data/master/3/card/av1/DTVCCData#dtvccService1Presence"</setKUnlatch>`
- `<setKUnlatch>set id="my_gateway_alarm_1"</setKUnlatch>`

setKChannel**KX K2 AQ**

This command is used to assign a logical source (channel) to the specified monitor in the current layout.

```
<setKChannel>set channelname=ChannelName monitor=MonitorNumber
</setKChannel>
```

Where:

- *ChannelName* is the name of the logical source you wish to assign to the specified monitor. On a Kaleido-X series multi-viewer this is the full path to the source (channel). Ex.: `/Input A/Channel 1`.
- *MonitorNumber* is the identifier of the monitor to which the source is to be assigned. On a Kaleido-X series multi-viewer the monitor number must be prefixed with the room name and a "/" if the session does not have a room context. Ex.:

Room1/composite42. The monitor name is available in the XEdit layout (**Properties > Assignments > Name**).

Note: On the Kaleido-K2, to get the monitors' identifiers for your current layout press the Tab key on the keyboard, or the SELECT key on the RCP.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command, or a parameter could not be resolved.

setKDynamicText

KX K2 AQ

This command is used to set the text of a UMD or text label component that is configured to use dynamic text. Note that the Service ID for this component must be set to "Gateway" when the layout is created in KEdit/XEdit in order for this command to work.

```
<setKDynamicText>set address=Address text=NewText </setKDynamicText>
```

Where:

- *Address* is the configured text address of the UMD or text label component.
Note: The Kaleido-Alto/Quad/Quad-Dual systems require a numeric value in the range 0-1024. The Kaleido-K2 and Kaleido-X series do not have this limitation.
- *NewText* is the text to display.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

getKDynamicText

KX

This command is used to retrieve dynamic text previously sent to a multi-viewer by a third-party device.

```
<getKDynamicText>set address=Address</getKDynamicText>
```

Where: *Address* is the configured text address of the UMD or text label component whose text you wish to retrieve.

Gateway response:

- `<kDynamicText>RetrievedText</kDynamicText>`
- `<nack/>`: The Gateway was not able to recognize the command.

Note: This command will only return text that was previously set via the `<setKDynamicText>` command.

getKMetaData

K2

This command is used to get metadata that is assigned to a MultiData component assigned to a text label in the Kaleido-K2. The Kaleido-K2 will return XDS, Dolby-E and video format data in response to this command.

```
<getKMetaData>get dataname=MultiDataName </getKMetaData>
```

Where *MultiDataName* is the name of the MultiData source, as defined in the MultiData Configuration panel.

Gateway response:

- `<kMetaData><error>MultiDataName not found</error></kMetaData>`: the MultiData entity does not exist in the Kaleido-K2.
- `<kMetaData><input id="1" stationID="1234" channelNumber="12"/> <input id="2" stationID="RDS" channelNumber="25"/></kMetaData>`

Where the returned information (shown in **bold** type here) is the data contents of the MultiData element. This example shows a typical return of data; the actual data returned will depend upon the configuration and definition of the MultiData component on the Kaleido-K2.

- The response will be grouped by input, and the inputs sorted in ascending order (from input 1 to 32).
- For each input, all the data will be presented as attributes.
- The data legends will be mapped to valid XML attribute names, all of which are listed here:

```
inputFormat
WSS
scansys
AFD
AFD3Bits
AFDANC
SID
programConfig
dialogLevel
networkName
stationID
channelNumber
TSID
programName
programType
vChipRating
programDescription
programLength
elapsedTime
```

programID
timeOfDay
timeZone

- The value field is escaped as defined in the XML protocol for an attribute value.
 - For instance, ABC"DEF\GHI<JKL>MNO/PQR&STU;VWX'YZ becomes ABC"DEF\GHI<JKL>MNO/PQR&STU;VWX'YZ
 - The attributes order is not guaranteed and may change for two consecutives calls to the same command.
- <nack/>: there is a syntax error in the XML command.

Note: If the MultiData component is not assigned to a text component, no values will be included in the information returned to the user from the gateway. *Make sure to assign the MultiData component to a text label component.*

setKTimer

KX K2 AQ

This command is used to configure the specified countdown timer component.

```
<setKTimer>set id="TimerID" preset="HH:MM:SS" direction="Direction"
loop="Loop" </setKTimer>
```

Where:

- *TimerID* is the ID of the countdown timer component to modify.
- *HH:MM:SS* is the preset value for the countdown timer component.
- *Direction* is the direction to count, either **UP** or **DOWN**.
- *Loop* indicates if the counter must count continuously. This value can be either **ON** or **OFF**.

Gateway response:

- <ack/>: The command was recognized by the Gateway.
- <nack/>: The Gateway was not able to recognize the command.

setKTimer2

KX K2

This command is used to configure a timer in a Kaleido-K2 or Kaleido-X series multi-viewer system.

```
<setKTimer2>set TimerName="NAME" StartTime="HH:MM:SS:FF"
PresetTime="HH:MM:SS:FF" TimerMode="Timer mode" EndMode="End mode"
</setKTimer2>
```

Where:

- *NAME* is the name assigned to the timer in the Timer configuration panel accessed from the **Timer Browser** window in KEdit, or in the **Timer Editor** window in XEdit.
- StartTime may be one of the following:
 - *HH:MM:SS:FF* – time in hours:minutes:seconds:frames at which this timer will start its count, depending on its configuration and presence of triggers. Note that if the hour value is “00”, the start time is deemed to be the previous midnight, whereas “24” is considered to be the next midnight. This allows the timer to decide whether it should be counting or waiting to start when it compares the start time to the current time.
Note: The current implementation allows the user to specify frame values, but they are not used by the timer, which will start on the exact second.
 - **NOW** – the timer will start counting immediately upon receiving the command.
 - **WAIT** – the timer will not start until it receives a *setKTimerTrigger* gateway command with the argument **START**.
- PresetTime may be one of the following:
 - Count duration (hours:minutes:seconds:frames) for **UP** and **DOWN** timer modes.
 - End time (hours:minutes:seconds:frames) for the **REMAINING** timer mode.
Note: The current implementation allows the user to specify frame values, but they are not used by the timer, which will start on the exact second.
- TimerMode is the operating mode of the timer. Possible values are: **UP**, **DOWN**, **REMAINING**.
- EndMode defines what is to happen when the timer reaches the end of its count. Possible values are: **LOOP**, **STOP**, and **OVERRUN**.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKTimerTrigger

KX K2 AQ

This command is used to control the specified countdown timer component. The countdown timer can be started, stopped or reset.

```
<setKTimerTrigger>set id="TimerID" trigger="Trigger"</setKTimerTrigger>
```

Where:

- *TimerID* is the ID of the countdown timer component to control.
- *Trigger* is the action that the countdown timer must do. This value can either be **START**, **STOP** or **RESET**.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKFireAction**KX K2 AQ**

This command is used to fire the specified Action (for example, by an external third-party system that is unable to use the GPI in as a trigger).

```
<setKFireAction>set name="NameOfTheActionToFire"</setKFireAction>
```

Where *NameOfTheActionToFire* is the Friendly name of the Action to be executed.

Notes:

- For a Kaleido-X series multi-viewer, the Friendly name is specified under the **Properties** tab in XEdit.
- The Action must have been exported to the multi-viewer in order to be executed.
- On a Kaleido-X series multi-viewer, background actions listed in the **On Change/Gateway** column under XEdit's **Actions** tab will be executed when the action is fired by the Gateway command.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command, or the command could not be executed.
Note: On a Kaleido-X series multi-viewer, an action that consists of multiple action items will stop as soon as one of the action items cannot be executed. The Gateway would then return `<nack/>`.

getKActionList**KX**

This command is used to obtain the list of actions known to your multi-viewer system.

```
<getKActionList/>
```

Gateway response:

- `<kActionList><action>Action1</action><action>Action2</action><action>Action3</action></kActionList>`
- `<nack/>`: The Gateway was not able to recognize the command.

setKEnableAlarmGroup**KX K2**

This command enables the specified alarm group or virtual alarm.

```
<setKEnableAlarmGroup>set  
name="NameOfTheGroupToEnable"</setKEnableAlarmGroup>
```

Where *NameOfTheGroupToEnable* is the name of the alarm group (for a Kaleido-K2 multi-viewer), or virtual alarm (for a Kaleido-X Series multi-viewer model) you wish to enable.

Note: In the case of a Kaleido-X Series multi-viewer model, this parameter can be the path/friendlyName of the virtual alarm or its URI.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKDisableAlarmGroup

KX K2

This command is used to disable the specified alarm group or virtual alarm.

```
<setKDisableAlarmGroup>set
name="NameOfTheGroupToDisable"</setKDisableAlarmGroup>
```

Where *NameOfTheGroupToDisable* is the name of the alarm group (for a Kaleido-K2 multi-viewer), or virtual alarm (for a Kaleido-X Series multi-viewer model) you wish to disable.

Note: In the case of a Kaleido-X Series multi-viewer model, this parameter can be the path/friendlyName of the virtual alarm or its URI. The virtual alarm will be set to OFFLINE.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKSaveLayout

K2 AQ

This command allows the user to save the currently displayed layout to a file.

```
<setKSaveLayout>set name="FileName"</setKSaveLayout>
```

Where *FileName* is the name of the file that will contain the layout.

Note: Do not specify an extension to the file name. The file extension “.kg2” (for Kaleido-K2 layouts) or “.xml” (for Kaleido-Alto/Quad/Quad-Dual layouts) will be automatically added by the system.

Gateway response:

- `<ack/>`: The command was correctly interpreted and executed.
- `<nack/>`: The command was not executed, due to wrong spelling or invalid parameter.

getKAudioOut

KX K2 AQ

This command allows the user to get the selected audio monitoring output.

```
<getKAudioOut/>
```

Notes:

- A session with user privileges must first be opened for this command to work on a Kaleido-X or Kaleido-X16 multi-viewer.
- This command is currently not supported on the KMV-3901/3911 models.

Returned value can be any of:

- `<kAudioOut>DETAILS</kAudioOut>`: The command was executed.

DETAILS will vary depending on the type of audio output detected.

When no audio output is currently being monitored:

- `<kAudioOut>Type="NONE"</kAudioOut>`

For a streaming source, the returned value indicates the IP address and the Feed ID of the source using the following syntax:

- `<kAudioOut>Type="STREAMING" IP="999.999.999.999"
FeedID="XX"</kAudioOut>`

Where:

- 999.999.999.999 is the IP address of the device from where the stream originates.
- XX is the identifier of the feed to use.

For an audio card source, the returned value indicates which audio card input is being monitored:

- `<kAudioOut> Type="AUDIOCARD" Input="999"</kAudioOut>`

Where 999 indicates the input from the card.

For an embedded source, the returned value will contain the video input, the group and the AES used. The syntax will be:

- `<kAudioOut>Type="EMBEDDED" Input="AAA" Group="BB"
AES="X"</kAudioOut>`

Where:

- AAA indicates the video input.
 - BB indicates the group. Valid values are from 1 to 4.
 - X indicates the AES. Valid value can be either 1 or 2.
- `<nack/>`: The command was not executed.

setKAudioOut

KX K2 AQ

The user can select the audio to be monitored by using this Gateway command. The syntax of the command will differ if the user indicates to monitor audio coming from a stream, from an audio card, from an embedded source or no audio at all. In general, you can select any audio source to be monitored, even if this source is not represented in an audio meter on the current layout.

Notes:

- A session with user privileges must first be opened for this command to work on a Kaleido-X or Kaleido-X16 multi-viewer.
- This command is currently not supported on the KMV-3901/3911 models.
- Streaming sources are not supported on the Kaleido-Alto/Quad/Quad-Dual.

```
<setKAudioOut>DETAILS</setKAudioOut>
```

Where *DETAILS* will differ depending on the type of audio source being selected for monitoring, as shown below.

To select a streaming source, format the command as follows:

```
<setKAudioOut>set Type="STREAMING" IP="999.999.999.999"
FeedID="XX"</setKAudioOut>
```

Where:

- 999.999.999.999 is the IP of the machine from where the stream occurs.
- XX is the identifier of the feed to use.

To select an audio card source, format the command as follows:

```
<setKAudioOut>set Type="AUDIOCARD" Input="999"</setKAudioOut>
```

Where 999 indicates the input from the card.

To select an embedded source, format the command as follows:

```
<setKAudioOut>set Type="EMBEDDED" Input="AAA" Group="BB"
AES="X"</setKAudioOut>
```

Where:

- AAA indicates the video input.
- BB indicates the group. Valid values range from 1 to 4.
- X indicates the AES. Valid value can be either 1 or 2.

To stop audio monitoring and mute the audio output:

```
<setKAudioOut>set Type="NONE"</setKAudioOut>
```

Gateway response:

- <ack/>: The command was correctly interpreted.
- <nack/>: The command was not executed, due to wrong spelling or an invalid parameter.

Note: You may select any audio source for monitoring, independent of whether it is being metered in the current layout, with the exception that a streaming source must be part of the current layout.

- If the source is included in the layout, the meter assigned to it will be highlighted.

- If the source is not included in the layout, the sound will be routed to the audio monitors, but there will be no indication of the source, in the layout.

getKAudioOutVolume

KX K2 AQ

Note: This command is currently not supported on the KMV-3901/3911 models.

This command retrieves the audio monitoring volume currently used.

```
<getKAudioOutVolume/>
```

The returned value will have the form:

- `<kAudioOutVolume>volume="XX"</kAudioOutVolume>`
Where *XX* is the value, expressed in dB, at which the audio monitoring volume is set. This value ranges between -96 dB and +24 dB for a Kaleido-X series multi-viewer, and between -90 dB and 0 dB for a Kaleido-K2/Alto/Quad/Quad-Dual. Fractions of dB are supported on the Kaleido-X series multi-viewers only.
- `<nack/>`: The command was not recognized.

setKAudioOutVolume

KX K2 AQ

Note: This command is currently not supported on the KMV-3901/3911 models.

This command sets the audio monitoring volume.

```
<setKAudioOutVolume>set volume="XX"</setKAudioOutVolume>
```

Where *XX* is the value expressed in dB at which the volume will be set. Valid values range between -96 dB and +24 dB for a Kaleido-X series multi-viewer, and between -90 dB and 0 dB for a Kaleido-K2/Alto/Quad/Quad-Dual. Fractions of dB are supported on the Kaleido-X series multi-viewers only.

Note: If the audio signal is muted, executing this command will unmute the signal.

Returned value will be one of:

- `<ack/>`: The command was correctly interpreted. The volume was set to the new value.
- `<nack/>`: The command was not executed, due to a spelling error or invalid parameter. The volume remains unchanged.

getKAudioOutMode

KX K2 AQ

Note: This command is currently not supported on the KMV-3901/3911 models.

This command retrieves the audio monitoring mode currently used.

```
<getKAudioOutMode/>
```

Returned value will have the form:

- `<kAudioOutMode>mode="XXXXX"</kAudioOutMode>`
Where XXXXX is the mode, which can be any of NORMAL, MUTE or -20 dB.
- `<nack/>`: The command was not executed, due to a spelling error or invalid parameter. In this case the audio monitoring mode remains unchanged.

setKAudioOutMode

KX K2 AQ

Note: This command is currently not supported on the KMV-3901/3911 models.

To set the Audio Monitoring Mode the following command is used:

```
<setKAudioOutMode>set mode="XXXXX"</setKAudioOutMode>
```

Where XXXXX is the value at which the mode must be set. Valid values are NORMAL, MUTE and -20 dB.

Returned value will be any of:

- `<ack/>`: The command was correctly interpreted. The Audio Monitoring Mode was set to the specified value.
- `<nack/>`: The command was not executed, due to bad spelling or invalid parameter. The Audio Monitoring Mode remains unchanged.

setKVerticalOffset

AQ

This command is used to position the CPU's graphic output vertically within the final DVI output on the display. The Kaleido-Alto/Quad's CPU includes up to 1024 lines, whereas the final output includes up to 1200 lines.

```
<setKVerticalOffset>set offset="NN"</setKVerticalOffset>
```

Where NN is the number of lines (between 0 and 175) by which to offset the CPU's graphic output, from the top of the final DVI output.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKIcontrolMode

AQ

This command is used to enable the Kaleido-Alto/Quad to key the detected mouse pointer colors on video.

```
<setKIconrolMode>set mode="N"</setKIconrolMode>
```

Where *N* is either 0 (color not keyed), or 1 (color key enabled).

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKMouseColorA

AQ

This command is used to set a color to key.

```
<setKMouseColorA>set mouseColorA="FFBBGGRR"</setKMouseColorA>
```

Where *FFBBGGRR* is the hexadecimal triplet for *mouseColorA* prefixed with the hexadecimal value "FF".

BB represents the blue component.

GG represents the green component.

RR represents the red component.

For example "FFFF00FF" would set magenta as the key color.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKMouseColorB

AQ

This command is used to set a color to key.

```
<setKMouseColorB>set mouseColorB="FFBBGGRR"</setKMouseColorB>
```

Where *FFBBGGRR* is the hexadecimal triplet for *mouseColorB* prefixed with the hexadecimal value "FF".

BB represents the blue component.

GG represents the green component.

RR represents the red component.

For example "FFFF00FF" would set magenta as the key color.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

setKMouseColorC**AQ**

This command is used to set a color to key.

```
<setKMouseColorC>set mouseColorC="FFBBGGRR"</setKMouseColorC>
```

Where *FFBBGGRR* is the hexadecimal triplet for mouseColorC prefixed with the hexadecimal value "FF".

BB represents the blue component.

GG represents the green component.

RR represents the red component.

For example "FFFF00FF" would set magenta as the key color.

Gateway response:

- `<ack/>`: The command was recognized by the Gateway.
- `<nack/>`: The Gateway was not able to recognize the command.

NOTE: All gateway commands must be followed by a carriage return. In scripts, add `\n` at the end of each gateway command.

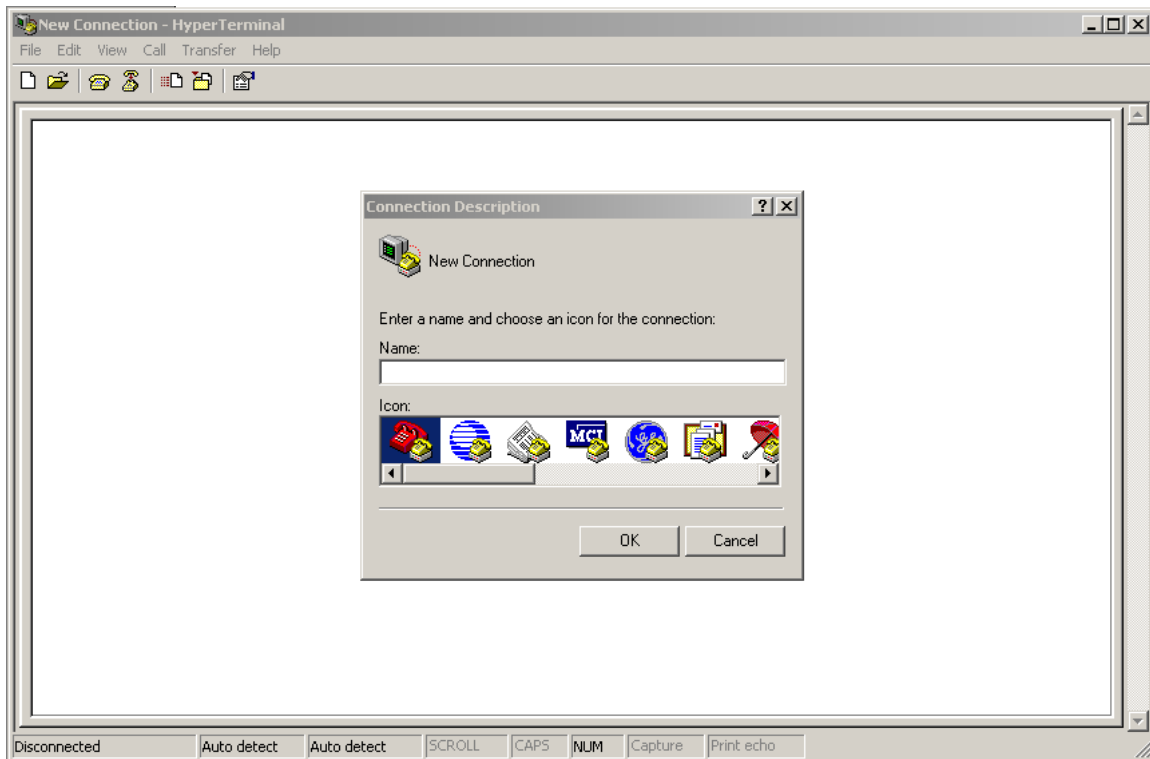
3 A Typical Session

Here is a description of how to open and close a typical session during which you will use these commands to operate a Kaleido. You can open concurrent sessions with multiple Kaleido frames; each session will have its own window on your desktop.

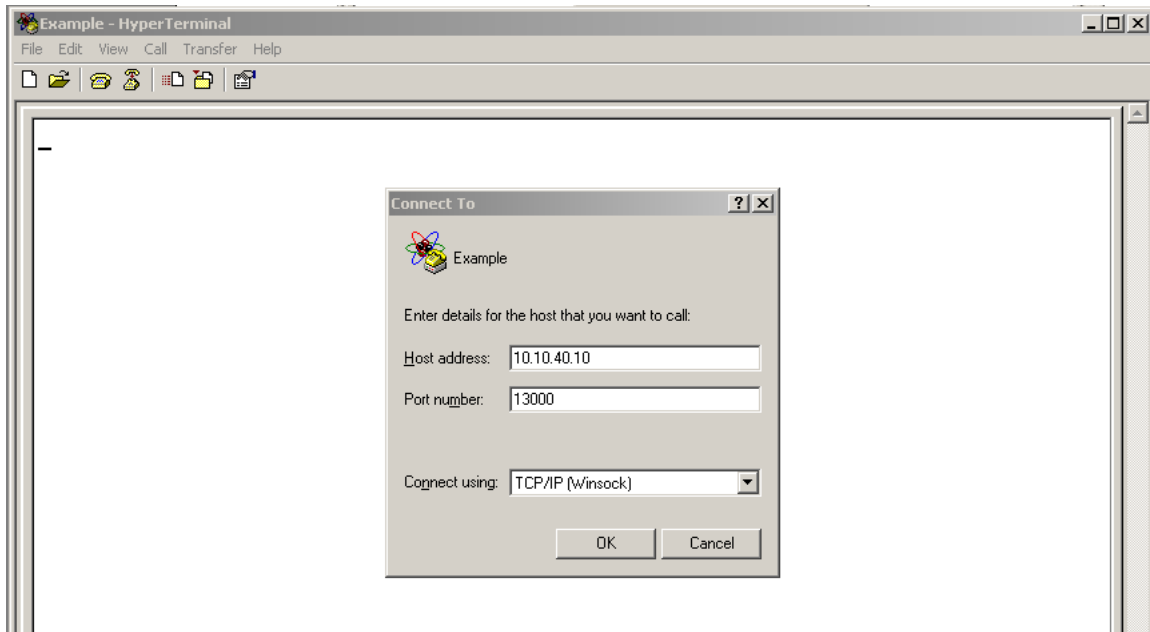
- If you are using a Kaleido-K2, make sure the internal gateway is turned ON, and the MT-gateway is turned OFF (see section 1.2).
- If your environment includes a Miranda iControl Application Server, see the Application Server's manual for a discussion of appropriate network configurations.

Open the HyperTerminal software on another computer:

1. From the Start menu, point to All Programs > Accessories > Communications, and then click HyperTerminal.
2. In **Connection Description**, type a name for the connection, and select an icon from the list.

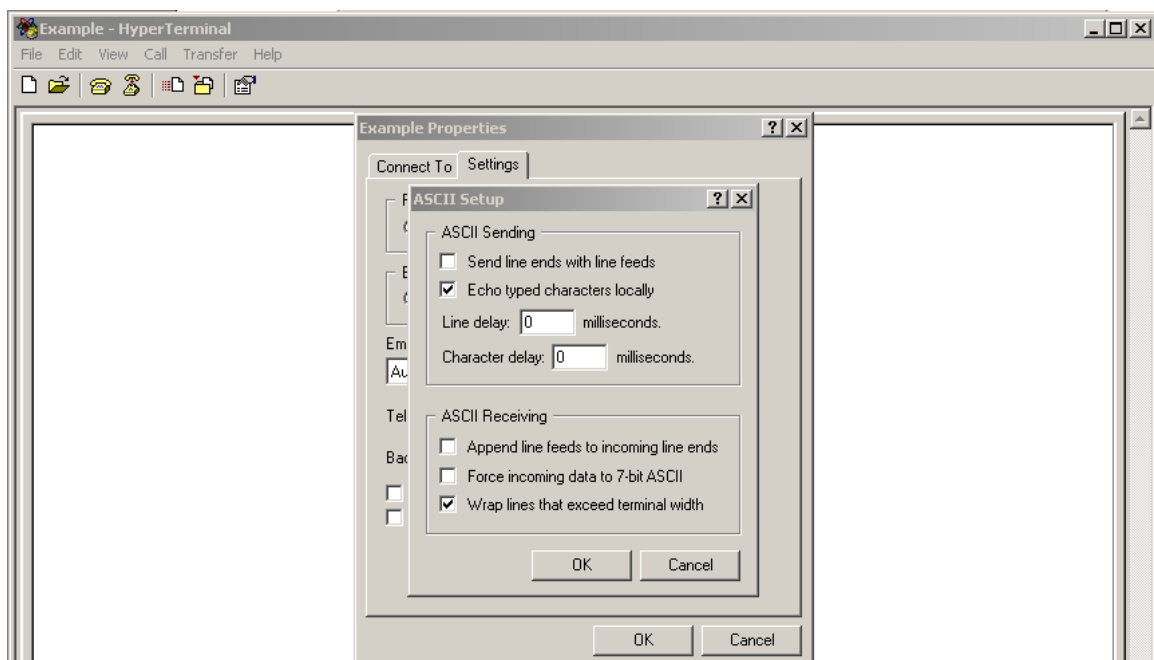


3. In **Connect To**, select **TCP/IP (Winsock)** from the **Connect using** list. Two new boxes appear in the window.
4. In **Host address**, type the IP address of the Kaleido frame.
5. In **Port number**, type "13000". This indicates that the connection to the Kaleido will be established via port 13000.
6. Click **OK**.



To be able to see the characters you type in the HyperTerminal console:

1. On the **File** menu, click **Properties**.
The **[connection name] Properties** window appears.
2. On the **Settings** tab, click the **ASCII Setup** button.
3. Select the **Echo typed characters locally** check box.



4. Click **OK** to close **ASCII Setup** window, and then click **OK** again to close the **Properties** window.
The characters you type will appear in the console.

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Commands can be sent to the Gateway while a session is open. To send a command, type it in the console and then press the Enter key.

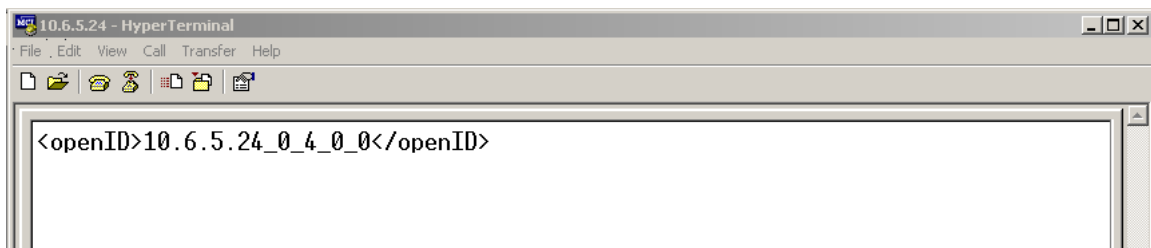
There is no limit to the number of commands that can be sent in a session, and it is recommended to keep a session open as long as there are commands to send, since opening a session takes a few seconds. Here is a simplified example of a session:

Open a session

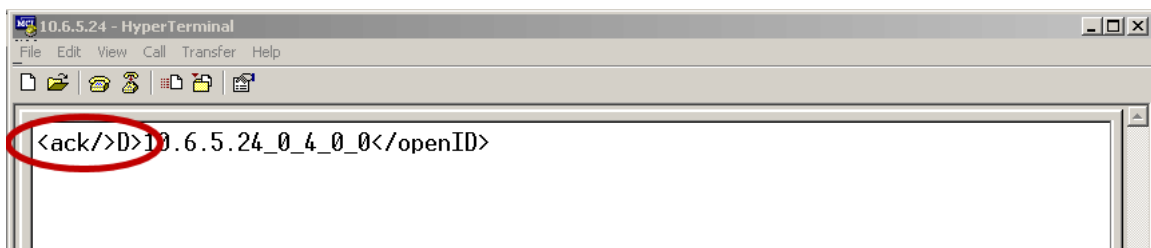
```
send command  
send command  
...  
send command
```

Close the session.

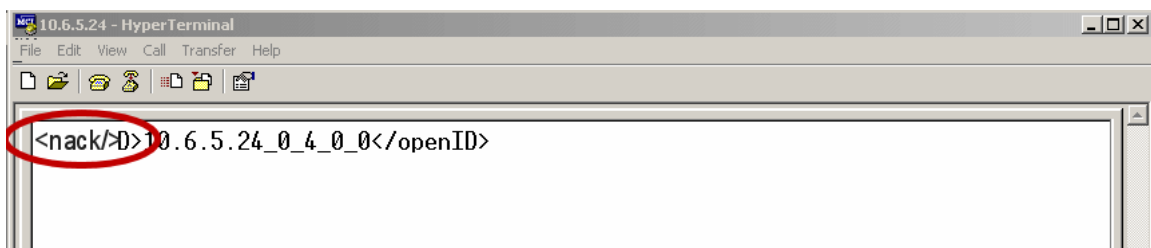
To open a session, enter the openID command using the IP address of the Kaleido with which the connection has to be established.



If the Gateway receives the command and recognizes it, it will respond with the following:

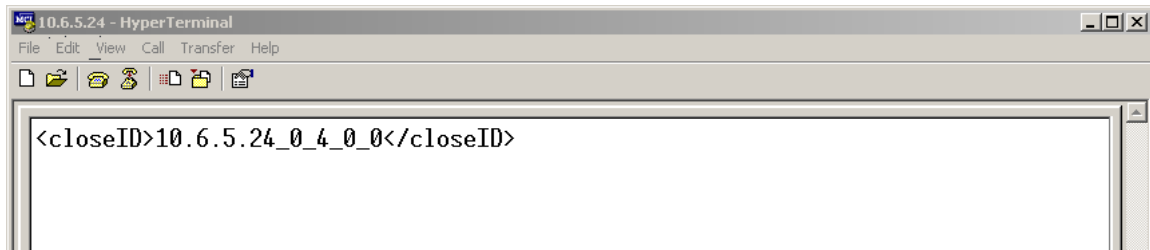


If the command cannot be recognized the following message will appear:

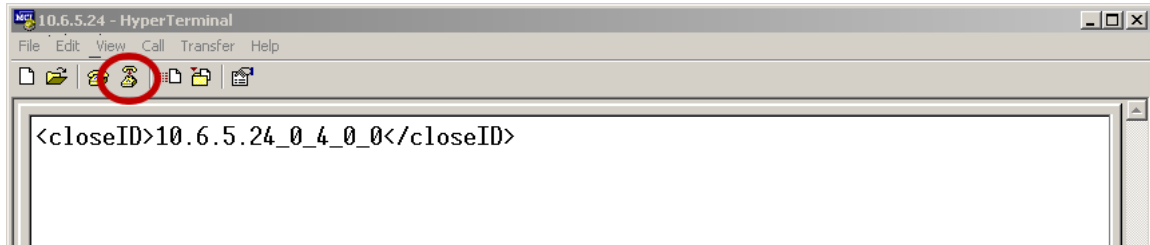


The Kaleido is now ready to receive commands.

When no more commands need to be sent to the Kaleido, close the link to the Kaleido using the closeID command.



To end the communication session, click the **Disconnect** button on the toolbar.



4 Appendix: Kaleido-X Series Support History

For each Kaleido Remote Control Protocol (Gateway) command, the following table indicates, for each Kaleido-X Series multi-viewer model, the version number of the Kaleido-X Software that first supported the command.

Command	Kaleido-X	Kaleido-X16	KMV-3901/3911
openID	1.00	4.10	5.00
closeID	1.00	4.10	5.00
getParameterInfo	4.00	4.10	5.00
getKCurrentLayout	1.00	4.10	5.00
setKCurrentLayout	1.00	4.10	5.00
getKLayoutList	1.00	4.10	5.00
getKRoom	4.00	4.10	5.00
getKRoomList	4.00	4.10	5.00
setKStatusMessage	4.00	4.10	5.00
setKUnlatch	4.00	4.10	5.00
setKChannel	1.00	4.10	5.00
setKDynamicText	1.00	4.10	5.00
getKDynamicText	4.00	4.10	5.00
getKMetaData	N.A.	N.A.	N.A.
setKTimer	3.00	4.10	5.00
setKTimer2	3.00	4.10	5.00
setKTimerTrigger	3.00	4.10	5.00
setKFireAction	3.00	4.10	5.00
getKActionList	5.00	5.00	5.00
setKEnableAlarmGroup	5.10	5.10	5.10
setKDisableAlarmGroup	5.10	5.10	5.10
setKSaveLayout	N.A.	N.A.	N.A.

Command	Kaleido-X	Kaleido-X16	KMV-3901/3911
getKAudioOut	2.00	4.10	—
setKAudioOut	2.00	4.10	—
getKAudioOutVolume	3.00	4.10	—
setKAudioOutVolume	3.00	4.10	—
getKAudioOutMode	3.00	4.10	—
setKAudioOutMode	3.00	4.10	—
setKVerticalOffset	N.A.	N.A.	N.A.
setKlcontrolMode	N.A.	N.A.	N.A.
setKMouseColorA	N.A.	N.A.	N.A.
setKMouseColorB	N.A.	N.A.	N.A.
setKMouseColorC	N.A.	N.A.	N.A.

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