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Application note:

Using the string based Application Specific Interface (API) of the MVI Engineering Meeting software

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Introduction:

MVI Engineering software version **8.90** or higher is required to be able to use the string-based API based on this manual.

The MVI Engineering API is a feature that allows third-party tools to control the MVI Engineering software on pre-defined ways.

Connectivity is done using standard TCP-IP interface, so any computer on the network or even the internet can perform some configuration and/or control actions.

Commands are based on simple strings, this allows most AMX and Crestron type of solutions to send commands to MVI Engineering software.

Example material

The MVI Engineering website contains a C# programmed example and command-text generator with below described commands, including the source code of this example.

Check out www.mvi-engineering.com , go the application note area and download the MVI-CAM serial command example.

Connectivity

The MVI Engineering API is accepting the TCP-IP string based API connection on port **20007**.

Each command is a string with the command name and optional arguments separated by the '|' character. A command ends with the '\r' character or '0x0D' in hex. Each command is case insensitive. Spaces may be used between argument-separator signs for readability.

The default string encoding is UTF8, this allows text to be send in all languages (English, Danish, Chinese,...). It's possible to use 'iso8859_1' as well, a specific command is required to enable this.

Important: The TCP connection may not be 'broken' for each character. The string needs to be send in one go (e.g. 1 packets) for it to be processed correctly. Its preferred to keep the TCP connection open.

Example:

"presenter-pressbutton1" -> Presses button 1 of the Meeting Presenter
"cam-switch_speaker_input | 1 | 3" -> switches speaker 1 to input 3

Notice the '|' character to separate options. Don't forget to end the command with the '\r' character or '0x0D' in hex.

Response:

At each command a response will be send back. The response you get back is the same as the one you send with either 'ack', 'nack' or 'nolicense' in front of it.

'ack' means the command is accepted and processed. Also 'ack' messages from other clients will be send, so all clients know of each other's actions.

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'nack' means the command is not accepted, has a syntax error

'nolicense' means the command is accepted, but not processed since the license is not available. S

'status' is a notification event. These may come at 'random' and can be ignored if not important.

Commands

Setting-UseIso8859_1

Tells the server that all future text for this connection will be using the ISO 8859-1 encoding. This is an extended-ASCII format where each byte represents a character, and special characters are located in the top 128 character possibilities. Find more on the internet about this.

Usually used in older systems. Not sending this command will use UFT8 for encoding.

Commands Camera Control

The following commands can be used with the MVI-CAM software with the MVI-CAM license. This allows the MVI-CAM to be used as a dedicated seamless switcher with picture-in-picture capabilities.

Smart 'microphone' switching

The API contains new commands that allow a basic 'microphone' ON and 'microphone' OFF command to be send to the MVI-CAM standalone software. The MVI-CAM software will then be able to smartly use its dome camera control system to get names from the delegate database, and automatically do its multi-speaker picture-in-picture techniques to show multiple speakers at the same time on screen. ('Cam-MicOn', 'Cam-MicOff', 'Cam-MicAllOff' and 'Cam-MicOnAndName')

Cam-Switch_Speaker_Input

Switches the video input for either speaker 1,2,3 or 4 to the selected input.

First Argument: Speaker number. Speaker 2,3 and 4 are picture-in-picture speakers.

Second Argument: input number.

Input numbers:

- 1-7 Camera input 1 to 7
- 8 The 'extern' camera button
- 9-16 Reserved for future 16 camera support
- 19 Screen capture/Remote Desktop Sharing input
- 20 Fixed image

Example: (Sets input 3 for speaker 1)

"cam-switch_speaker_input | 1 | 3"

Cam-ClearNames

Clears all generated names, titles and speechnames for all speakers.

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Cam-ClearName

First Argument: Speaker number.

Clears generated name, title and speectime for selected speaker.

Cam-SetAmountOfSpeakers

Sets the amount of visible speakers on screen. Default 1.

This is the Picture in Picture mode and allows multiple speakers to be shown at the same time

First Argument: Amount of speakers

Example: (shows 2 speakers)

“cam-setamountofspeakers | 2”

Cam-CamAutoOn

Enables the automatic control of the Camera and Name Display (default on).

In automatic control mode the software responds immediately to the conference system when a speaker change occurs.

Cam-CamAutoOff

Disables the automatic control of the Camera and Name Display

The MVI-CAM software will ignore the conference system and is depending on ‘manual’ control or API control for speaker name displaying.

Cam-RecordingStart

Start a (Full-HD) video recording. Settings can be found in the Camera and Name Display client.

Cam-RecordingStop

Stops the video recording

Cam-MachineRestart

Will restart the Windows machine where the MVI-CAM client is installed. Takes a minute to complete.

Cam-MachineShutdown

Will shut-down the Windows machine where the MVI-CAM client is installed. Takes a minute to complete.

Use Wake-On-Lan techniques to remotely start the machine again. Search the internet or ask your IT specialist for more details.



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Camera and Name Display using delegates, names and dome positions

The following commands allow the MVI-CAM to also be used as a character generator based on manual input, or to select from the internal delegate database inside the MVI-CAM software.

These feature require the MVI-CAMDB license. To also have dome-control the MVI-CAMDOME license is required.

The dome-control will use priority-based camera selection. If a camera is in use for speaker 1 and speaker 2 tries to use the same camera, a different camera will be selected based on the priority programming of the dome camera's in the MVI-CAM software.

This will allow for guaranteed best-camera use as well as 2,3 and 4 person conversation on screen between speakers.

Note: There is no priority based system for the EVID-70 domes, ask for support.

About 'speaker number'

The speaker number is related to the capability of the MVI-CAM software to show multiple speakers on screen at the same time. Usually you'll be using speaker number 1.

But when speaker number two is used, and the amount of speakers on screen is set to '2', you can see two persons on screen at the same time allowing for live discussions on screen. The MVI-CAMDOME priority based camera system will make sure the best available camera is used. Up to 4 speakers can be displayed at the same time.

Cam-ActivateSeat

Activates a seat in the Camera and Name Display software without displaying a delegate name. Any active name will be cleared.

This can be a conference seat or a 'virtual' seat. If the seat does not exist, it will be created automatically as a 'virtual' seat and can be immediately be used for Dome camera setup.

If the seat has been configured for a camera input, this input will be selected. The video will optionally freeze and fade-over.

If a dome-position is assigned, the Dome Camera will move to that position. The camera will also be marked 'in-use' meaning it will not be used by another speaker.

First Argument: Speaker number

Second Argument: Seat name (string without spaces)

Example:

```
"cam-activateseat | 1 | Seat0001"
```

Requires: MVI-CAMDB (and MVI-CAMDOME for dome control)



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Cam-ActivateSeatPlusDelegate

Activates a seat in the Camera and Name Display software and searches the delegate database for the corresponding delegate name, title and logo sitting on that seat and displays them.

This can be a conference seat or a 'virtual' seat. If the seat does not exist, it will be created automatically as a 'virtual' seat and can be immediately be used for Dome camera setup.

If the seat has been configured for a camera input, this input will be selected. The video will freeze and fade-over. If a dome-position is assigned, the Dome Camera will move to that position.

If another seat was already active on this speaker number, this seat will be removed first so its camera becomes available for the new seat.

First Argument: Speaker number

Second Argument: Seat name (string without spaces)

Example:

```
"cam-activateseatplusdelegate | 1 | Seat0001"
```

Requires: MVI-CAMDB (and MVI-CAMDOME for dome control)

Cam-RemoveSeatFromSpeaker

This will remove the seat from the speaker position. If a name is displayed, the name will be removed. The speaker will show the overview camera afterwards.

The camera that was assigned to this speaker will be made available for other speakers to use.

First Argument: Speaker number

Example:

```
"Cam-RemoveSeatFromSpeaker | 1 "
```

Cam-ActivateDelegate

Searches only the delegate database for the delegate name sitting on this seat and will display the name, title and logo without freezing or fading.

This can be a conference seat or a 'virtual' seat. If the seat does not exist, it will be created automatically as a 'virtual' seat but will not be selected.

First Argument: Speaker number

Second Argument: Seat name (string without spaces)

Example:

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“cam-activateddelegate | 1 | Seat0001”

Requires: MVI-CAMDB

Cam-ManualDelegate

Manually sets a name and title on screen for speaker 1,2,3 or 4. When a group name is used, the MVI image database will be scanned for the group name and if found the corresponding image will be used.

First Argument: Speaker number

Second Argument: Name

Third Argument: Title

Third Argument: Group

Example (with a Chinese title):

cam-manualdelegate | 1 | Mr Li Wang | 汉语/漢語 | Labour Party

Requires: MVI-CAMDB



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Camera and Name Display using conference style mic-on and mic-off commands

The following commands allow the MVI-CAM to also be used as a character generator based on microphone input. The MVI-CAM will automatically detect which microphones are enabled, and show the name that is assigned to it in the MVI-CAM database.

The MVI-CAM software will also handle the speaker numbers when using mic-on commands. And when set to 'automatic PIP' in the MVI-CAM settings, will automatically show multiple speakers on screen at the same time.

The dome-control will use priority-based camera selection. If a camera is in use for speaker 1 and speaker 2 tries to use the same camera, a different camera will be selected based on the priority programming of the dome camera's in the MVI-CAM software.

These feature require the MVI-CAMDB license. To also have dome-control the MVI-CAMDOME license is required. Note: There is no priority based system for the EVID-70 domes, ask for support.

Cam-MicOn

Accepts a seat-name as argument. When send, the MVI-CAM will treat this seat as being enabled and will select the correct dome camera, dome preposition and assigned delegate name. If the seat name does not exist, the seat name will be created then selected.

Example: Cam-MicOn Seat 1

Cam-MicOff

Accepts a seat-name as argument. Will disable the microphone with the assigned seat-name. If displayed on screen, the name will be removed.

Example: Cam-MicOff Seat 1

Cam-MicAllOff

Will disable all microphones to ensure all microphones are disabled. Tip: if your conference system can indicated when there are no more speakers, please use the Cam-micAllOff command.

Cam-MicOnAndName

Same as Cam-MicOn but this will bypass the delegate database. Instead, the names will be displayed that are send along this command. The image in the delegate database will be checked so a delegate image/group image can be displayed.

If the seat name does not exist, the seat name will be created then selected.

First Argument: Seat Name

Second Argument: Delegate Name

Third Argument: Delegate Title

Third Argument: Group

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Example: Cam-MicOnAndName | Seat 1 | Mr Li Wang | 汉语/漢語 | Labour Party

Cam-MachineRestart

Will immediately restart the PC where the MVI-CAMCLIENT is running on.

Cam-MachineShutdown

Will immediately shut-down the PC where the MVI-CAMCLIENT is running on. Wake-on-Lan techniques can be used to turn the machine ON (check your PC specification)

Cam-TemporarySpeakerOn

Will enable the setting that allows a temporary speaker when no speakers are active. Normally the system would go to overview, but with this setting enabled the special temporary seat will be used (MVI-CAM settings).

The duration of this effect can be set with the 'cam-temporariespeakertime' command.

Cam-TemporarySpeakerOff

Disables the temporary speaker setting (default)

Cam-TemporarySpeakerTime

Sets the amount of seconds the temporary speaker is displayed on screen before the overview camera is selected. Setting to 0 will mean infinite time.

Example cam-temporariespeakertime | 20 -> 20 seconds camera on chairman before overview

Cam-SonyCamerasOn

Turns all connected supported EVID Sony HD cameras On.

Cam-SonyCamerasOff

Turns all connected supported EVID Sony HD cameras Off. This will help protecting the CCDs of the camera's.

Cam-ScrollText

Scrolls a string on the Ticker of the MVI-CAM client display, permanently until stopped.

First Argument: Screen number (1 for now)

Second Argument: Text to scroll

Cam-ScrollTextOnce

Scrolls a string on the Ticker of the MVI-CAM client display just once.

First Argument: Screen number (1 for now)

Second Argument: Text to scroll

Cam-StopScrollText

Stops the MVI-CAM client ticker.

First Argument: Screen number (1 for now)

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Cam-SetSettingMultiSpeaker

Changes the current multi-speaker setting to ON or OFF.

When set to ON, The camera behavior will go into effect the next microphone press. Speaker override mode is not possible.

When set to OFF, the current PIP settings will be automatically set to 1 speaker and speaker override mode is set to ON and there will be no automatic switching. You can send additional commands to reconfigure those settings.

First Argument: 'ON' or 'OFF'

Nothing will happen when the setting is already active.

CAM-SetSettingOverrideMode

When set to ON, each new speaker will be the active speaker on screen. Not possible in multi-speaker mode.

When set to OFF, the first speaker is shown on screen even if more microphones are presses. Once the first speaker stops speaking, the next speaker will be active.

First Argument: 'ON' or 'OFF'

Cam-SetSettingMaxSpeakers

First Argument: Sets the maximum amount of speakers in multi-speaker mode. Possible values: 2,3 or 4

Cam-SetSettingAutoPIP

When 'ON' the software will automatically switch PIP mode to 2 speakers if 2 speakers are active and 1 speaker if 1 or 0 speakers is active.

When 'OFF' the PIP mode is not automatically changed

First Argument: 'ON' or 'OFF'

Cam-SetSettingPIPswitchTime

Sets the maximum time to switch auto PIP mode. Use a high value for Sony camera's since the feedback from the camera is used to determine the swtich time (e.g. when the camera is ready). For Bosch camera's this setting is used.

First Argument: Max Switch time in milliseconds (will be rounded per 100 ms)



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Cam-PresentationMode

Sets the MVI-CAM software in presentation or presentation + PIP mode.

First Argument: 'pip' will use presentation including the camera footage as a PIP
'presentation' will show the presentation source only
'none' will disable presentation/pip mode and show camera footage.

Second Argument: MVI-CAM input number to use for presentation. Valid for 'pip' and 'presentation' mode. Ignored for 'none' mode.

Cam-SecretMode

Sets the MVI-Control and CAM software in secret mode. This will trigger 4 things:

- This will overlay a templates with the arguments template name on top of the camera feed
- All PC audio will be muted
- All XML metadata will be muted except meeting updates., e.g. microphone activity will not be send out of the system
- All microphones will be disabled.
- All camera activity and movements will be stopped

When returning to 'none', current microphone metadata will instantly be send out, and the camera's will go to the current speaker(s)

First Argument: 'none' to disable secret mode. 'secret' to enable secret mode

Second Argument: Template name. This is the name of the UI template which will be placed on top of the camera feed. Use the '-' sign as a template name to clear the template on screen.

Example: Cam-SecretMode | secret | Pauze Cam Template

Note: This command only works when MVI-CONTROL is used. This command does not work in stand-alone Camera and Name Display operation, a 'CommandNotSupported' nack will be returned. The 'Cam-AudioMute' command may be used as an alternative to stop the audio.

Cam-AudioMute

This will mute or unmute all the audio inputs and outputs of the PC.

First Argument: 'none' or 'muted'

Note: Not to be used in combination with 'Cam-SecretMode'.



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Cam-PresentationTemplate

Tells the MVI control environment to set template on top layered on top of the camera screen.

Note: This layer will be overruled in secret mode.

First Argument: Template name. Use '-' to clear the template from screen.

Conference system related commands

Below commands have a direct result on the Bosch conference system (DCN-NG and DCN Multimedia only). An MVI-CONTROL or MVI-CONTROL_NG is required for this to work.

Conf-set-activeroomid

This command will change the active DCN-NG room ID to the one set in the argument. The current DCN-NG CCU2 will be disconnected, and the new CCU2 will be used and connected to.

The ID may be the ID of the room, or the ID of a multi-room setup.

First Argument: Unique ID of the room or multi-room to activate

Example:

Conf-Set-ActiveRoomId | d1c29ab6-c576-4d50-a361-dbde11e811bd

Conf-Disconnect-Conferencesystem

This command will force the system to disconnect from the Bosch DCN-NG CCU2 and stay disconnected. This command needs to be used before multiple rooms are reconfigured at the same time. Otherwise there is a chance another MVI-CONTROL PC is connecting to the same PC at the same moment.

Conf-Toggle-Seat

Will toggle the microphone status of a seat just like if this would be pressed in the control of the conference system.

If a microphone is switched off, it will be switched on. And vice-versa. If a microphone is in the request list, it will be switched on and removed from the request list. If the maximum amount of active microphones has been reached, the oldest (non-VIP) speaker will be removed

First Argument: Seat Name

Example: Conf-Toggle-Seat | Seat 1

Example: Conf-Toggle-Seat | d1c29ab6-c576-4d50-a361-dbde11e811bd

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Conf-Off-Seat

Will disable the microphone of the selected seat. If the microphone was already off, nothing will happen.

First Argument: Seat Name

Example: conf-off-seat Seat 1

Example: Conf- off -Seat | d1c29ab6-c576-4d50-a361-dbde11e811bd

Conf-On-Seat

Will enable the microphone of the selected seat. If the microphone was already on, nothing will happen. If the microphone is part of the request list this entry will be removed.

First Argument: Seat Name

Example: conf-on-seat Seat 1

Example: Conf- on -Seat | d1c29ab6-c576-4d50-a361-dbde11e811bd

Conf-StartMeetingByNumber

This starts a meeting in the system based on the entry number in the meeting list. The first entry starts with 0. So to start the first meeting in the list, use '0' as the first argument.

First Argument: Meeting entry number to start. Starts at 0.

Conf-StopMeeting

Stops the current meeting

status conf-seat-off

Status response from the conference system, this indicates (at any time) a microphone is turned off.

First Argument: Seat Name

Second Argument: Unique seat id (Guid)

In the future, additional arguments may indicate more information about the name of the speaker.

Example: status conf-seat-off | Seat 1 | d1c29ab6-c576-4d50-a361-dbde11e811bd

status conf-seat-on

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Status response from the conference system, this indicates (at any time) a microphone is turned off.

First Argument: Seat Name or unique Seat ID

Second Argument: Unique seat id (Guid)

In the future, additional arguments may indicate more information about the name of the speaker.

Example: status conf-seat-on | Seat 1 | d1c29ab6-c576-4d50-a361-dbde11e811bd

Conf-CustomLabelText

This command allows custom texts to appear on the MVI-CONTROL and Presentation clients. This process requires to add a tag to a specific control element called `MVlapiControlledLabel`. This tag name of this control element label requires to be the same as the tag field in this command. When send, this command allows the text for this label to be updated. Note: The text is only updated after sending the 'presenter-customlabelupdate' command

In addition, this command allows the name of custom buttons to be updated as well. Custom buttons can be added to the UI using a 'TouchGenericButtonApi' control entry.

First Argument: The unique 'tag' for the 'TouchGenericButtonApi' label or 'TouchGenericButtonApi' button in the UI template designer.

Second Argument: The text to show on screen for all 'MVlapiControlledLabel' or 'TouchGenericButtonApi' control labels with the same tag.

Note: 'Conf-DoUpdateChanges' must be called afterwards to activate the changes.

Conf-SetButtonState

This command allows the behavior of custom buttons to be changed. Custom buttons can be added to the UI using a 'TouchGenericButtonApi' control entry.

First Argument: The unique 'tag' for the button in the UI template designer

Second Argument: The name of the button group.

Third Argument: The button state. 'Active', 'Inactive' or 'Hidden'. Note that buttons sharing the same group will be made inactive when button is activated to allow 'radiobutton' behavior.

Note: 'Conf-DoUpdateChanges' must be called afterwards to activate the changes.

Conf-DoUpdateChanges

Sending this command will force the UI to accept the new custom labels and button updates and show them in 1 go.