Multi-Content Solution Deployment Guide

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This deployment guide is meant to help install and configure a room for the Multi-Content Solution, enabling the possibility to share multiple local content sources into a single presentation.

Infrastructure Requirements

The Codec Pro must be registered to a 4k capable infrastructure, including a 4k capable multiparty conference solution. This could be CUCM or Expressway for call control, and CMS version 2.9 or later for the multiparty conference solution.

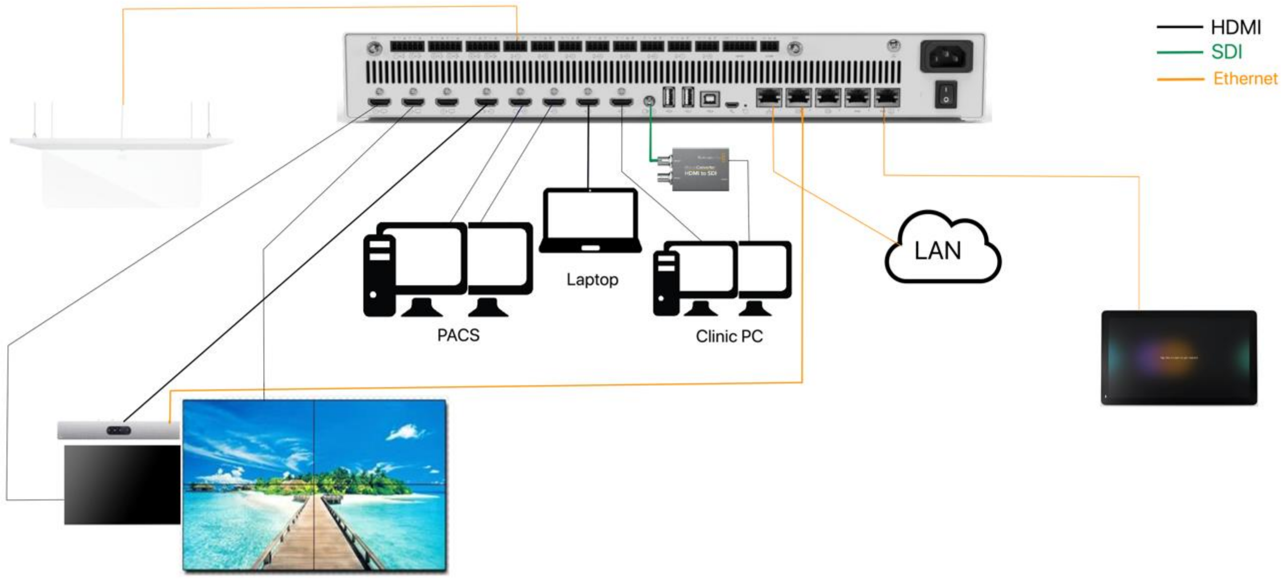
Physical Connections

The set-up has the following components:

- Cisco Webex Codec Pro
- Cisco Webex Quad Camera
- Cisco Ceiling Microphone
- Cisco Webex Room Navigator
- HDMI-to-SDI converter
- PACS Machine with 2 monitors
- Clinic PCs with 2 monitors
- Laptop
- Video screen
- Video wall

You are free to use other sources and configurations, but this is what we have used in this guide.

The following illustrations and table explain how to connect the components.



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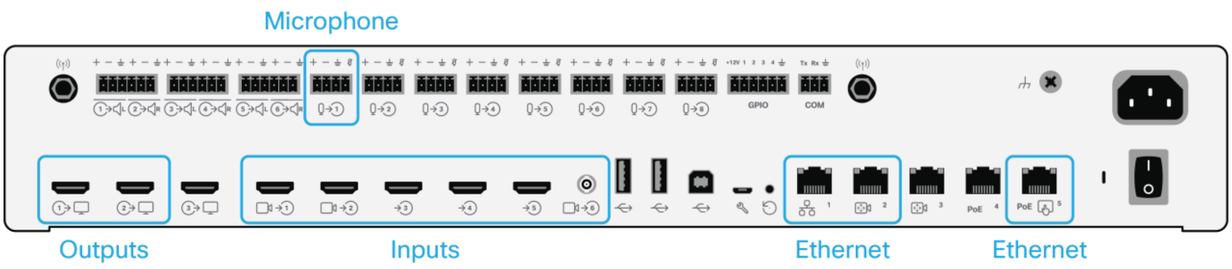

Outputs	Inputs	Ethernet and microphone	Microphone (Euroblock)
HDMI 1: Video screen	HDMI 1: Quad Camera	Ethernet 1: LAN	Ceiling Microphone
HDMI 2: Video wall	HDMI 2: PACS 1	Ethernet 2: Quad Camera	
	HDMI 3: PACS 2	Ethernet 5: Room Navigator	
	HDMI 4: Laptop		
	HDMI 5: Clinic PC 1		
	3G-SDI 6: Clinic PC 2		

HDMI-to-SDI converter

In this setup, we have chosen to use and test an HDMI-to-SDI converter from BlackMagic. You can find the converter from this link:

- https://www.blackmagicdesign.com/products/microconverters/techspecs/W-CONU-04

Note: You can use another HDMI-to-SDI converter if you prefer.

You can power the converter with a USB cable that you connect to the Codec Pro.

3G-SDI

When connecting the two outputs from the Clinic PC to the codec, configure the Clinic PC to send audio to the HDMI cable going straight to the codec, as the 3G-SDI input does not support embedded audio.

> **Note:** The 3G-SDI input only supports 3G-SDI *Level A*, and the converter by default outputs *Level B*. Connect the converter to a computer and run the configuration tool provided by Black Magic to reconfigure it to output *Level A*.

More outputs from the PACS machine

Some customers install an extra Video Graphics Adapter in the PACS machine to enable more outputs, instead of using splitters.

> **Note:** For local sources, such as local PACS machines, the resolution should be set to 1920x1080 to avoid problems with vertical black bars.

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Configuration

Video inputs

Configure the input connectors

Sign in to the web interface of the Codec Pro, navigate to *Setup > Configuration > Video > Input*, and set the following settings.

	Connector 1 (Quad Camera)	Connector 2 (PACS 1) Connector 3 (PACS 2) Connector 5 (Clinic PC 1) Connector 6 (Clinic PC 2)	Connector 4 (Laptop)
InputSourceType	Keep the default setting	PC	PC
PresentationSelection	Keep the default setting	Manual	Manual
Visibility	Keep the default setting	Never	Never
Quality	Keep the default setting	Sharpness	Sharpness
PreferredResolution	Keep the default setting	1920_1080_60	3840_2160_30

Set the resolution of the monitor (optional)

Depending on your monitor you may need to set the output to the desired resolution. If so, navigate to *Setup > Configuration > Video > Output*, choose the correct **output** connector, and set its resolution.

Example: *Video > Output > Connector 2 > Resolution: 3840_2160_30*

Add the UI extension

1. Navigate to *Integration > UI Extensions Editor*. Open the menu in the upper right corner of the editor, and choose “Merge from file”.

   Select the file, “MCS_panel.xml”, from your PC, to upload it to the Codec Pro.

   You can find a copy of the MCS_panel.xml file in Appendix 1.

   Note: “Merge from file” will add a file to your existing setup, whereas “Import from file” will overwrite your current setup!

2. Open the menu in the upper right corner of the editor again, and choose “Export to video system”.

   When this is done, you get a preview of the panel that will be shown on the Touch 10 / Room Navigator.

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Add the macro

1. Go back to the web interface and navigate to *Integration > Macro Editor*.

   Note: If prompted a question whether you want to enable macros, select "Yes".

2. Click "Import from file" in the upper left corner of the macro editor, and select the file "MCS_with_laptop.js". This will not overwrite your setup like in the UI Extension Editor

   You can find a copy of the MCS_with_laptop.js file in Appendix 2.

3. Save the macro by clicking on the floppy disk icon next to the macro name, and enable it with the toggle switch.

Audio inputs

Configure audio on the input connectors

Go back to the web interface and navigate to *Setup > Configuration > Audio > Input*, and set the following settings.

	HDMI 2	HDMI 3	HDMI 4	HDMI 5
VideoAssociation MuteOnInactiveVideo	Off	Off	On	Off

Audio is not supported on the Connector 6, as this is an SDI input.

Check that the codec is sending video with 4k resolution

You should verify that the codec is sending video with 4k resolution.

Navigate to *Setup > Status > Video > Output > Connector 2*

> You can click the minus icon to colaps groups of statuses, so that it easier to find "Output" and "Connector 2".

Check that the resolution is 3840x2160 (4k):

- Resolution > Height: 2160
- Resolution > Width: 3840

If not, check which formats the monitor supports under "ConnectedDevice > SupportedFormat". Navigate to *Setup > Configuration > Video > Output > Connector 2*, and change the Resolution from "Auto" to one of the supported formats (e.g. 3840_2160_30).

> You can click the minus icon to colaps groups of statuses, so that it easier to find "Output" and "Connector 2".

Note: If you are using a video wall, ensure that 4k passthrough is possible even though panels only support 1080p each.

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Cleaning up the user interface

To make the system neater, you may choose to remove the buttons that you are not going to use. Navigate to *Setup > Configuration > UserInterface > Features > Call*, and set the following settings.

MusicMode	Hidden
VideoMute	Hidden
MidCallControls	Hidden

Appendix 1: MCS_panel.xml

```
<Extensions>
  <Version>1.7</Version>
  <Panel>
    <Order>1</Order>
    <PanelId>panel_1</PanelId>
    <Origin>local</Origin>
    <Type>Statusbar</Type>
    <Icon>Laptop</Icon>
    <Color>#02BBCC</Color>
    <Name>MCS demo</Name>
    <ActivityType>Custom</ActivityType>
    <Page>
      <Name>Select content to share</Name>
      <Row>
        <Name> </Name>
        <Widget>
          <WidgetId>presentation_source</WidgetId>
          <Type>GroupButton</Type>
          <Options>size=4;columns=2</Options>
          <ValueSpace>
            <Value>
              <Key>pacs_1</Key>
              <Name>PACS monitor 1</Name>
            </Value>
            <Value>
              <Key>pacs_2</Key>
              <Name>PACS monitor 2</Name>
            </Value>
            <Value>
              <Key>pc_1</Key>
              <Name>Clinic PC monitor 1</Name>
            </Value>
            <Value>
              <Key>pc_2</Key>
              <Name>Clinic PC monitor 2</Name>
            </Value>
          </ValueSpace>
        </Widget>
        <Widget>
          <WidgetId>presentation_source2</WidgetId>
          <Type>GroupButton</Type>
          <Options>size=4;columns=1</Options>
          <ValueSpace>
            <Value>
              <Key>4_sources</Key>
              <Name>PACS + Clinic PC (4-split)</Name>
            </Value>
            <Value>
              <Key>laptop</Key>
              <Name>Laptop (HDMI-cable)</Name>
            </Value>
          </ValueSpace>
        </Widget>
      </Row>
```

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```
      <Row>
        <Name> </Name>
        <Widget>
          <WidgetId>presentation_stop</WidgetId>
          <Name>Remove presentation</Name>
          <Type>Button</Type>
          <Options>size=4</Options>
        </Widget>
      </Row>
      <Options>hideRowNames=1</Options>
    </Page>
  </Panel>
</Extensions>
```

Appendix 2: MCS_with_laptop.js

```
const xapi = require('xapi');

let connectedSources ={ '1': false, '2': false, '3': false, '4': false , '5': false
, '6': false }

function StartPresentation(sources){
    xapi.command('Presentation Start', {PresentationSource: sources });
}

function StopPresentation(){
  xapi.command('Presentation Stop');
  xapi.command('UserInterface Extensions Widget UnSetValue', {WidgetId:
'presentation_source'});
  xapi.command('UserInterface Extensions Widget UnSetValue', {WidgetId:
'presentation_source2'});
}

xapi.event.on('UserInterface Extensions Widget Action', (event) => {
  if (event.WidgetId === 'presentation_source' && event.Type === 'released') {
  xapi.command('UserInterface Extensions Widget UnSetValue', {WidgetId:
'presentation_source2'});
    switch (event.Value){
      case 'pacs_1':
        StartPresentation(2);
        break;
      case 'pacs_2':
        StartPresentation(3);
        break;
      case 'pc_1':
        StartPresentation(5);
        break;
      case 'pc_2':
        StartPresentation(6);
        break;
    }
  }
  else if (event.WidgetId === 'presentation_source2' && event.Type === 'released')
{
    xapi.command('UserInterface Extensions Widget UnSetValue', {WidgetId:
'presentation_source'});
    switch (event.Value){
      case '4_sources':
        StartPresentation(
        [  connectedSources['2'] ? 2 : 'none'
          ,connectedSources['3'] ? 3 : 'none'
          ,connectedSources['5'] ? 5 : 'none'
          ,connectedSources['6'] ? 6 : 'none'
        ]);
        break;
      case 'laptop':
        StartPresentation(4);
        break;
    }
  }
  else if (event.WidgetId === 'presentation_stop' && event.Type === 'clicked' ) {
    StopPresentation();
    }

    console.log(JSON.stringify(event));
  }
);

function updateSourceList(id, formatStatus){
    connectedSources[id] = formatStatus === "Ok" ? true : false;
    console.log(JSON.stringify(connectedSources));
}

xapi.status.on('Conference Presentation Mode', (status) => {
  if (status === 'Off' || status === 'Receiving'){
    xapi.command('UserInterface Extensions Widget UnSetValue', {WidgetId:
'presentation_source'});
  }
});

async function init() {
  await xapi.status.get('Video Input Source').then((sourceStatuses) => {
  sourceStatuses.forEach(element => updateSourceList(element.id,
element.FormatStatus))
  });
}


xapi.status.on('Video Input Source', (status) => {
  if(status.FormatStatus){
    updateSourceList(status.id, status.FormatStatus);
  }
});

init();
```

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