Application Note

Direct IP configuration

This application note describes a step-by-step procedure to set up a Direct IP configuration.

1 Introduction

1.1 Cable mode configuration

In cable mode configuration, the XCU and the camera are directly connected using an XF Fiber transmission cable as indicated in the diagram below. The camera number for the system is set in the XCU while the OCP 400 control panel connects to the camera by using the camera number.

1.2 Direct IP configuration

In a Direct IP configuration, the XCU and camera are connected through an IP network: any XCU can connect to any camera in the network. Pairing cameras and XCUs is done by means of camera DeviceID. Both XCU and camera need to be configured for Direct IP mode.
1.3 Requirements

To use cameras in the Direct IP configuration the eLicense “GVLC-XF-Direct-IP” is required for the camera head. Also the system components and package and/or software versions must meet the following requirements:

<table>
<thead>
<tr>
<th>System component:</th>
<th>Grass Valley product:</th>
<th>Package or Software version:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera head</td>
<td>LDX 80 Series</td>
<td>6190 v28 (or higher)</td>
</tr>
<tr>
<td>Camera head</td>
<td>LDX 82 Series</td>
<td>all versions</td>
</tr>
<tr>
<td>Camera head</td>
<td>LDX 86/86N</td>
<td>6436 v11 (or higher)</td>
</tr>
<tr>
<td>Camera adapter</td>
<td>XF Universe, LDX 5660</td>
<td>6477 v07 (or higher)</td>
</tr>
<tr>
<td>Local power (camera side)</td>
<td>LDK 4425 Power Box</td>
<td>—</td>
</tr>
<tr>
<td>Local power (camera side)</td>
<td>Power Supply Unit + SHED-C</td>
<td>—</td>
</tr>
<tr>
<td>SMPTE Hybrid Elimination Device Adapter</td>
<td>SHED-BS</td>
<td>—</td>
</tr>
<tr>
<td>Base Station</td>
<td>XCU Enterprise UXF, XCU Universe UXF</td>
<td>all versions</td>
</tr>
<tr>
<td>Base Station</td>
<td>XCU HD/4K XF IP</td>
<td>6478 v03 (or higher)</td>
</tr>
<tr>
<td>Base Station</td>
<td>XCU Universe XF</td>
<td>6476 v04 (or higher)</td>
</tr>
<tr>
<td>Camera Connect application</td>
<td>runs on MCP 450 Box PC</td>
<td>v1.12 (or higher)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Network equipment</th>
<th>Third party product:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP+ compatible pluggable modules</td>
<td>Optical single-mode fiber (SMF)</td>
<td>Use Long Reach (LR) versions (1310 nm)</td>
</tr>
<tr>
<td>SFP+ compatible pluggable modules</td>
<td>Eoptolink</td>
<td>EOLP-1396-20-I (for 20 km)</td>
</tr>
<tr>
<td>COTS Ethernet Switch (COTS = Commercial off-the-shelf)</td>
<td>10-GigE compatible</td>
<td></td>
</tr>
</tbody>
</table>

2 Setup

The setup procedure consists of the following steps:
1. Connect an XCU with a camera in a direct cable configuration and set the DeviceID of the camera;
2. Connect all cameras and XCU to the IP network;
3. Switch the camera to Direct IP mode and repeat for each XCU - camera combination;
4. Use Camera Connect to assign cameras to XCU in the network and check names and green lights in device configuration section.
2.1 Set up camera

Note
Make sure that the eLicense “GVLC-XF-Direct-IP” is installed onto the camera. Refer to the camera user’s guide for more information about installing eLicenses.

Make sure that an MCP 450 PC Box running the Camera Connect application is connected to the camera control (C2IP) network, either directly or via a switch.

Connect a camera directly to an XCU using a standard hybrid fiber cable as indicated below:

Set camera connection type to cable
- In the camera menu, navigate to the CONFIGURATION > SECURITY menu and enter the camera’s PIN code to enter Service user level;
- Navigate to the CONFIGURATION > XCU CONN > CONNECTION TYPE and select CABLE (this is the factory default setting). Leave it unchanged if it is already set to CABLE.

Set camera DeviceID (via camera menu)
- In the camera menu, navigate to the CONFIGURATION > DIAGNOSTICS > CAMERA menu, select the DEVICE ID item and enter a DeviceID. By default, the camera’s serial number (= PID) is used as the DeviceID. However it is recommended to enter a more meaningful name.

Note
Make sure that DeviceIDs are unique within the IP network. Do NOT enter DeviceIDs that contain spaces.

Set camera DeviceID (via Camera Connect)
- Log in to Camera Connect, click the Configuration tab and then click the Device Config tab.
• In the **Camera system devices** list, click the camera that you want to set up; the Edit Device Settings dialog box is opened:

![Edit Device Settings dialog box](image)

• Fill in the **DeviceID** box; in this example “CamOne” is entered as the DeviceID for the camera. By default, the camera’s serial number (= PID) is used as the DeviceID. However it is recommended to enter a more meaningful name.

**Note**

Make sure that DeviceIDs are unique within the IP network. Do NOT enter DeviceIDs that contain spaces.

**Tip**

It is recommended to make a note of the DeviceID you have chosen for each camera in order to create a list of all DeviceIDs in the network.

### 2.2 Connect the network

Connect cameras and XCU according to your network configuration. Below is an example of a basic direct IP configuration; both Power Box and Local Power applications are shown:

![Network configuration diagram](image)

**Note**

When a camera is locally powered (which is the case in Direct IP mode) the cable LED indicator on the front panel of the XCU blinks red. This is not an error.
2.3 Assign cameras to XCU

- For cameras: in the camera menu, navigate to the CONFIGURATION > XCU CONN > CONNECTION TYPE and select DIRECT IP
- For XCU: log in to Camera Connect, click the Configuration tab and then click the Device Config tab.
  - in the Camera system devices list, click the XCU (Base Station) that you want to set up; the Edit Device Settings dialog box is opened:

  ![Edit Device Settings dialog box](image)

  - In the Alias box you can type a system Alias for the camera system however this is not necessary for this setup.
  - Fill in the DeviceID box; in this example “XCUno” is entered as the DeviceID for the XCU. By default, the XCU’s serial number (= PID) is used for the DeviceID. However it is recommended to enter a more meaningful name.

  ☞ Note

  Make sure that DeviceIDs are unique within the IP network. Do NOT enter DeviceIDs that contain spaces.

  - In the Cam.ConnectType box, select Direct IP.
  - In the Cam.Name box enter the DeviceID of the camera you want to connect to.
  - Click Ok. The camera is now connected to the XCU.

Repeat steps 2.1 to 2.3 for all XCU - camera combinations that need to be set up in the network.
2.4 Monitoring connections

Camera system overview

In Camera Connect, click the Configuration tab. The camera system devices list is shown:

The Camera column (the rightmost one) shows the camera connection and assignment status for XCU (Base Station) - camera combinations:

<table>
<thead>
<tr>
<th>Indication:</th>
<th>Status description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CamOne</td>
<td>XCU is running in Direct IP mode; camera is connected</td>
</tr>
<tr>
<td>CamOne</td>
<td>XCU is running in Direct IP mode; camera is not connected</td>
</tr>
<tr>
<td></td>
<td>XCU is running in Cable mode; camera is connected</td>
</tr>
<tr>
<td></td>
<td>XCU is running in Cable mode; camera is not connected</td>
</tr>
</tbody>
</table>
Viewfinder information screen

At the camera side, the operator can view the XCU to which the camera is assigned when it is running in Direct IP mode. Press and hold the info button at the front or at the back panel of the camera. The information screen is shown in the viewfinder.

When the camera is running in Direct IP mode, the DeviceID of the XCU is shown at the top right of the overlay screen. The camera number is shown at the top left:

When a camera is not connected the message “XCU Not Conn” is shown at the top right while the DeviceID of the camera is shown at the top left of the screen.

Tip
This information can be used to quickly find the camera’s DeviceID when connecting or identifying cameras in the network.

Reassigning cameras
To reassign a camera to a different XCU, use Camera Connect:

- Go to the Camera system devices list and click the XCU (Base Station) that you want to set up. The Edit Device Settings dialog box is opened;
- Clear the Cam.Name box and then Ok;
- In the list, click the XCU (Base Station) again. The Edit Device Settings dialog box is opened;
- In the Cam.Name box enter the NEW DeviceID of the camera you want to connect to.

Note
Make sure that DeviceIDs are unique within the IP network. Do NOT enter DeviceIDs that contain spaces.

- Click Ok. The camera is now connected to the XCU.

Note
When you want to exchange two camera assignments, make sure both Cam.Name boxes in the (XCU) Edit Device Settings dialog are cleared first, then assigned to the new camera DeviceIDs.