



Wir schaffen Wissen – heute für morgen

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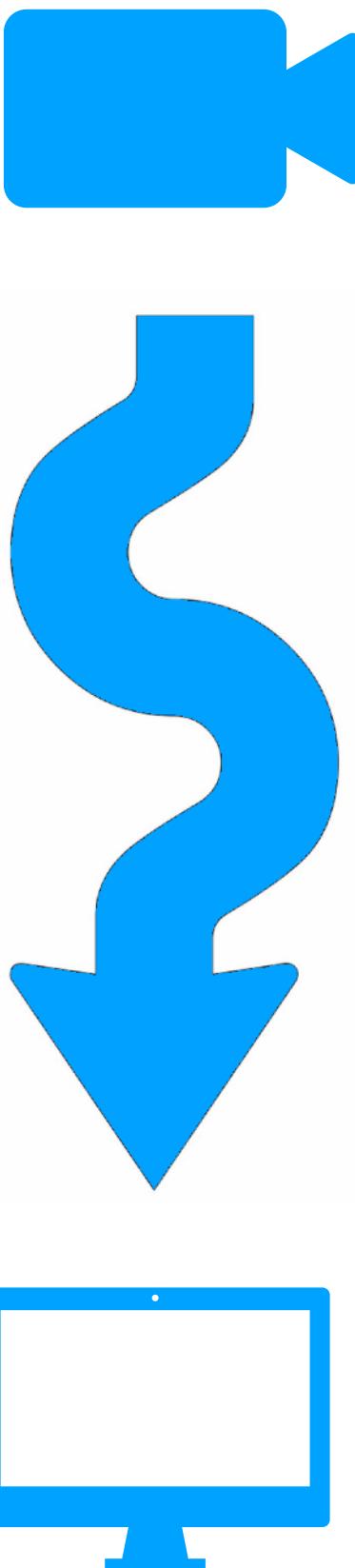
CamServer Overview & Management Console Tutorial

1. CamServer Overview

- CamServer Chronicle
- Pipeline Server x Camera Server
- On Demand x Permanent Pipelines
- Proxies, Clusters, Managers and Workers

2. CamServer Management Console Tutorial

- Cluster Monitoring
- Cluster Configuration
- Instance Creation & Testing
- Background Image Management
- DataBuffer Reconnection



CamServer Chronicle

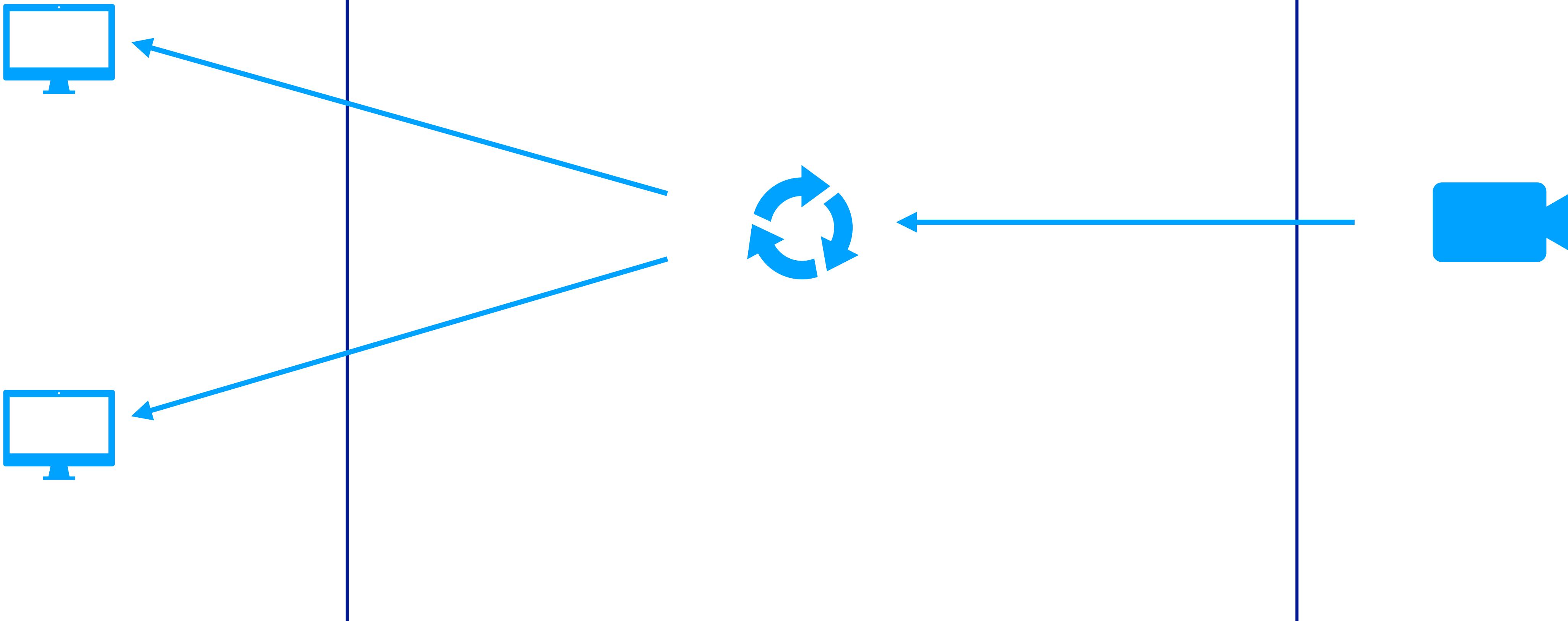
At first...

- Handle camera data at SF
- Calculate standard beam measurements.
- Guarantee one unique connection to cameras.
- Standardize and factorize the calculations.
- Lighten network usage and processing in clients.

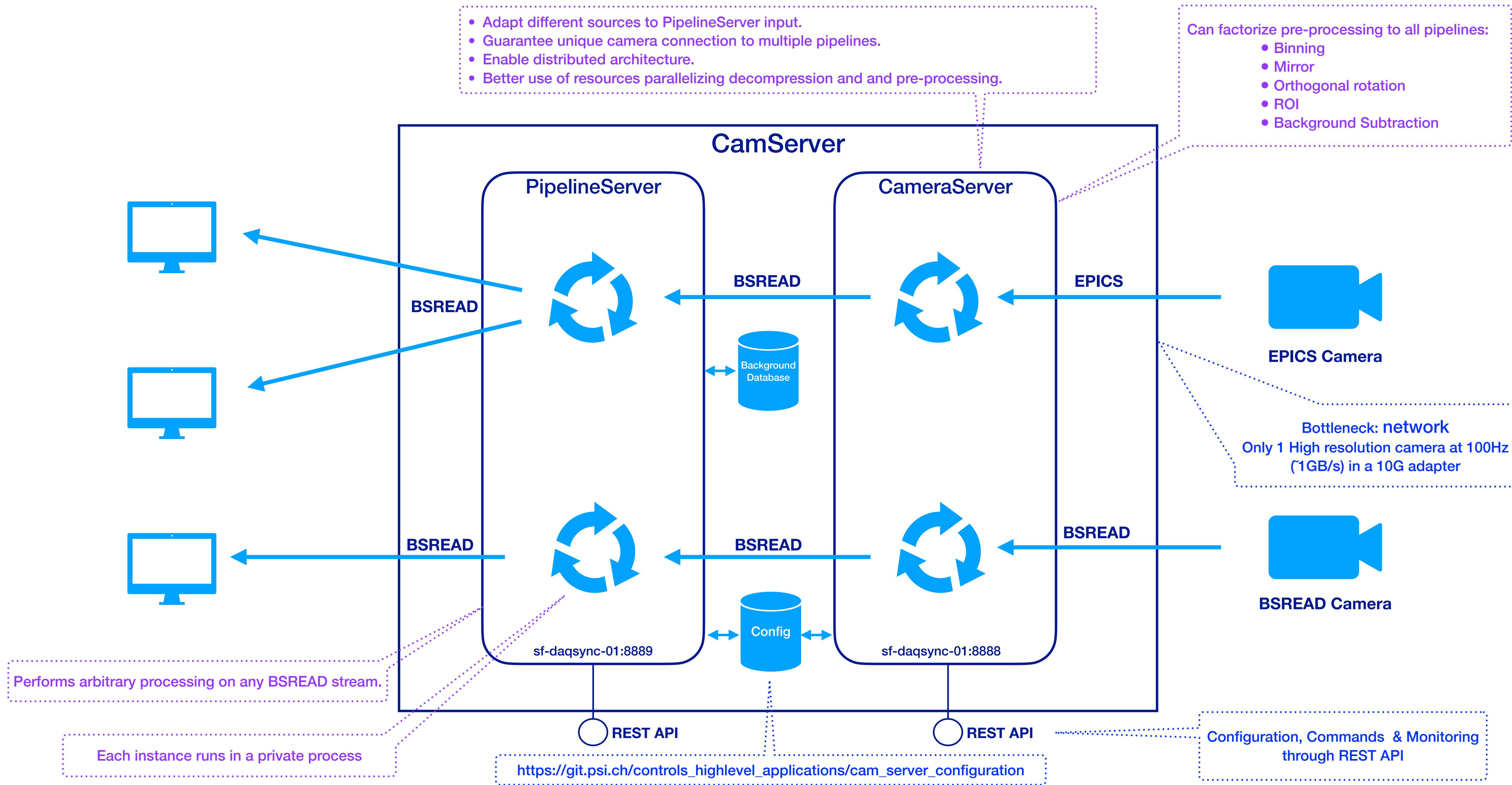
But then also...

- Beamline cameras.
- Supporting Dispatcher streams.
- Push to data buffer.
- Run user-defined processing algorithms.
- Permanent pipelines: PSEN, PSSS, ...

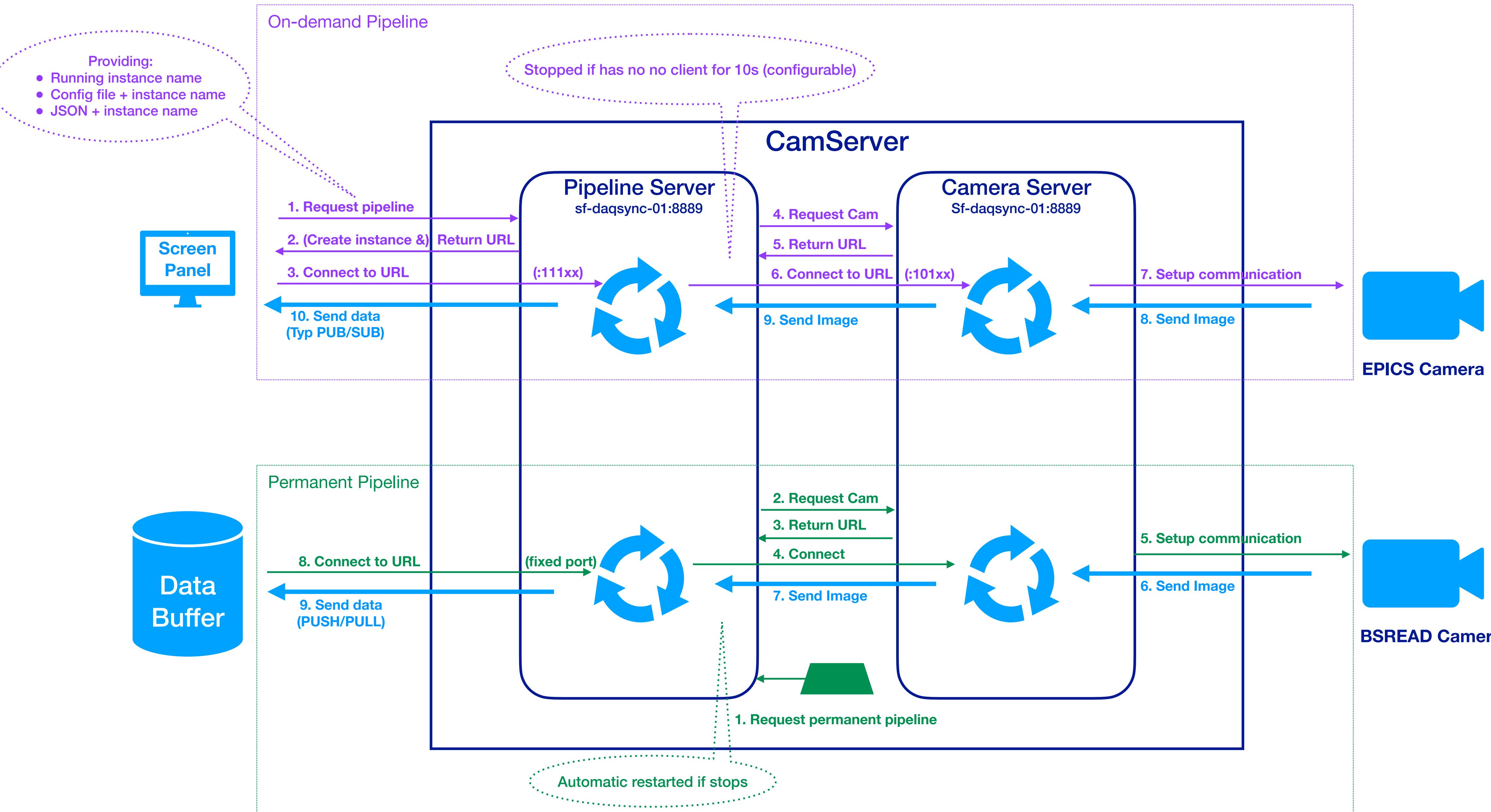
CamServer



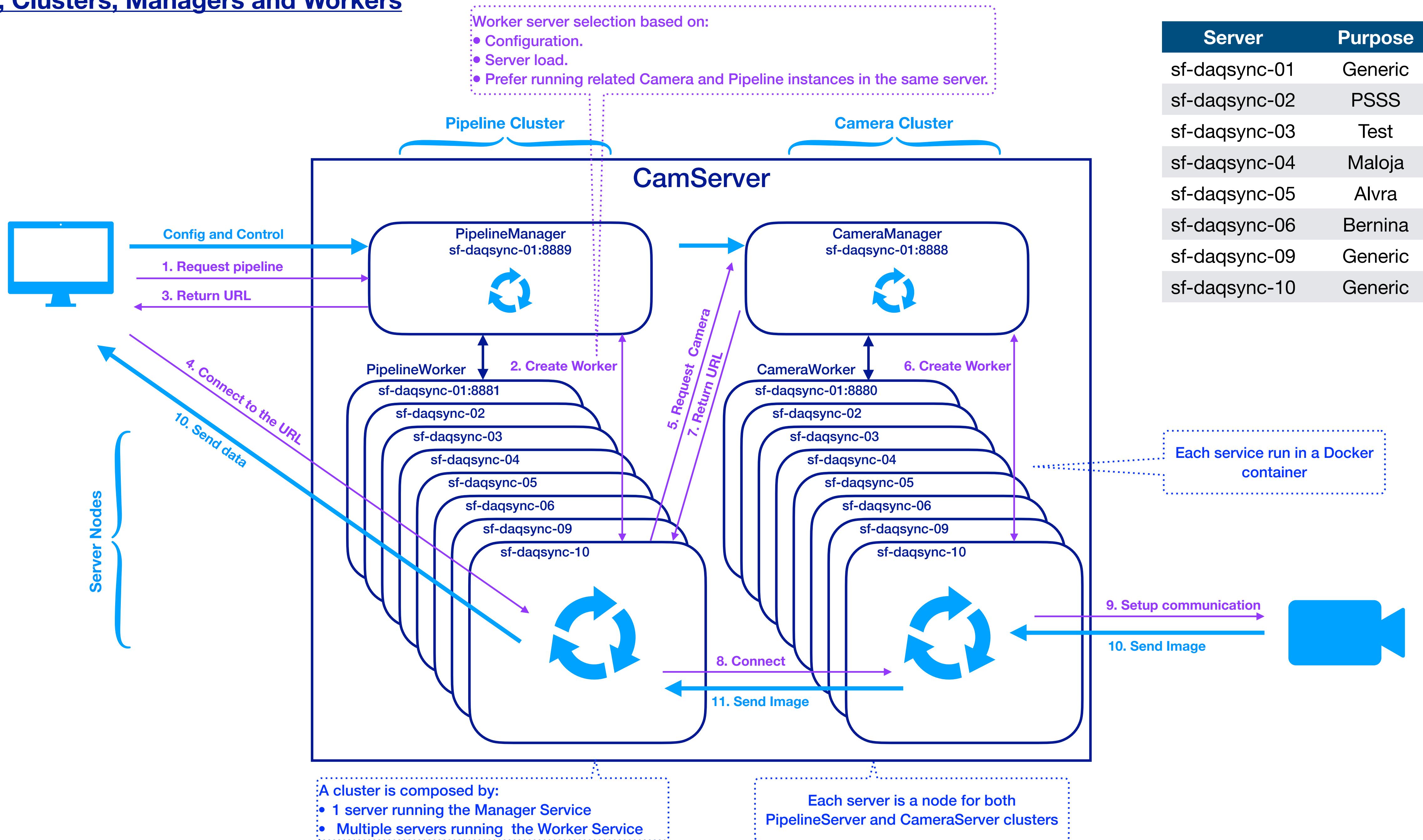
Pipeline Server x Camera Server



On Demand x Permanent Pipelines



Proxies, Clusters, Managers and Workers



CamServer Manager

[sf-lc7a ~]\$ csm
CamServer Management Console
Version 1.2.0 (build 2106041703)

The screenshot shows the CamServer Management Console interface. At the top, there are tabs for Pipelines, Cameras, Background, DataBuffer, and Logs. Below that, a sub-menu has Status, Config, and Testing selected. A search bar for 'Search Instance:' is present. The main area is divided into two sections: 'Servers' and 'Instances'.
Servers: A table listing various server instances with columns for Host, Version, Load, RX, TX, CPU, and Memory. One row is highlighted for 'http://sf-daqsync-04.psi.ch:8881'. Buttons for Get Logs, Restart, and Stop All are available.
Instances: A table listing specific instances with columns for Instance, Time, Clients, RX, TX, CPU, and Mem. Two rows are highlighted: 'SATES21-CAMS154-M1_psen_lb1' and 'SATES24-CAMS161-M1_psen_lb1'. Buttons for Inspect, Stop, Config, and Script are available.

WARNING: full access to all configuration
TODO: centralized log of user actions

User-level tool for configuring and monitoring CamServer

The old way:

Configuration:

- REST API (Python client libraries)
- Manually editing config files at the servers

Monitoring:

- REST API (Python client libraries)
- Server logs (SSH)
- Web UI (monitor/stop running instances)
 - <http://sf-daqsync-01:8889> (pipeline cluster)
 - <http://sf-daqsync-01:8888> (camera cluster)
 - <http://sf-daqsync-0x:8881> (specific pipeline server node)
 - <http://sf-daqsync-0x:8880> (specific camera server node)

This screenshot shows a 'Server Management' window with a tab for 'Server'. It displays a table with columns Host, Ver, Load, CPU, Mem, TX, RX, Logs, and Stop. One row is highlighted for 'sf-daqsync-01:8881'. Below this is a section for 'Instances' with a table showing details for two instances: 'SATES21-CAMS154-M1_psen_lb1' and 'SATES24-CAMS161-M1_psen_lb1'. Each instance row contains a detailed configuration table with fields like total_bytes, clients, time, tx, rx, and config parameters.

CamServer Manager

Pipeline Cluster

Camera Cluster

Cluster Monitoring

Proxy URL

Server selection

Running instances of selected server

Search instance by name

Proxy logs

Proxy restart

Server logs

Server restart logs

Stop all server instances

Stop the selected instance

Config the selected instance

Select processing script for the selected instance

Display one single message of the selected instance

RED: Risky Operations

Pipeline Only

The screenshot illustrates the CamServer Management Console interface. The top navigation bar includes tabs for Pipelines, Cameras, Background, DataBuffer, and Logs. Below this, a sub-navigation bar shows Status, Config, and Testing. The Proxy section displays a URL (http://sf-daqsync-01:8889) and provides a search bar for 'Search Instance'. It also includes 'Get Logs' and 'Restart' buttons. The main content area is divided into two sections: 'Servers' and 'Instances'. The 'Servers' section lists ten server instances with their respective details. The 'Instances' section lists four running instances with their details. To the right of the 'Instances' section, there are four buttons: Inspect, Stop, Config, and Script. A red callout box labeled 'RED: Risky Operations' points to the 'Restart' button. Another red callout box labeled 'Pipeline Only' points to the 'Script' button. A blue callout box labeled 'Display one single message of the selected instance' points to the Stream Inspector window at the bottom right.

Host	Version	Load	RX	TX	CPU	Memory
http://sf-daqsync-01.psi.ch:8881	4.2.7	1	44.77M	69.13M	0.50	10.22G
http://sf-daqsync-02.psi.ch:8881	4.2.7	2	110.84M	111.54M	0.60	9.59G
http://sf-daqsync-03.psi.ch:8881	4.2.7	2	12.32M	25.17M	3.50	10.17G
http://sf-daqsync-04.psi.ch:8881	4.2.7	4	114.93M	116.42M	0.50	12.37G
http://sf-daqsync-05.psi.ch:8881	4.2.7	0	115.77K	55.79K	0.00	10.38G
http://sf-daqsync-06.psi.ch:8881	4.2.7	5	78.93M	65.16M	0.40	22.10G
http://sf-daqsync-09.psi.ch:8881	4.2.7	1	81.86K	36.66K	0.00	12.66G
http://sf-daqsync-10.psi.ch:8881	4.2.7	1	81.31K	37.26K	0.00	12.49G

Instance	Time	Clients	RX	TX	CPU	Mem
SATES21-CAMS154-M1_psen_ib1	13:34:11	2	5.00Hz	5.00Hz	2.50	304.71M
SATES24-CAMS161-M1_psen_ib1	13:34:11	2	4.99Hz	4.99Hz	2.00	272.19M
SATES21-CAMS154-M1_psen_d...	13:34:11	2	5.00Hz	5.00Hz	6.00	272.39M
SATES24-CAMS161-M1_psen_d...	13:34:11	1	4.99Hz	4.99Hz	3.00	231.96M

Stream Inspector

Channel	Type	Size	Value
good_region	java.lang.Double	3150010.116521...	
gr_intensity	java.lang.String	446	{"image_backgro...
gr_x_axis	java.lang.Double	980.5533569864...	
gr_x_fit_amplitude	long[]	4	[522, 460, 699, 4...
gr_x_fit_gauss_fu...	float[]	960	[23370.967, 233...
gr_x_fit_mean	java.lang.Double	13353.9871895...	
gr_x_fit_offset	java.lang.Double	3571826.410539...	
gr_x_fit_standard_...	java.math.BigInteger	30	[549305, 550405...
gr_x_profile	java.math.BigInteger	177	[99103, 101232, ...
gr_y_axis	java.math.BigInteger	48488385	
gr_y_fit_amplitude	java.lang.Float	2077.4648	
gr_y_fit_gauss_fu...	java.math.BigInteger	1280	[3360044, 31306...
gr_y_fit_mean	java.lang.Double	60.9960270773	

CamServer Manager

Pipeline Only

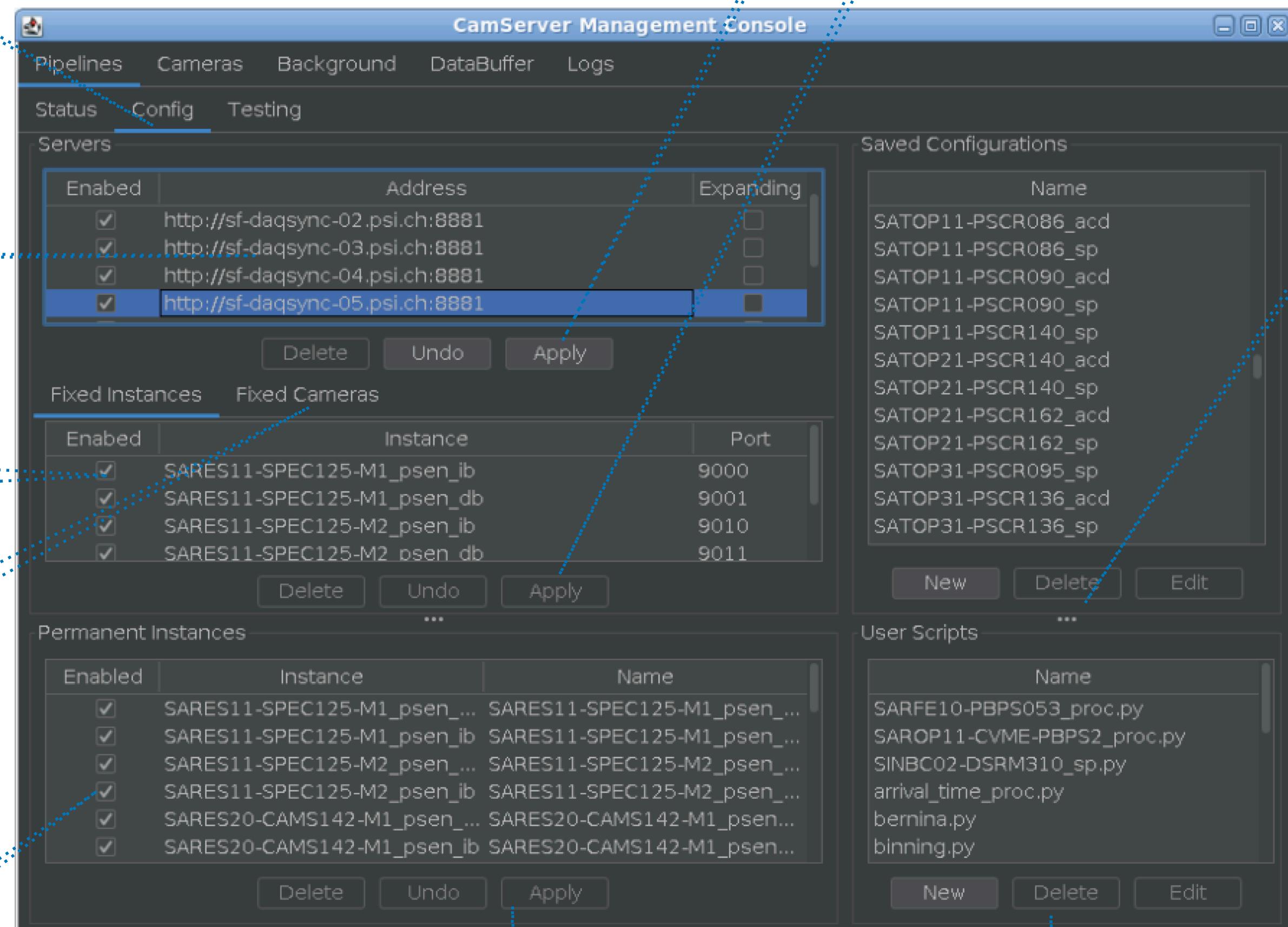
Cluster Configuration

Server selection, enabling and expanding flag

Fixed instances at selected server (and port)

Cameras assigned to this pipeline server
(Fixed cameras configured preferably in the Pipeline Proxy)

Permanent instances configuration



Apply Changes: Does not require proxy restart

Pipeline Only

Create/edit user processing scripts

"New" creates method signature with call to default processing function
Syntax highlighting

Create/edit JSON configuration files
Adds mandatory fields if omitted.
Syntax highlighting
Syntax check before saving

SIND02-DLAC055_sp

```
1  "image_background_enable": false,
2  "image_background": null,
3  "image_threshold": null,
4  "image_region_of_interest": null,
5  "image_good_region": null,
6  "image_slices": null,
7  "pipeline_type": "processing",
8  "camera_name": "SIND02-DLAC055",
9  "name": "SIND02-DLAC055_sp"
```

Cancel Ok

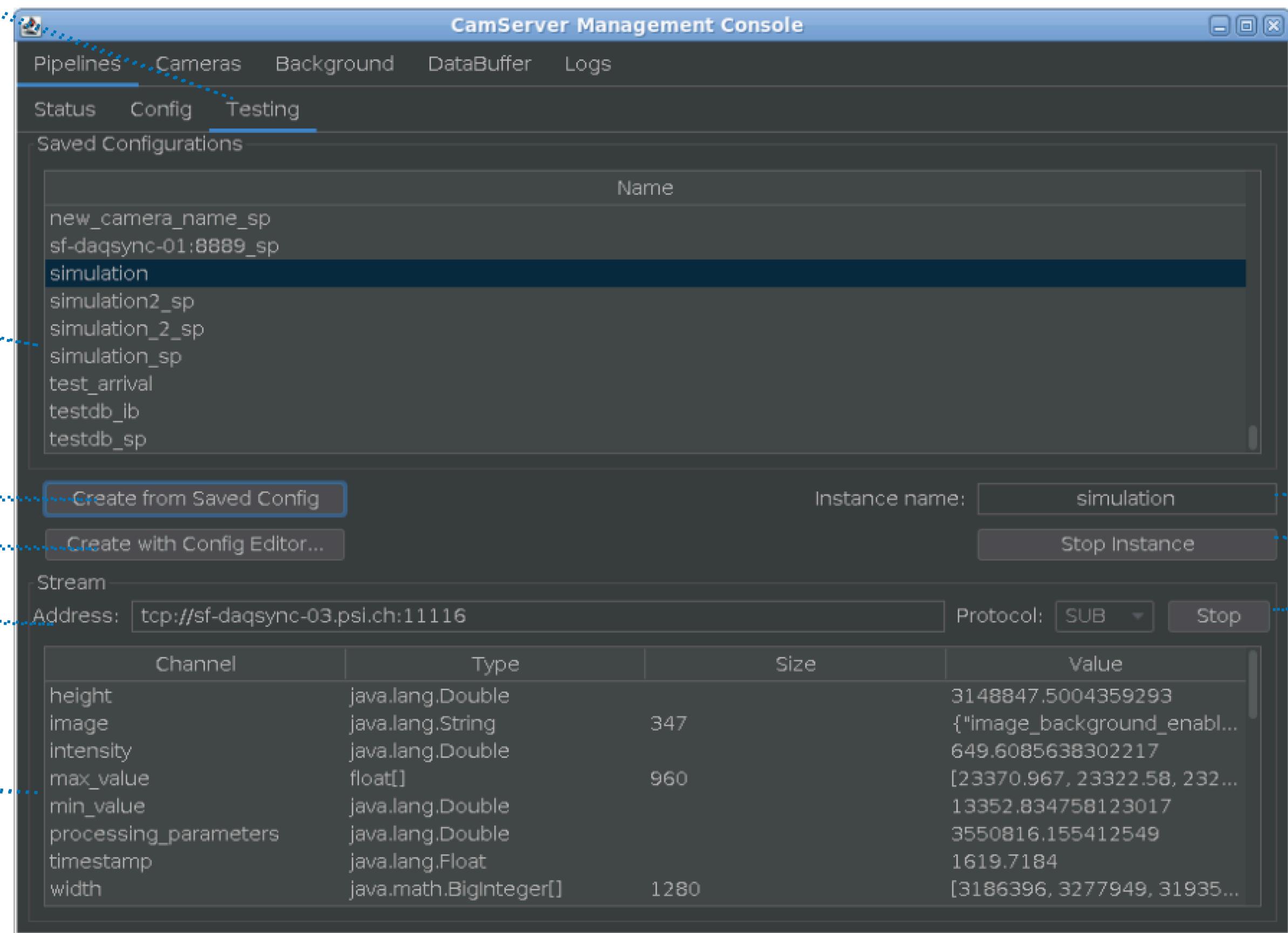
test_new.py

```
1 from cam_server.pipeline.data_processing import functions, processor
2
3 def process_image(image, pulse_id, timestamp, x_axis, y_axis, parameters):
4     ret = processor.process_image(image, pulse_id, timestamp, x_axis, y_axis)
5     return ret
```

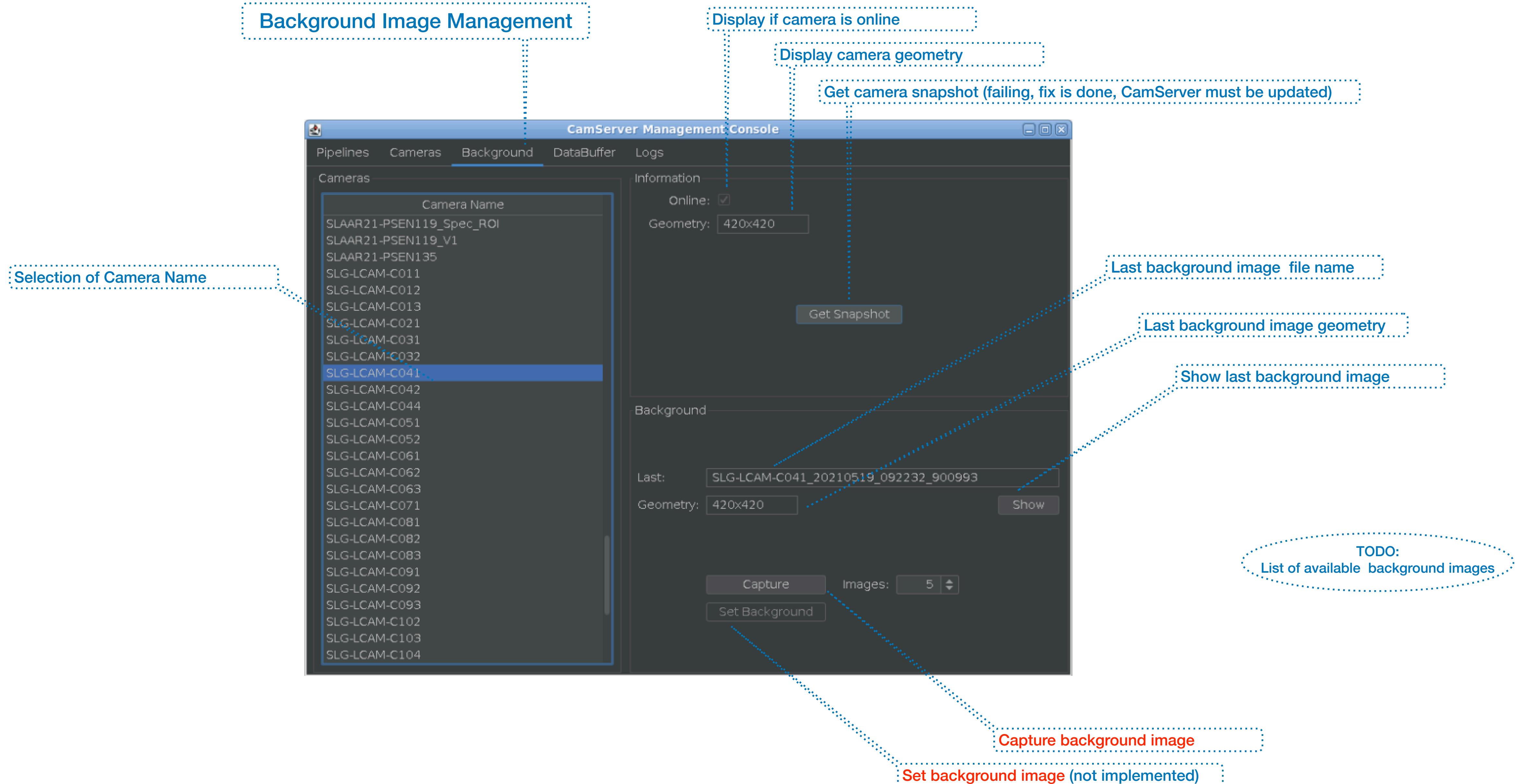
Cancel Ok

CamServer Manager

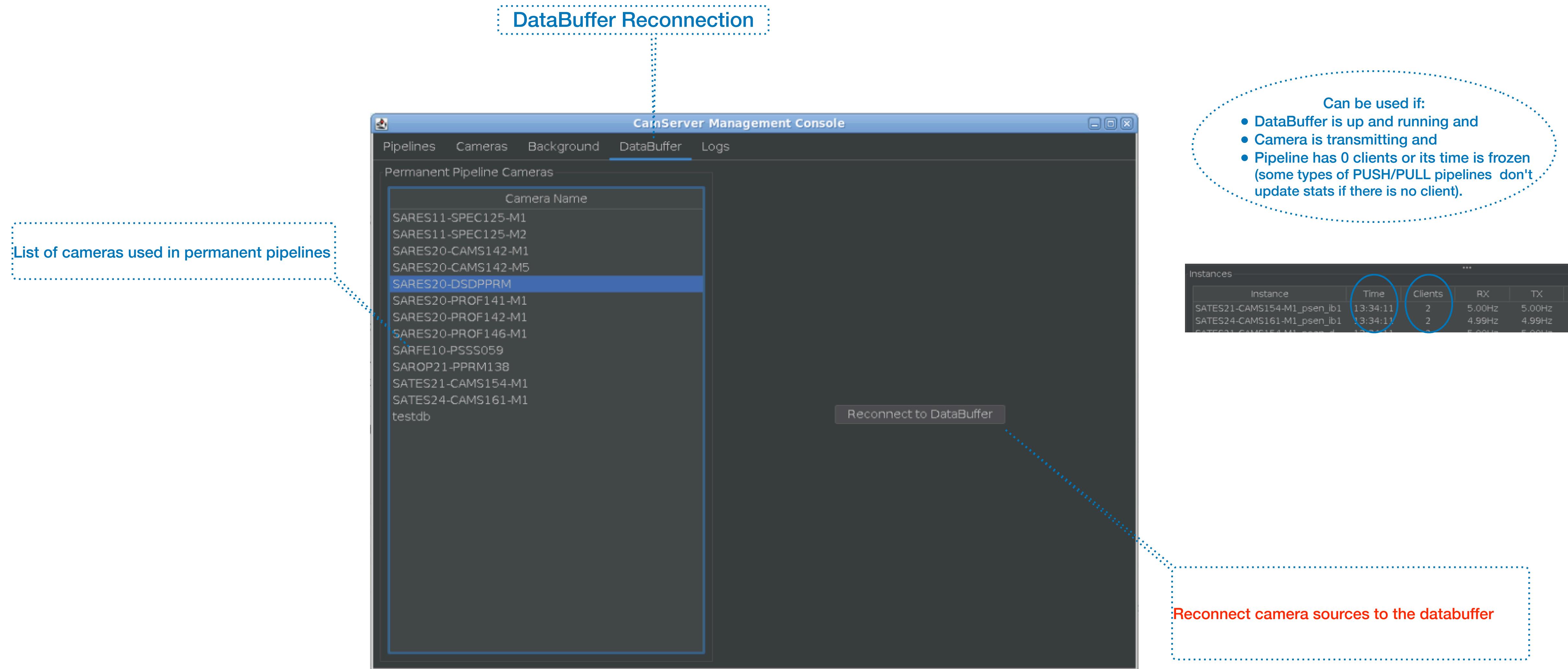
Instance Creation & Testing



CamServer Manager



CamServer Manager



Questions?

