Open APIs for Open Minds

Kurento Real Time Media Stream Processing - Advanced

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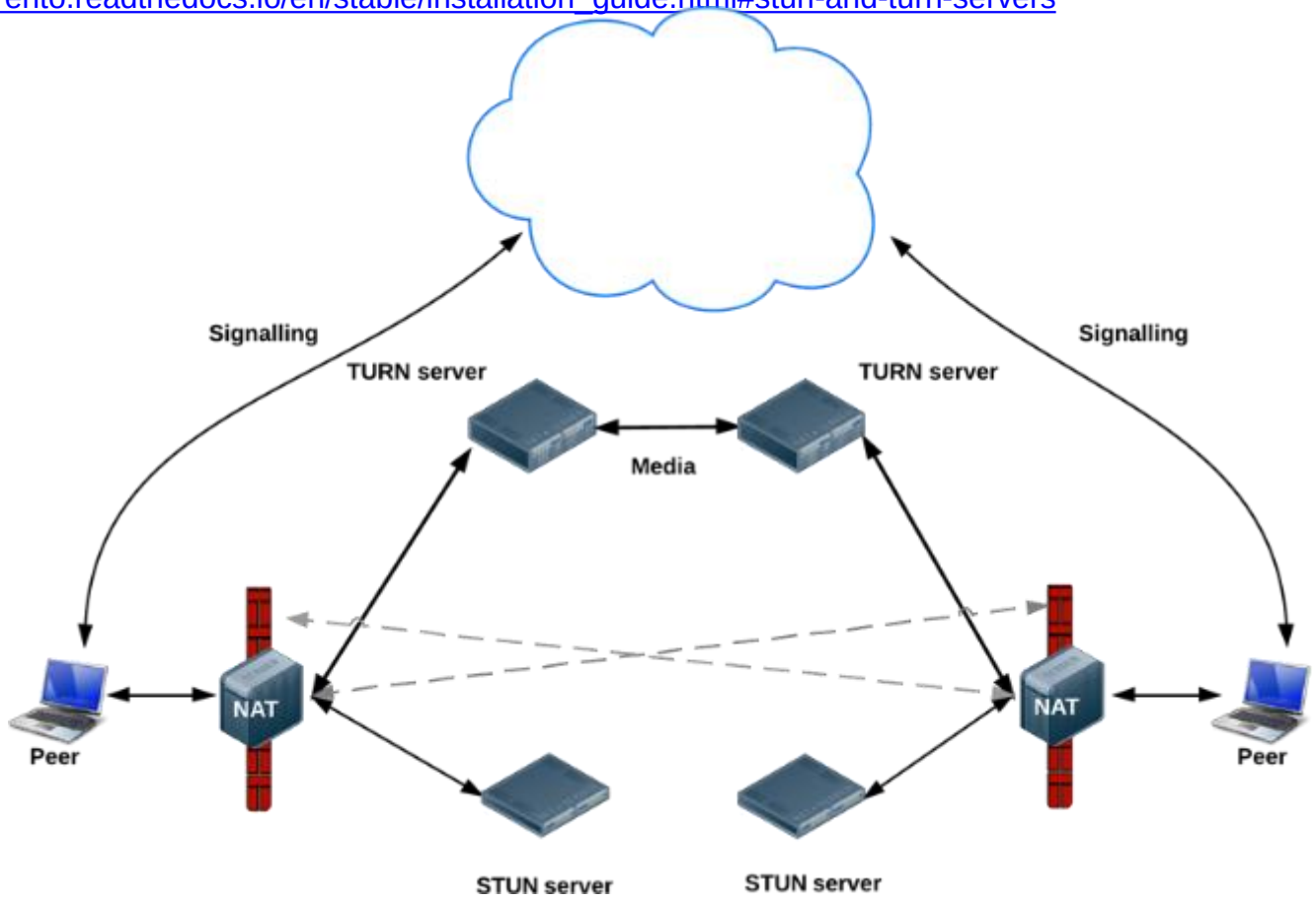
What do we need?

- **An instance of the Kurento Media Server**
  - **FIWARE-LAB** (https://catalogue.fiware.org/enablers/stream-oriented-kurento/creating-instances)
  - **Local installation** (http://doc-kurento.readthedocs.io/en/stable/installation_guide.html)
- **Maven**
- **NPM**
- **Bower**
- **Your favorite IDE**

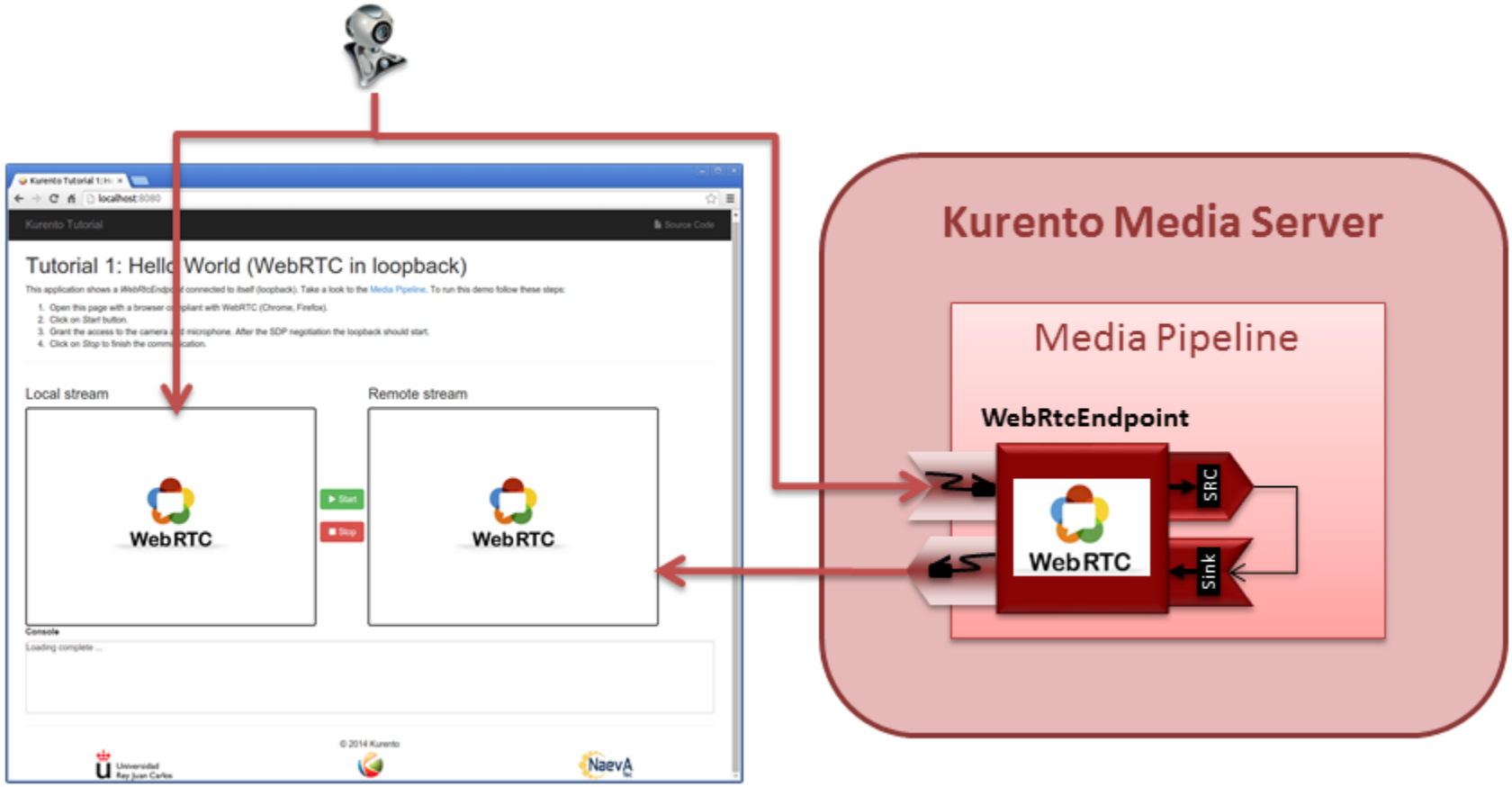
Installation Tip

- Setup a turn and a stun server in configuration to deal with NATs

http://doc-kurento.readthedocs.io/en/stable/installation_guide.html#stun-and-turn-servers

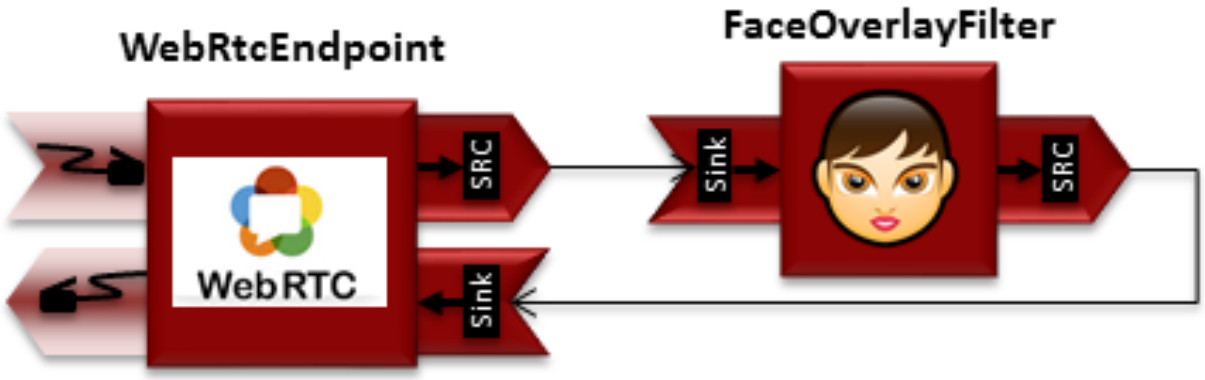


Tutorial 1 - Hello world



http://doc-kurento.readthedocs.io/en/stable/tutorials.html#hello-world

Tutorial 2 - WebRTC magic mirror



http://doc-kurento.readthedocs.io/en/stable/tutorials.html#webrtc-magic-mirror

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Tutorial 3 - WebRTC one-to-one video call with recording and filtering

```
public CallMediaPipeline(KurentoClient kurento, String from, String to) {
   // Media pipeline
   MediaPipeline pipeline = kurento.createMediaPipeline();

   // Media Elements (WebRtcEndpoint, RecorderEndpoint, FaceOverlayFilter)
   webRtcCaller = new WebRtcEndpoint.Builder(pipeline).build();
   webRtcCallee = new WebRtcEndpoint.Builder(pipeline).build();

   recorderCaller = new RecorderEndpoint.Builder(pipeline, RECORDING_PATH
         + from + RECORDING_EXT).build();
   recorderCallee = new RecorderEndpoint.Builder(pipeline, RECORDING_PATH
         + to + RECORDING_EXT).build();

   FaceOverlayFilter faceOverlayFilterCaller = new FaceOverlayFilter.Builder(
         pipeline).build();
   faceOverlayFilterCaller.setOverlayedImage(
         "http://files.kurento.org/imgs/mario-wings.png", -0.35F, -1.2F,
         1.6F, 1.6F);

   FaceOverlayFilter faceOverlayFilterCallee = new FaceOverlayFilter.Builder(
         pipeline).build();
   faceOverlayFilterCallee.setOverlayedImage(
         "http://files.kurento.org/imgs/Hat.png", -0.2F, -1.35F, 1.5F,
         1.5F);

   // Connections
   webRtcCaller.connect(faceOverlayFilterCaller);
   faceOverlayFilterCaller.connect(webRtcCallee);
   faceOverlayFilterCaller.connect(recorderCaller);

   webRtcCallee.connect(faceOverlayFilterCallee);
   faceOverlayFilterCallee.connect(webRtcCaller);
   faceOverlayFilterCallee.connect(recorderCallee);
}
```

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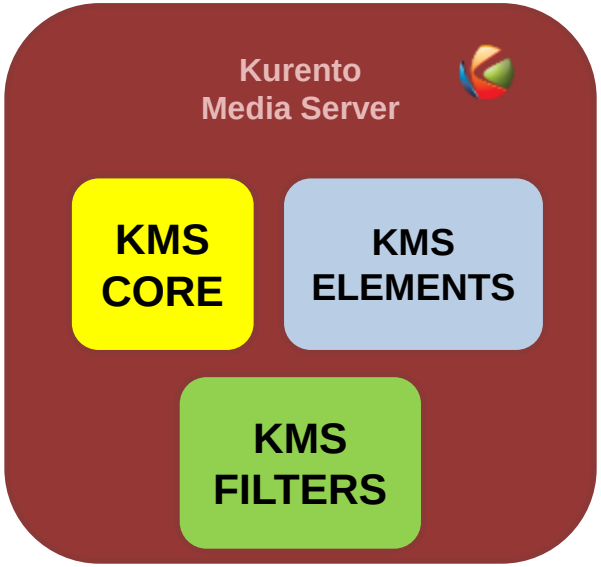
Expanding Kurento

Media Server structure

- Kurento is a pluggable framework.
- Kurento-media-server uses:
  - Kms-core
  - Kms-elements
  - Kms-filters
- Other available modules:
  - Kms-crowddetector
  - Kms-pointerdetector
  - Kms-chroma
  - Kms-platedetector



KMS
CROWDDETECTOR

KMS
CHROM
A

KMS
PLATEDETECTOR

KMS
FILTERS

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How to develop a module?

- **Two flavours:**
  - **Gstreamer developer**
  - **OpenCV developer**
- **Define the module using IDL**
- **The tool kurento-module-creator will do the magic:**
  - **Generate code for server-side**
  - **Generate code for clients**

How to develop a module?

1. **Create module structure using kurento module scaffold**
2. **Modify kmd file to add module properties**
3. **Generate code**
4. **Add filter functionality**
5. **Compile**
6. **Install**
7. **Generate client-side code**

How to develop a module?

- Install Kurento Dev

  sudo apt-get install kurento-media-server-6.0-dev

- OpenCV

  kurento-module-scaffold.sh <module_name> <output_directory> opencv_filter

- GStreamer

  kurento-module-scaffold.sh <module_name> <output_directory>

http://doc-kurento.readthedocs.io/en/stable/mastering/develop_kurento_modules.html

Example 1: For OpenCV developers

https://github.com/Kurento/kms-opencv-plugin-sample

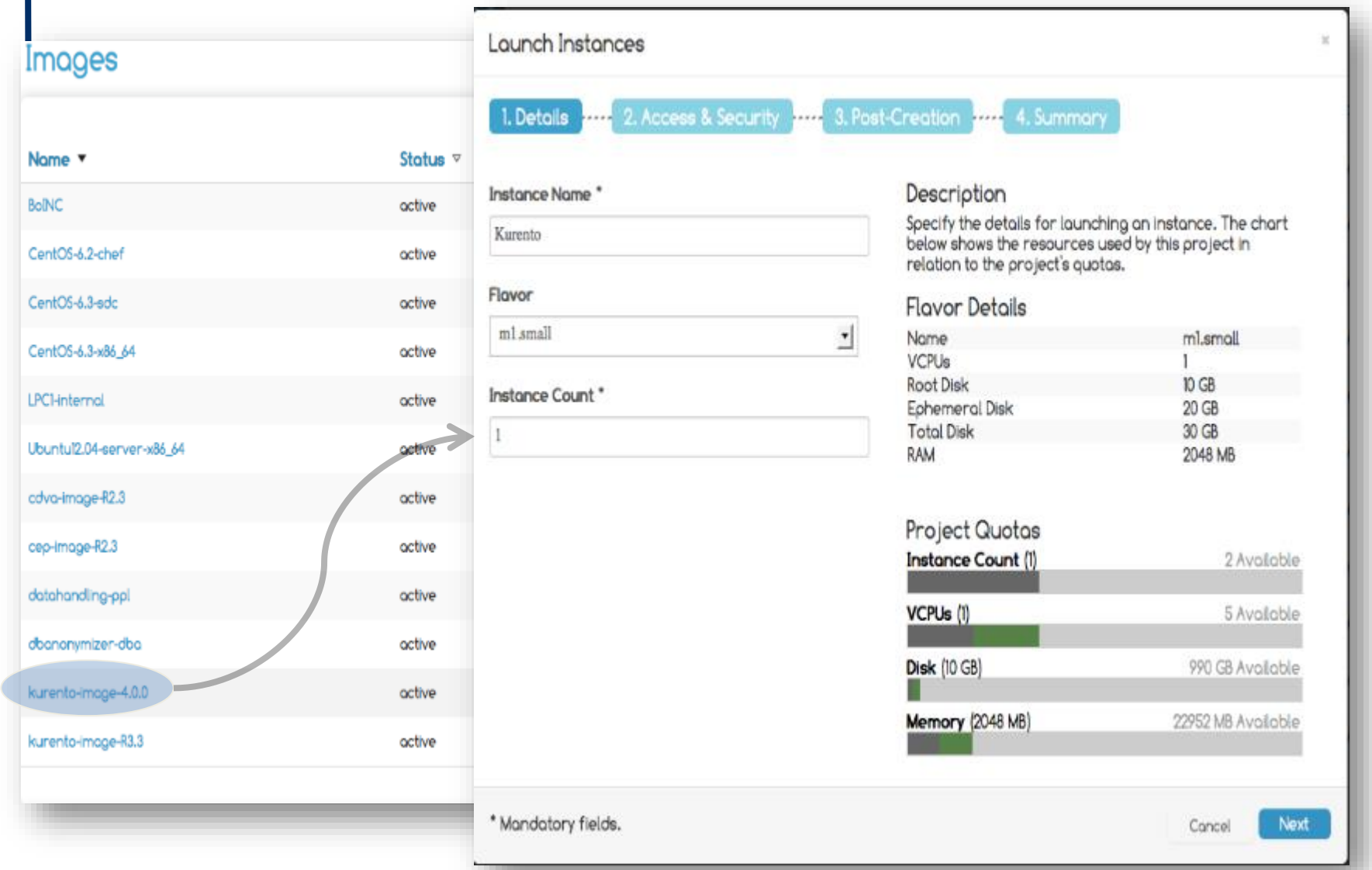
Example 2: For GStreamer developers

https://github.com/Kurento/kms-plugin-sample

Kurento and the FIWARE-LAB

- FIWARE-LAB
  - Working instance of FI-WARE enabling free experimentation with technology
  - http://lab.fiware.org
- Creating a Kurento instance from an image
  - Use latest version of Kurento images.
- Creating a Kurento instance using recipes
  - Use Ubuntu 14.04 LTS clear image
  - Use latest version of Kurento recipes

Kurento and the FIWARE-LAB



To learn more…

Thank you!

http://fiware.org
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