

# manifold CLOUD

manifold MULTIVIEWER is a service in manifold CLOUD.

Each MULTIVIEWER service instance creates one multiviewer head output which can have any combination of audio, video and metadata sources from any of the sources assigned to manifold CLOUD. The manifold MULTIVIEWER service supports over 128 unique video sources (PIPs) per head while still maintaining sub frame/field latency regardless of layouts. Layouts are completely flexible and support web graphics that can be inserted through a URL. All elements of the layout are web based which allows customers to customize their layouts with their own design elements if they so wish.

Configuration of a manifold MULTIVIEWER service is done through the manifold CLOUD single-sign-on web-based UI, through a REST-based API, Ember+ or NMOS.

manifold MULTIVIEWER service highlights

- Web based configuration and layout tool as part of manifold CLOUD single-sign-on management UI.
- Support for more than 128 video PIPs per head
- Web based graphics allows for easy insertion of any URL directly into a PIP on the head. Great for monitoring of websites or for example for Grafana web-widgets.
- Automatic generation of sub resolutions streamed as ST2110/RFC4175 for easy viewing on e.g. VLC player
- Automatic generation of ST2110 compliant 3G downscaling of any UHD source processed by the manifold MULTIVIEWER service
- Inherent support for NMOS IS-04, IS-05, Ember+ and TSL5.0 as part of manifold CLOUD

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## SPECIFICATIONS

### INPUT STANDARDS

- **INPUT VIDEO:**
  - ST2110-20
- **UHD FORMATS**
  - 2160p 60Hz
  - 2160p 59.94Hz
  - 2160p 50Hz
  - 2160p 30Hz
  - 2160p 29.97Hz
  - 2160p 25Hz
  - 2160p 24Hz
  - 2160p 23.98Hz
- **HD FORMATS**
  - 1080p 60Hz
  - 1080p 59.94Hz
  - 1080p 50Hz
  - 1080i 60Hz
  - 1080i 59.94Hz
  - 1080i 50Hz
  - 1080p 30Hz
  - 1080p 29.97Hz
  - 1080p 25Hz
  - 1080p 24Hz
- 1080p 23.98Hz
- 720p 60Hz
- 720p 59.94Hz
- 720p 50Hz
- 720p 30Hz
- 720p 29.97Hz
- 720p 25Hz
- **COLORSPACE**
  - Transparent - WYSIWYG
  - SDR: BT709
  - HDR: BT2020/2100
- **INPUT AUDIO:**
  - ST2110-30 Level C
  - PCM Audio
- **METADATA: (NOT YET IMPLEMENTED AS OF SW 1.2)**
  - Timecode
  - Closed captions
    - 608 in 708
    - OP47

### MULTIVIEWER LAYOUTS AND TALLY

- Completely flexible layouts
  - Video PIP
    - Configurable location and size and depth
    - Configurable crop
  - Audio Meters - PPM (Left, Right, Inside, Outside, Audio only etc)
    - From 1 to 80 channels
  - Textboxes (OMD/UMD) with various data sources
    - No limits on the amount of textboxes in a layout, placement, size, fonts, colors etc. Based on webgraphics.

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- Can be independent or linked to another element.
- Various data sources such as:
  - Source name (from SDP)
  - TSL Label
  - User label
  - Free text etc.
- Tally signaling
  - Border, Lamp, Textbox (OMD/UMD) color, Flashing etc.
- Clocks
  - Digital
  - Analogue (Multiple versions, custom version possible)
  - Each clock can be offset with HH:MM
  - Up, Down, Set/Target time
- **ALARMING**
  - Video: black, freeze, wrong format
  - Audio: silence, low, phase mismatch etc.
  - Metadata: Timecode, Closed caption (not yet implemented)

## OUTPUT STANDARDS:

- **OUTPUT VIDEO:**
  - ST2110-20
- **OUTPUT (HEAD) FORMATS**

### Supported output rasters:

- 3840x2160
- 2048x1080
- 1920x1080
- 1920x1035
- 1280x720
- 720x526
- 720x486

### Supported output framerates:

- 60p
- 59.94p
- 50p
- 30p
- 25p

- **LATENCY:**
  - Less than 2 fields/frames end to end when in narrow transmitter mode