Epic BMDI with Capsule

Agenda

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    1. Connectivity overview
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        2. Neuron / Axon
        3. Smartlinx
        4. Ensemble
        5. Epic
    2. Common troubleshooting
2. Advanced
    1. MPI ID conventions
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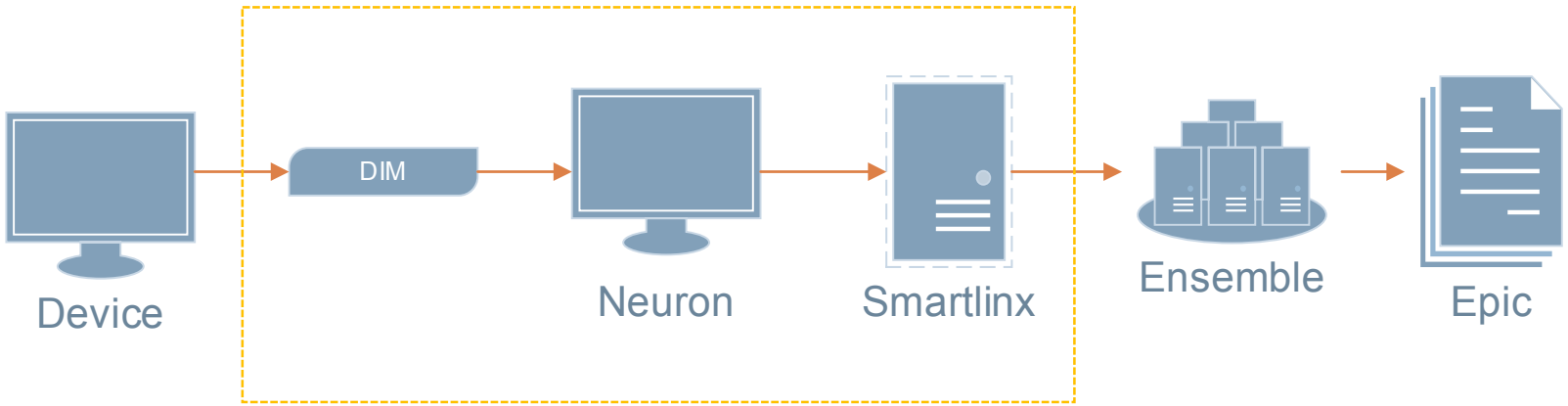
    3. Smartlinx
        1. DMM Stacks
        2. Output connectors
        3. Loopback

Data flow to Epic in Capsule



** New components **

Device Identification Module (DIM)

- DIM connects the medical device to Capsule's communication device on the network (Neuron or Axon)
- DIM is programmed with:
  - Medical Device Type
  - Free-Text label for identifying the device called "ID Tag"
  - Baud Rate
  - Parity / Data / Stop

Neurons

- Connects to Smartlinx server via PHS IS wired and wireless networks
- Configuration contains drivers needed for device data
- Typically configured for specific OR, Bed or location
- Displays connected devices and current data transmission
- Inputs:
  - Medical device data from DIMs
  - ADT info for current patient, if applicable
- Outputs
  - Medical device data to Smartlinx

Device to Neuron Connectivity

Device

Serial Cable

Connects to medical device

DIM

Identifies device connected

Patch Cable

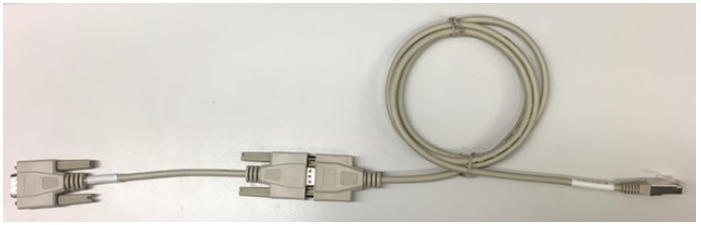
Connects DIM to Neuron

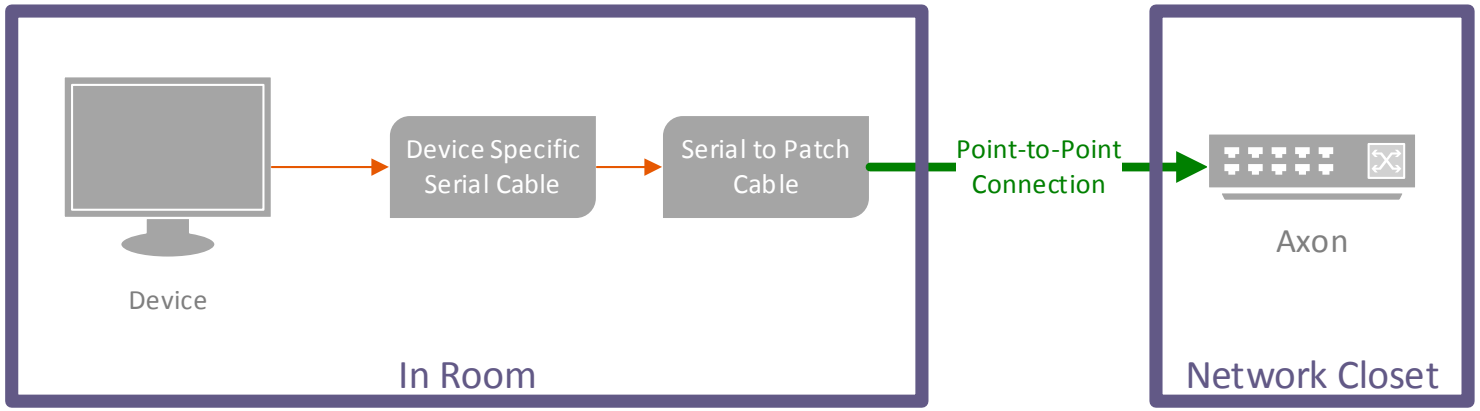
Neuron

Manages device connectivity at the bedside, sends data to server

Axons (CPC, Endo, Waltham/Danvers PACUs)

- 8-Port, 4-Port, & 1-Port Configurations
- Wired connection
- Each port is programmed to a specific room & device type



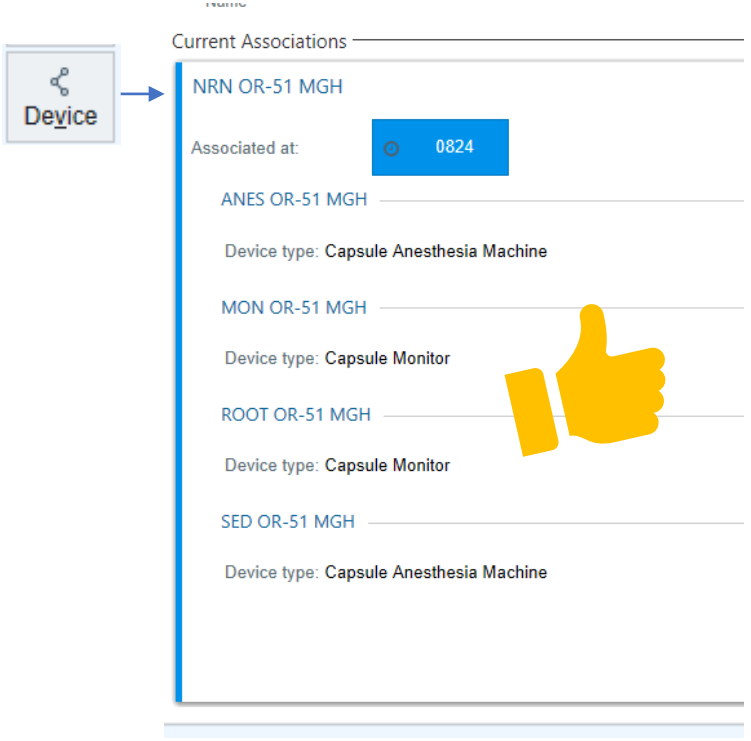


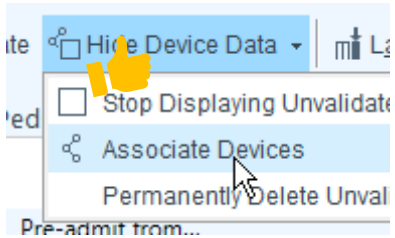
Smartlinx

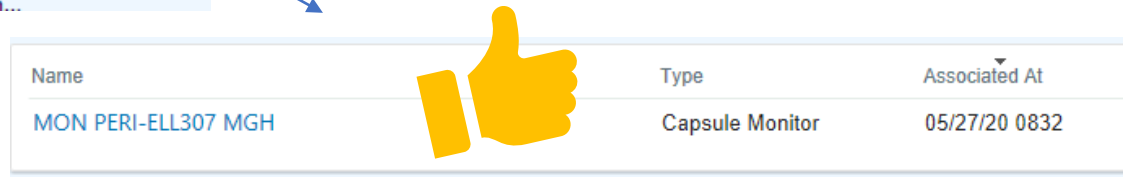
- Connects to Ensemble for Epic integration
- Interface / Application server configured in clusters of 3 servers
- Runs two applications:
  - Smartlinx Command Console – data and output management
  - Capsule Command Console (C3) – Neuron management
- Inputs:
  - Raw medical device data
- Outputs:
  - Filtered and transformed device data as HL7 messages

Troubleshooting: Data in Epic?

- Always check Epic first! Data can be hidden by users in Anesthesia interop and Flowsheets
- Confirm:
  - Correct DEV record is attached
  - In flowsheets: device data is not hidden

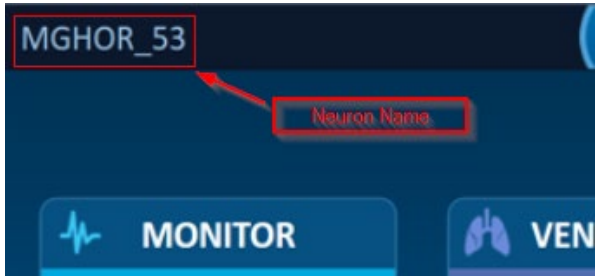


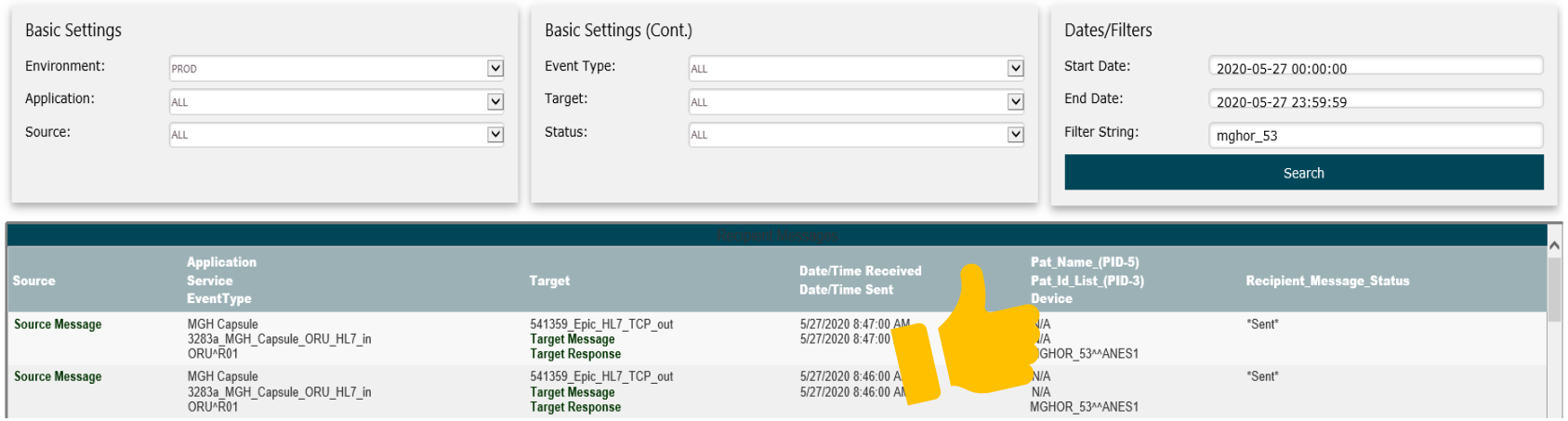




Troubleshooting: Data in Ensemble?

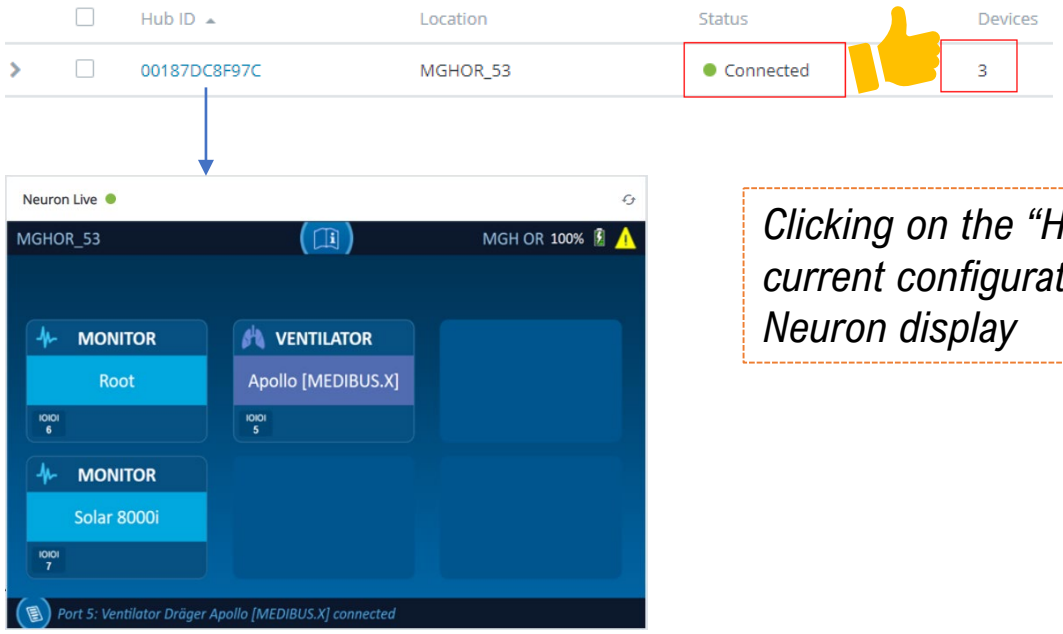
- Ensemble MDEV Message View: http://ensutils.partners.org/MDEV/Recipients.aspx
- Search by Neuron name in filter string





Troubleshooting: Neuron connected?

- Neurons can be updated and viewed through C3: https://phsweb1517/login
- C3 hub view allows you to confirm the Neuron (hub) is active and devices are connected



Clicking on the "Hub ID" link will take you to a page showing the current configuration of the Neuron, including a live view of the Neuron display

Advanced: MPI ID Conventions

- “MPI ID” is the unique identifier for a device
- The identifier is sent in two separate parts out of Smartlinx: PV1-3.1 and 3.3.
- 3.1 contains the Neuron name and 3.3 has the DIM Tag
- Those two components are put together on receipt into Epic to be read as the MPI ID

Ensemble message:

1MSH | ^~\& | DATACAPTOR | . | . | . | 20200603082200.498-0400 | . | ORU ^ R01 | 0603082
2PID | .
3PV1 | . | I | MGHOR_53 ^ . ^ ANES1 | .
4OBR | . | . | . | . | . | . | 20200603082200.000-0400 | . | . | MGHOR_53 | . | . | MGHOR_53 | .

Neuron name

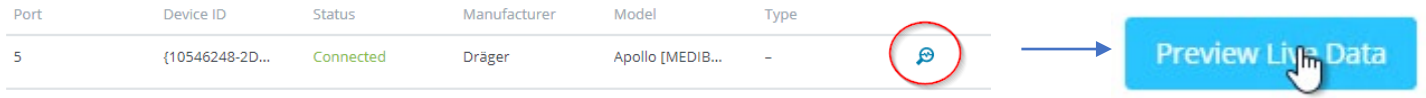
DIM ID Tag

Epic DEV build:

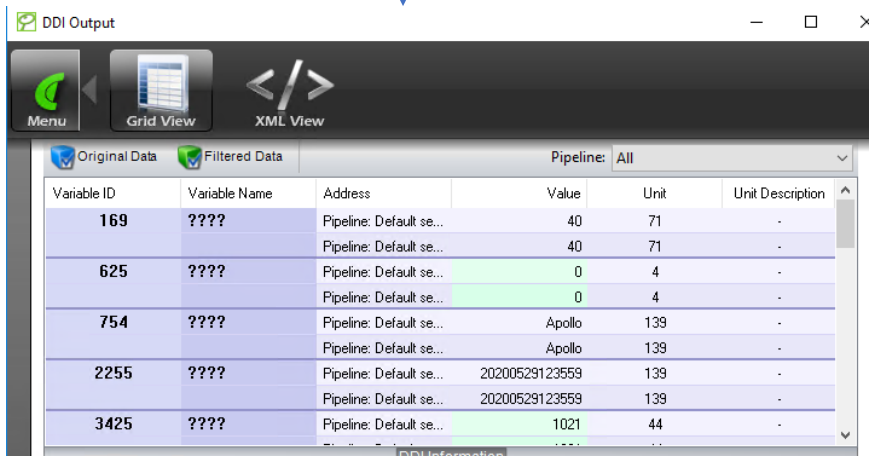
Rel	5000-MPI: ID TYPE	5001-MPI: ID
0	1. 1	1. 1 Combined
1	1. DEVICE [12]	1. MGHOR_53-ANES1

Advanced: Neuron data view

- Data captured from the device at the Neuron can be viewed
- Must connect from C3 on the server hosting the Neurons current connection
- Previewing live data is available from the Neuron Details page in C3

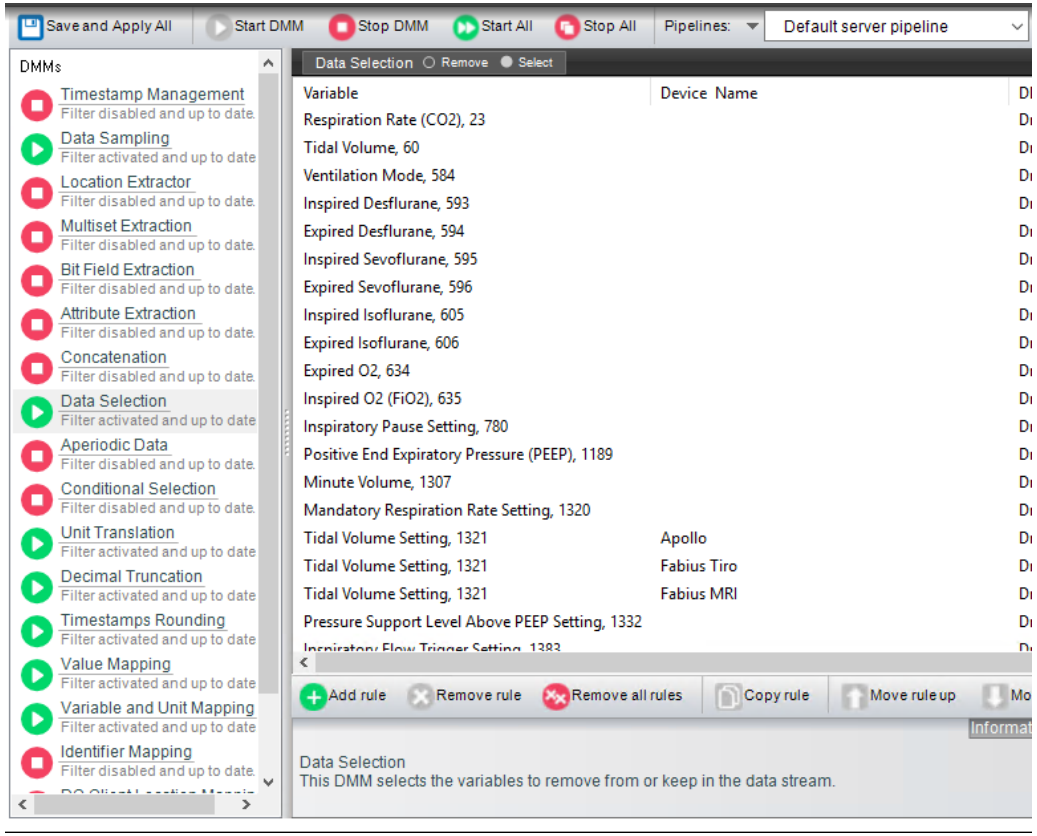


Variable IDs in the DDI Output live view can referenced in the Help File available on the Capsule customer portal.



Advanced: Smartlinx DMM Stack

- In Smartlinx, device data from a Neuron or Axon is filtered and transformed by Data Management Modules (DMMs)
- DMMs allow us to set frequency of data collection, parameter selection and other rules that determine final format and volume of data sent to downstream systems
- Rules are additive, with rules on top of GUI applied first



Advanced: Smartlinx Outputs

- Output connectors send HL7 messages to defined recipients
- Can be configured using a number of different profiles
- Each output has a corresponding “loopback” – a broadcast port that we can view messages in the same configuration as the output.

Advanced: HL7 Loopbacks

- Loopbacks should be stopped when not in use to conserve resources on the server