Standard CDU Controls

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- The information in this presentation represents a snapshot of work in progress within DMTF.
- This information is subject to change without notice. The standard specifications remain the normative reference for all information.
- For additional information, see DMTF's website.

Overview

- Existing CDUs have various set points that end users specify
  - CDUs don't inherently know the thermal requirements of the downstream equipment
  - On initial configuration, and changes to the rack configuration, the CDU is configured accordingly
- The Redfish CDU model omitted standard controls from the initial release
  - The ControlCollection in Chassis could be used for the time being
- This presentation contains a proposal for standard controls for CDUs

Standard Set Points

- Two common set points for CDUs were identified
  - Secondary loop target flow rate
  - Secondary loop target supply temperature
- Both set points are independent from each other
  - The target flow rate will affect the operating speed of the pumps
  - The target supply temperature will affect the primary side valve
- Proposal: Add **Control** excerpts in **CoolantConnector** for the secondary side connection
  - *TargetFlowLitersPerMinute*
  - *TargetSupplyTemperatureCelsius*

Standard Set Points (Target Flow Rate)

```
{
    "@odata.type": "#CoolantConnector.v1_1_0.CoolantConnector",
    "Id": "1",
    "Name": "Cooling connection to rack equipment",
    ...
    "RatedFlowLitersPerMinute": 50,
    "FlowLitersPerMinute": {
        "Reading": 42,
        "DataSourceUri": "/redfish/v1/Chassis/CDU/Sensors/SecondaryFlow"
    },
    "TargetFlowLitersPerMinute": {
        "SetPoint": 43,
        "AllowableMax": 50,
        "AllowableMin": 20,
        "ControlMode": "Override",
        "DataSourceUri": "/redfish/v1/Chassis/CDU/Controls/SecondaryFlow"
    }
}
```

Standard Set Points (Target Supply Temperature)

```
{
    "@odata.type": "#CoolantConnector.v1_1_0.CoolantConnector",
    "Id": "1",
    "Name": "Cooling connection to rack equipment",
    ...
    "SupplyTemperatureCelsius": {
        "Reading": 30,
        "DataSourceUri": "/redfish/v1/Chassis/CDU/Sensors/SecondarySupplyTemp"
    },
    "TargetSupplyTemperatureCelsius": {
        "SetPoint": 30,
        "AllowableMax": 35,
        "AllowableMin": 10,
        "ControlMode": "Override",
        "DataSourceUri": "/redfish/v1/Chassis/CDU/Controls/SecondarySupplyTemp"
    }
}
```

Pumps Controls

- To service hot swappable pumps, the pump needs to be disabled
- Proposal: Add action to **Pump** to enable/disable the **Pump**
  - *Pump.SetMode*
  - Initially just specify *Enabled* or *Disabled*, with possible expansion to other modes in the future as requested

Standard Pump Control (Set Mode)

```
POST /redfish/v1/ThermalEquipment/CDUs/1/Pumps/1/Actions/Pump.SetMode

{
    "Mode": "Enabled" | "Disabled"
}
```

Other Controls?

- Secondary loop target differential pressure
  - Some devices use this instead of a secondary loop target flow rate to control pump speeds
  - Would a device ever support both “target differential pressure” and “target flow rate”?
  - If so, would the user need to specify which control is active?
  - The *ControlMode* property can be used to enable and disable which control is active

Thank you!

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