

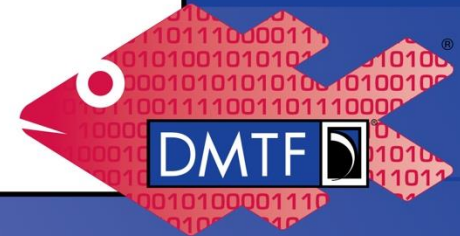


# Standard CDU Controls

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Redfish

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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.
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## 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"  
}
```





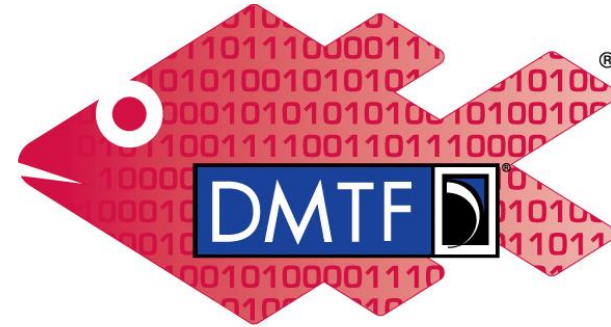
## Other Controls?

- 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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