

NSF/IUCRC CAC PROJECT

INTEGRATED VISUALIZING, MONITORING, AND MANAGING HPC SYSTEMS

Jie Li

Doctoral Candidate, TTU

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Advisors:

Mr. Jon Hass, SW Architect, Dell Inc.

Dr. Alan Sill, Managing Director, HPCC, TTU

Dr. Yong Chen, Associate Professor, CS Dept, TTU

Dr. Tommy Dang, Assistant Professor, CS Dept, TTU

IDARC9 GPU NODE METRICS

- ▶ GPU metrics are being collected and can now be found in `idrac9_gpu` schema.
- ▶ 38 available metrics in total.
- ▶ Some new metrics that are not available in idrac9 cpu node:
 - ▶ Aggregateusage, ?
 - ▶ Computepower, difference with systempowerconsumption?
 - ▶ Memoryusage (reports 0 in idrac9 cpu node)
 - ▶ Totalfanpower
 - ▶ Totalstoragepower

The metrics are obtained from PowerEdge R740 with a BMC model 14G Monolithic and firmware version 4.40.00.00

GPU SPECIFIC METRICS

- ▶ GPU Health
- ▶ GPU Status
- ▶ Memory Temperature
- ▶ Power Brake State
- ▶ Power Consumption
- ▶ Power Supply Status
- ▶ Primary Temperature
- ▶ Thermal Alert State

```
"Dell": {
  "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
  "ContextID": "Video.Slot.4-1",
  "Label": "Video.Slot.4-1 PowerBrakeState",
  "Source": "gpu-health",
  "FQDD": "Video.Slot.4-1"
}
},
{
  "MetricId": "PowerConsumption",
  "Timestamp": "2021-09-17T17:51:41.000Z",
  "MetricValue": "168575",
  "Oem": {
    "Dell": {
      "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
      "ContextID": "Video.Slot.4-1",
      "Label": "Video.Slot.4-1 PowerConsumption",
      "Source": "gpu-health",
      "FQDD": "Video.Slot.4-1"
    }
  }
},
{
  "MetricId": "PowerSupplyStatus",
  "Timestamp": "2021-09-17T17:51:41.000Z",
  "MetricValue": "Enabled",
  "Oem": {
    "Dell": {
      "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
      "ContextID": "Video.Slot.4-1",
      "Label": "Video.Slot.4-1 PowerSupplyStatus",
      "Source": "gpu-health",
      "FQDD": "Video.Slot.4-1"
    }
  }
}
```

UNDERSTANDING METRICS

Sample metric report:

```
{
  "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
  "ContextID": "Video.Slot.4-1",
  "Label": "Video.Slot.4-1 PowerBrakeState",
  "Source": "gpu-health",
  "FQDD": "Video.Slot.4-1"
},
{
  "MetricId": "PowerConsumption",
  "Timestamp": "2021-09-17T17:51:41.000Z",
  "MetricValue": "168575",
  "Oem": {
    "Dell": {
      "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
      "ContextID": "Video.Slot.4-1",
      "Label": "Video.Slot.4-1 PowerConsumption",
      "Source": "gpu-health",
      "FQDD": "Video.Slot.4-1"
    }
  }
},
{
  "MetricId": "PowerSupplyStatus",
  "Timestamp": "2021-09-17T17:51:41.000Z",
  "MetricValue": "Enabled",
  "Oem": {
    "Dell": {
      "@odata.type": "#DellMetricReport.v1_0_0.DellMetricReport",
      "ContextID": "Video.Slot.4-1",
      "Label": "Video.Slot.4-1 PowerSupplyStatus",
      "Source": "gpu-health",
      "FQDD": "Video.Slot.4-1"
    }
  }
}
```

Metric definition:

```
// 20210917114807
// https://10.101.20.1/redfish/v1/TelemetryService/MetricDefinitions/PowerConsumption

{
  "@odata.type": "#MetricDefinition.v1_0_3.MetricDefinition",
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/PowerConsumption",
  "Id": "PowerConsumption",
  "Name": "GPU Power Consumption Metric Definition",
  "Description": "Total GPU board power consumption in mWatts (100mW resolution)",
  "MetricType": "Numeric",
  "MetricDataType": "Decimal",
  "Units": "mW",
  "Accuracy": 0.0,
  "SensingInterval": "PT5S",
  "DiscreteValues": [

  ]
}
```

UNDERSTANDING METRICS

Metric definition:

```
// 20210917111117
// https://10.101.20.1/redfish/v1/TelemetryService/MetricDefinitions/ComputePower

{
  "@odata.type": "#MetricDefinition.v1_0_3.MetricDefinition",
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/ComputePower",
  "Id": "ComputePower",
  "Name": "Compute Power Metric Definition",
  "Description": "Computer power that is not wasted",
  "MetricType": "Numeric",
  "MetricDataType": "Integer",
  "Units": "W",
  "Accuracy": 5.0,
  "SensingInterval": "PT5S",
  "DiscreteValues": [

  ]
}
```

The meaning of **Compute Power** is not clear.
What does it mean by computer power that is not wasted? How this metric is calculated?