NSF/IUCRC CAC PROJECT

INTEGRATED VISUALIZING, MONITORING, AND MANAGING HPC SYSTEMS

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NODE METADATA

- Some nodes (among Quanah nodes) have the same service tag:

ServiceTa	UUID	SerialNumber	HostName	Model	Manufactu	ProcessorModel	Pro	Logic	TotalSystemI
2L8YHK2	4c4c4544-004b-5410-8054-b2	CN7475175G0	compute-1-1	PowerEd	Dell Inc.	Intel(R) Xeon(R) CPU E5-2695 v4 @ 2.10G	2	36	178.814016
2L8YHK2	4c4c4544-004b-5410-8052-b2	CN7475175G0	cpu-1-2	PowerEd	Dell Inc.	Intel(R) Xeon(R) CPU E5-2695 v4 @ 2.10G	2	36	178.814016
2L8YHK2	4c4c4544-004b-5410-8056-b2	CN7475172H0	compute-1-3	PowerEd	Dell Inc.	Intel(R) Xeon(R) CPU E5-2695 v4 @ 2.10G	2	36	178.814016
2L8YHK2	4c4c4544-004b-5410-8053-b2	CN7475175G0	cpu-1-4	PowerEd	Dell Inc.	Intel(R) Xeon(R) CPU E5-2695 v4 @ 2.10G	2	36	178.814016

- Some nodes have a different version of BMC firmware (4.30.30.30 instead of 4.40.00.00):

HostName	Model	Manufact	ProcessorModel	Pro	Logica	TotalSystemM	Bmc_Ip_Addr	BmcModel	BmcFirmware	Status
cpu-23-17	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.23.17	15G DCS	4.30.30.30	OK
cpu-23-32	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.23.32	15G DCS	4.30.30.30	OK
cpu-23-42	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.23.42	15G DCS	4.30.30.30	OK
cpu-23-46	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	64	476.837376	10.101.23.46	15G DCS	4.30.30.30	OK
cpu-24-57	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.24.57	15G DCS	4.30.30.30	OK
cpu-25-31	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.25.31	15G DCS	4.30.30.30	OK
cpu-25-34	PowerEdge C6525	Dell Inc.		2		476.837376	10.101.25.34	15G DCS	4.30.30.30	OK
cpu-25-42	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.25.42	15G DCS	4.30.30.30	OK
cpu-26-2	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	64	476.837376	10.101.26.2	15G DCS	4.30.30.30	OK
cpu-26-3	PowerEdge C6525	Dell Inc.		2		476.837376	10.101.26.3	15G DCS	4.30.30.30	OK
cpu-26-31	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.26.31	15G DCS	4.30.30.30	OK
cpu-26-35	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.26.35	15G DCS	4.30.30.30	OK
cpu-26-50	PowerEdge C6525	Dell Inc.	AMD EPYC 7702 64-Core Processor	2	128	476.837376	10.101.26.50	15G DCS	4.30.30.30	OK

SCHEMA DESIGN

- Monitoring data are organized in tables named after the Telemetry Report names.
  - 24 tables: ['PSUMetrics', 'PowerStatistics', 'PowerMetrics', 'SystemUsage', 'CPUMemMetrics', 'AggregationMetrics', 'ThermalSensor', 'ThermalMetrics', 'StorageSensor', 'StorageDiskSMARTData', 'Sensor', 'FCPortStatistics', 'FCSensor', 'NICStatistics', 'NICSensor', 'MemorySensor', 'SerialLog', 'CPUSensor', 'CPURegisters', 'FanSensor', 'GPUStatistics', 'NVMeSMARTData', 'GPUMetrics', 'FPGASensor']

Table - PowerMetrics

time	node_id	SystemHeadRoom Instantaneous	SystemInput Power	SystemOutput Power	SystemPower Consumption	TotalCPUPower	TotalMemoryPower	...
1610676100	468	40	555	555	694	796	230	
1610676100	469	40	555	555	694	796	230	...
1610676100	470	40	555	555	694	796	230	
...								
1610676160	468	40	555	555	634	800	230	
1610676160	469	40	555	555	634	800	230	...
1610676160	470	40	555	555	634	800	230	
...								

TELEMETRY REPORTS CONFIGURATION

- Not all telemetry metrics report valid data
  - “When a report is enabled but the device hardware is not present, no report is generated” – FPGASensor does not provide data on a CPU node
  - Some metrics reports provide empty value – SerialLog, CPURegisters, etc.
- To avoid building tables for invalid telemetry reports, need a tool that helps define what metrics reports are valid and disables those invalid reports.

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                                   |___/
+=========| Auto-configure Telemetry Reports |========+
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--> 13 reports are ENABLED: ['PowerStatistics', 'PowerMetrics', 'SystemUsage', 'CPUMemMetrics', 'AggregationMetrics', 'ThermalSensor', 'ThermalMetrics'
, 'Sensor', 'NICStatistics', 'NICSensor', 'MemorySensor', 'CPUSensor', 'FanSensor']
--> 11 reports are DISABLED: ['PSUMetrics', 'StorageSensor', 'StorageDiskSMARTData', 'FCPortStatistics', 'FCSensor', 'SerialLog', 'CPURegisters', 'GPUS
tatistics', 'NVMeSMARTData', 'GPUMetrics', 'FPGASensor']
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