



# **CONTROLS OPEN SOURCE MONITORING SYSTEM** COSMOS

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The CERN Accelerator Control System relies on many components and a substantial infrastructure, which must be available 24 hours a day, 7 days a week. This hardware and software infrastructure needs to be monitored in order to anticipate or detect failures and fix them as quickly as possible. The Controls Open-Source Monitoring System (COSMOS) project was launched in 2017 to renovate the existing in-house solution, which was suffering from its hyper-centralized model, the multiplicity of the solution, service overlap and scalability issues.

CONTEXT	Grafana 3	COSMOS IN FIGURES			
<ul> <li>7000 hosts</li> <li>PC Server VME V Machines diskless RT</li> </ul>			Item	Source	Number
(Linux CC7, SLC6, Windows)	Serie	The second s	OS metric types	collectd	250
SNMP and IPMI crate controllers	ine	S	OS metric cardinality	collectd	236,000
<ul> <li>PLC (Siemens, Schneider,)</li> </ul>				1	90

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#### **OBJECTIVES**

- Focus on sysadmin core business by:
  - using open-source solution
  - decoupling business and functional monitoring
- New paradigm to delegate specific parts (checks, alerts, dashboards)
- Provide integrated and compact solution

### **OPEN-SOURCE BASED SOLUTION**

Product	Purpose
collectd	Operating system metrics acquisition
Prometheus	Application metrics acquisition
Icinga2	Hosts and Services status check + perf. data acquisition
InfluxDB	Time series storage for Icinga2 perf. data and collectd metrics
Grafana	Graphical user interface for metrics visualization and analysis



Check types	Icinga2	80
Check cardinality	Icinga2	29,600
Perf. data types	Icinga2	2,500
Perf. data cardinality	Icinga2	1,378,000





Infrastructure

nce Nov 10 OK - White Rabbit switch ctdwa-355-cwrsps is fine OK ctdwa-774-cbt: WRSNetworkService incelun 8 OK - Network Status from ctdwa-774-ch



## open-source solution covering 100% of the infrastr. monitoring • 2xCPU/2.2Ghz/10c, 128Gb

- - reliability, availability

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