Chopin Management System

Improving Windows infrastructure monitoring and management

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Outline

• Windows Server Infrastructure
• Objective
• The Chopin project
• Architecture overview
• Deployment
The group Collaboration, Devices and Applications (CDA) provides information services such as video conferencing, webcast & recording, indico, the CERN Document Server (CDS), document conversion, printing, e-mail, IP telephony, the Invenio Digital Library Framework, Windows' environment tools, web services, authentication and authorisation services, e-publishing and software development tools on a range of devices, such as desktops, laptops, tablets and smartphones.
Windows Server Infrastructure

- ~700 machines to manage
- Microsoft System Center Operation Manager (SCOM) used for alarming and availability
- Many automatic operational information coming via e-mails
  - Daily hardware events report
Objective

• Central and readably access to details about all managed machines
• Detection of critical events
• Assistance in the operations
• Possibility to extend
• SCOM replacement
Chopin Management System
Open SHIM ticket

Dear IT Process Venue Team,

Please change the disk 278 875 GB (internal disk array)

Device: XLADAP13
SN: 03JW6H4-0000341-Z5EE
Disk size: 2780000375 M (278 875 GB)

Rack location can be checked here: https://

Copy

Physical drives events

05/11/2019 CHEP 2019 10
Rebuild succeeded. The new logical configuration has been created.

Drive failure.

Physical configuration

Drive ...LD7 has been replaced on Sep 9 at 9:37 by the physical drive ...V27
Architecture

MySQL database: CERN Database on Demand Service

Message broker: Used for communication and a buffer

Chopin Agent

- Event listener (real-time)
- Load plugins and read settings
- Invoke plugins (scheduler)

Heart beat | RabbitMQ
---|---
Windows updates | Terminal
StorCli | 
SuperDoctor | 
Facter | 
Versions | 

Agent auto updater

Input plugins

Output plugins

Service

Standalone exe
Message flow
Apache Flink

• To detect patterns in log stream the Flink Complex Event Processing (CEP) library is used.
• The CEP library allows to define patterns over data stream by defining the rules using PatternAPI, in a manner similar to defining a finite state machine.

VD degraded, drive offline
81: VD state change
250: VD partially degraded
251: VD degraded
Apache Flink

- Detects configuration changes based on both logs and data from StorCli
- Filters data obtained from machines
- Filters logs based on the admin configuration
- Detects inactive servers and shutdowns
Worker

Message persistence and notification generation module

- Saves data to the database
- Generates notifications
- Updates the current state of the server
Dashboard

ReactJS, Redux, Redux-Thunk, Ant Design, Semantic UI React, Reactstrap
Deployment

- Containerised deployment using OpenShift
  - Frontend (dashboard)
  - Backend
  - Apache Flink
  - Worker
- MySQL CERN DBoD
Thank you for your attention!