Fermilab Distributed Monitoring System (NGOP)

Progress Report

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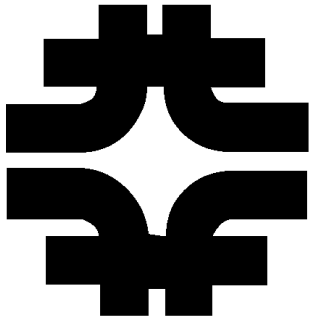

NGOP Working Group

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What is NGOP and who is using it?

- What:
  - A Distributed Monitoring System that scales to the anticipated requirements for Run II (up to 10,000 nodes during next 5 years)
  - Facilitates problem diagnostics and provides ways for early error detection
  - Provides centralized data collection
  - Executes corrective and notification actions
  - Offers a framework to create Monitoring Agents for monitoring the overall state of computers and software that are running on them.
  - Provides means to define the status of the services
- Who:
  - System administrators
  - Software administrators
  - Help Desk and computer center personnel
  - Management
  - Developers (the most curious ones)
  - End users

NGOP Project Phases (since last HEPIX)

09/2001 - 12/2001: First production release. Different sets of configuration for operators and system administrators ("roles"). Interfacing Remedy Help Desk System.

12/2001 - 03/2002: Deployment of Web Admin Tools that allows modification of hosts/clusters "known-status" via Web and schedule email/Remedy tickets generation startup /shutdown. Automatic propagation to NGOP monitor "known status" modification. New options addition to agent action. XML configuration language extension "If" and "Else" to describe roles.

03/2002 – : Installation of designated server machine for NGOP Central Services. Web Admin Tools expansion and improvements. URL Agent - agent that is watching the presence of the web page and its content. NGOP Monitor improvements.

Scope of NGOP deployment

- Production Installation:
  - Monitoring a total of 705 nodes
  - ~1015 Monitoring Agents:
    - 24 Ping Agents
    - 3 URL Agents
    - 492 OS Health Agents (IRIX, SUN, Linux)
    - 466 Swatch Agents (Linux)
    - ~30 Custom Agents (FBS Agent, Enstore Cron Agent,…)
  - Number of Monitored Objects ~15,000
  - About 10 instances of “NGOP monitor” (GUI) are running simultaneously.
- Test Installation (CDF Analysis Farm Cluster)
  - Monitoring a total of 45 nodes

New Features
(URL Monitoring Agent)

URL Monitoring Agent scans given URL's for reachability and content

- Uses Monitoring Agent API
- Behavior is defined by XML configuration

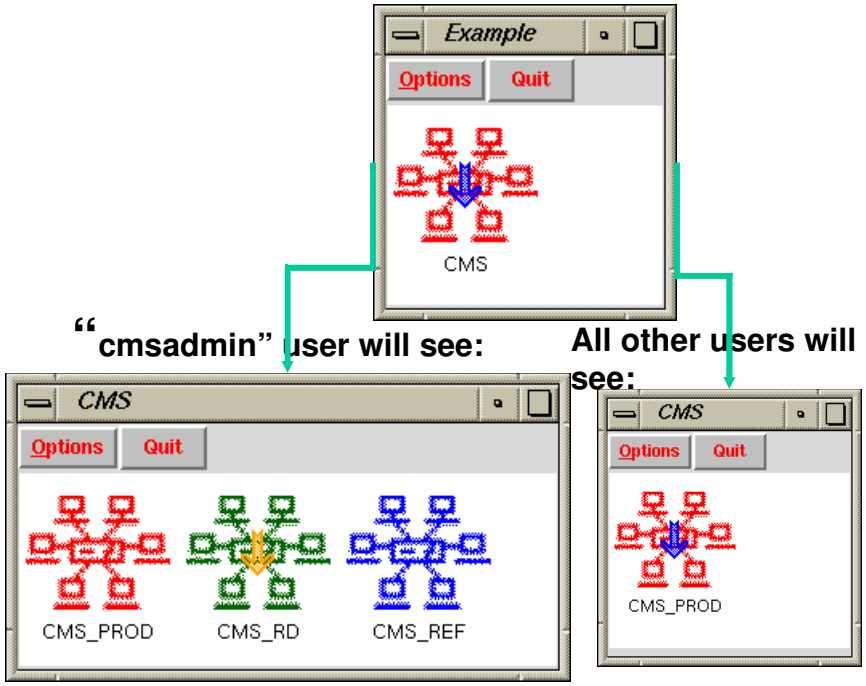
```
<System Name="www" Cluster="WWW">
    <MonitoredElement Name="mainpage" Type="webpage" Host="www0">
      <URLFailRule ActionLocal="email_cdweb" href="http://www.fnal.gov/"
                   RegExp="Fermilab" />
    </MonitoredElement>
    <MonitoredElement Name="telephone" Type="webpage" Host="www0">
      <URLFailRule ActionLocal="email_cdweb" href="http://www-tele.fnal.gov/cgi-
      bin/telephone.script?format=text&amp;name=wolbers&amp;which=last&amp;e
      xact=&amp;output=name“ RegExp="WOLBERS"/>
    </MonitoredElement>
</System>
```

- Can check for particular entry on the web page
- Performs several retries
- Verifies that web server is up before generating event and action
- Runs on central node

New Features

(Configuration Language Expansion)

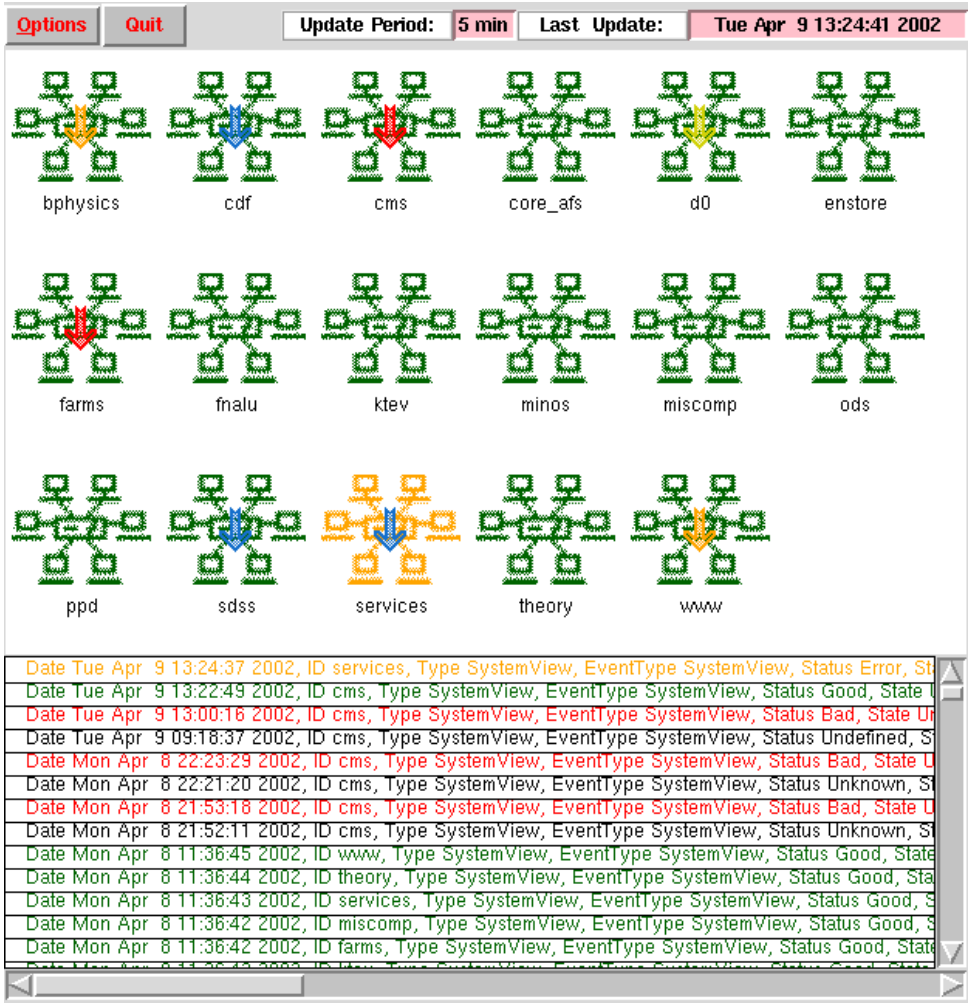
- Introduced conditions (***<If>, <Else>***)
  - simplified handling of various fragments of XML that are relevant for a particular “role”
  - “role” can be defined in any part of configuration files by using ***<If>*** and ***<Else>*** XML tags
- Role reflects requirements of a particular group of people:
  - Cluster administrators (CMS, Farm, Enstore), operators, default
- Role defines what subset of configuration will be seen by particular user and what rules will be used to define the status of the monitored objects



  - Only “cmsadmin” will see CMS R&D and CMS Reference system views:

```
<SystemView ID=“CMS”>
        <SystemView ID=“CMS_Prod”/>
        <If Cond=“{%Role}”==“cmsadmin”>
                <SystemView ID=“CMS_Ref”/>
                <SystemView ID=“CMS_RD”/>
    </If>
</SystemView>
```

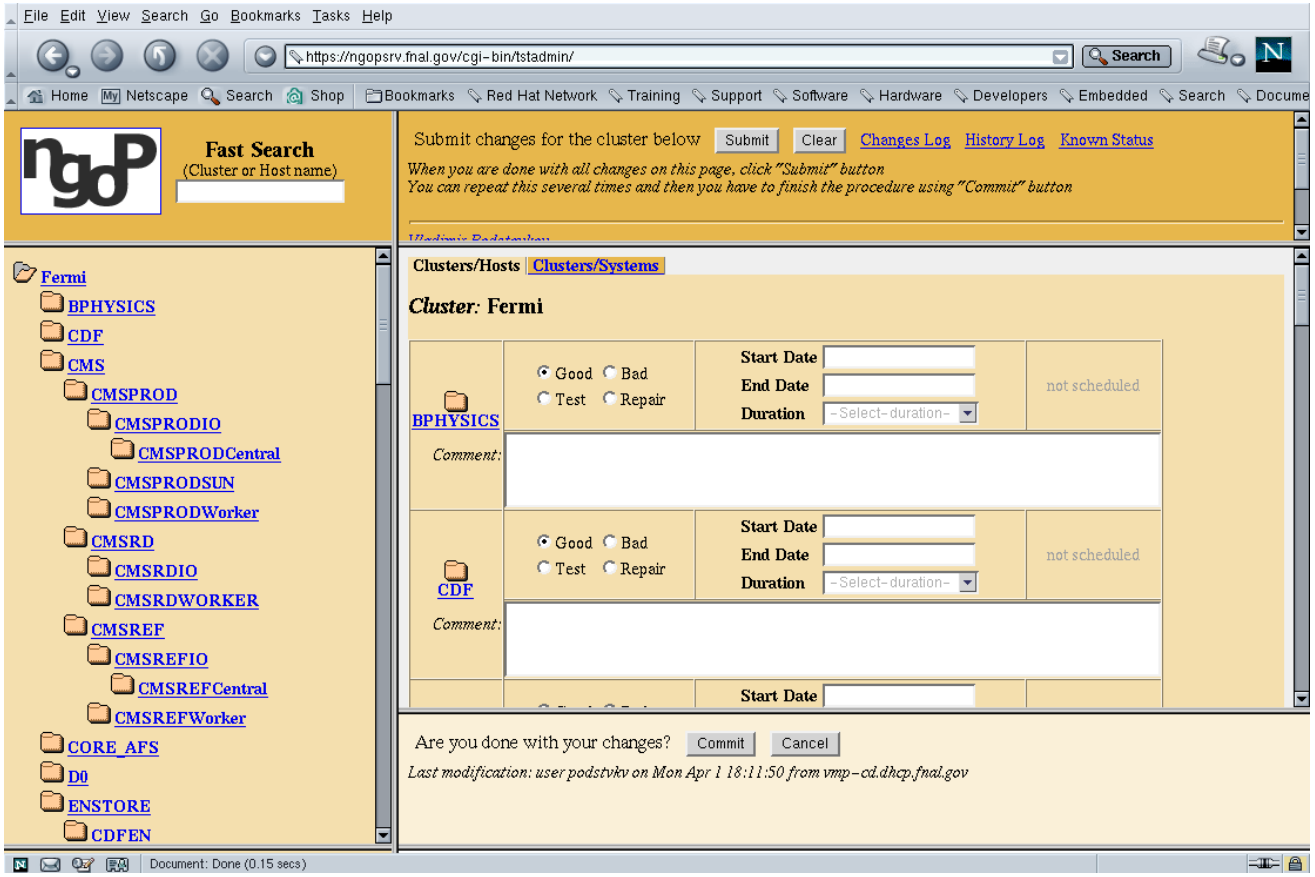
New Features
(NGOP Monitor)



- Automatic propagation of “known status” modification
- Increase of the speed of events handling
- “Time Stamp” Indicator (Last update from NCS)
- Modification of color setting dialog
- Modification of default monitor display layout

Web Admin Tool
(Known Status)

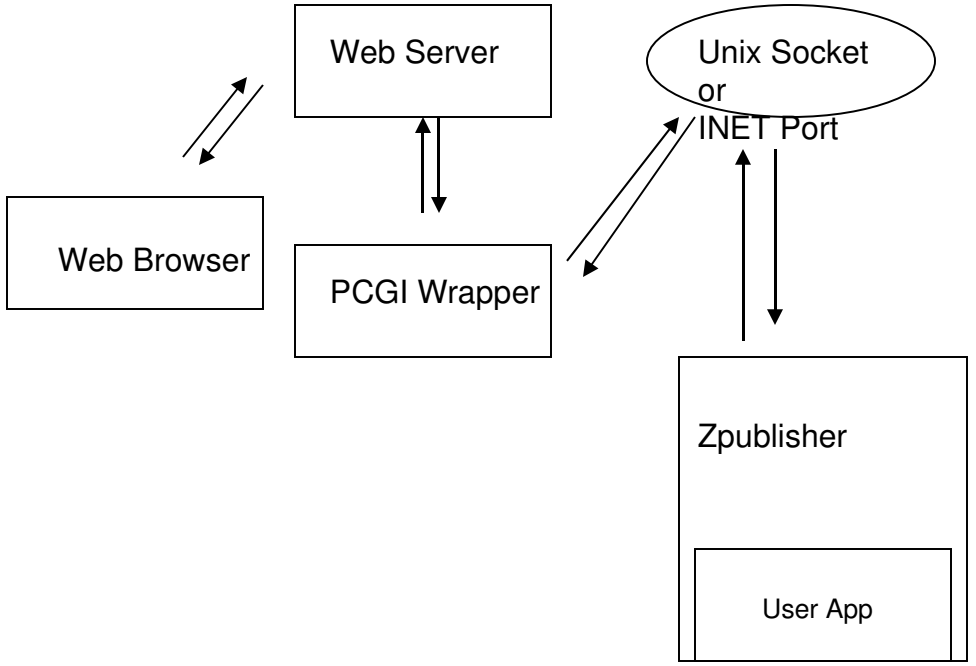
- Secure access by authorized users
- Displays hierarchy of Cluster/ Hosts or Clusters/Systems
- Allows changing status of any object or host service type
- Allows scheduling out of service time period (start date, end date/ duration and comments)
- Provides Search
- Keeps change log
- Displays all out of service objects
- Provides multi-users locking mechanism



Known Status Interface Implementation

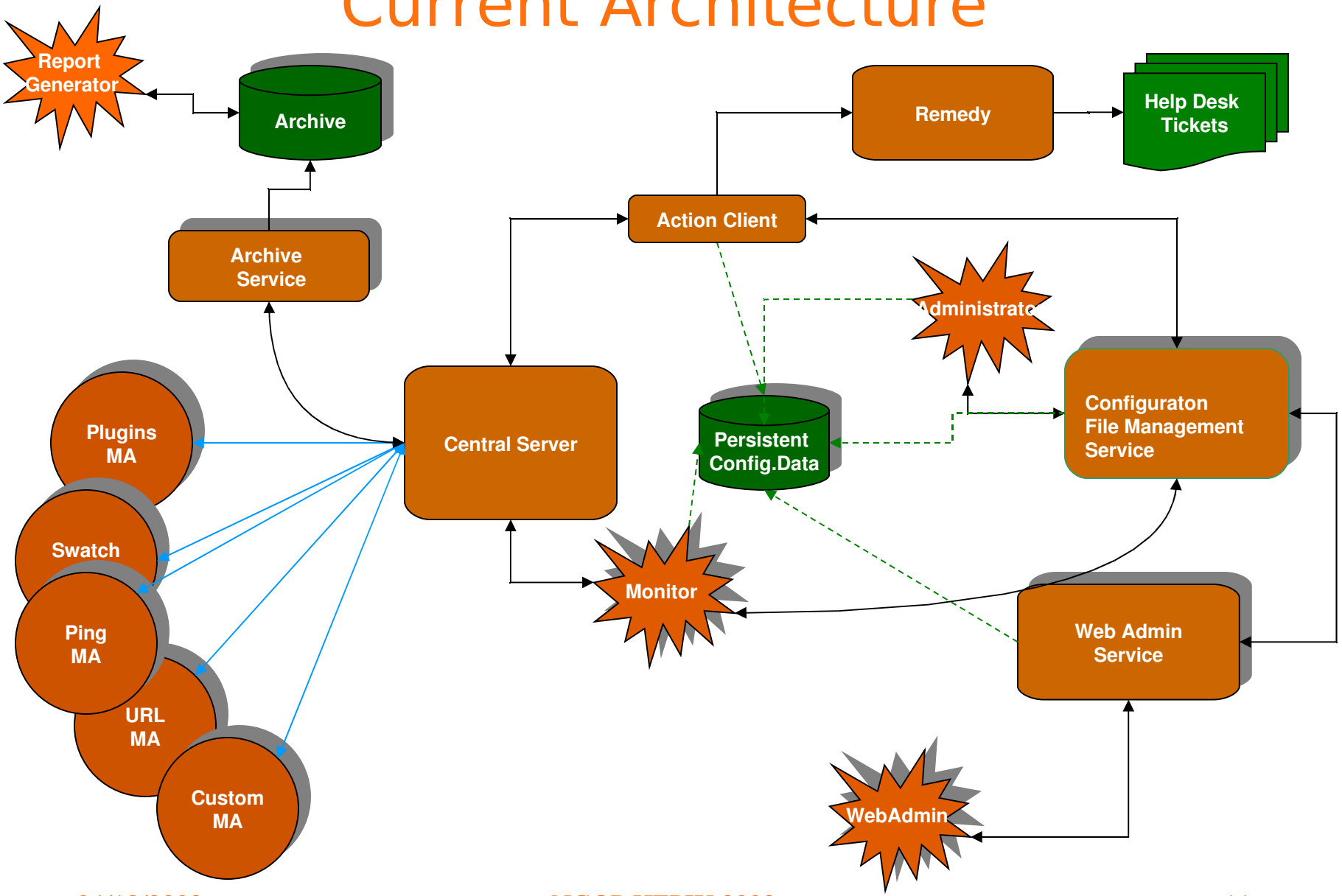
(Zope Technology)

- PCGI(persistent CGI) - Circumvents launch overhead by using pcgi-wrapper and sending request to PCGI Application via unix socket



- Zpublisher – web interface for python objects

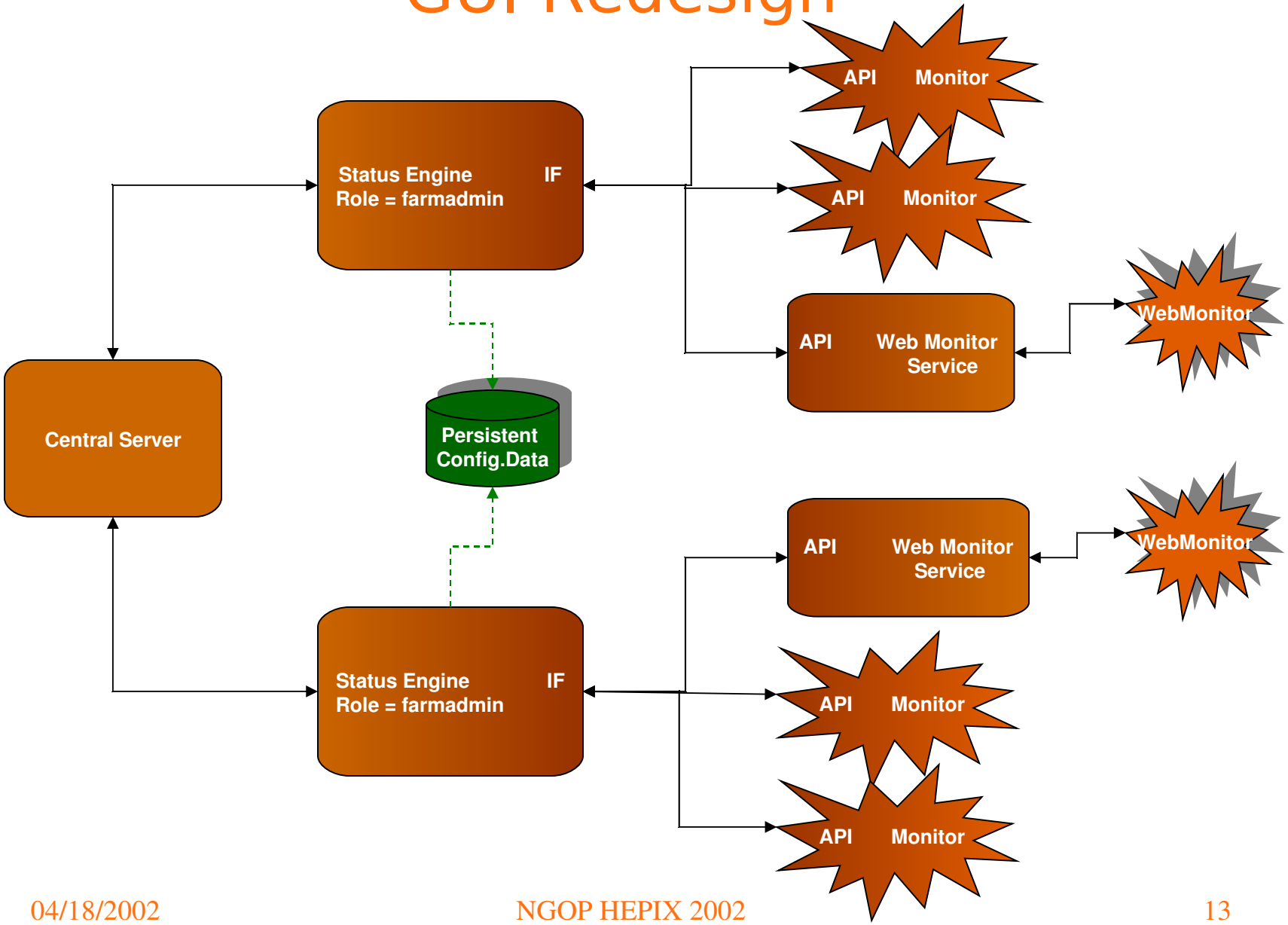
Current Architecture



Why do we need a new GUI?

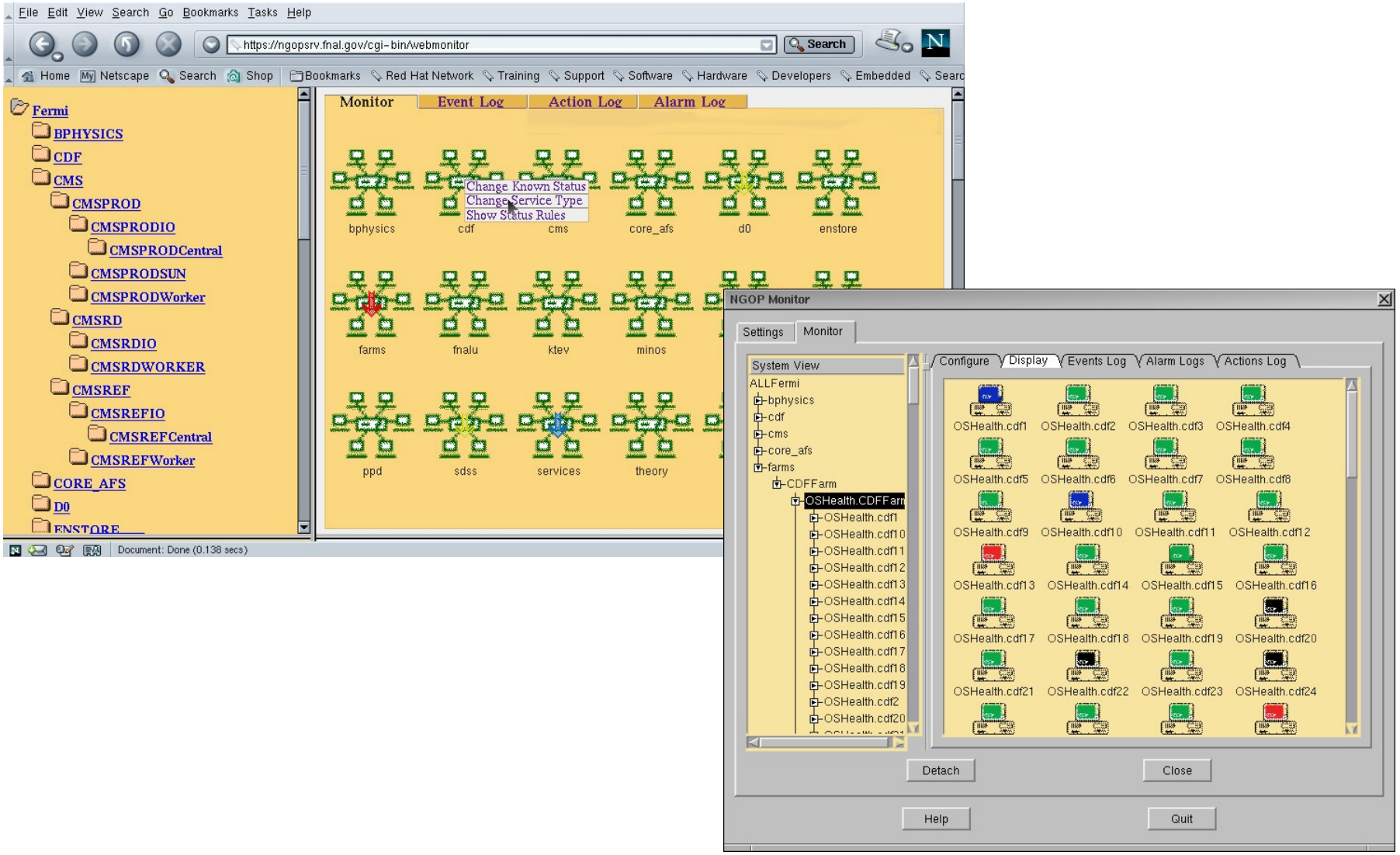
- NGOP monitor has some major deficiencies
  - Large memory requirements
  - Sometimes CPU intensive
  - Shows its own sequence of events that depends on the start time, acknowledged and deleted events and alarms
  - Generates separate window for each level of hierarchy
  - Plain ugly
- We have some new requirements
  - Access via Web
  - Ability to “clone” monitors: identical view of all events if monitors are started by the same user with the same role

GUI Redesign



GUI New Look

(work in progress)



Summary

- A comprehensive framework was created to fulfill monitoring needs of system administrators, operators and end users.
- The current version has proven itself in helping to increase the systems uptime and efficiency.
- The work started to improve NGOP monitor and provide same functionality via Web.
- NGOP interface to the Fermilab Remedy Help Desk system provides means for possible future complete automation of the notification process.
- NGOP could be used as a GRID fabric component as a low level site monitoring tool

More Information can be found at:

URL: http://www-isd.fnal.gov/ngop/

e-mail: ngop-team@fnal.gov