Porion a new Build Manager

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FOSDEM 2022
CI/CD DevRoom
Why a new build manager?

- Used Jenkins during 8 years:
  - 30 projects, 8 build nodes (x86, ARM, Mips)
  - Jenkins is great but...
    - It is slow and uses 1.3Gb memory (RSS)
    - Requires Java on build nodes
    - Regular security vulnerabilities
- Why not:
  - Get rid of Java
  - Make a safer design in Ada
Meaning of Porion

- « porion » comes from north of France coil mine
- « porion » is the master miner (maître mineur)
- « porion » means leek (« poireau » in French)
- « porion » does not work:
  he sits down and waits for others to do the job!
Porion concepts

- Projects: defines what must be built
- Recipes: describes how to build the project
- Build nodes: executes the build recipes
- Builds: data and results produced by a build
Porion features

- Several build recipes per project branch:
  - Different build nodes (OS, CPUs)
  - Different build options (coverage, release, ...)

- Log filtering:
  - Pre-defined rules (configure, make, mvn, gprbuild)
  - Customizable rules

- Consolidated project view:
  - Compute a global build status on a project (takes into account every branch and every recipe)
Some security aspects

- A build manager has access to sensitive data:
  - Sources files (proprietary projects)
  - It has access to API secret keys
  - It knows some credentials (checkout sources, connect to build nodes)
  - It knows the secret keys to sign or to publish
Safe design with Ada

- Ada is designed for safe & critical systems:
  - 40 years of evolutions: Ada 83, 95, 05, 12, 22

- Some benefits of Ada:
  - Strong typing to prevent programming errors
  - No code injection, no buffer overflow
  - Pre & post conditions to enforce API usage

- Other benefits of Porion architecture:
  - Uses Ada Web Application security and permission framework
  - Uses Ada Keystore to store sensitive data
Porion architecture

Web Server

- porion-server
  - Ada

Command Line

- porion
  - Ada

Build Nodes

Filesystem

- config
- tmp
- logs
- projects

- Ada Keystore
- SQLite Database

https://gitlab.com/stcarrez/porion
Porion installation

- **Installation from sources**
  
  ```
  git clone --recursive https://gitlab.com/stcarrez/porion.git
  cd porion
  ./configure
  make
  sudo make install
  ```

- **Installation with Debian package**
  
  ```
  sudo apt-get install porion-server
  ```
Porion setup

- Need a workspace:
  - For the database
  - For the build area
- Choose workspace area and setup with:

  `porion init workspace-dir`
Porion build node setup

- Each build node need a space for the build area
- Need only an ssh access with private/public key (no password)
- Register the build node with an URI
- Ssh scheme URI to register a build node
- Optional list of commands (rules) that must be checked on the node

```
porion node -R git,make,mvn,gprbuild,lcov,cloc \
ssh://porion@poseidon/home/porion/build-dir
```

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Adding a project

- Add a project and tell how to get the sources
  - Tar, Zip file path
  - Git URL

```
porion add https://github.com/Ada-France/aflex.git
```

- Porion creates a build recipe for the project:
  - Identify GNU tools (./configure, make)
  - Identify Maven
  - Identify CMake
  - Identify npm

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Updating recipes

• **Add a build step to a recipe**
  
  ```
  porion step aflex make install
  ```

• **Updating a build step**
  
  ```
  porion step --update 3 aflex sudo make install
  ```

• **Build**
  
  ```
  porion build aflex
  ```

• **List and information**
  
  ```
  porion list
  ```
  ```
  porion info aflex
  ```
Porion identification string

- Easily identify a project, branch, recipe or build
- General format:
  \(<project>[#<branch>][~<recipe>][@<node>]\)
- Build identification:
  \(<project>:<build-number>\)

  - aflex
  - aflex:8
  - aflex~main
  - aflex~netbsd
  - aflex#debian-gnat-9
  - aflex~beaglebone@beaglebone

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Porion Web Server

- Implemented on top of AWA and AWS:
  - Ada Web Application (Web app security framework)
  - Ada Web Server (Pascal Obry, Dmitriy Anisimkov)
- Provides high level dashboard overview
- Responsive UI for desktop, phones, tablets,…
- Server UI still under construction

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Conclusion

• Performance :
  - Web server memory reduced from 1.3Gb to 50Mb
  - Faster Web requests
  - No need for Java on build nodes

• Next development steps :
  - Notification of build results
  - Full editable configuration in Web UI
  - Start/stop build nodes (VM or dynamic instances)
Questions

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