Adopt, Adapt, Reuse: C-DeVL (CVL) Project

Sharing and reusing outputs from ARDC funded domain projects

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www.cvl.org.au
What is the CVL?

The Researcher view:
A single place where you can access your characterisation data and software tools, in a user friendly format.

Project (C-DeVL) view:
A program of work to connect Australian Characterisation instruments with data management environments, tools and analysis pipelines on the Australian research cloud.
Contents

- **Reusable Components** - what can you reuse now?

- **Federation** - how are we re-deploying across Australia?
  - Technical
  - Procedural and Operational
Reusable Software and Infrastructure

- Strudel and Strudel Web
- MyTardis (www.mytardis.org)
- AuthZ (authentication certificates)
- Ansible scripts for all services/applications
- Data repatriation scripts from ANSTO Australian Synchrotron
- Software containers
Strudel Web & Desktop

M3 Standard Desktop

- Launch a desktop
  - Nodes: 1
  - Processors: 3
  - Memory (GB): 13
  - Time (hours): 4

- Running desktops
  You currently have no running desktops.

- Server messages
  Any messages from the server will be displayed.

CVL | Characterisation Virtual Lab

MONASH University | MASSIVE | ANSTO | AMMRF | The University of Queensland | Sydney | University of Western Australia

Strudel Web

Send feedback
Strudel Web & Desktop

- Web interface
desktop.cvl.org.au

SSH AuthZ

LDAP
Job Control

Web interface or desktop appl

Strudel Web & Desktop

Guacamole

TurboVNC (Strudel Desktop)
Strudel Deployments

- University of Queensland
- University of Western Australia
- Central Queensland University
- NCI
- Pawsey
- Julich
- TERN
- TPAC
- Swinburne University
- University of Melbourne
- University of Southern Queensland
CVL Desktop Unique Users per month (CVL@MASSIVE) 08/2016 - Current

Total cumulative desktop sessions: 41,206

Unique users: 643
MyTardis is a data management system, developed by Monash, for instrument data. The Monash instance of the MyTardis service is called Store.Monash.
Federation Activities
Federation

- History and Architecture
- Principles (What are we trying to achieve?)
- Procedures/Processes (How are we going to achieve it?)
- Technical Implementation
CVL “Cluster in a Box” Deployment Technology
Timeline of development and reuse
Where are we Adopt Adapt and Reusing (CVL nodes)?

CVL@MASSIVE (source model)
- In production
- Containerisation of software stack in progress

CVL@UQ integrated with existing cluster infrastructure (Awoonga)
- Strudel and Strudel Web
- AuthZ linked to cvl.org.au
- Repository linking started

CVL@UWA on Pawsey cloud (source model)
- Closely match to lead node
- Full software stack

CVL Windows prototype developed at University of Sydney for EM Workbench

CVL@UoW (planned replication of CryoEM workbench)
Federation Architecture

Governance

Governance and funding

Lead node

Coordinates the development of a consistent user experience

All Federation Nodes

Nodes collaborate and develop a consistent user experience and agree to deployment

Individual Nodes of the Federation

Node deploys and operates

Contributes specialised capability
Detailed View

Governance

Characterisation Informatics SC
Funder(s)

Lead node

Web presence
Sign up / AAF user management
Consistent User Experience

CVL build coordination
Coordination and Reporting

All Federation Nodes

Documentation Software Contributions
Support & Helpdesk Operations
CVL build source

Node

Deployment Specialised Capability
Types of desired CVL nodes we’ve identified (Technical)
### Example Federation Principles

<table>
<thead>
<tr>
<th>Principle/Feature</th>
<th>Status</th>
<th>Future Work</th>
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<tbody>
<tr>
<td>Single user portal</td>
<td>Website is up</td>
<td>Forking of docs.massive.org.au to docs.cvl.org.au and adding of champions materials</td>
</tr>
<tr>
<td>Single sign up/registration (AAF authenticated)</td>
<td>Resource allocation system under development (CRAMS)</td>
<td>Implement CRAMS for CVL@UQ and others</td>
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<tr>
<td>Single help desk</td>
<td>NeCTAR model investigated. <a href="mailto:help@cvl.org.au">help@cvl.org.au</a> being implemented</td>
<td>Define SLA and partner contributions. MOU</td>
</tr>
<tr>
<td>Single software stack</td>
<td>Repository created, packages being built nationally,</td>
<td>Rebuild existing software to support different infrastructure</td>
</tr>
<tr>
<td>Single desktop user interface and branding</td>
<td>Portable desktop configuration begun. CVL from source nodes have consistency</td>
<td>Develop production ready desktop configuration for alternate CVL model</td>
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Federated Research Software Stacks

- Procedures for contributions have been developed ([link](https://github.com/Characterisation-Virtual-Laboratory/CharacterisationVL-Software))
- A public repository is now available for container build scripts
  
  [https://github.com/Characterisation-Virtual-Laboratory/CharacterisationVL-Software](https://github.com/Characterisation-Virtual-Laboratory/CharacterisationVL-Software)
- 31 Packages have been committed to the repositories (and growing)
- Pre-built containers are available from a public repository (Singularity Hub)
- Ongoing work to accommodate disparate clusters

What communities (new and/or existing) are important to you?
Summary

● Reusable Components
  ○ Strudel Desktop and Strudel Web (desktop.cvl.org.au)
  ○ MyTardis (www.mytardis.org)
  ○ AuthZ (https://github.com/monash-merc/ssh-authz)
  ○ Software containers -
    https://github.com/Characterisation-Virtual-Laboratory/CharacterisationVL-Software

● Federation
  ○ www.cvl.org.au
  ○ https://github.com/Characterisation-Virtual-Laboratory
How do we do Federated Reporting?

- **Central**
  - Researchers (Institutional affiliation)
  - Projects (FOR and SEO)

- **Nodes**
  - Number of desktops
  - Distribution of times
  - Number of denied requests
  - Data volumes
  - Repository usage

What other metrics are important to you and your funders?