VOLTTRON 10
Modular updates

Craig Allwardt
Chandrika Sivaramakrishnan
Software Developers

PNNL-SA-175415
Recap of what is changing between 8.2 and 10.0.0
VOLTTRON 8.2

• Single repository for all components
  ▪ core, services, utilities, and agents
  ▪ Base classes for customized (Historian, Market, Drivers) agents
  ▪ Contributed code – some of which we don’t have access/resources to test and keep up to date.

• Different code formatting in different parts of the repository

• Internal JIRA board used for tasking
VOLTTRON-10.0.0

- Platform in a single repository (https://github.com/VOLTTRON/volttron-core)
- Service agents in their own repositories
- Pluggable services and auth
- Standardized agent repositories
- New repositories for base classes determined as necessary (Historian base, Market, etc)
- Testing Repository
- Tooling – Github actions for CI
- Base docker image from volttron-core
- Transparency, all issues available to look at on GitHub (https://tinyurl.org/volttron-board)
VOLTTRON Core – Current state

• Modular VOLTTRON alpha version available from PyPi
  ▪ pip install volttron (for now this will install latest develop version)
  ▪ Contains core volttron – server, client, and utils
  ▪ Uses github actions for automated testing
  ▪ Automated PyPi release – any push to develop branch would create a new alpha wheel to PyPi

• Next step:
  ▪ Work towards an official 10.0.0 release by end of October
  ▪ Automated testing core agents before official release
VOLTTRON agents vs libraries

Agents:
- Have source code + data
- Data is stored in $VOLTTRON_HOME
- Can have multiple instance of same agent
  - All instances share same source code
  - Unique data directory – i.e. unique vip identity and agent directory
- Install using vctl install command
  - Installs source code in python (virtual) environment
  - Creates unique vip identity and agent directory
- Naming convention – volttron-<agent name>
VOLTTRON agents vs libraries

Libraries:
- VOLTTRON libraries are source code used by other agents.
- Installed in python (virtual) environment
- Doesn’t have any data associated with it
- Naming convention - volttron-lib-<library name>
  - volttron-lib-base-historian, volttron-lib-modbus
- `pip install <library name>` Similar to installing any third-party library
  - `pip install numpy`
  - `pip install volttron-lib-base-historian`
- In most cases these will be installed by default when installing an agent
Standardized Agent Repositories – Current Status

• Initial agents ported to modular design
  ▪ Listener agent - https://github.com/VOLTTRON/volttron-listener-agent
  ▪ Historian agent
    ✓ Base libraries –
      • https://github.com/VOLTTRON/volttron-lib-base-historian
      • https://github.com/VOLTTRON/volttron-lib-sql-historian
    ✓ SqliteHistorian - https://github.com/VOLTTRON/volttron-sqlite-historian
  ▪ Platform driver agent
    ✓ volttron-platform-driver - https://github.com/VOLTTRON/volttron-platform-driver
    ✓ volttron-lib-fake - https://github.com/VOLTTRON/volttron-lib-fake
Standardized Agent Repositories – Current Status

- Pre-commit hooks for PEP 8 and yaml/json formatting.
- Poetry build
- Github workflow integration for
  - Static code analysis done using codeql
  - Automated agent testing on commit using test utilities at [https://github.com/VOLTTRON/volttron-testing](https://github.com/VOLTTRON/volttron-testing)
  - Creates develop wheels and pushed to PyPi
Task progress

• Completed tasks
  • Published volttron alpha version to PyPi
  • Ported ListenerAgent, SqliteHistorian, PlatformDriver agent with fake driver
  • Test framework repository with mock server for unit testing

• In progress
  • Authentication abstraction
  • Add platformwrapper to test repository for integration testing
  • Update documentation

• Next steps
  • Port driver libraries – DNP3, BACnet
  • Port – Postgres/TimescaleDB historian, Platformweb, Forwarder,
  • 10.0 Release – End of October
Questions? Comments?

- [https://tinyurl.com/volttron-board](https://tinyurl.com/volttron-board) or [https://github.com/orgs/VOLTTRON/projects/6/views/5](https://github.com/orgs/VOLTTRON/projects/6/views/5)
- [https://github.com/VOLTTRON/volttron-core](https://github.com/VOLTTRON/volttron-core)

Get involved
- Create an issue, provide guidance on your use case