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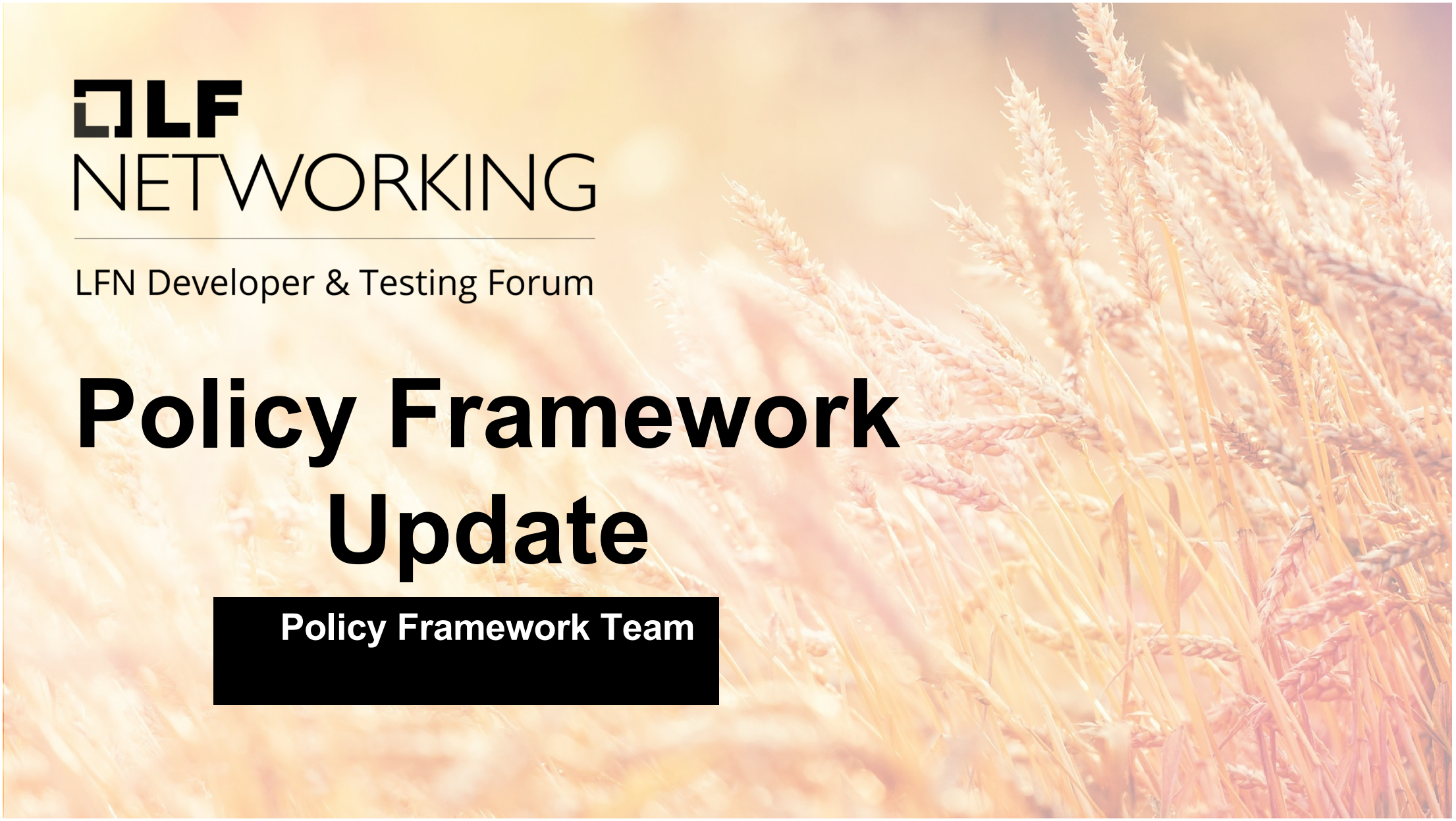
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Policy Framework Update
Policy Framework Team

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Contents

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- Jakarta Achievements
- Kohn Items
- Summary

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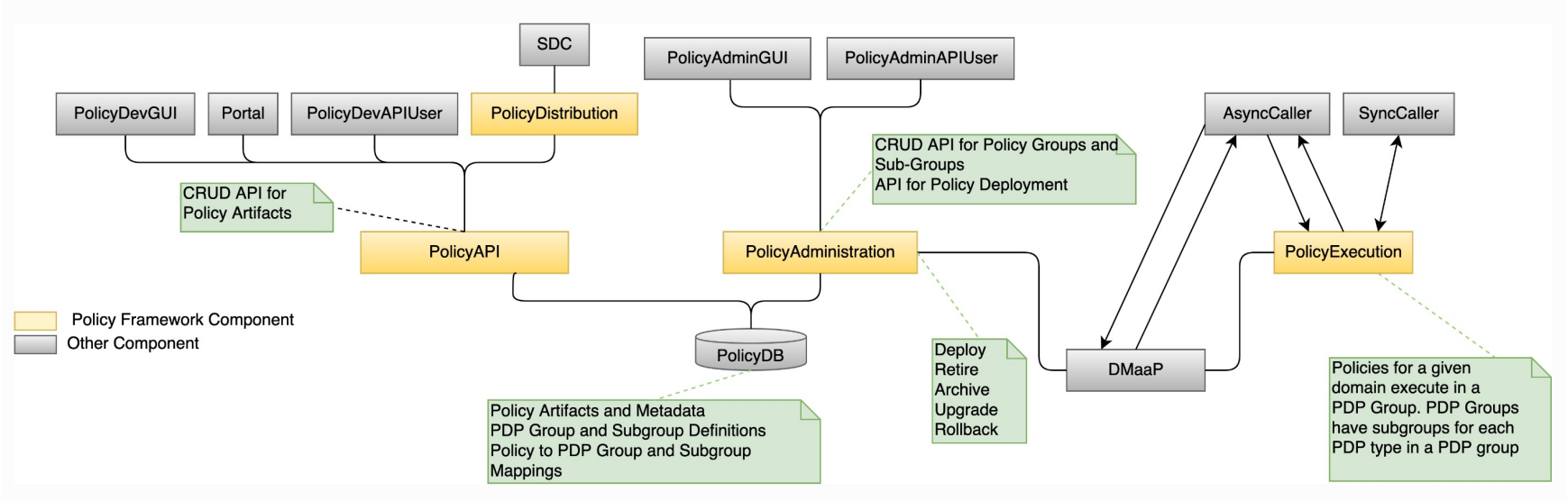
Jakarta Achievements

The ONAP Policy Framework

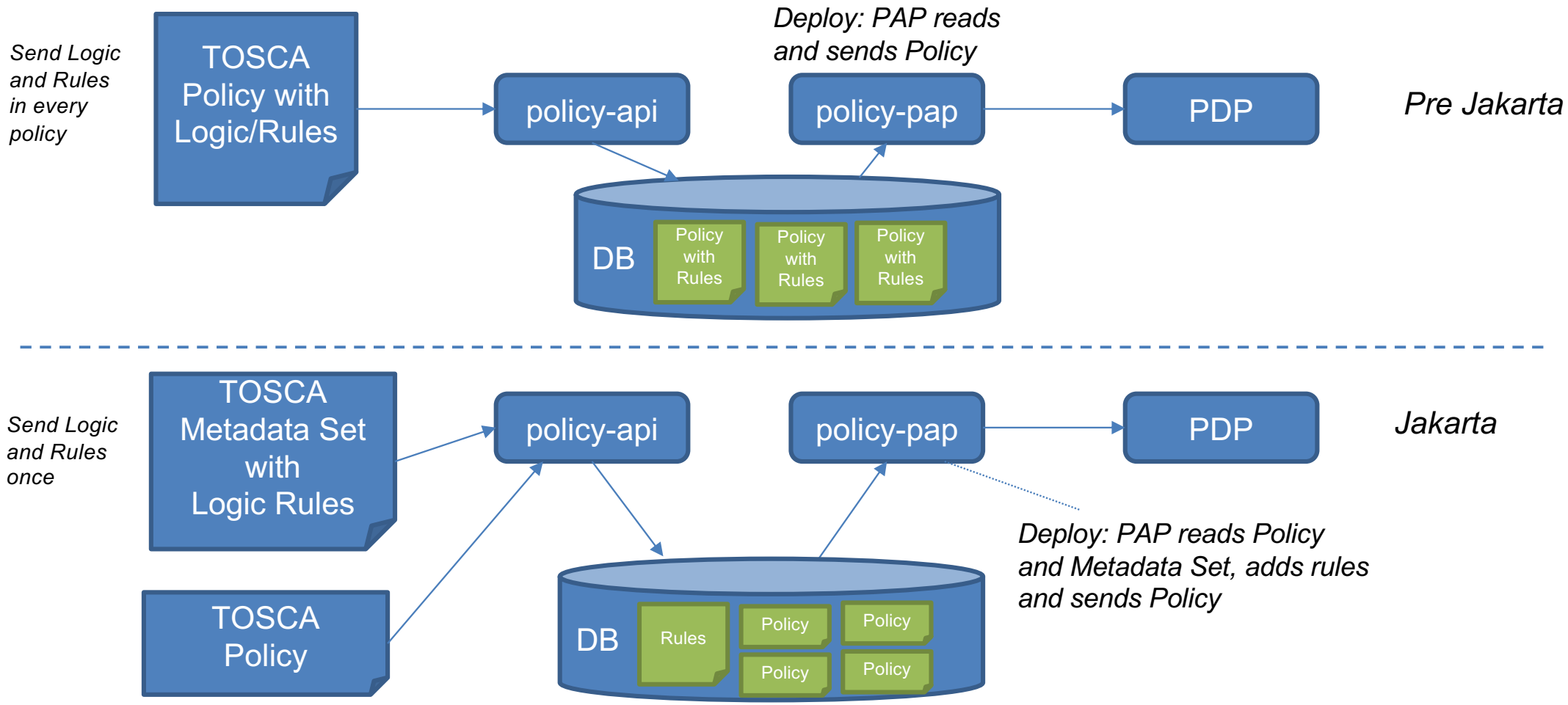


- Architecture and implementation stable
- CII Silver badged for many releases
- Incremental improvement and addition of features

Metadata Sets for Policy Types

- A Policy Type defines the parameters that a policy can take
- A Policy defines the values for those parameters
- Different rule sets can be developed to implement a policy type for different engines and different environments
  - A metadata set allows engine-specific rule sets to be associated with a policy type
  - When a policy is executed, a given policy engine uses its specific rule set to execute the policy

Metadata Sets



Improved Monitoring

- Introduction of Prometheus for monitoring Policy components
- Necessary alerts can be easily triggered and possible outages can be avoided in production systems.
- Expose application level metrics in policy components.
  - An end user can plug in a Prometheus instance
  - Listen to the metrics exposed by policy components
  - Raise alerts
  - Display on a Grafana dashboard for monitoring by an operations team
- Provision of sample Grafana dashboards for policy metrics

Control Loop in TOSCA LCM (ACM)

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- CLAMP was moved to the Policy project in the Istanbul release
- CLAMP provides a Control Loop Lifecycle management architecture
- The Control Loop LCM architecture was evolved to provide
  - Abstract Automation Composition Management (ACM) logic
  - An Automation Composition definition in TOSCA
  - Isolates Composition logic logic from ONAP component logic
  - APIs allow integration with other design systems as well as 3PP component integration.
- The current PMSH and TCS control loops are migrated to use an Automation Composition approach
- Support for Automation Compositions in SDC is also introduced
- Separate session on CLAMP/ACM tomorrow at 11:00

Policy Handling Improvements

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- Improve the policy/api and policy/pap readiness probes to handle database failures
- policy/api and policy/pap Kubernetes pods are marked ready only if the policy database pod is ready
- Migration of Policy Framework components to Springboot to support easier handling, configuration and maintenance. The migrated components are policy/api, policy/pap, policy/clamp, and policy/gui.
- Enhanced health checks on drools-pdp to report on stuck applications. This together with enhanced liveness probes self-heals the unresponsive pod in such condition by restarting it.
- Drools PDP has been upgraded to the latest available stable version: 7.68.0.Final.
- Extend CDS actor model to decouple VNF handling from the vFirewall use case.

Configurable RDBMS

- Support to allow any JDBC-compliant RDBMS to be used as the Policy Framework dabtabase
- Some components in the Policy Framework can be configured to use any JDBC-compliant RDBMS
- Configuration files are supplied for the Postgres RDBMS
- MariaDB remains the default RDBMS for the Policy Framework in ONAP
- Remaining components will be supported in Kohn
- Further testing will be carried out using Postgres in Kohn and future releases

System Attribute Improvements

- Transaction boundaries on REST calls are implemented per REST call on applications migrated to Spring (policy/api, policy/pap, and policy/clamp)
- JDBC backend uses Spring and Hibernate rather than Eclipselink
- All GUIs are now included in the policy/gui microservice
- Documentation is rationalized and cleaned up, testing documentation is now complete
- Scripts are added to make release of the Policy Framework easier
- Support for upgrade and rollback, starting with upgrade from the Istanbul release to the Jakarta release

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Kohn Items

Database and TOSCA (POLICY-3642)

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- Investigation of a better approach for TOSCA handling
- TOSCA artifacts handled as atomic entities in the system
- Introduction of TOSCA namespaces
- PoC in progress

Component Redundancy (POLICY-3751)

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- Check that Policy components are redundant, that multiple instances can be deployed
- API and PAP are verified as being redundant
- PDPs (Drools and Apex) are being verified
- CLAMP ACM components also to be verified
- If components are not redundant, work to achieve redundancy will be assessed

Non Functional Improvements (POLICY-4045)

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- Port security fixes to Honolulu
- Re-activate CSIT tests on Honolulu and Istanbul branches
- Ensure all parameters in charts have default values
- Grafana dashboards for all components
- Upgrade unit tests from Junit4 to Junit5
- Support build of Docker images for other Linux flavours

XACML-PDP Improvements (POLICY-4049)

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- Optimization for multiple requests
- Better support for time ranges
- Improve local storage of Policy Types
- Support for wildcards in monitoring policies
- Size limits on Operations History table

Drools PDP/Applications Improvements (POLICY-4049)

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- Full support for JMX
- Conversion of stateful set to deployment for OOM
- CSIT test cases for application metrics
- Add thread dump for hung sessions
- Extended Prometheus support for operations
- Support for distributed locking with external databases
- Support Postgres Database

CLAMP ACM Improvements (POLICY-4053)

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- Improve REST API conventions and structure
- Allow updates on existing compositions
- Improve composition state handling for participant loss and re-connect
- Improve repository handling in K8S participant
- Replace the CLAMP gating test with an ACM based test
- Composition testing and sbetter sample compositions

Asynchronous Messaging (POLICY-4121)

- DMaaP
  - Support for the DMaaP MR client changes for the Strimzi backend
- Kafka
  - Policy Framework can be configured to use either DMaaP or Kafka directly
  - Addition of Kafka client code in the common Policy Framework library
- Verification
  - PAP/PDP and ACM interactions that use asynchronous messaging are verified with both DMaaP and Kafka

Code Refactoring for GUI (POLICY-4122)

- There are two microservices for CLAMP
  - The CLAMP ACM backend used for compositions
  - The original CLAMP backend that forwards GUI requests to CLAMP ACM and to policy API
- The GUI microservice will be update to access CLAMP ACM and Policy API directly
- Code transferred from CLAMP backend to GUI microservice
- CLAMP backend microservice retired

Use of OpenAPI for API and Contract test generation (POLICY-4123)

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- Currently, OpenAPI (Swagger) documents generated from annotations in the code.
- This approach could be reversed so that the APIs and the stubs for contract testing are generated from the OpenAPI specification
- Investigation to see if OpenAPI specifications can be source documents and are used to generate the APIs and the Contract Testing stub
  - Generate APIs from OpenAPI specifications
  - Generate Contract Testing stubs from OpenAPI specifications
  - Ensure that all unit tests and automated integration and S3P tests still pass when the OpenAPI approach is reversed

Add Metrics for SLA Measurement (POLICY-4124)

- Specify SLAs (Service Level Agreements) of the Policy Framework
- Produce Prometheus metrics so that SLA compliance can be measured
- This enables observability and performance management
- Tasks:
  - Add Prometheus counters for measuring SLAs on Policy Framework and CLAML/ACM REST endpoints
  - Add Prometheus counters for measuring PDP performance SLAs
  - Verify that the counters are being produced

Improved Testing (POLICY-4125, POLICY-4126)

- The Policy Framework has test suites for stability, scalability, security, and performance (S3P)
- These tests are currently executed manually, which means it is only practical to run them at the end of each release
- Scope
  - Automate the current S3P tests as much as possible and run them as CSIT tests
  - Add contract tests to the CSIT tests
  - Write new tests to verify that SLAs are being met
  - Add SLA tests to the CSIT tests

Documentation Improvements (POLICY-4127)

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- Full review of the Policy Framework documentation
- Full check of all tutorials, examples and demos to make sure they are still correct
- Streamlining of Documentation
- Scope not fully set yet

Future Items (Not planned yet)

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- CLAMP ACM participant for CDS and CPS
- New PDP that runs the OPA (Open Policy Agent) policy engine?
- Others?

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Summary

Summary and Thanks

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- The Policy Framework is stable, with improvements being added as the framework evolves
- Challenges that remain are being addressed in Kohn and subsequent releases
- Thanks to the members and committers of the Policy Framework team for their commitment and professionalism
- Thanks to the participating companies for their support, particularly AT&T, Bell Canada and Ericsson
- Thanks to all our users for continuing to use the Policy Framework and to provide us with valuable feedback


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