GlassFish v2
Self Management

- **Sankara Rao Bhogi**

- –Presentation to AS user experience meeting 11th Oct 2006
- –http://glassfish.dev.java.net

Agenda

- Overview
- Tools Support
- GlassFish v2 planned features
- Resources

Define Self Management?

- JMX Standards based framework to automate the tuning/configuring/healing (Self Management) with in the appserver without user manual intervention at runtime

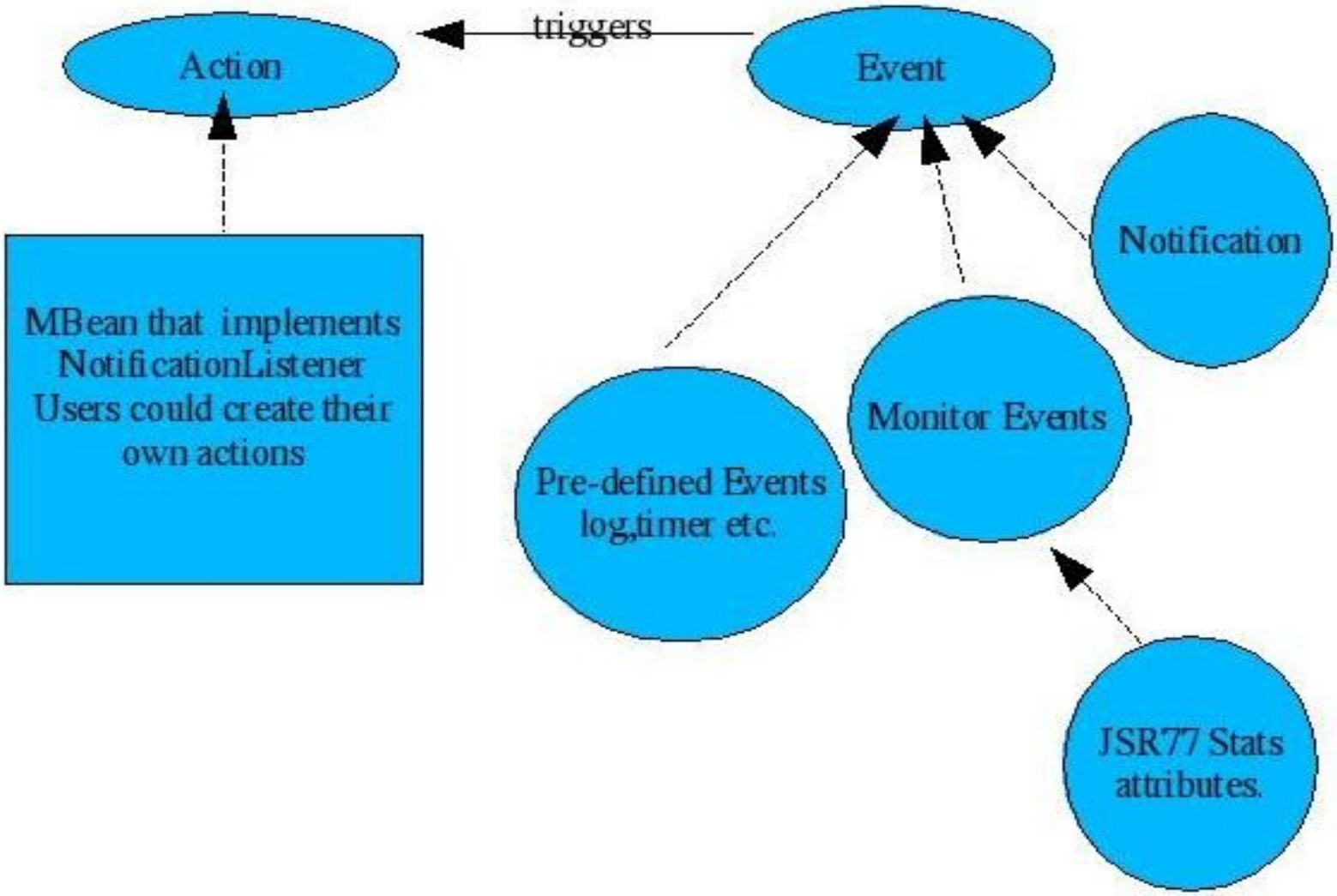
Framework Summary

- Built on JMX
- Custom MBean Support
- Based on the concept of management rules
- Set of Management Rules provided by default
- Admin GUI and CLI support to create and manage rules

Define Management Rule?

- Encapsulates Self Management Intelligence
- Contains an Action to be taken when an Event occurs
- Loose Coupling between Event and Action
  - Allows the life cycle of Event and Action to be different
- Event – Action association is 1 to 1 with in a management rule

Management Rule Components



Events

- Event Source is an MBean which can emit javax.management.Notification
- Set of Useful events are provided out of box
- Extendable Event Dictionary
- Events can be further customized by customizing its properties
- There are total 7 event types (log, timer, monitor, cluster, trace, lifecycle, notification)

Predefined Event : Log Event

- Customizable properties/filters:
  - loggerNames (comman separated logger names or *)
  - level (valid log level)
- Example: When an EJB container logger logs a SEVERE message

Predefined Event : Montior Event

- Declarative Support for javax.management.monitor JMX service
- Supports counter, gauge and string monitors
- Additional support for monitoring complex attributes
- When the number of max connections in a JDBC connection Pool exceeds the specified threshold

Predefined Event : Timer Event

- Declarative Support for javax.management.timer JMX service
- Supports user defined date format type
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Predefined Event : Trace Event

- Supported Events
  - Request Start/End
  - Web Component Method Entry/Exit
  - EJB Component Method Entry/Exit

Predefined Event : LifeCycle Event

- Supported Events
  - at server start
  - at server shutdown
  - at server termination

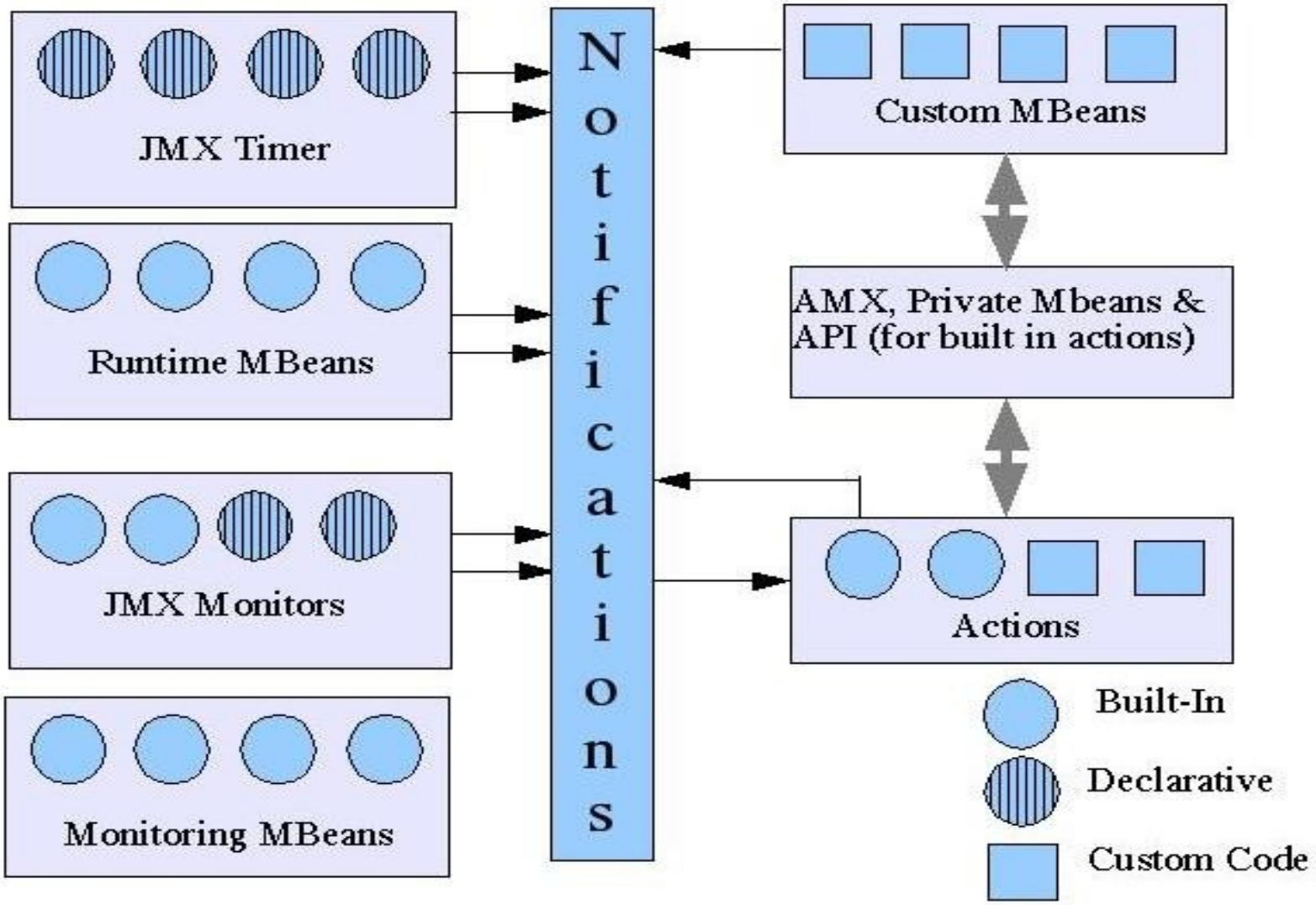
Predefined Event : Cluster Event

- Supported Events
  - any server start in a given cluster
  - any server shutdown in a given cluster

Predefined Event : Notification Event

- Any MBean which emits Notification
- Way to extend event dictionary

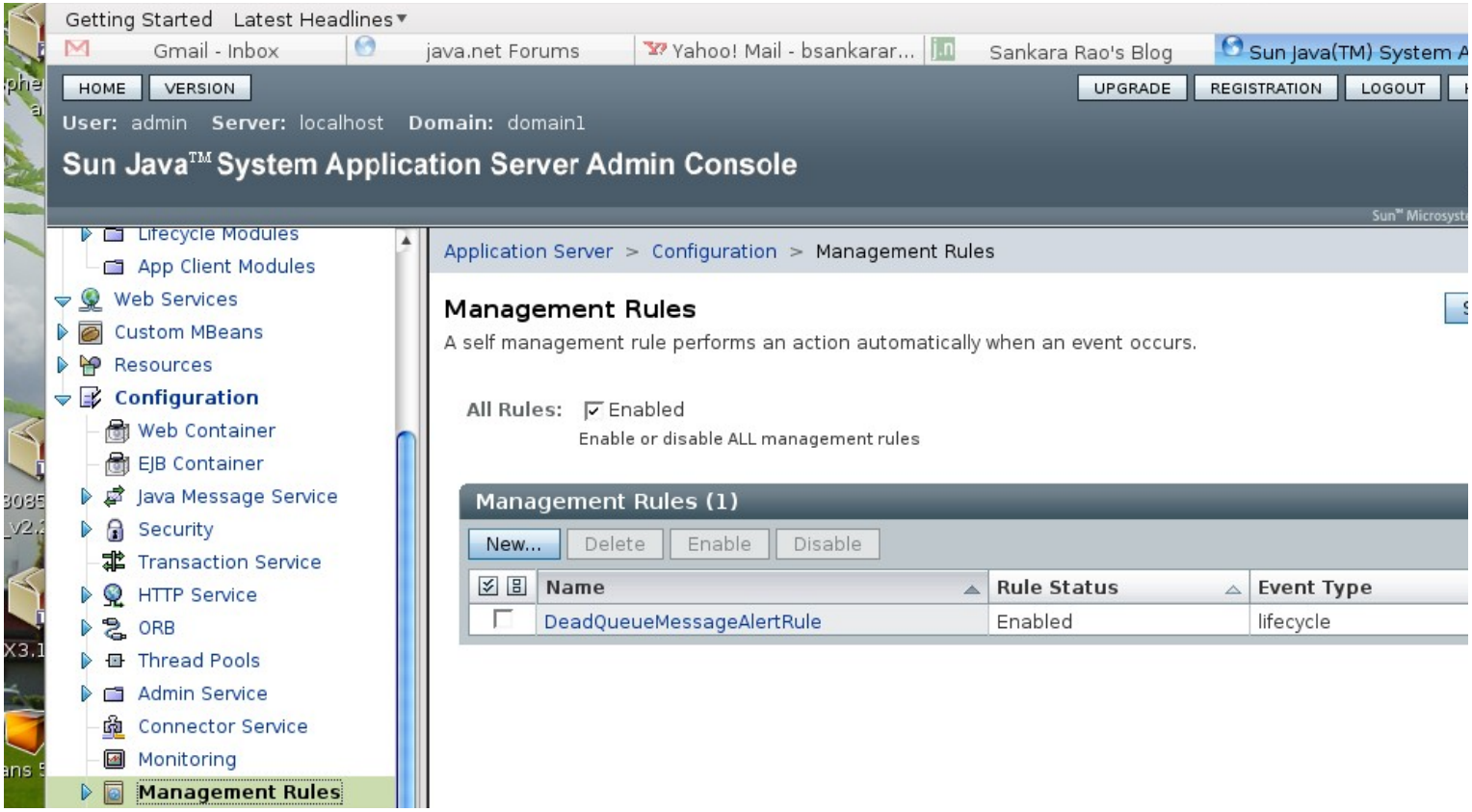
Rules subsystem overview



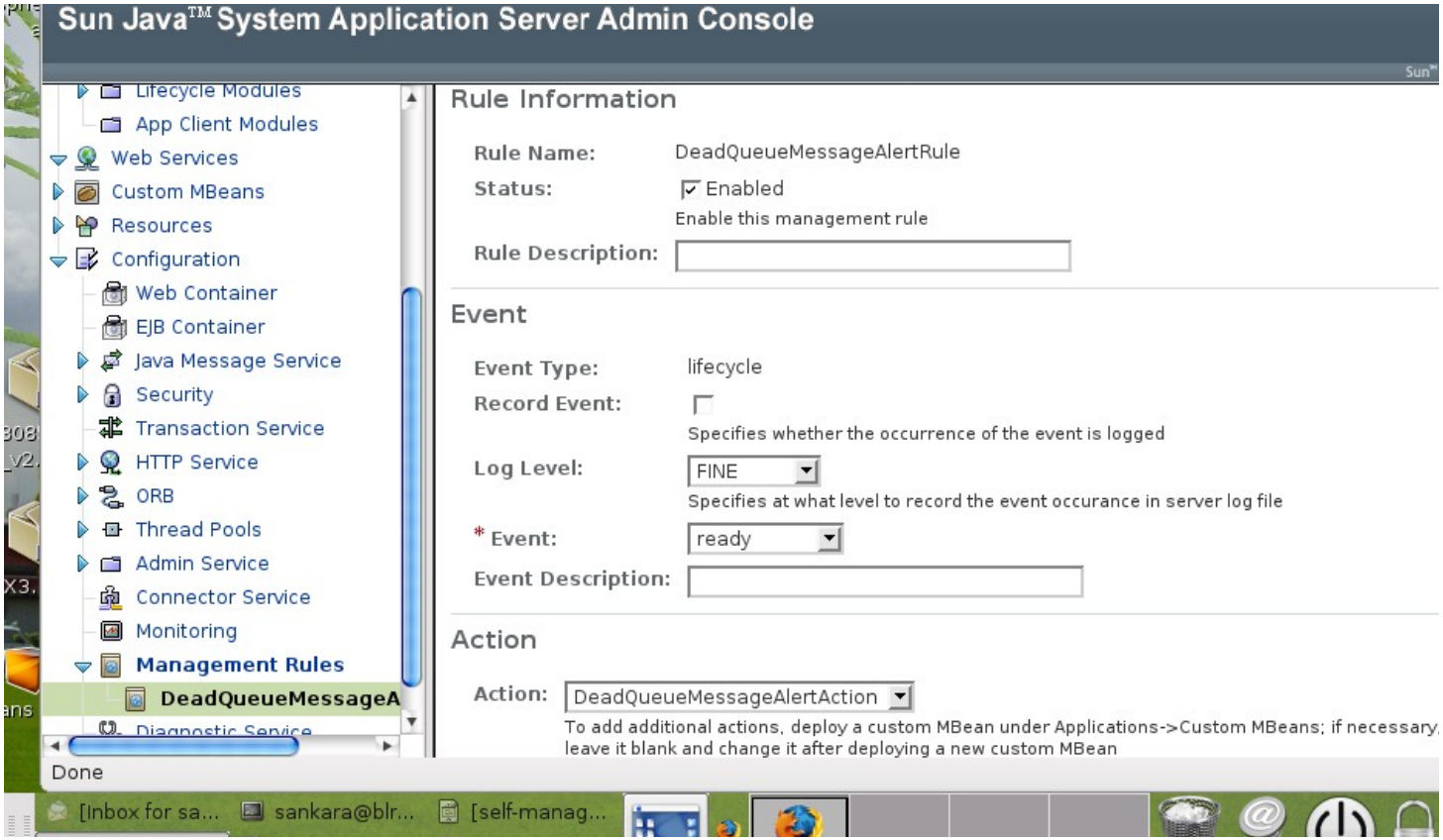
Admin CLI and GUI support

- Full Admin GUI Support for CRUD operations of management Rules
- CLI commands to Create, Delete and List Management Rules

Management Rules: Screen Shot



Management Rules: Screen Shot II



Predefined Rules

- Predefined Rules are not enabled by default
- Rules can be enabled by the user
- All the Rules audit the actions they take

Proposed predefined Rules for v2

- Self Configuring/Self tuning of JDBC Connection pools
- Self Healing/Diagnosing
  - Out of memory detection, cleanup and alert notification
  - Hang detection and recovery: Instance and thread hangs
  - Dead queue Message Alert
  - Disk full detection and server logs cleanup
- Few More..

DeadQueueMessageAlert Rule

- When ever a message can't be successfully delivered, MQ would put that message into a dead queue and administrator would be interested in knowing when that happens.
- Management Rule detects this event and would send a mail to the configured user. Threshold, Offset, Recipients are configurable.

Future

- Actions as scripts
- Direct Support for Multiple Actions with the Same Event
- Simple Event Composition such as 'and' and 'or'
- More Default Rules

Resources

- GlassFish Project : Self Management home
  - https://glassfish.dev.java.net/javaee5/selfmanagement/selfmanagementhome.html
- Blog: "Self Management Framework in GlassFish"
  - http://weblogs.java.net/blog/sankara/archive/2006/02/self_management.html
- Blog: "GlassFish : Self Management Rules"
  - http://blogs.sun.com/roller/page/technical?entry=self_management_rules

Q & A

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