Improving CloudStack for Operators

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Shape
Blue The Cloud Specialists

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- **Software Architect at ShapeBlue**
- **Apache CloudStack Committer since 2012 and PMC member**
- **Specialise in:**
    - CloudStack feature development and 3rd party integrations
    - KVM, API/DB Layers, SystemVMs, UI, Upgrades, UI
    - Distributed Systems, Java, Python
- **Author: Apache CloudStack CloudMonkey**
- **Release Manager: Apache CloudStack 4.5.x**
- **Maintainer of Apache CloudStack packages (shapeblue.com/packages)**
- **Recent work: Out-of-band management, Metrics Views, SAML2 plugin, KVM and UI improvements**

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cloudstack

"ShapeBlue are expert builders of public & private clouds. They are the leading global Apache CloudStack integrator & consultancy"

...and we're hiring!

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cloudstack

- **Managing CloudStack users in large orgs**
- **Finding critical information**
- **Dealing with physical hosts**
- **Dealing with security and user roles**
- **Making sense of CloudStack API results**
- **Pain points around Installing and Upgrading CloudStack**
- **Improving CloudStack Clustering**
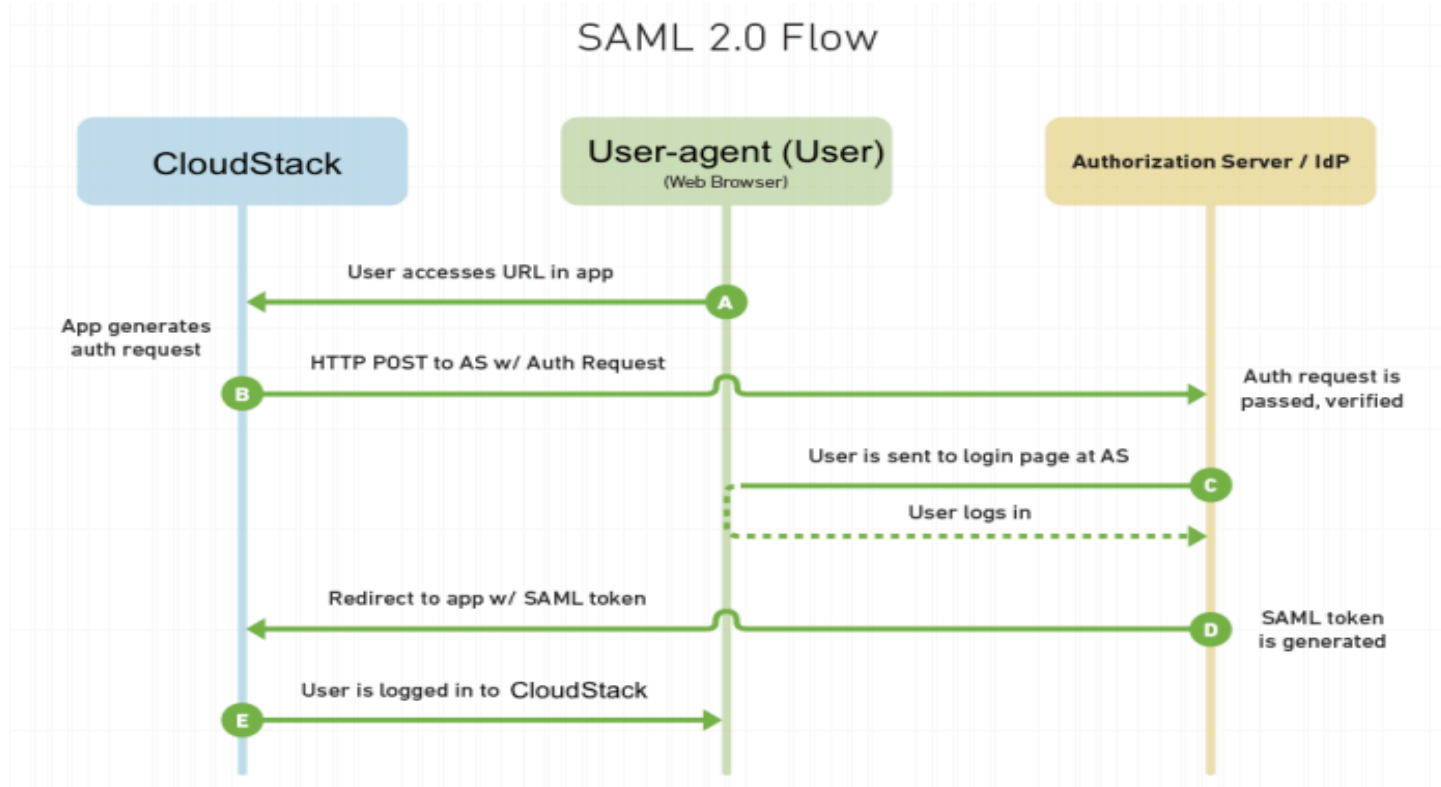
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Improving CloudStack for Operators
- **Support for SAML2**
- **Metrics Views for CloudStack**
- **Out-of-band Management for CloudStack**
- **CloudMonkey improvements**
- **Dynamic CloudStack Roles (RBAC)**
- **Upcoming features**
- **Painpoints and improvements**

- **SAML2 Single-Sign-On Plugin based on newer authentication framework in CloudStack**
- **Available in 4.5.2, 4.6.0+**
- **Authorization based workflow**
- **Demo**

SAML 2.0 Flow

CloudStack

User-agent (User)
(Web Browser)

Authorization Server / IdP

User accesses URL in app

A

App generates auth request

HTTP POST to AS w/ Auth Request

B

Auth request is passed, verified

User is sent to login page at AS

C

User logs in

Redirect to app w/ SAML token

D

SAML token is generated

User is logged in to CloudStack

E

- **Finding critical information about infrastructure and cloud resources using UI**
- **Identify performance hotspots**
- **CloudMonkey works but operators like using UI**
- **Available in 4.7.0+**
- **Demo**

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- **Manage physical hosts using out-of-band management interface such as ilo, idrac**
- **Allows custom driver implementation, out of box support for IPMI 2.0**
- **Available in 4.9.0+**
- **Demo**

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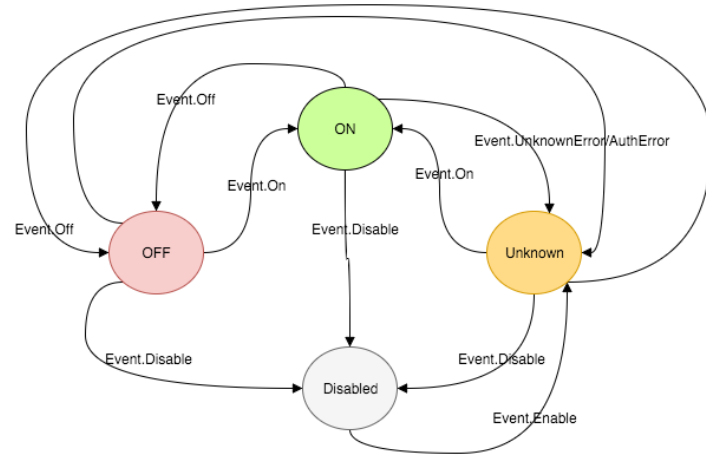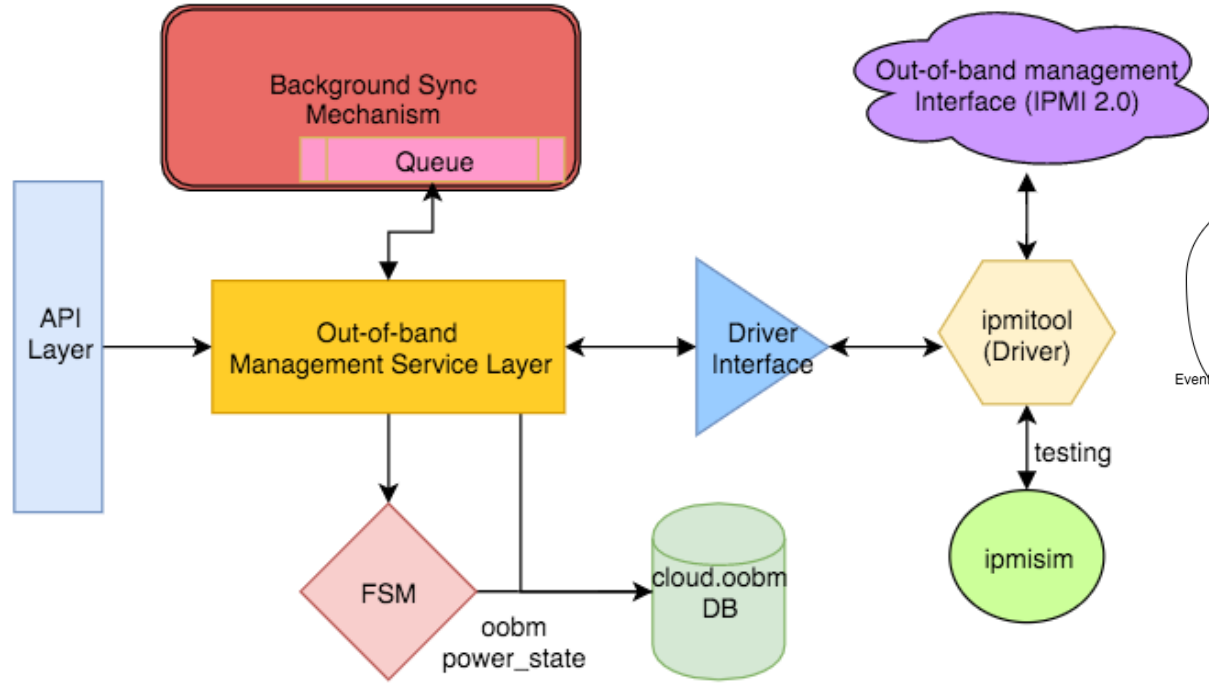
OOBM Power State
Finite State Machine

- **CSV output: Making sense of data**
- **History support**
- **Available in 5.3.3 (upcoming)**
- **Demo**

- **Improve RBAC, allow dynamic roles**
- **Presently only four static roles:**
  Admin, Resource Admin, Domain Admin, User
- **Each role maps to set of allowed APIs, currently statically configured in commands.properties**
- **Operators can create users/account with new sets of dynamic roles with custom set of allowed APIs**

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- Dynamic routed VPC (support for OSPF)
- Host HA with out-of-band based fencing
- Distributed Resource Load-Balancer Service
- CloudStack CI for Github PRs
- Improve CloudStack installation and upgrade experience specifically around database and systemvms
- SDN plugin improvements, StrongSwan based VPN/ipsec, Debian 8 based systemvm template, support Java 8, embedded Jetty. Marvin and UI improvements

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- **Better distributed systems implementation; claim&ownership, improved fault-tolerance and resilience, clustering and agent rebalancing, circuit breaker, mgmt server fencing**

- **Improve CloudStack agents framework, improve/replace link protocol**

- **Improve job framework**

- **Zero-downtime upgrades**

- **Q&A**
- **Follow-ups - dev@cloudstack.apache.org**