



## Elastic Grid @t OW2

Quick Introduction to Elastic Grid and its synergies within the OW2 forge

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# Agenda

- Elastic Grid introduction
  - Technology, approach and benefits
- Elastic Grid and OW2
  - How OW2 projects benefit from Elastic Grid
  - How Elastic Grid benefits from OW2
- Elastic Grid and EC2
  - Deploying and scaling applications using Elastic Grid
- Cloud Computing and Amazon EC2
  - Capabilities, benefits and challenges

# About Elastic Grid

- Project initiated in early '08
  - LGPLv3 license
  - Part of the OW2 forge
- ETA for initial Early Access version: end of Oct. '08
- Elastic Grid, LLC. founded in May '08
  - Dennis Reedy: Director US Operations at Elastic Grid LLC, founder of the Rio OSS project, active in distributed computing efforts
  - Jerome Bernard: Director EMEA Operations at Elastic Grid LLC, committer on various OSS projects like Rio, Typica, JiBX.

# Elastic Grid and OW2

- Synergies with other OW2 projects
  - EG will provide leadership for emerging cloud computing technology using an open source approach
  - EG provides an easy way to deploy any application or framework on the Cloud
  - EG Had already happened before our move to OW2!
    - Deployments of XWiki and eXo Portal on EC2 have already been demonstrated during JavaOne 08 and JavaZone

## Elastic Grid and OW2

- What EG expects with its move to the OW2 forge
  - Partnerships with other OW2 projects in order to sell support for those projects on the Cloud
  - Networking within the EU community



# Cloud Computing

- A way to increase capacity or add capabilities on the fly without investing in new infrastructure, training new personnel, or licensing new software
- Virtualized hardware available for computation
  - Resources “in the cloud”
- Low cost of entry, utility based model
  - Pay for what you use
- Embraced by startups, and medium to large corporations as a way to bypass IT
- Cloud Computing Providers (Utility)

# Amazon EC2 Overview



## ➤ In a nutshell

- Provides resizable compute capacity in the cloud

## ➤ EC2 Amazon Machine Image (AMI)

- Operating System & application “stack”
- Deployed using Amazon Web Services to the “cloud”

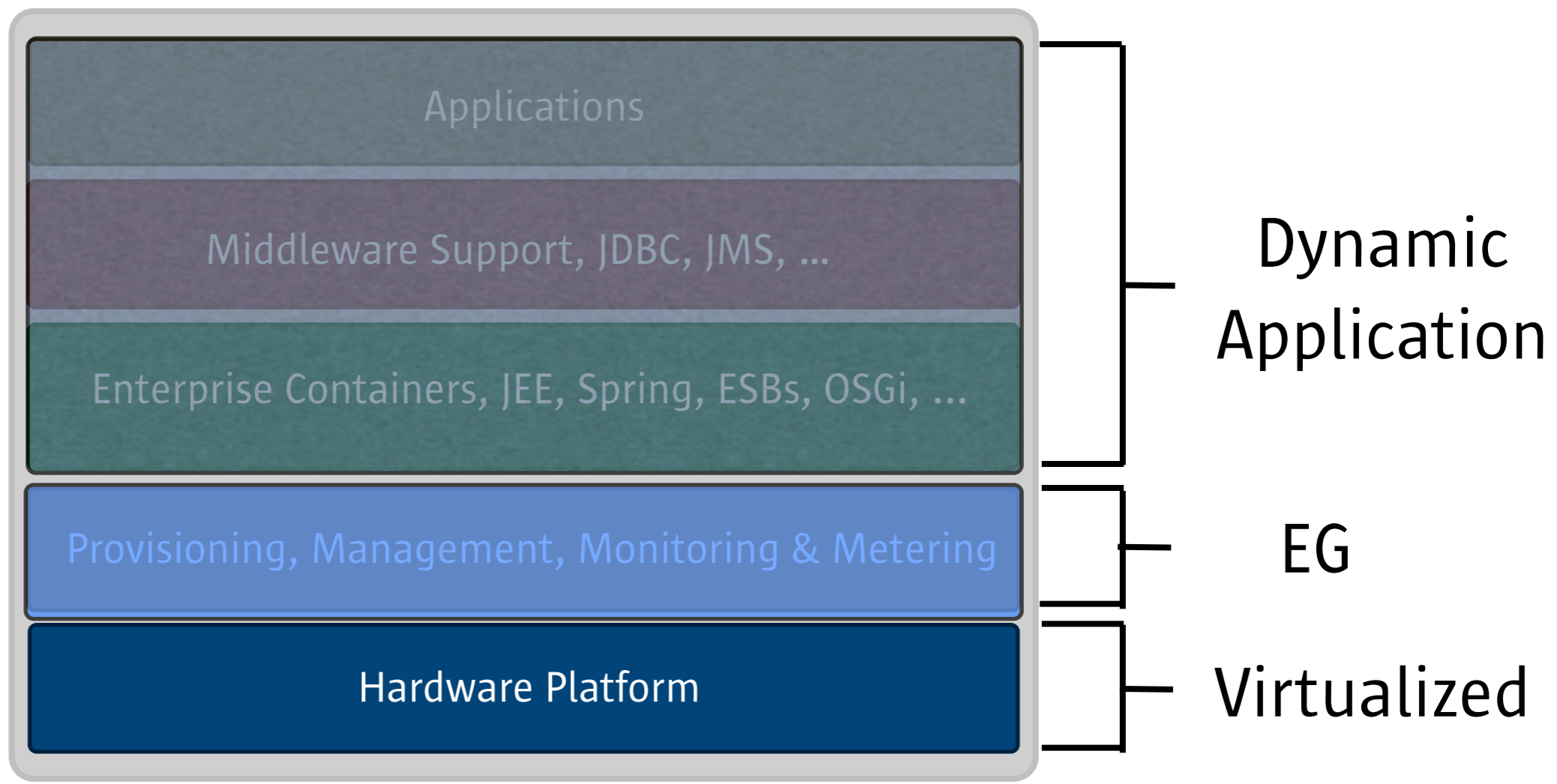
## ● EC2 Instances

- Virtual machines that run AMIs

## Elastic Grid (abbreviated as EG)

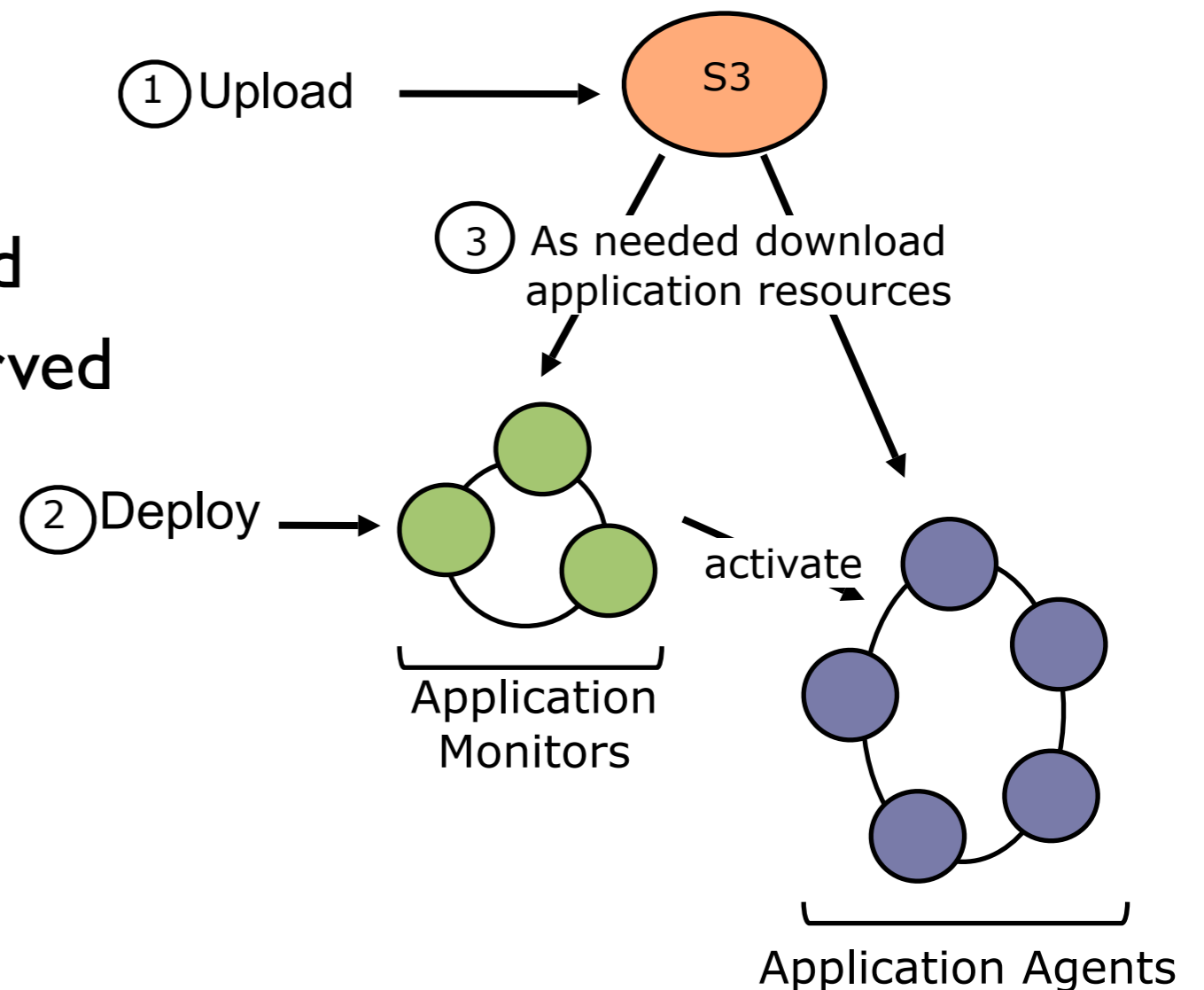
- Dynamic infrastructure for the dynamic deployment, activation and management of Java applications on virtualized hardware
- Technology building blocks
  - Rio:
    - used for provisioning of services,
    - both EG founders are committers of the projects
  - Typica: Elastic Grid, LLC is an active committer on this project
  - JetS3t: the most popular Java API for using Amazon S3
  - Jini (River)

# Elastic Grid Stack



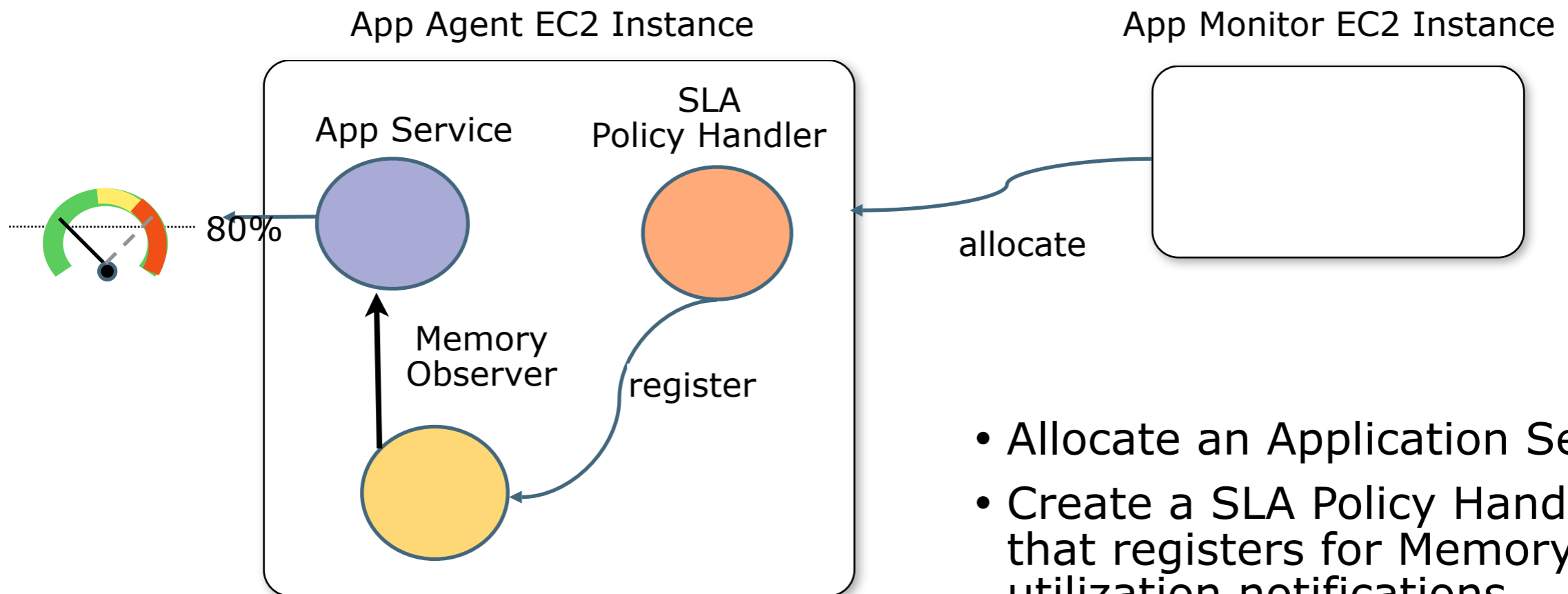
# Elastic Grid Deployment

- Deploy application in the Cloud (Amazon S3 for storage)
- Run the Deploy Command
- All code is dynamically served and instantiated
- Application is monitored and managed across EC2 instances



# Elastic Grid Scalability on EC2

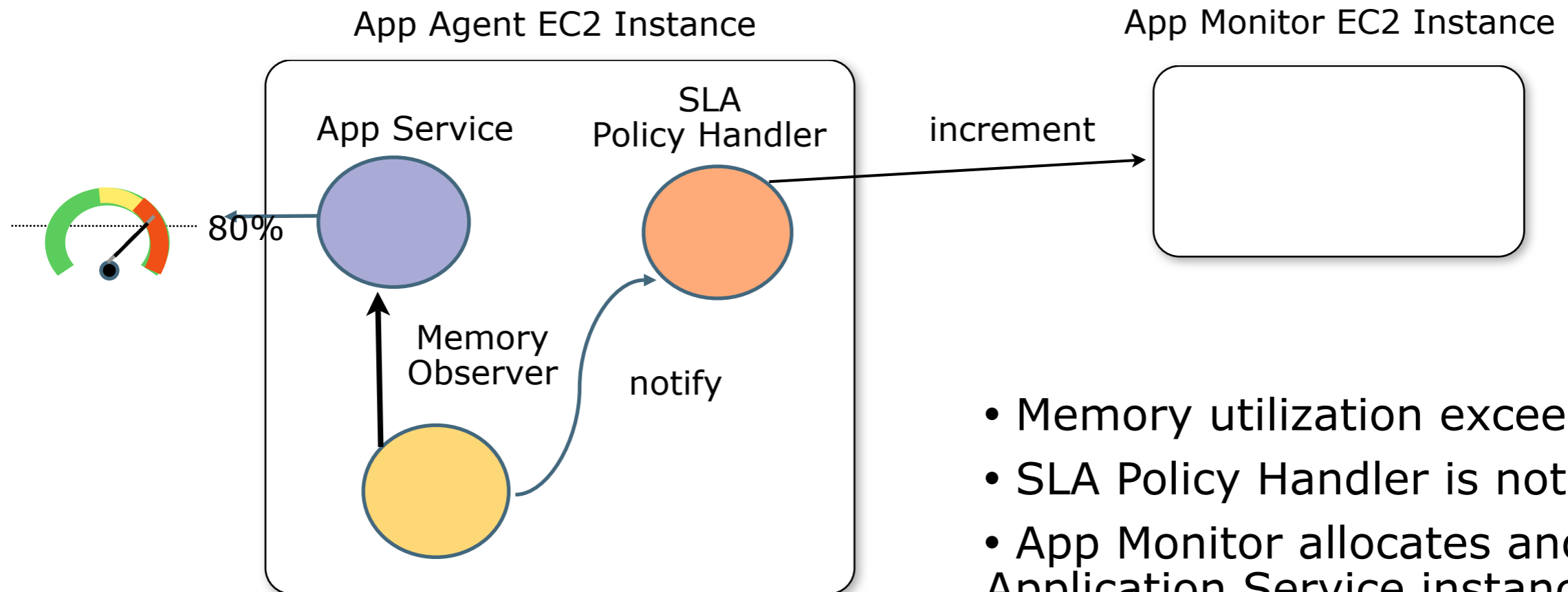
- Across existing EC2 Instances



- Allocate an Application Service
- Create a SLA Policy Handler that registers for Memory utilization notifications
- SLA has upper limit set to 80%

# Elastic Grid Scalability on EC2

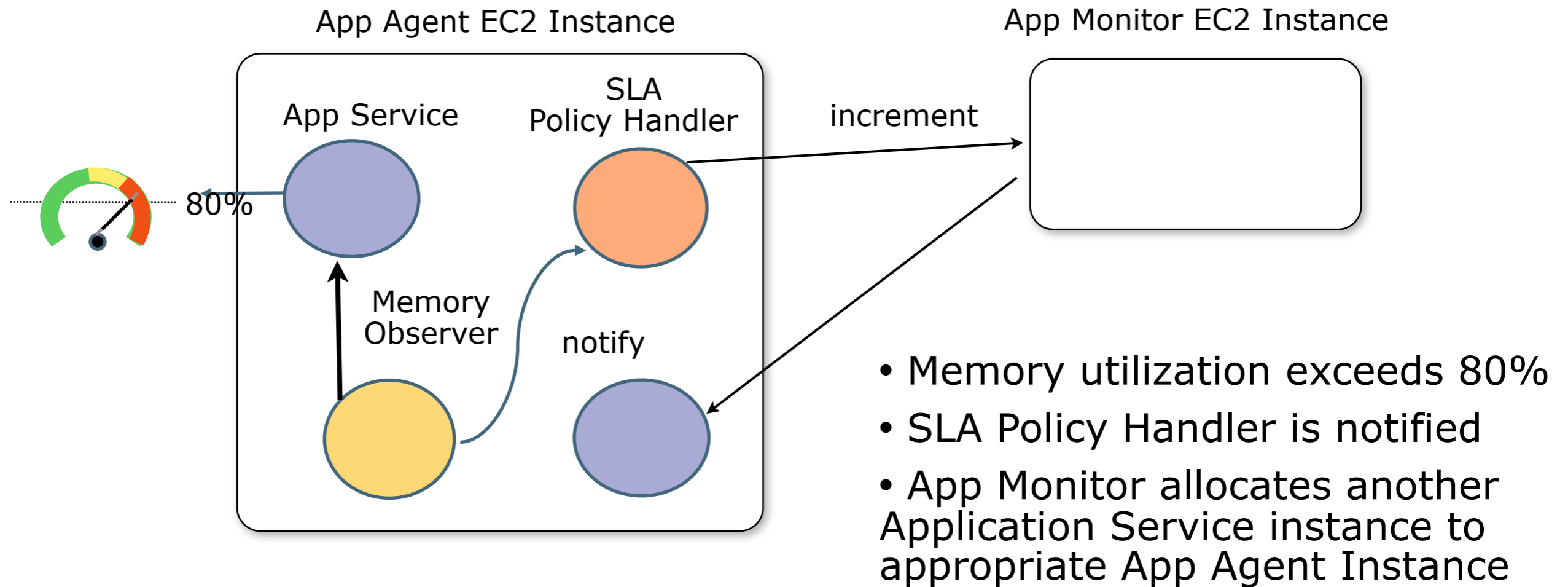
- Across existing EC2 Instances



- Memory utilization exceeds 80%
- SLA Policy Handler is notified
- App Monitor allocates another Application Service instance to appropriate App Agent Instance

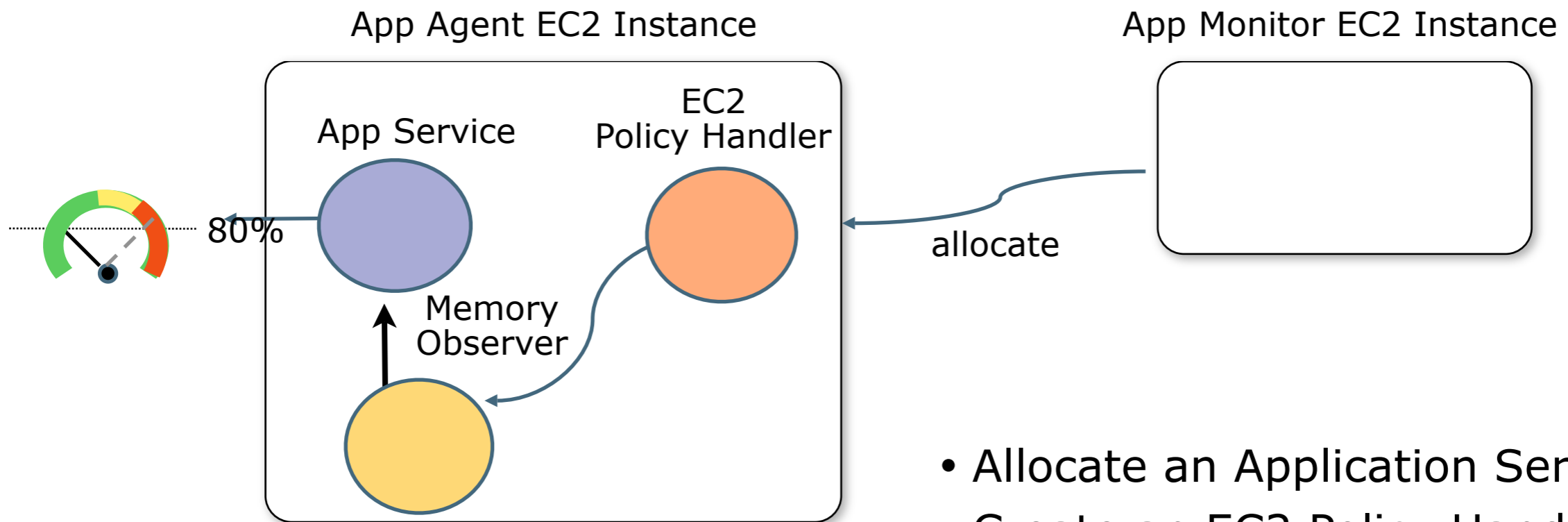
# Elastic Grid Scalability on EC2

- Across existing EC2 Instances



# Elastic Grid Scalability on EC2

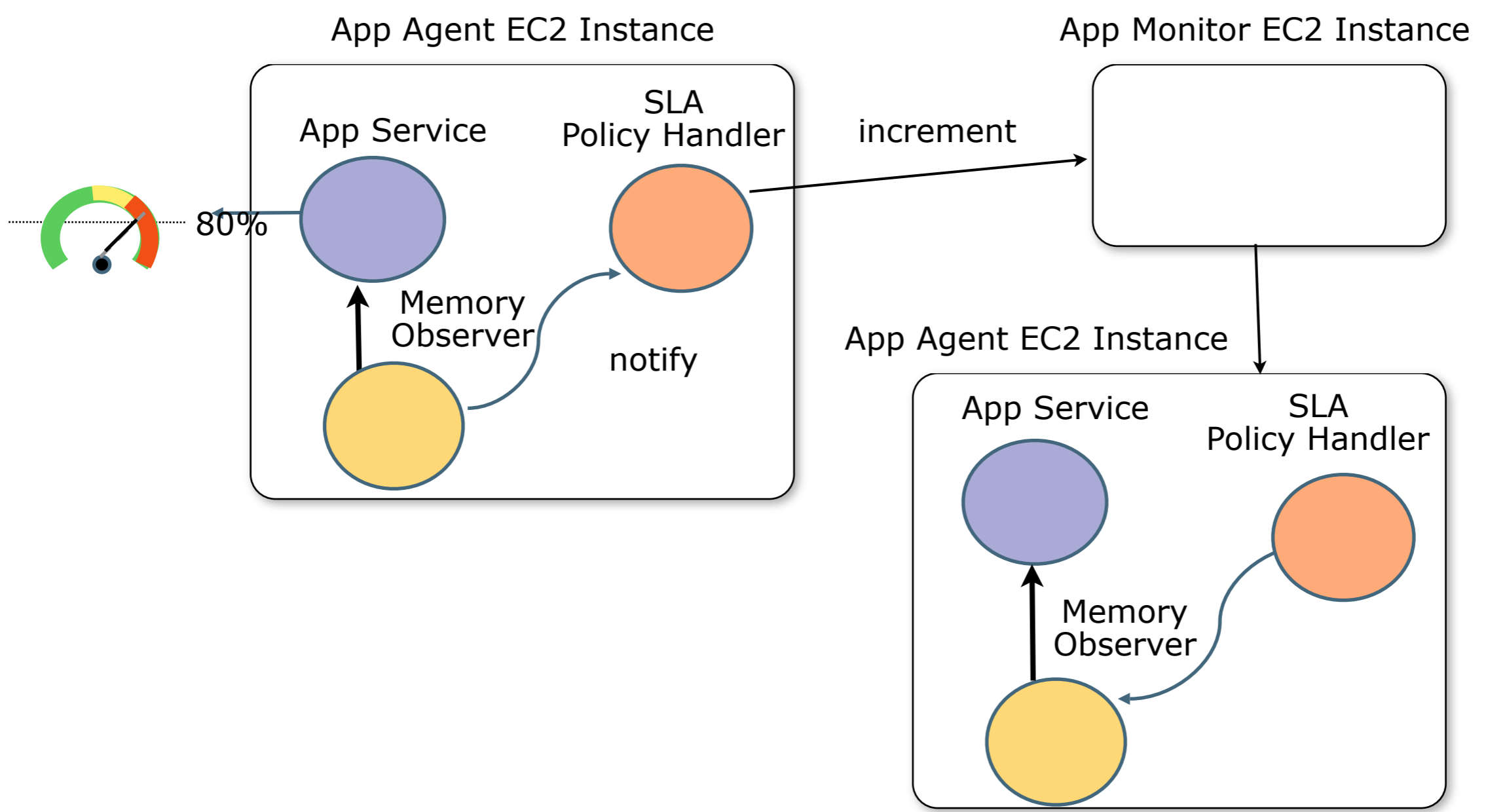
- New EC2 Instance



- Allocate an Application Service
- Create an EC2 Policy Handler which registers for Memory utilization notifications
- SLA has upper limit set to 80%

# Elastic Grid Scalability on EC2

- New EC2 Instance



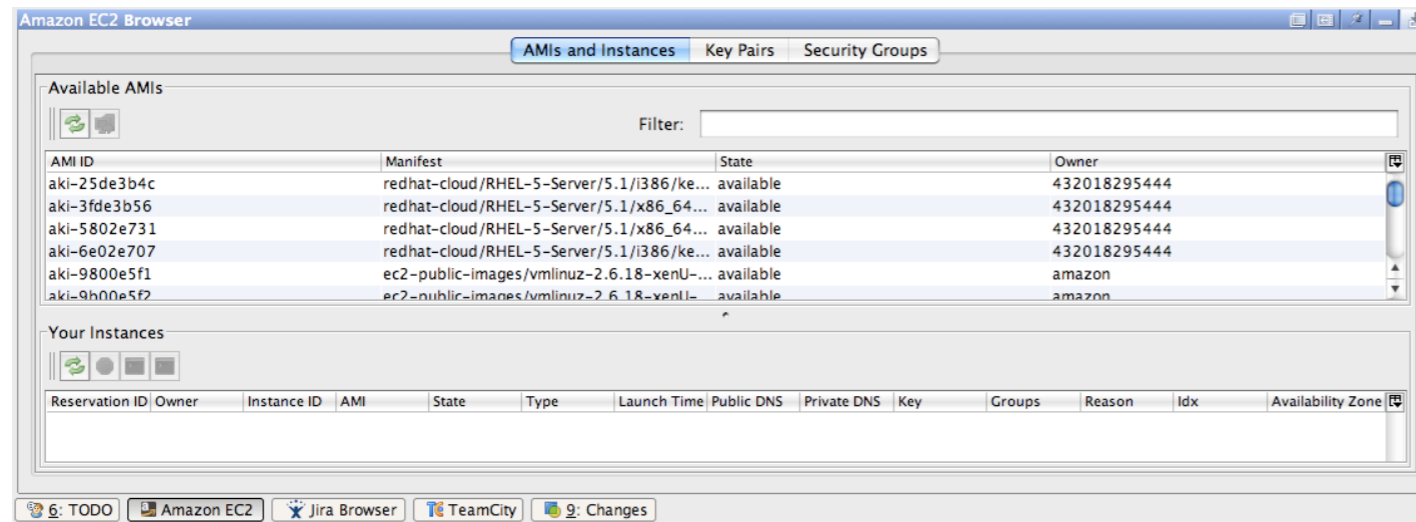
## Elastic Grid Benefits

- So what EG does for the app?
  - Ease development and deployment of Java applications using Amazon services
  - Provides automated management, fault detection and scalability for the application
  - To come soon: Cloud Bursting!
  
- Why EG should be used?
  - Ease deployment and management of your Java applications
  - The same app can work on the LAN or on the Cloud and in the both at the same time (Cloud Bursting)

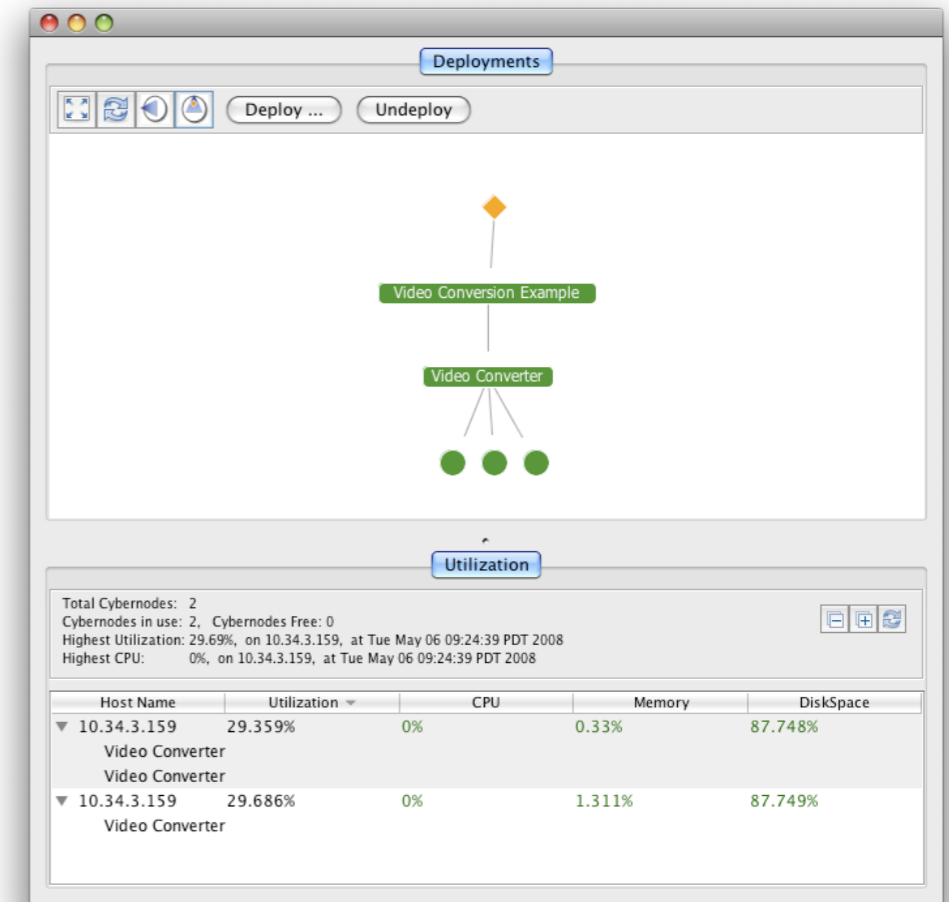
# Elastic Grid Tools

Tools Used in the Demonstration

➤ IntelliJ plugin

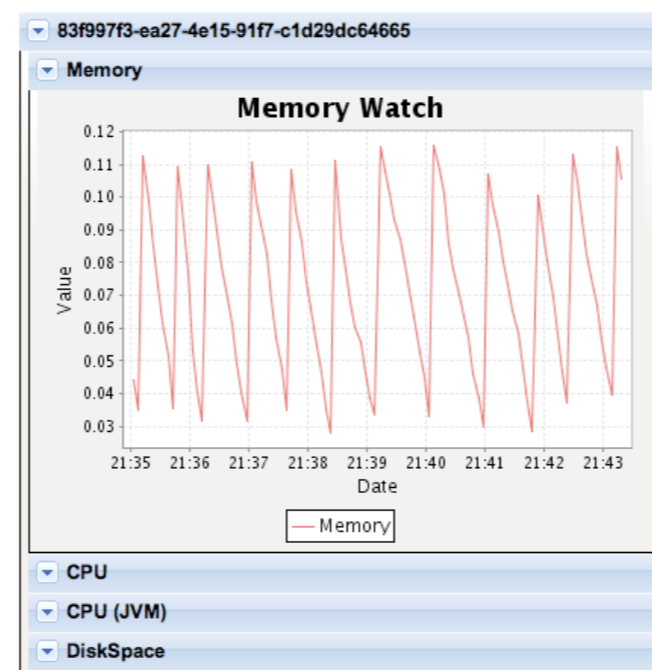


➤ Rio UI



➤ Web Console

Cybernodes:



## Summary

- Elastic Grid extends EC2, enabling users to manage & dynamically scale application service instances and EC2 instances based on declarable SLAs
- Cloud decides allocation of services
  - QoS approach provides feedback mechanisms based on SLAs
  - Today: Human decides/admins each machine
- Provisioning/changing services is simple
  - Dynamic reconfigurable systems
  - Make it live through the network

THANK YOU

**Elastic Grid @t OW2**

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