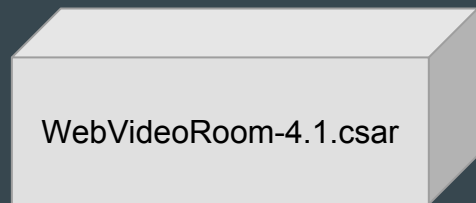


*Standards-Compliant* **Cloud Orchestration**  
with  
**Apache AriaTosca**



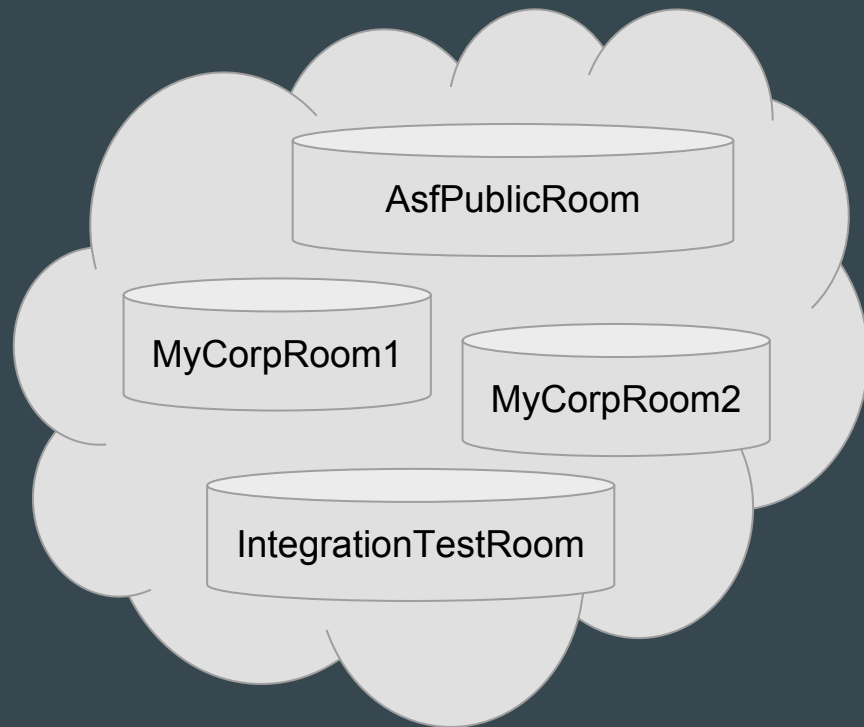
Apache: Big Data North America, May 2017, Miami  
Presented by **Tal Liron**, GigaSpaces

# Farm to Table

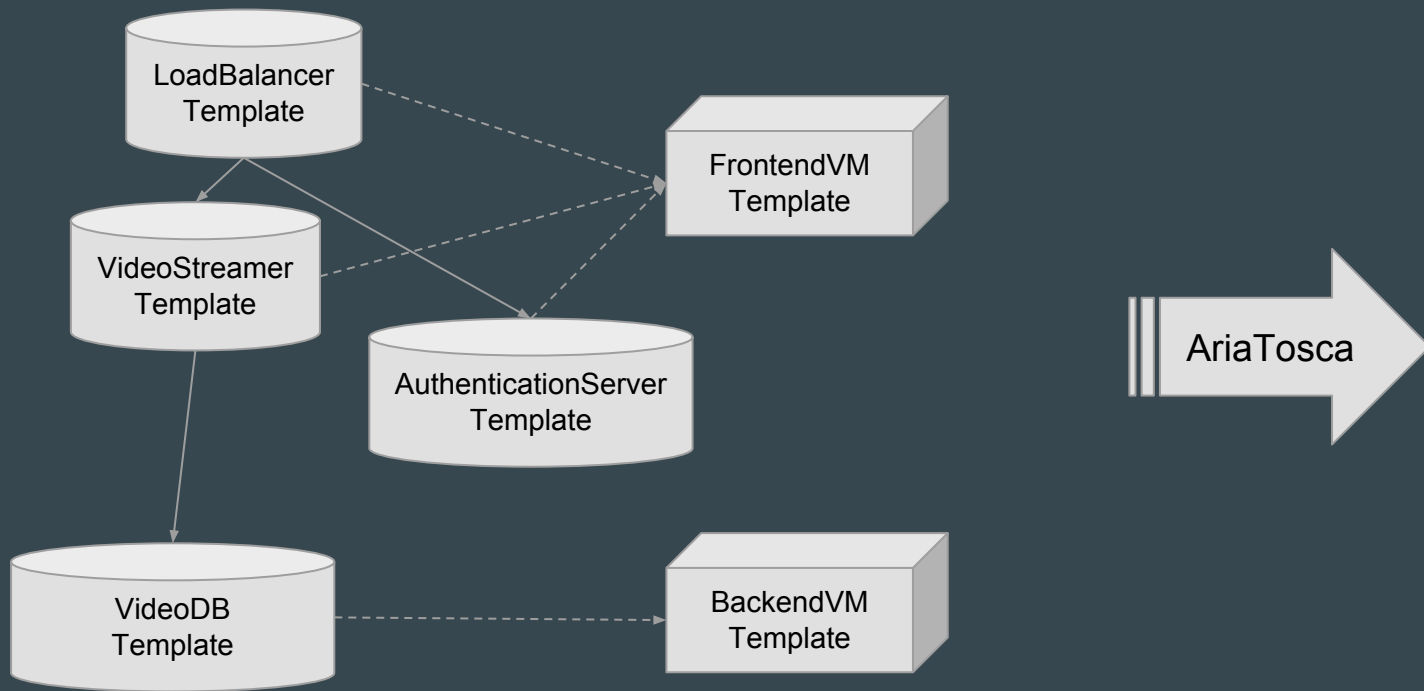


*Cloud Service Archive:*

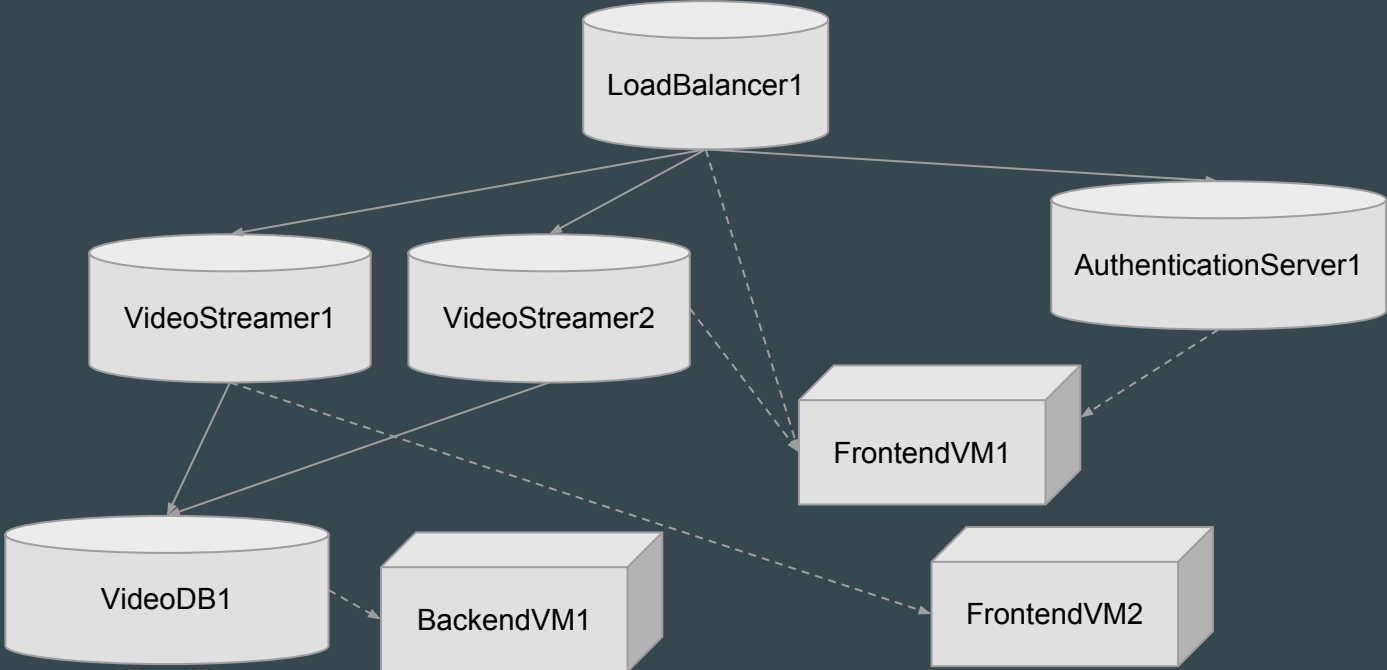
- TOSCA YAML file
- Artifacts:
  - Orchestration scripts
  - VM images



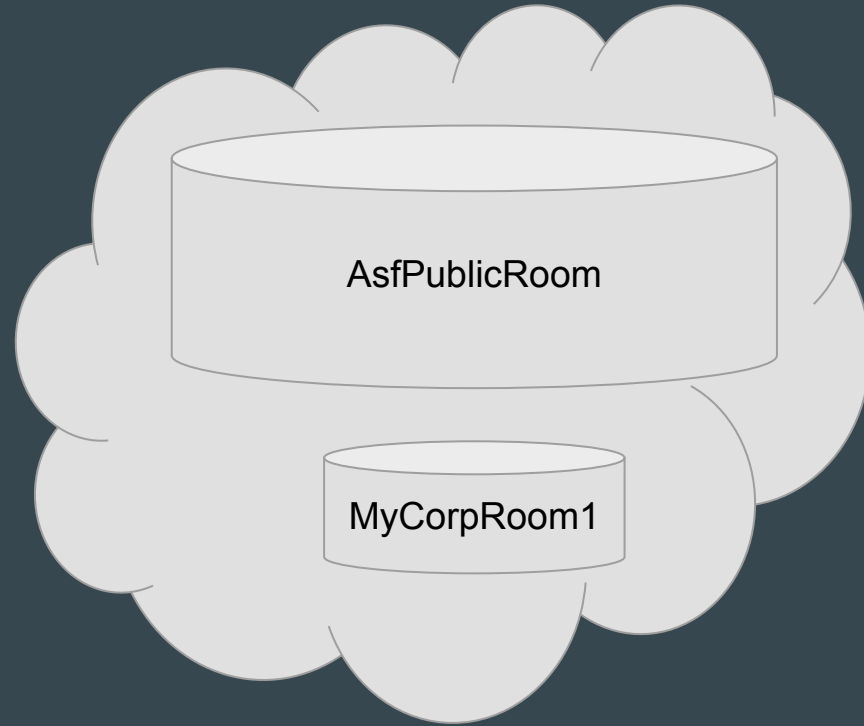
# Service Template



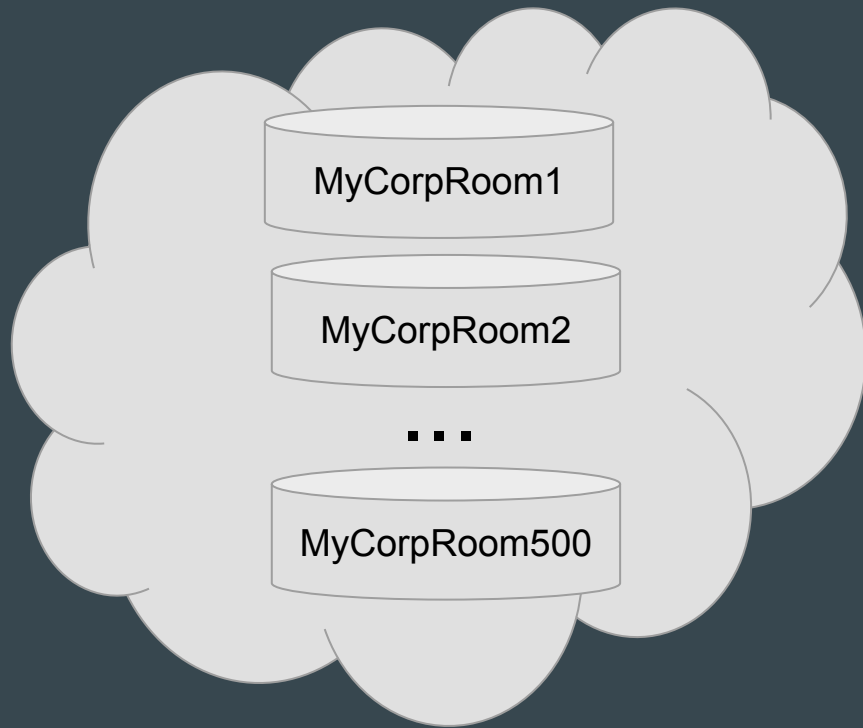
# Service Instance



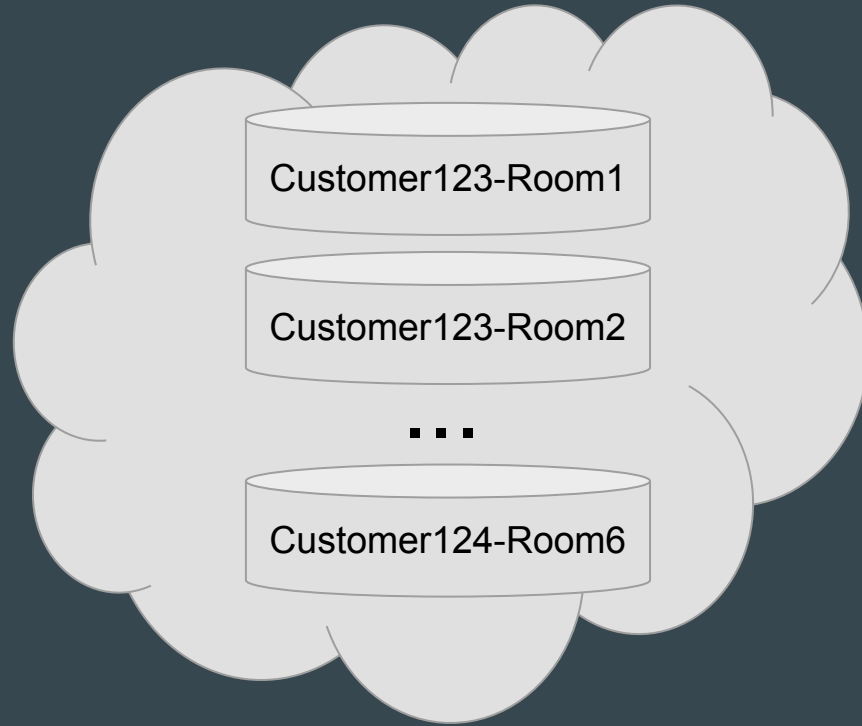
# Internal Scale: Big vs. Small



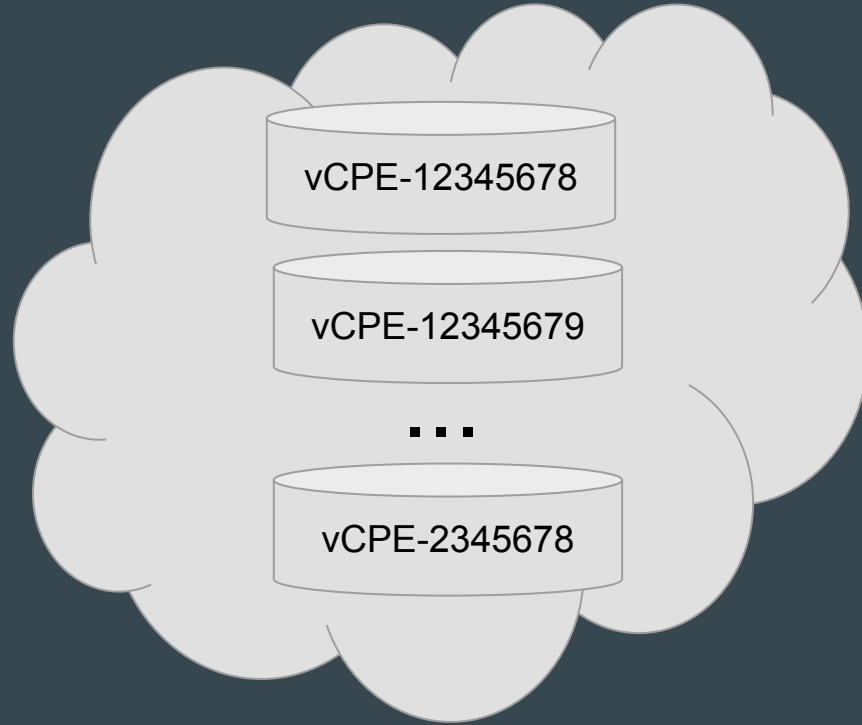
# External Scale: Number of Services in Enterprise



# *Meta-External Scale: Number of Services for ISPs*



# *Meta-External Scale: Number of Services for NFV*





# Who?

(As of May 2017)

ASG, Bank of America, Brocade, CA, CENX, Cisco, Cloudsoft, CSI, FastConnect, Fujitsu, GigaSpaces, Google, HP, Huawei, IBM, iMinds, Intel, JPMorgan Chase, Mitre, NetApp, NetCracker, NIST, Nokia, Politecnico di Milano, Primeton, Quali, Red Hat, SAP, SINTEF, UNIPI, VMware, Vnomic, WIPRO, Yanna, Zenoss, ZTE

- Cloud providers
- ISPs and mobile operators
- Enterprises (banks, government)
- Compute infrastructure
- Network infrastructure
- Agile innovators

# When?

- 1993: “SGML Open” in Massachusetts
- 1998: Renamed to “OASIS”: change of emphasis to XML
- 1999: ebXML (with UN)
- 2005: ODF (clash with Microsoft’s Open Document)
- 2011: Call for participation for TOSCA
- 2012: GigaSpaces releases Cloudify 1.0
- 2012: First draft of TOSCA 1.0 (in XML)
- 2015: First draft of TOSCA Simple Profile in YAML 1.0
- 2016: TOSCA 1.0 released, first draft of TOSCA Simple Profile in YAML 1.1
- 2016: AriaTosca joins Apache Software Foundation as incubator project,
- 2016: AriaTosca joins OPEN-O (Linux Foundation)
- 2017: AriaTosca joins ONAP = OPEN-O + OpenECOMP (Linux Foundation)

# Operas, Orchestras, and ... Napoleon?

**TOSCA** = Topology and Orchestration Specification for Cloud Applications

**Tosca** was an Italian opera by Giacomo Puccini that premiered in 1900. Based on Victorien Sardou's French play about the Kingdom of Naples' defense of Rome from Napoleon in 1800. It contains depictions of torture, murder and suicide, as well as some of Puccini's best-known lyrical arias. (Wikipedia)

**ARIA** = Agile Reference Implementation of Automation

**Aria** is an expressive melody, usually, but not always, performed by a singer. A self-contained piece for one voice, normally part of a larger work. (Wikipedia)

Example

# The TOSCA Balancing Act

- **Strict**
  - Object-oriented, strictly typed, polymorphic
  - Rich set of base types (Simple Profile + Simple Profile for NFV)
  - Normative lifecycle (install, uninstall, start, stop)
- **Agnostic**
  - Not specific to any cloud provider (multi-VIM is hard)
  - Not specific to any machine technology (tosca.nodes.Compute = VM, container, cage, or...?)
  - Base types designed to be lowest-common denominators (politics)
  - Base types are optional
  - Support for generic workflows in TOSCA 1.1

# AriaTosca

- Fanatic compliance with TOSCA spec (1.0, 1.1)
- Python 2.6
- Rich CLI
- Rich API (Python and REST)
- SQL modeling
  - Converts to JSON or YAML
- Batteries included: execute scripts locally and remotely, support dry runs
- Extensible plugin system
  - VIMs: CloudStack, OpenStack, VMware, AWS, Azure
  - Orchestration: Puppet, Chef, Juju, Ansible, BPML/WSO2, Jenkins
  - Custom: plugin can be included as artifact in .csar file



Demo

# An AriaTosca Future

- Rich plugin ecosystem
  - Integration with open and proprietary orchestration systems
- Community repository of .csar files
  - Every Apache Software Foundation project should publish one or more .csar files
- Integrated into every cloud admin (native speaking of TOSCA)
- Cloud-based integration testing
- TOSCA IDE
  - Autocompletion
  - Inline validation
  - Graphical modeling studio
- Contribute to TOSCA evolution in OASIS



# Thank You

Today's presenter:

Tal Liron, GigaSpaces  
tal@gigaspaces.com

For more information:

<http://ariatosca.org/>  
<https://github.com/apache/incubator-ariatosca>