Cloud Standards Interoperability Demo

OCCI, CDMI & OpenNebula

Demo Topology

•Public Internet
•Private Network

JavaFX GUI

OCCI

Open Nebula

Glue Code

CDMI

SNIA RI

Server

Server

VM

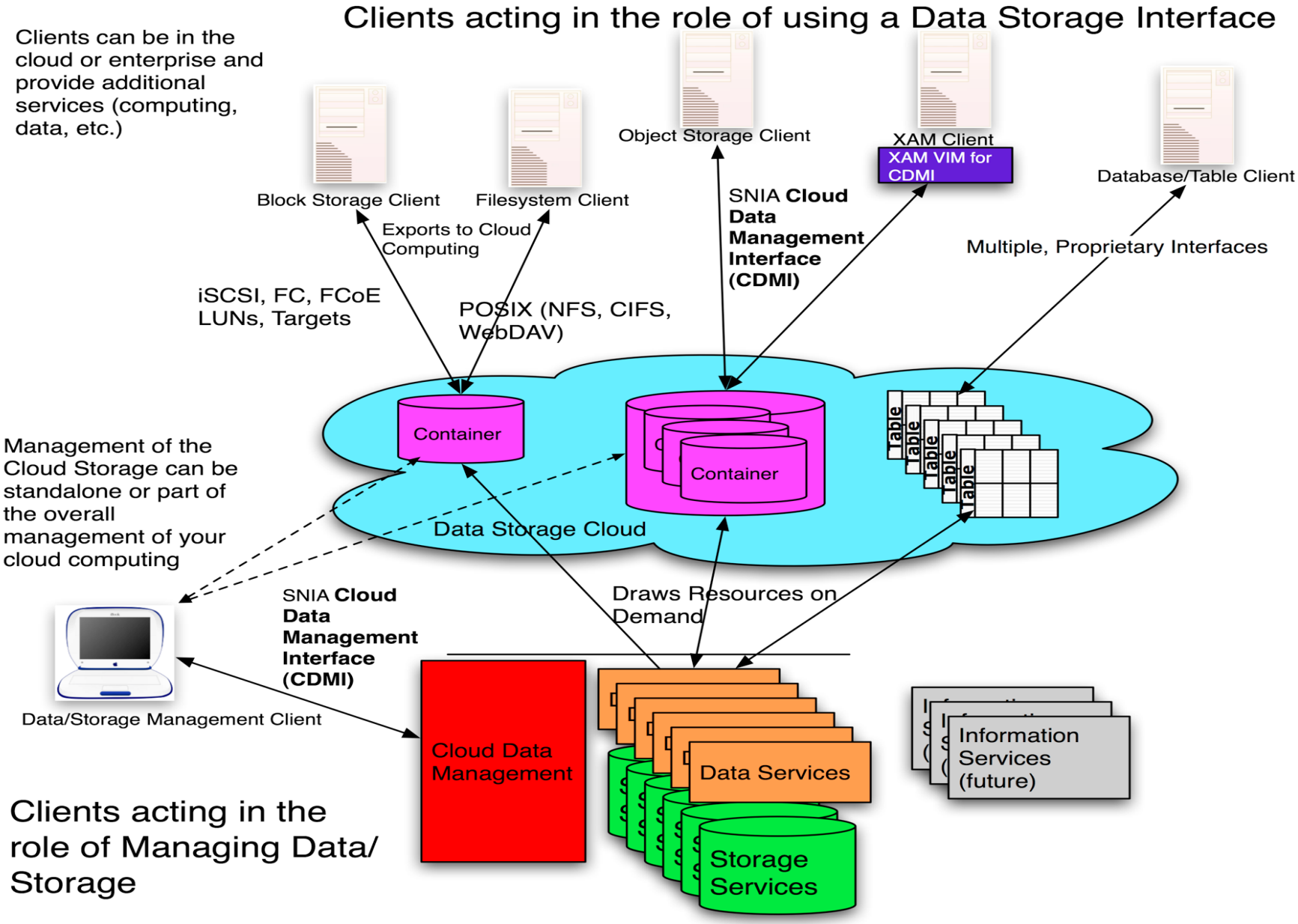
Future !

JClouds

Storage

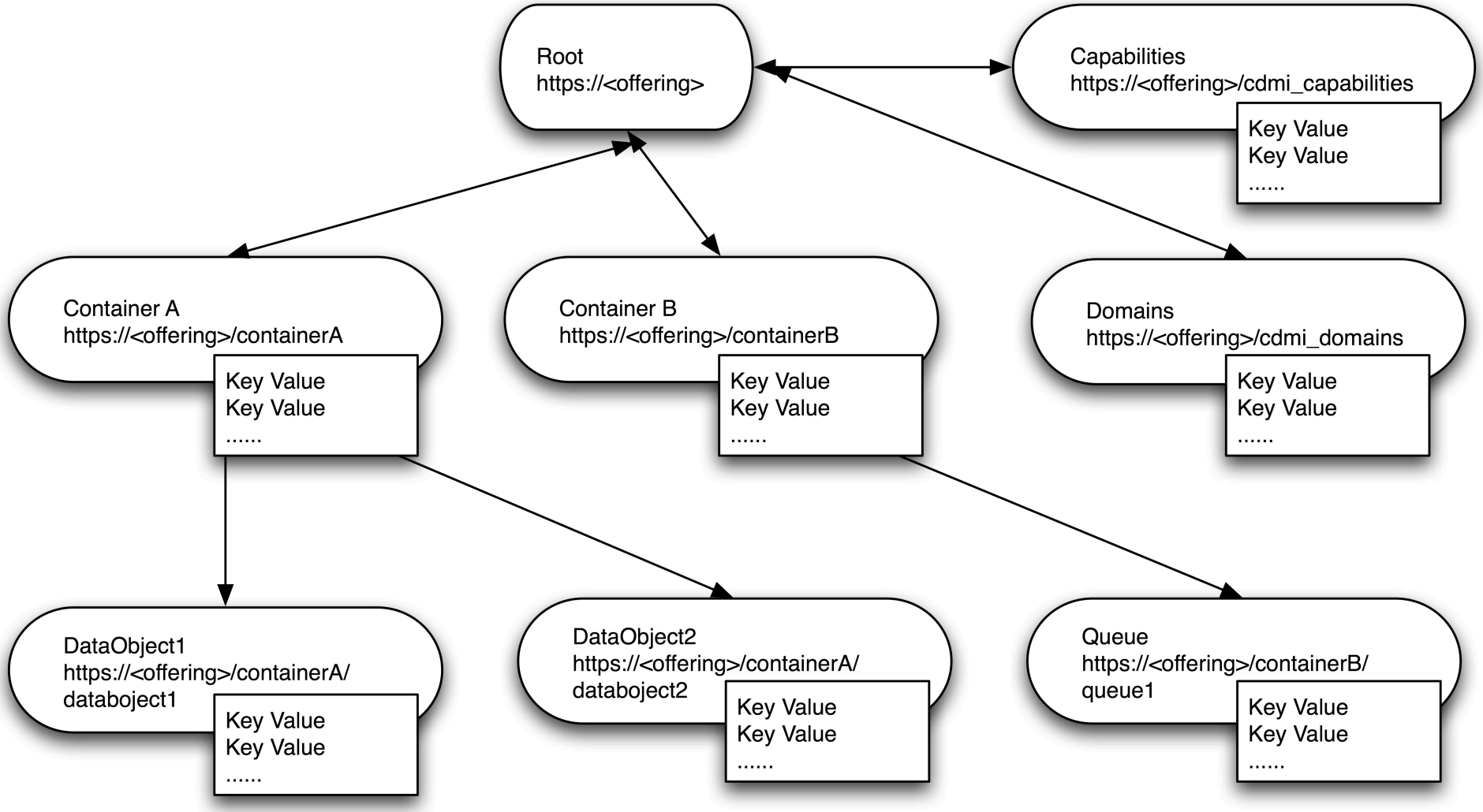
2 or 3 client machines	Cloud Layer Software	Compute & Hosting Infrastructure	Storage
Client Software	•OCCI – Open Nebula •CDMI RI •Glue code between	•Raw Intel based machines (Sun Solaris) •Virtual Machine instances	•Storage Array or NAS •Public Clouds (being proxied)

The Complete CDMI Picture



Model for the CDMI Interface

The resources which are accessed through the RESTful interface



CDMI Specification

- SNIA Architecture (industry standard):
  - http://snia.org/cloud
  - Implementations are under way

Cloud Data Management Interface

Version 1.0

"This document has been released and approved by the SNIA. The SNIA believes that the ideas, methodologies, and technologies described in this document accurately represent the SNIA goals and are appropriate for widespread distribution. Suggestion for revision should be directed to http://www.snia.org/feedback/.

CDMI iPad Demo

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CDMI iPad Client: Goals

1. Primarily Instructional on CDMI
2. Not General Purpose “Cloud Storage” Client
3. Show Network Interactions
4. Show Object Information
5. Provide CDMI Object Library (future)

What is OCCI?

- Open Cloud Computing Interface
  - Becoming OGF proposed standard
- OCCI provides features to identify, link and categorize “dumb RESTful resources”

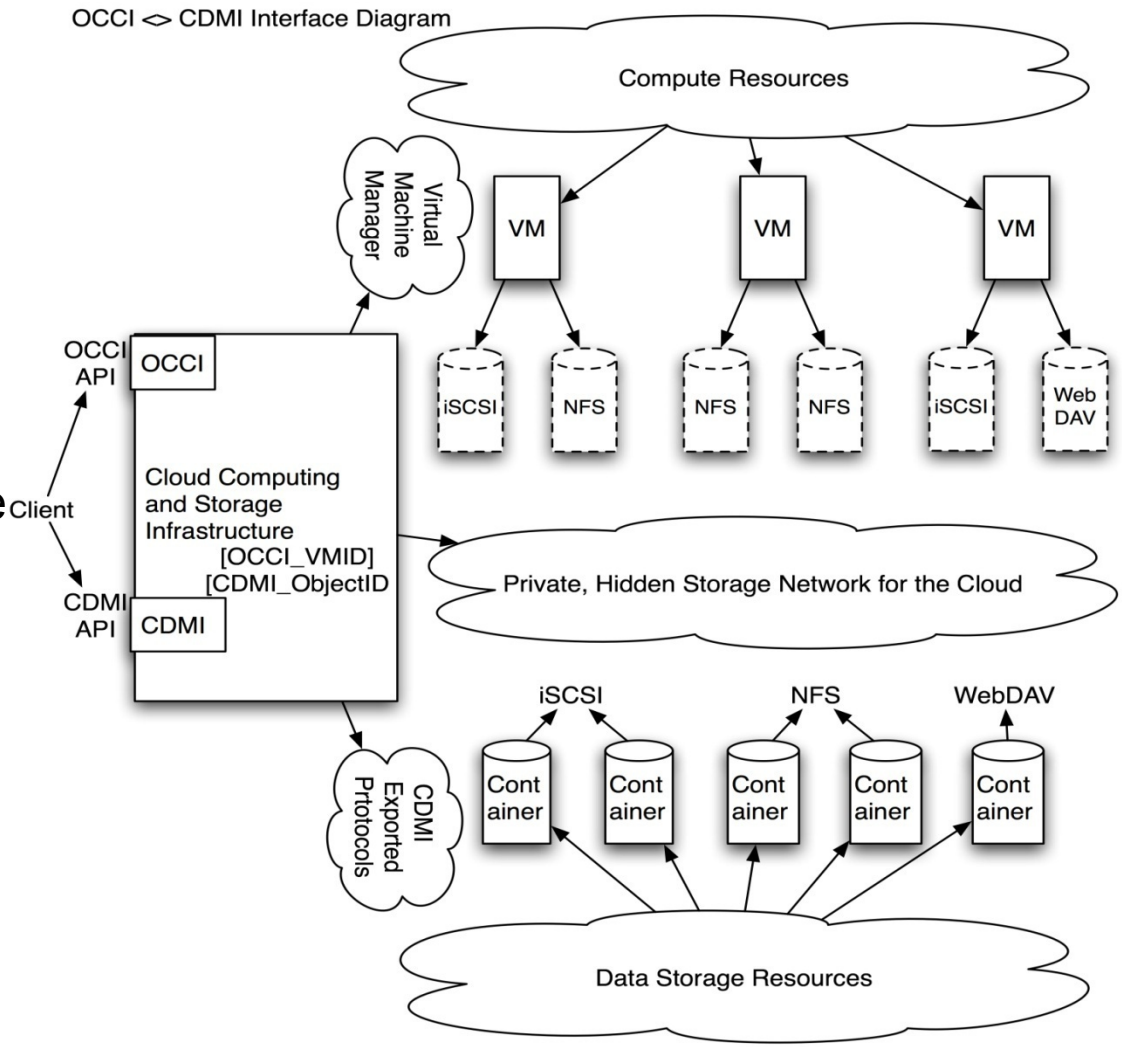
- OCCI-infrastructure defines kinds, actions, & attributes to work with virtual machines

CDMI in Cloud Computing

A single cloud computing infrastructure can implement both the OCCI and CDMI interfaces

The infrastructure abstracts the configuration of the networking and virtual machine details and uses the standard interface merely to define connectivity

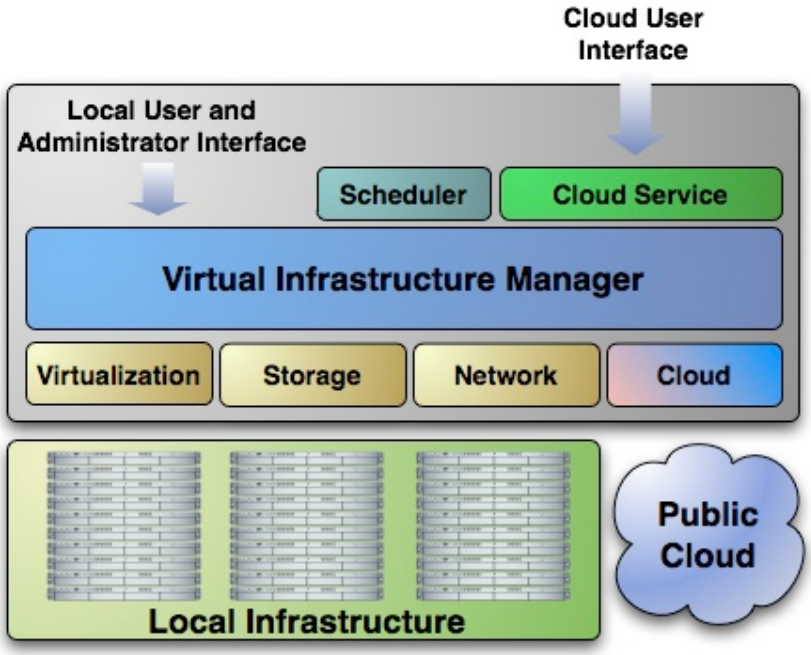
A cloud computing client can then utilize the interfaces to both specify the data requirements and then use that data for guests



OpenNebula

Open-Source Toolkit for Building Cloud Infrastructures

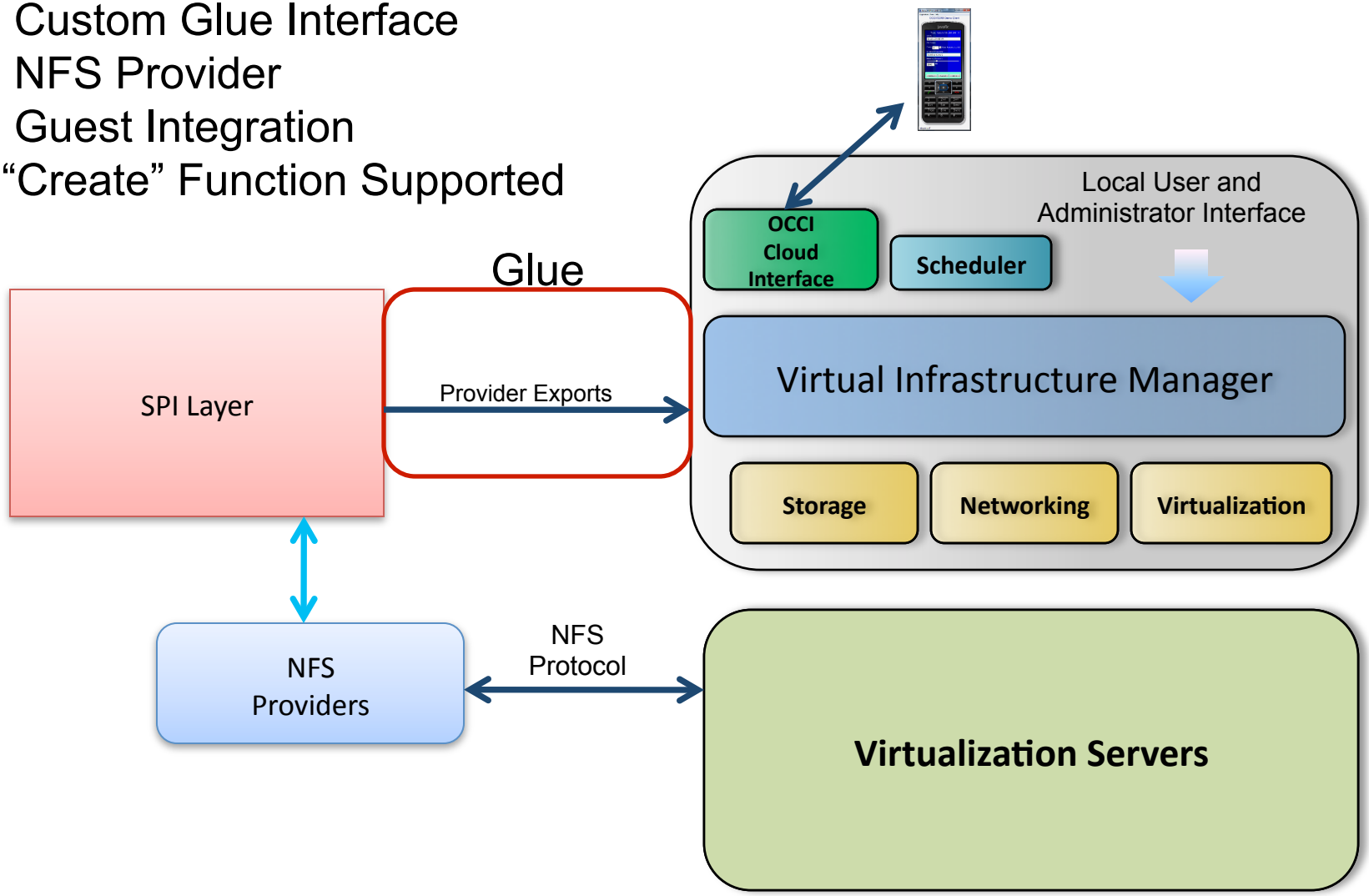
- Open Source Created and Supported at the University of Madrid under Dr. Rubén S. Montero & Dr. Ignacio M. Llorente. CDMI Integration Provided by Gary.Mazzaferro @AlloyCloud .com
- Orchestrates storage, network and virtualization technologies to enable the dynamic placement of multi-tier services on distributed infrastructures, combining both data center resources and remote cloud resources, according to allocation policies
- Provides internal and Cloud administration and user interfaces for the full management of the IaaS Cloud platform



- Private Cloud: Management of virtual infrastructure in the data-center or cluster
- Hybrid Cloud : Combination of private with Cloud resources
- Public Cloud: Cloud interfaces for the full management of services

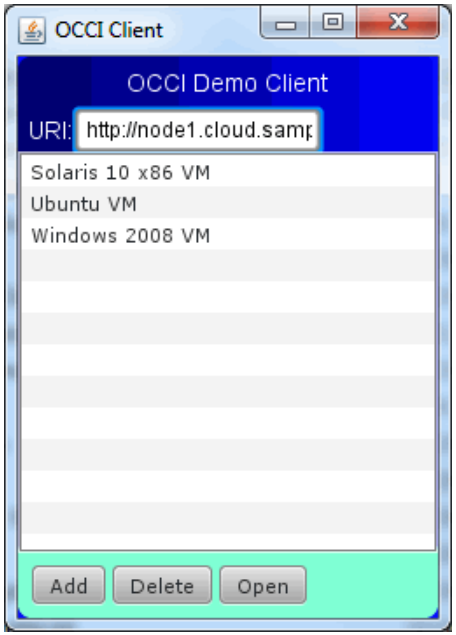
CDMI OCCI/OpenNebula Integration

- Custom Glue Interface
- NFS Provider
- Guest Integration
- "Create" Function Supported

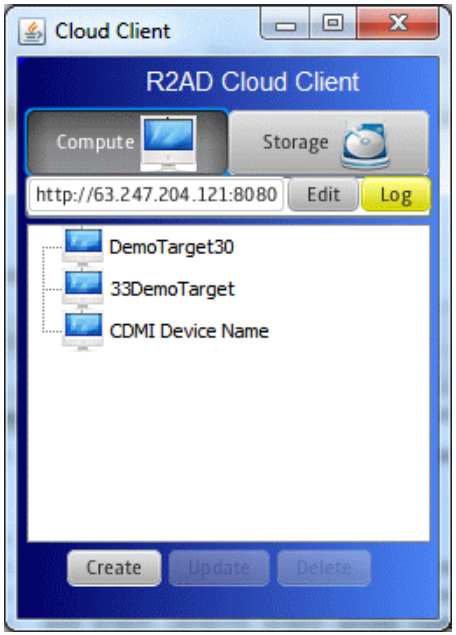


Client Requirements

- Simple/Small
  - Implement use-case (first with simple get/put)
  - Keep UI footprint small – potential phone app
  - UI became more sophisticated with experience



Flat list to Tree
Added Tabs
Icons
Edit Resource Location
Learning JavaFX
Authentication Models
Added Log



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Client Interactions

- Required to communicate with OCCI + CDMI
  - Clear specifications and examples very helpful
  - Used local test server to code up initial GET/PUT
  - Use case driven (keeping goals on target)