

Cloud Technologies Application at JINR

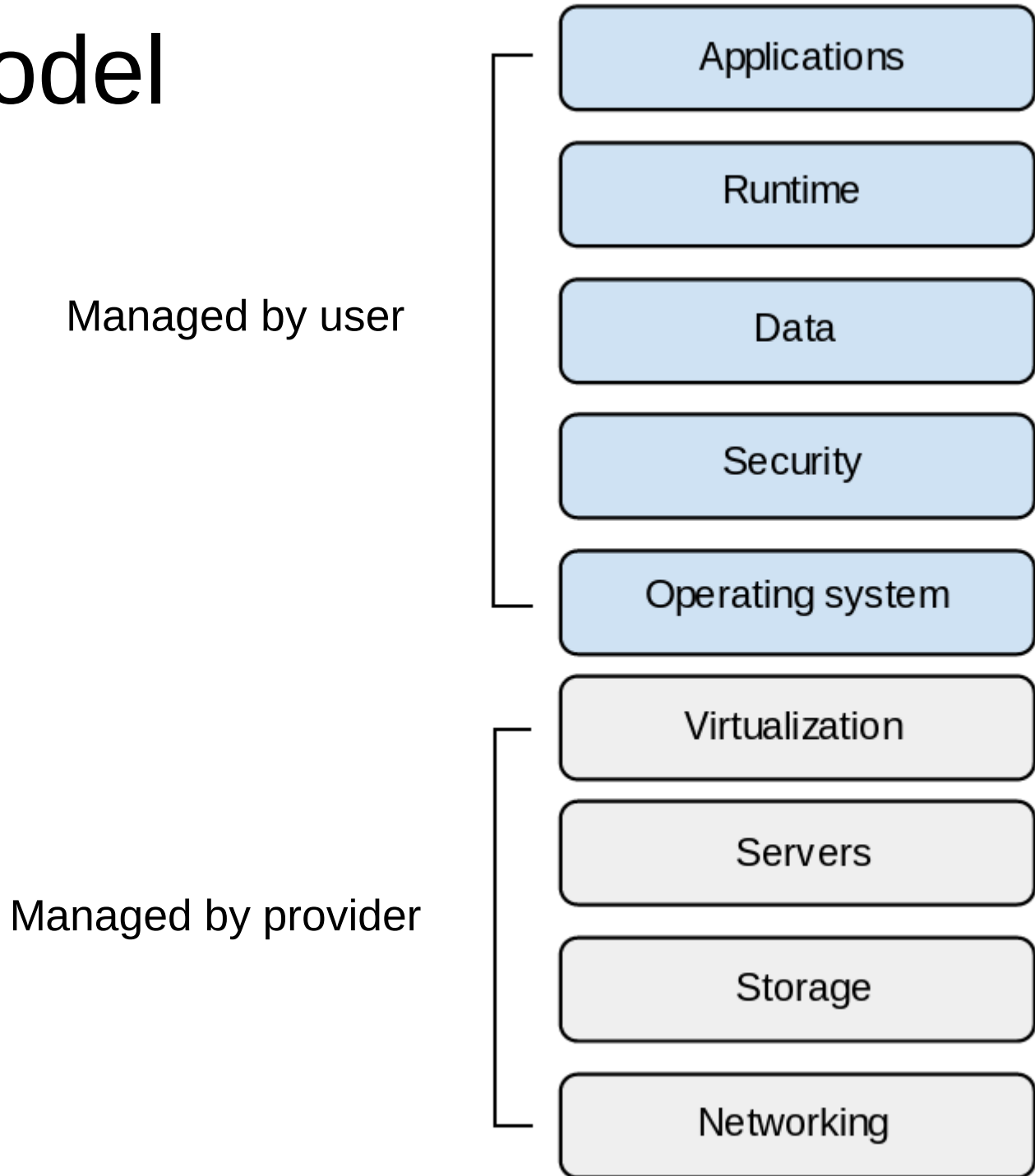
N. Balashov¹, A. Baranov¹, N. Kutovskiy¹², R. Semenov¹

cloud.jinr.ru

¹ Laboratory of Information Technologies, JINR, Dubna, Russia

² National Scientific and Educational Centre of Particle and High Energy Physics of the Belarusian State University, Minsk, Belarus

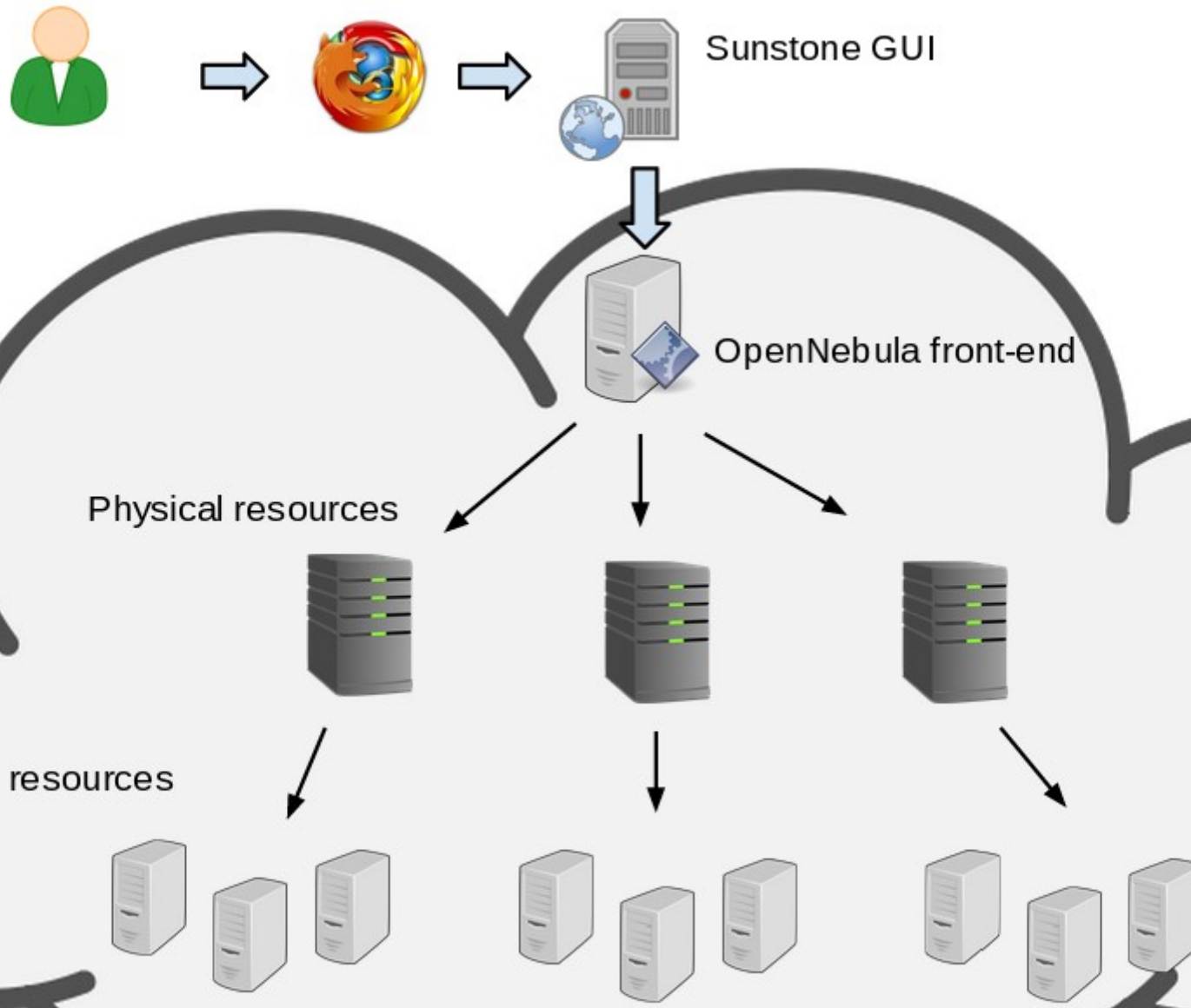
IaaS model



Tasks

- **Developers**
 - development, testing and debugging various apps in various environments
- **System administrators**
 - testing and studying specifics of installation and operation of new apps or testing updates
- **Users**
 - installing and using apps for their daily work

JINR Cloud structure



Create Virtual Machine

Virtual Machine Name

Select Template

Search



| System | Saved |
|--------|-------|
|--------|-------|

auth_krb
x1 - 512MB
...

OpenVZ - scientific_6-x86_64 - 1CPU - 512Mb RAM - 2GB HDD_clst36
x1 - 512MB
...

OpenVZ - scientific_6-x86_64 - 1CPU - 1Gb RAM - 10GB HDD_clst36
x1 - 1GB
...

KVM - scientific_6-x86_64 - 1CPU - 512Mb RAM_clstKVM
x1 - 512MB
...

KVM - scientific_6-x86_64 - 1CPU - 1Gb RAM_clstKVM
x1 - 1GB
...

Copy of KVM - scientific_6-x86_64 - 1CPU - 1Gb RAM_clstKVM
x1 - 1GB
...

Customize

or

Create



Update VM Template

Wizard Advanced mode

- General
- Storage
- Network
- OS Booting
- Input/Output
- Context
- Other

Description

Windows SERV

Memory 512 MB

CPU 1

Advanced options

VCPU 1

Update

- Admin
- -
 -

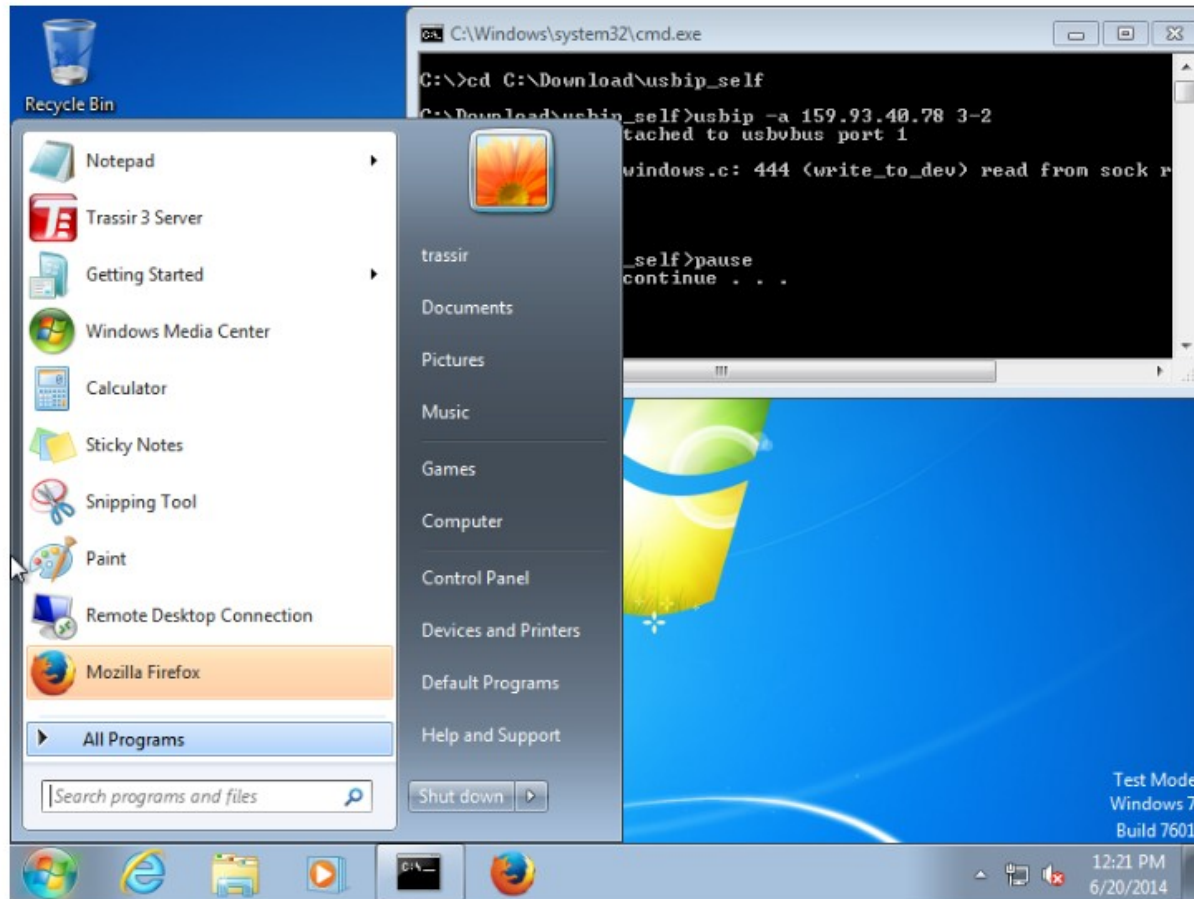
Virtual Machines



- KVM_host**
 x1 - 1GB
 Public_openvz_scientific_6-x86_64_cntxt_clst36
 159.93.36.129
 RUNNING 1 Jun
- KVM_host_2**
 x1 - 1GB
 Public_kvm_SL-6_x86-64_cntxt_clstrKVM
 159.93.36.174
 RUNNING 1 Jun
- test-795**
 x1 - 2GB
 Public_openvz_scientific_6-x86_64_cntxt_clst36
 159.93.36.130
 RUNNING 1 May
- Git_server**
 x0.1 - 256MB
 My_openvz_scientific_6-x86_64
 159.93.36.117
 RUNNING 5 Apr
- KVM_SL_6.4_x86-64**
 x1 - 512MB
 Public_kvm_SL-6_x86-64_cntxt_clstrKVM
 159.93.36.135
 RUNNING 3 Apr
- KVM_OpenVZ_HOST2**
 x2 - 2GB
 KVM_OpenVZ_Host_new
 159.93.36.143
 RUNNING 3 Feb
- FN_opennebula 4.4.1->4.6.0_test_infr**
 x1 - 1GB
 FN_scientific_6-x86_64_cntxt
 159.93.36.32
 RUNNING 1 Feb
- KVM_OpenVZ_HOST1**
 x2 - 2GB
 KVM_OpenVZ_Host_new
 159.93.36.158
 RUNNING 5 Feb
- FN_opennebula 4.4.1_test_infr**
 x1 - 1GB
 FN_scientific_6-x86_64_cntxt
 159.93.36.123
 RUNNING 4 Feb

Create Virtual Machine

VNC Connected (unencrypted) to: QEMU (one-780) Send Ctrl+Alt+Del



VNC

3.36.171

3.36.119

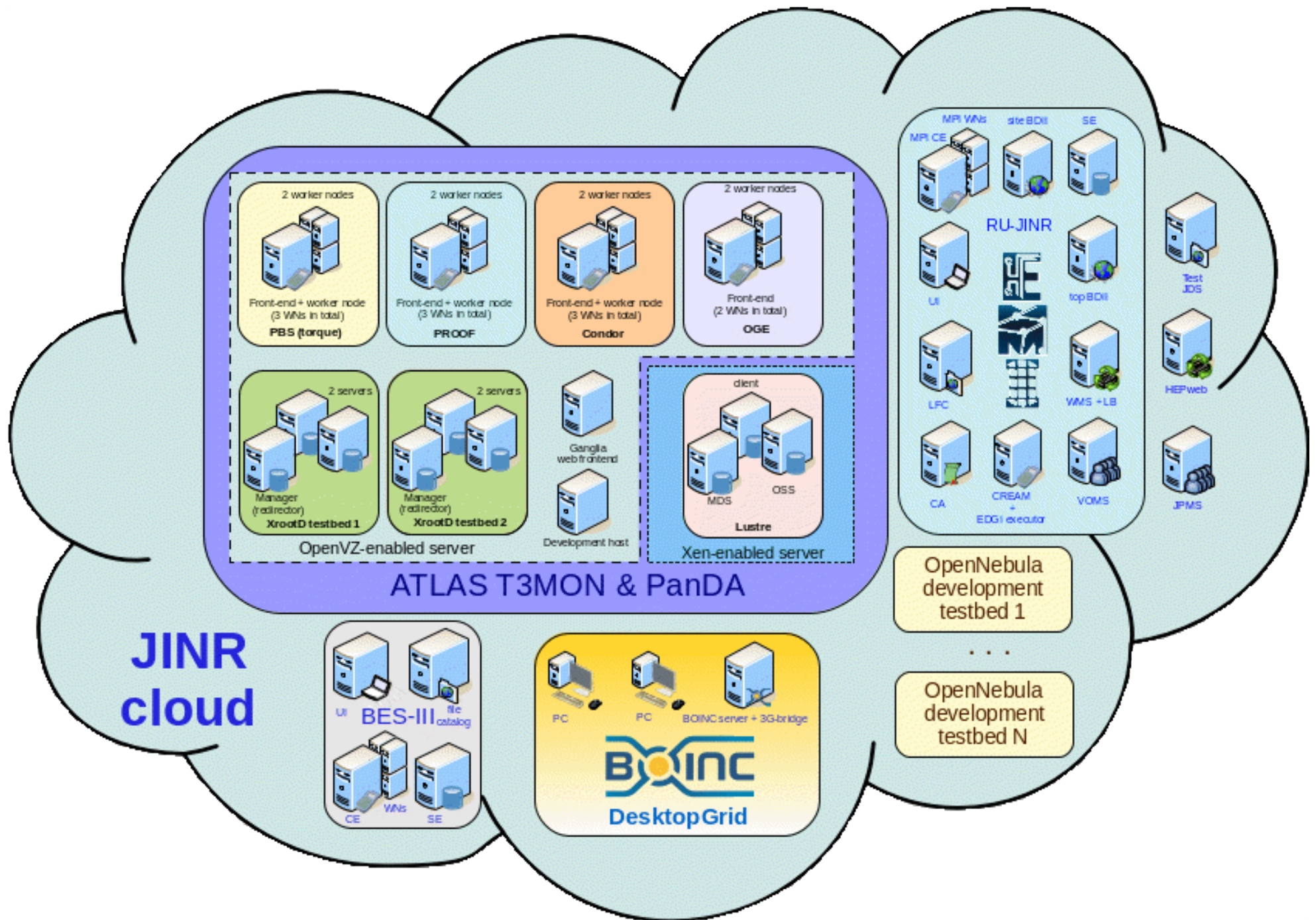
1

10

Implementation

- OpenNebula
- Two types of virtualization:
 - OpenVZ (OS-level virtualization),
 - KVM (full virtualization)
- Two types of cluster nodes:
 - servers with two mirrored disk drives for highly reliable VMs
 - servers with a single disk for educational, research or test VMs
- Cloud access:
 - Sunstone web interface
 - command-line interface
- VMs access:
 - public IP addresses,
 - {rsa,dsa}-keys,
 - password

Usage



Service development directions

- Test, educational and research tasks as part of participation in various projects
- Systems and services deployment with high reliability and availability requirements
- Increasing computing capabilities of the grid-infrastructures during peak loads

Profit







- Efficient instrument to manage services and servers
- Better hardware utilization
- Services and servers higher reliability
- Reduced proprietary apps owning cost by giving multiple users access to a single installation
- Ability to extend computing power of grid-infrastructures by means of cloud resources

Current work and plans

- Process the feedback
- Deploy support web portal and mailing list
- Re-design Sunstone interface to improve end-users' experience
- Implement authentication to the VMs using Kerberos

Team

- Nikita Balashov
 - OpenNebula extensions development and support
 - User support
- Alexandr Baranov
 - Cloud administration, OpenVZ driver testing
 - User support
- Nikolay Kutovskiy
 - Project coordination
 - User support
- Roman Semenov
 - Administration
 - User support

-  Dashboard
-  Virtual Resources
-  Infrastructure
-  Marketplace
-  OneFlow
-  **Request resources**

 Send

 General Information

Full name

E-mail

Manager's full name

Manager's e-mail

Laboratory: LIT ▾

Topic number: No topic ▾

Details on the listed topics see [here](#)

 Required Resources

CPUs (cores)

RAM (GB)

Storage (GB)

Number of virtual machines

OS type: Linux ▾

Comment (purpose of the requested resources or reason for quotas change)