Cloud Technologies Application at JINR

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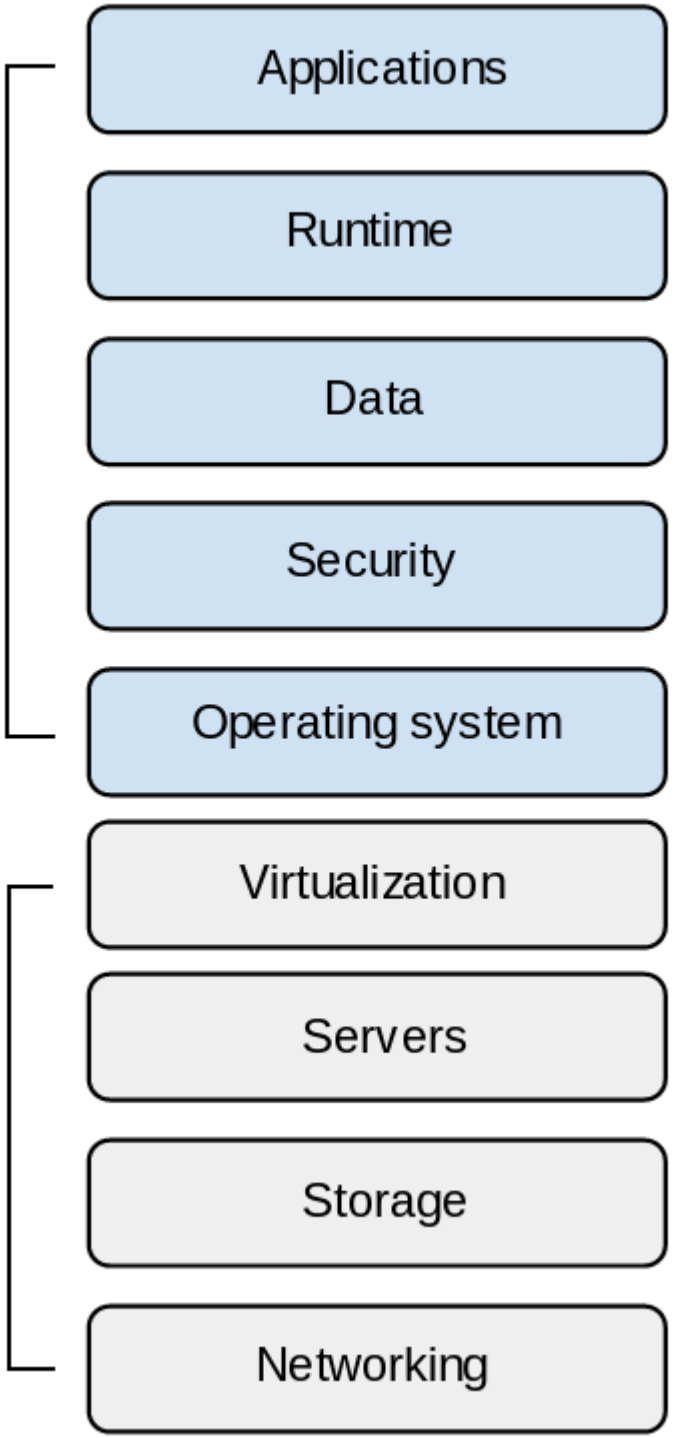
cloud.jinr.ru

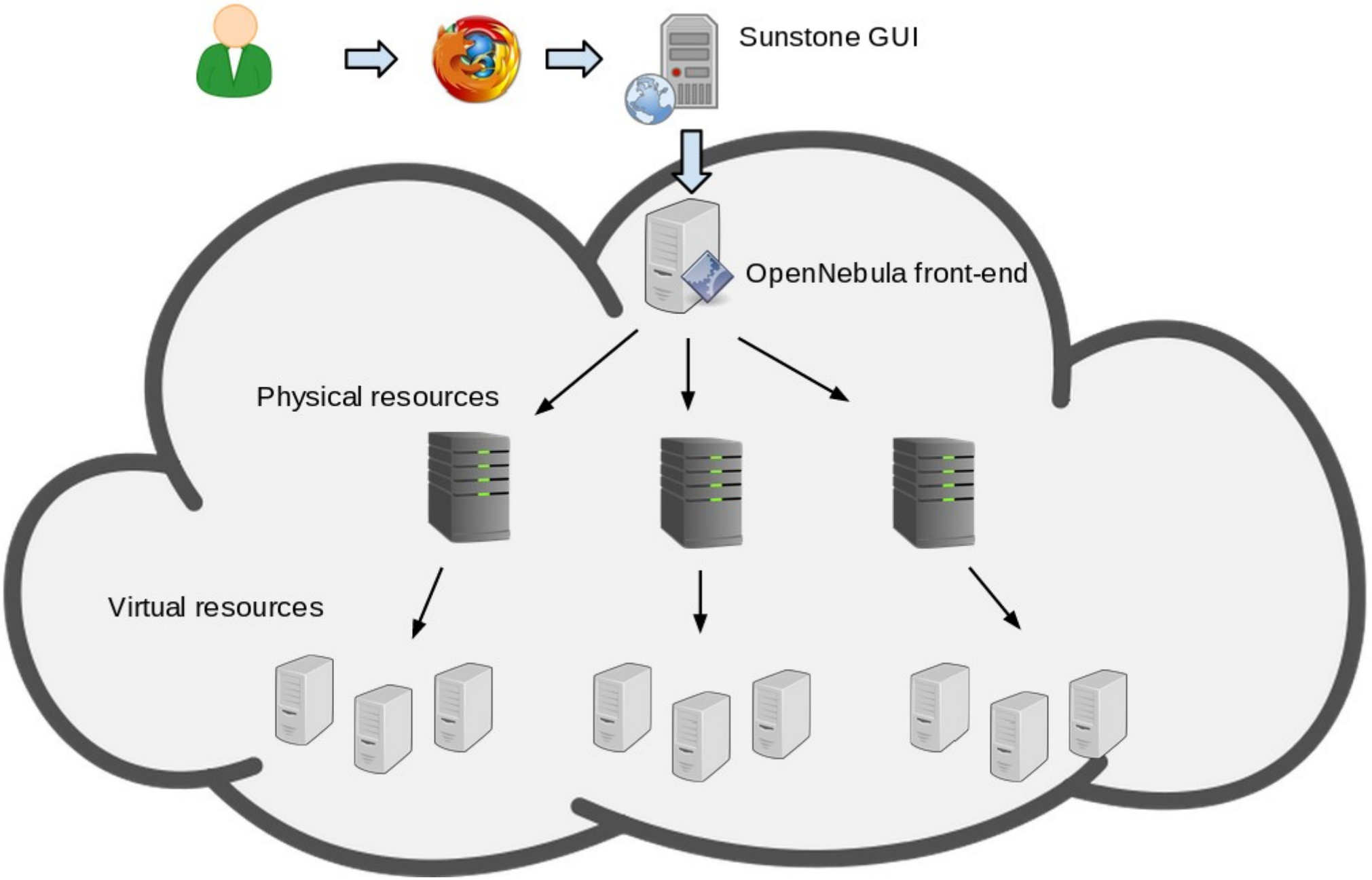
IaaS model

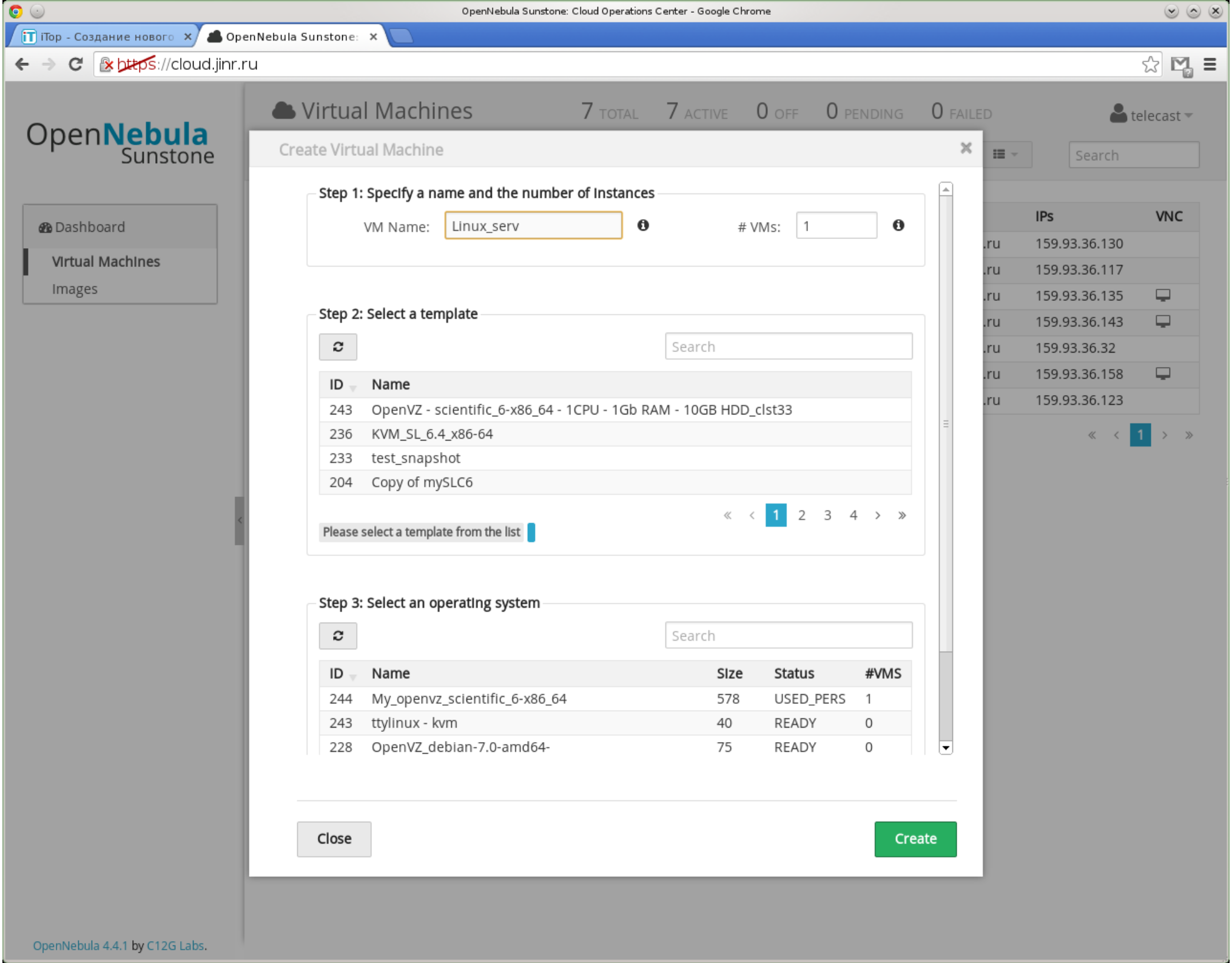

Applications
Runtime
Data
Security
Operating system
Virtualization
Servers
Storage
Networking
Managed by user
Managed by provider

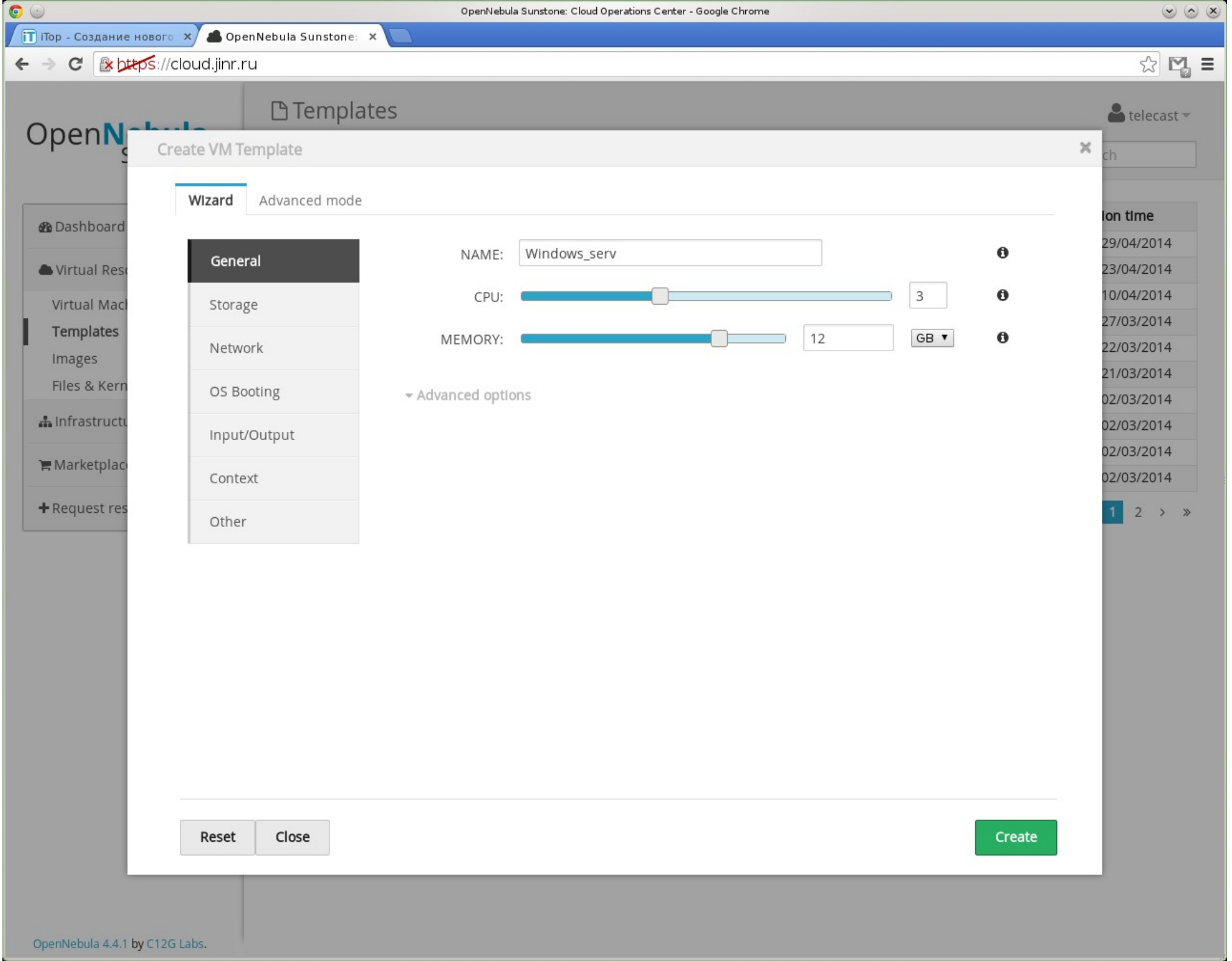
Tasks

- 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




OpenNebula Sunstone: Cloud Operations Center - Google Chrome
iTop - Создание нового
OpenNebula Sunstone
https://cloud.jinr.ru
OpenNebula Sunstone
Dashboard
Virtual Machines
Images
Virtual Machines
7 TOTAL
7 ACTIVE
0 OFF
0 PENDING
0 FAILED
telecast
Search
IPs
VNC
159.93.36.130
159.93.36.117
159.93.36.135
159.93.36.143
159.93.36.32
159.93.36.158
159.93.36.123
Create Virtual Machine
Step 1: Specify a name and the number of Instances
VM Name:
Linux_serv
VMs:
1
Step 2: Select a template
Search
ID
Name
243
OpenVZ - scientific_6-x86_64 - 1CPU - 1Gb RAM - 10GB HDD_clst33
236
KVM_SL_6.4_x86-64
233
test_snapshot
204
Copy of mySLC6
Please select a template from the list
Step 3: Select an operating system
Search
ID
Name
Size
Status
#VMS
244
My_openvz_scientific_6-x86_64
578
USED_PERS
1
243
ttylinux - kvm
40
READY
0
228
OpenVZ_debian-7.0-amd64-
75
READY
0
Close
Create
OpenNebula 4.4.1 by C12G Labs.


OpenNebula Sunstone: Cloud Operations Center - Google Chrome
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OpenNebula Sunstone:
https://cloud.jinr.ru
Templates
telecast
Create VM Template
Wizard
Advanced mode
General
Storage
Network
OS Booting
Input/Output
Context
Other
NAME:
Windows_serv
CPU:
3
MEMORY:
12
GB
Advanced options
Reset
Close
Create
Dashboard
Virtual Mach
Templates
Images
Files & Kern
Infrastructu
Marketplac
Request res
ion time
29/04/2014
23/04/2014
10/04/2014
27/03/2014
22/03/2014
21/03/2014
02/03/2014
02/03/2014
02/03/2014
02/03/2014
1
2
OpenNebula 4.4.1 by C12G Labs.

OpenNebula Sunstone

- Dashboard
- Virtual Machines
- Images

Virtual Machines

7 TOTAL 7 ACTIVE 0 OFF 0 PENDING 0 FAILED

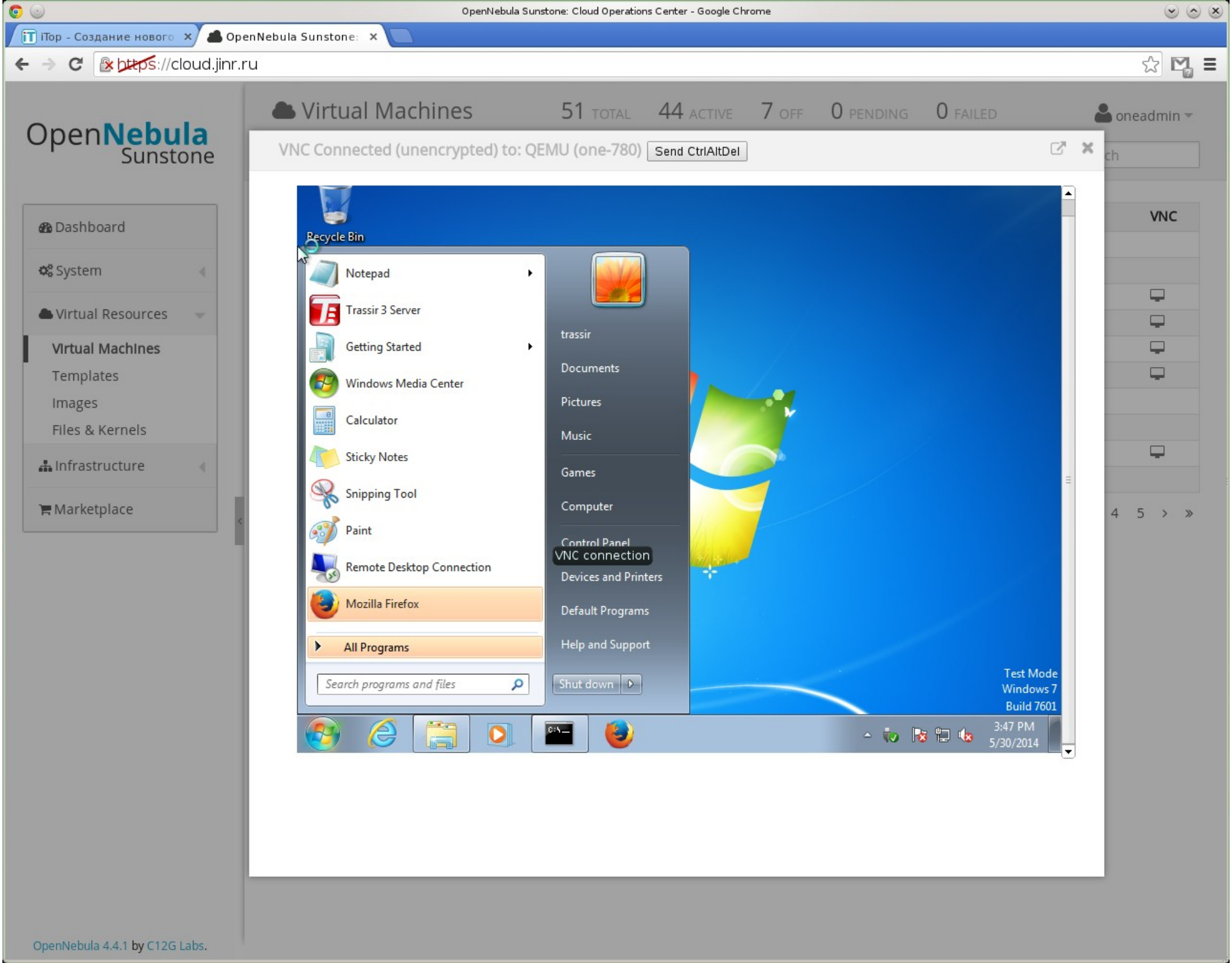
telecast

Launch

Search

ID	Owner	Group	Name	Status	Host	IPs	VNC
795	telecast	telecast	test-795	RUNNING	cldwn19.jinr.ru	159.93.36.130	
726	telecast	telecast	Git_server	RUNNING	cldwn12.jinr.ru	159.93.36.117	
725	telecast	telecast	KVM_SL_6.4_x86-64	RUNNING	cldwn02.jinr.ru	159.93.36.135	
487	telecast	telecast	KVM _OpenVZ_HOST2	RUNNING	cldwn07.jinr.ru	159.93.36.143	
481	telecast	telecast	FN_opennebula 4.4.1->4.6.0_test_infr	RUNNING	cldwn04.jinr.ru	159.93.36.32	
475	telecast	telecast	KVM _OpenVZ_HOST1	RUNNING	cldwn11.jinr.ru	159.93.36.158	
473	telecast	telecast	FN_opennebula 4.4.1_test_infr	RUNNING	cldwn03.jinr.ru	159.93.36.123	

10 Showing 1 to 7 of 7 entries « ‹ 1 › »


OpenNebula Sunstone: Cloud Operations Center - Google Chrome
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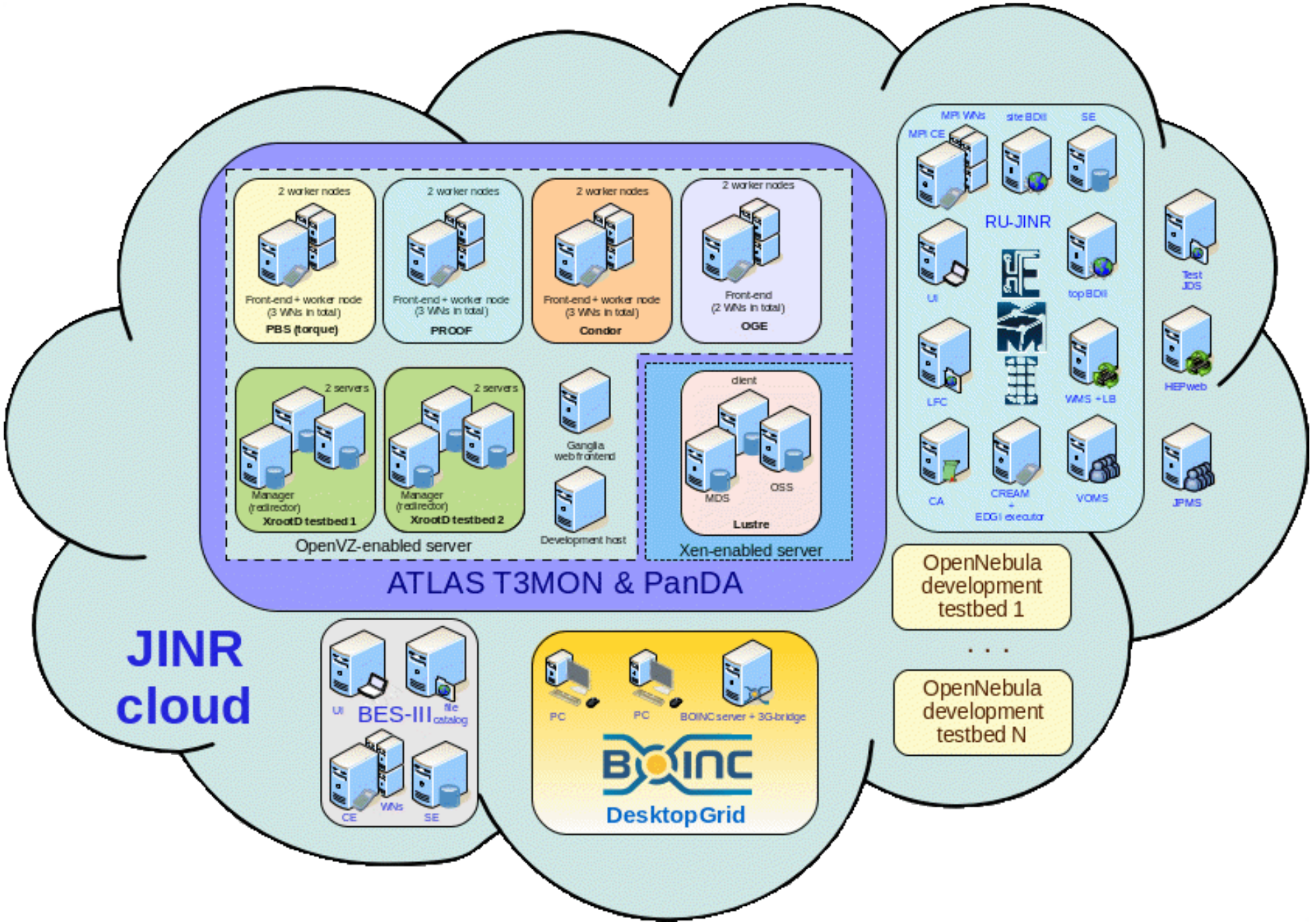
OpenNebula Sunstone
Virtual Machines
51 TOTAL
44 ACTIVE
7 OFF
0 PENDING
0 FAILED
oneadmin
Dashboard
System
Virtual Resources
Virtual Machines
Templates
Images
Files & Kernels
Infrastructure
Marketplace
VNC
VNC Connected (unencrypted) to: QEMU (one-780)
Send CtrlAltDel
Recycle Bin
Notepad
Trassir 3 Server
Getting Started
Windows Media Center
Calculator
Sticky Notes
Snipping Tool
Paint
Remote Desktop Connection
Mozilla Firefox
All Programs
Search programs and files
trassir
Documents
Pictures
Music
Games
Computer
Control Panel
VNC connection
Devices and Printers
Default Programs
Help and Support
Shut down
Test Mode
Windows 7
Build 7601
3:47 PM
5/30/2014
4 5
OpenNebula 4.4.1 by C12G Labs.

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


JINR cloud
2 worker nodes
Front-end + worker node (3 WNs in total)
PBS (torque)
2 worker nodes
Front-end + worker node (3 WNs in total)
PROOF
2 worker nodes
Front-end + worker node (3 WNs in total)
Condor
2 worker nodes
Front-end (2 WNs in total)
OGE
2 servers
Manager (redirector)
XrootD testbed 1
2 servers
Manager (redirector)
XrootD testbed 2
Ganglia web frontend
Development host
OpenVZ-enabled server
client
MDS
OSS
Lustre
Xen-enabled server
ATLAS T3MON & PanDA
MPI WNs
site BDII
SE
MPI CE
RU-JINR
UI
top BDII
Test JDS
LFC
VOMS + LB
HEPweb
CA
CREAM + EDGI executor
VOMS
JPMS
OpenNebula development testbed 1
. . .
OpenNebula development testbed N
UI
BES-III
file catalog
CE
WNs
SE
PC
PC
BOINC server + 3G-bridge
BOINC
DesktopGrid

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-infrustructures during peak loads

Profit

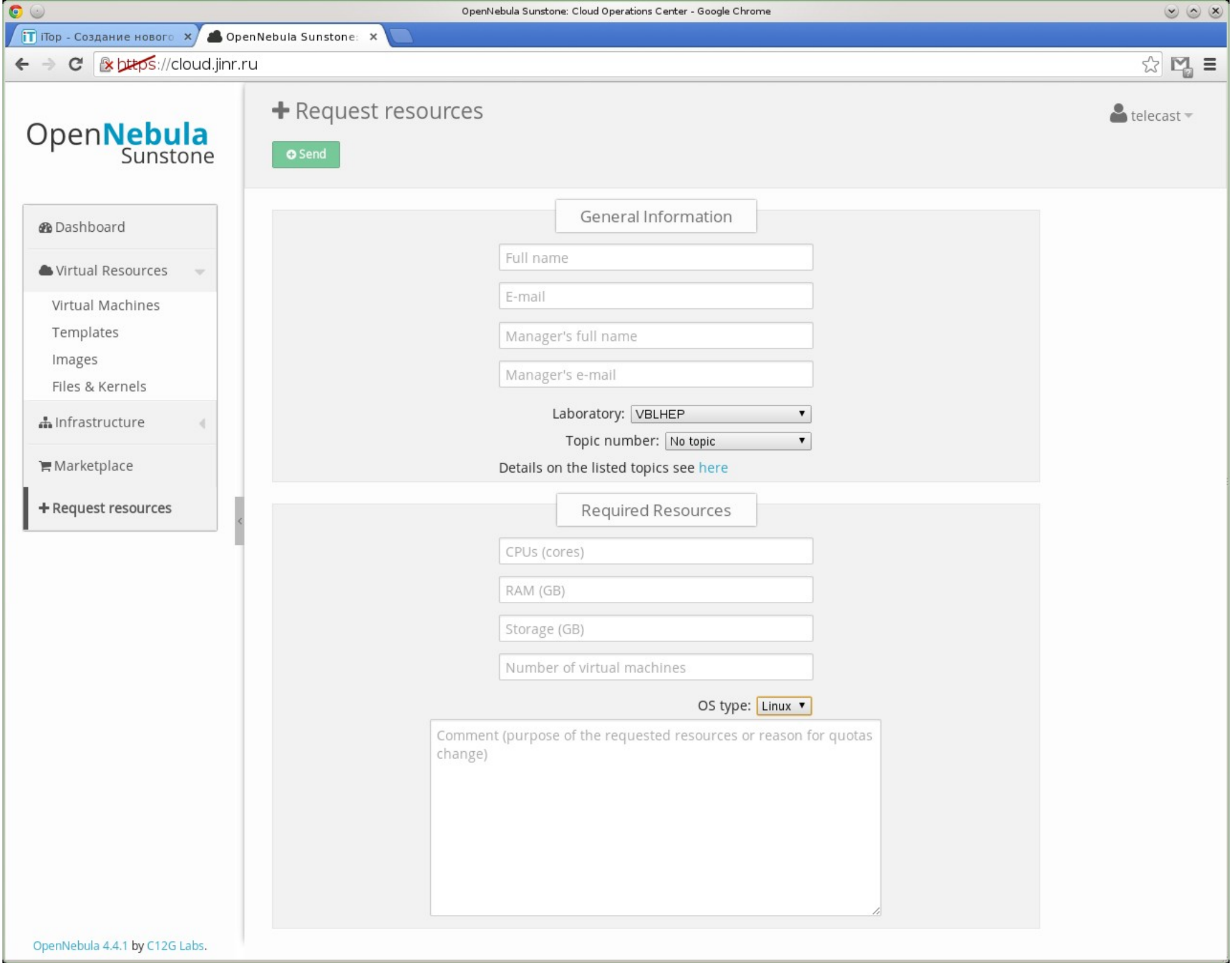
- Efficient instrument to manage services and servers
- Better hardware utilization
- Services and servers higher reliability
- Reduced proprietary apps owning cost by giving multiple users access to a single installation
- Ability to extend computing power of grid-infrustructures by means of cloud resources

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
- Nikolai Kutovskiy
  - Project coordination
  - User support
- Roman Semenov
  - Administration
  - User support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Request resources
telecast
Send
Dashboard
Virtual Resources
Virtual Machines
Templates
Images
Files & Kernels
Infrastructure
Marketplace
Request resources
General Information
Full name
E-mail
Manager's full name
Manager's e-mail
Laboratory: VBLHEP
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)
OpenNebula 4.4.1 by C12G Labs.