BalticCloud: Regional Cloud Playground

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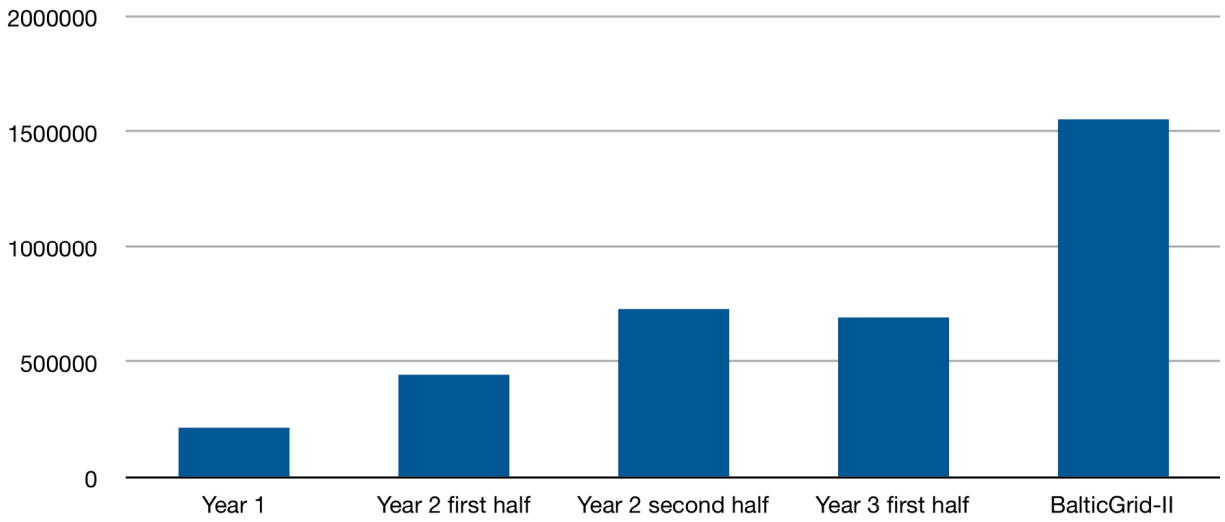
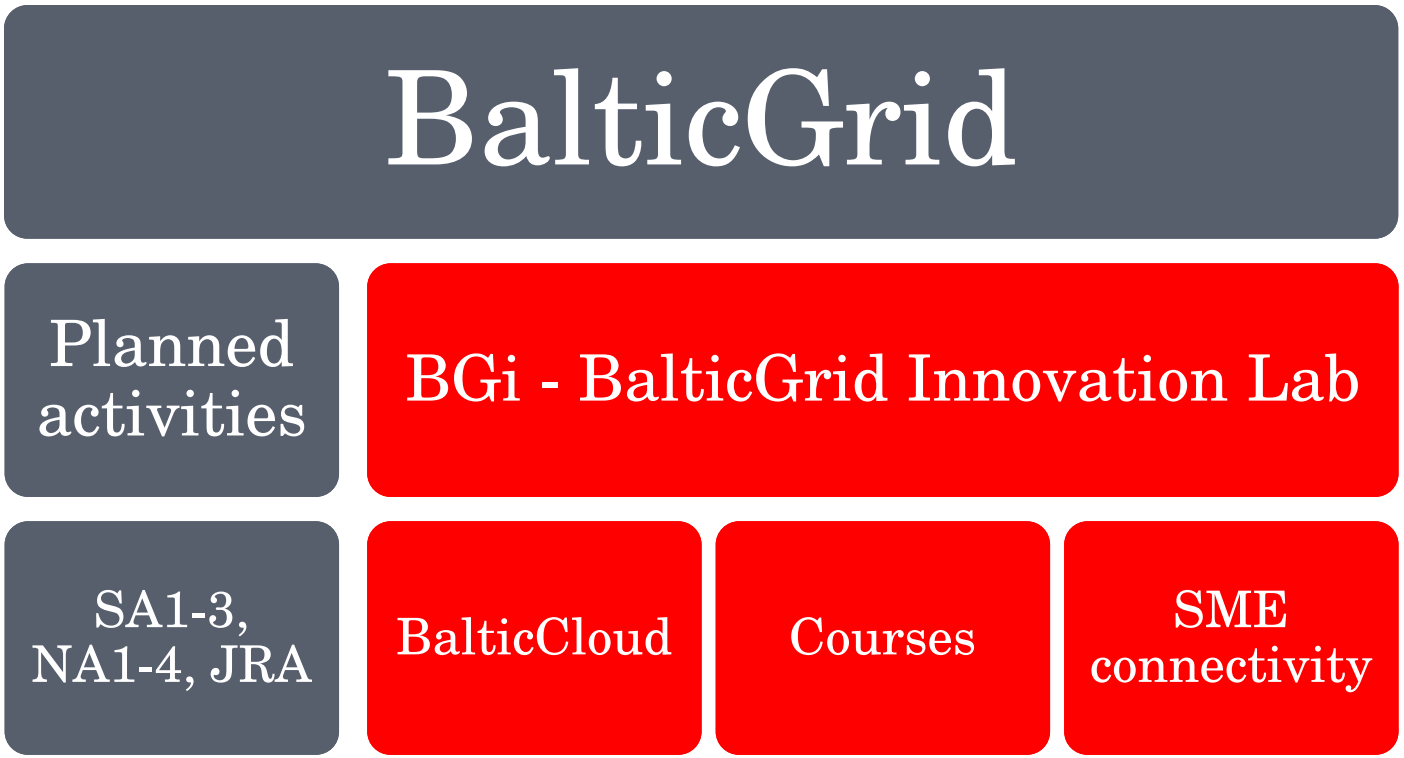
Technical coordinator of BC

Basis

- BalticGrid II
  - Started 1st of May, 2008, duration - 2 years
  - Continues the BalticGrid project (2005-2008)
  - 13 partners from Baltic States, Belarus, Poland, Sweden, Switzerland
  - Financing – 3 MEUR
  - Collaborating project for EGEE
  - Supporting NGIs and their collaboration



How it fits together



Motivation

- Low number of applications and application areas in BG
- Too steep learning curve for the users
- Low acceptance within the industry
  - Almost non-existent collabration with SMEs
- Problems with adapting new applications
  - Typically, need a “project” for that
- Following the trend

Goals

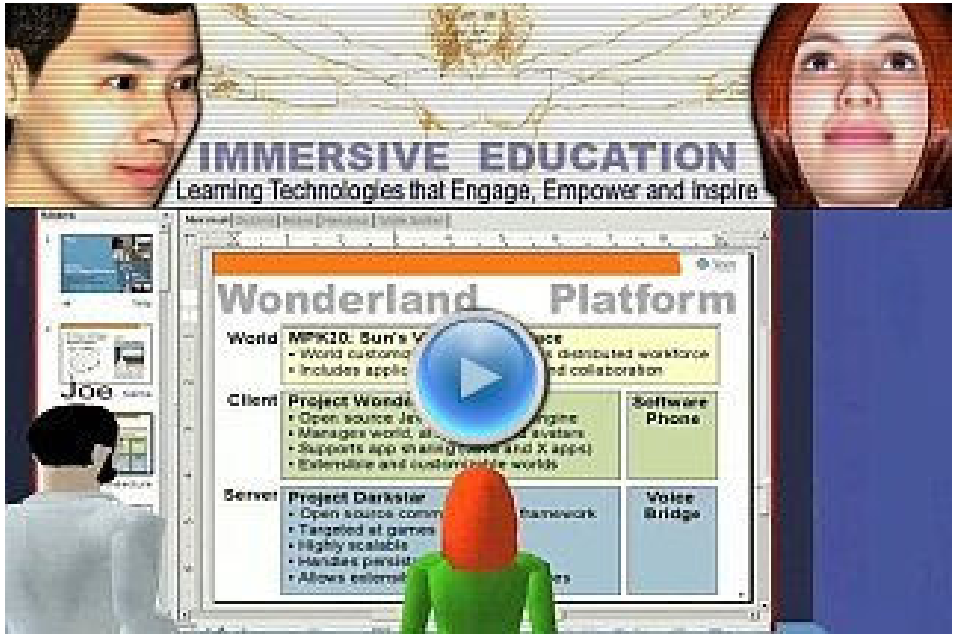
- One more, hopefully, easier access point to our BalticGrid resources
- Building cloud-competence in the region
  - Academia
  - Industry

Organisation

- BalticGrid asked one center per country to install a cloud instance
- SNIC (Swedish National Infrastructure for Computing) supported the coordination of the work
- Learning by doing - what's in it for eScience, really? Is industry interested?
- Started information gathering and sharing through our site; went to cloud expos and conferences
- Took early contact with open source cloud vendors, decided to focus on Eucalyptus

Use cases

- First usage
  - Virtual world installations (Wonderland), for the Immersive Education organization
  - Rendering of animations for an Estonian architecture company



Technology

- Our (main) choice:  Eucalyptus

- Lead by Rich Wolski, UCSB
- Integrated with  ubuntu
- Also supported by: RIGHTSCALE™

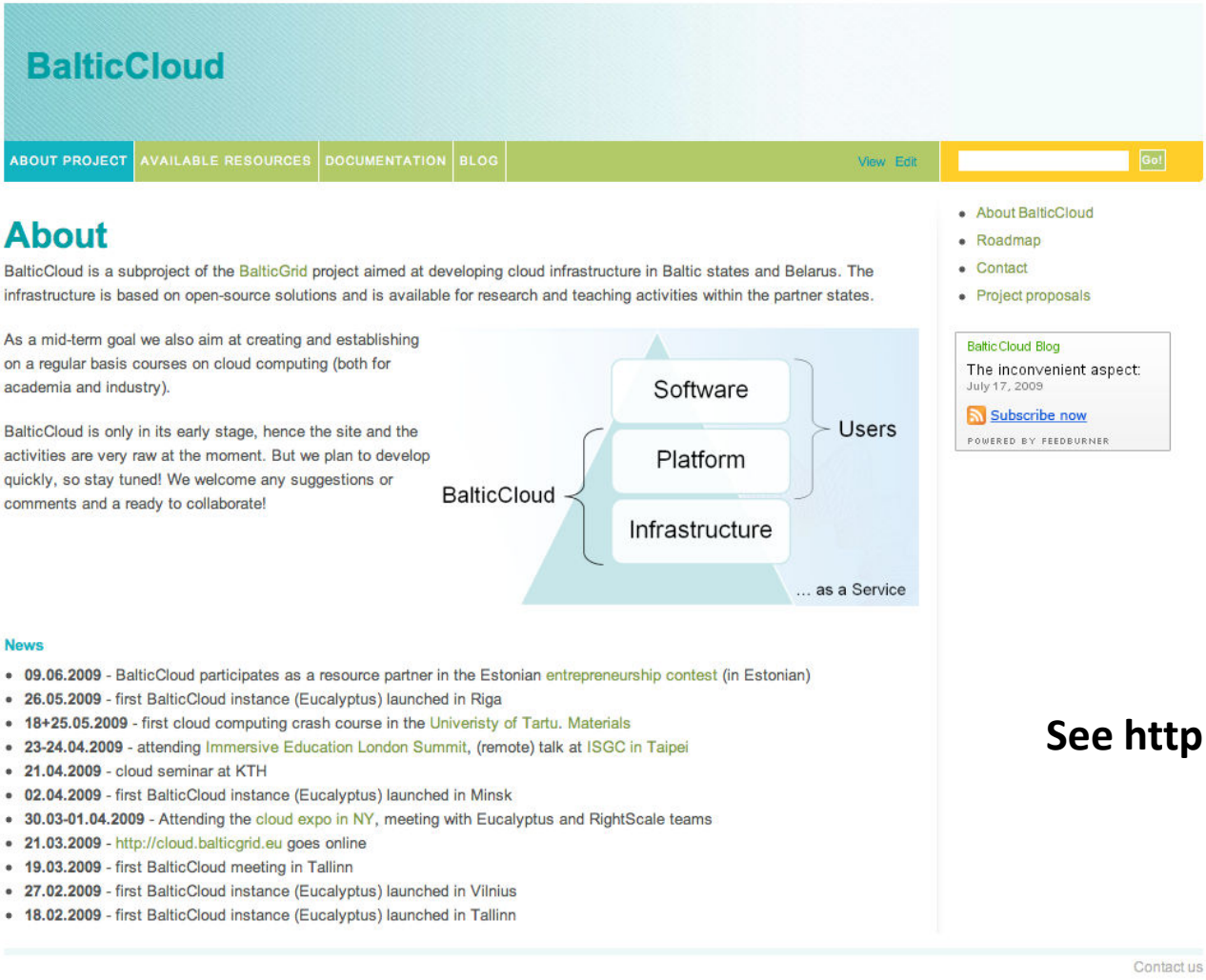
  http://open.eucalyptus.com/wiki/ToolsEcosystem

- Looking at OpenNebula.org

Concerns

- Will the open source alternatives be supported in a satisfactory way?
  - “Not invented here” easily becomes “Not supported here”
- Missing standards for interoperability
  - Vendor lock-in
- Missing features

Status of BalticCloud



See http://cloud.balticgrid.eu

Status: UIIP NASB (Belarus) 1/3

- Installation
  - Xen-based Eucalyptus installation
  - HW: 6 CPU, 24 cores (enough for present tasks);
- Used by UIIP NASB grid team for designing dynamic grid resource reservation and adjustment mechanisms for UNICORE sites

Status: UIIP NASB (Belarus) 2/3

- We have prepared a pilot project proposal on deploying one of the advanced information systems of the State Committee for Science and Technologies of the Republic of Belarus (SCST) into the cloud infrastructure provided by the datacenter of the UIIP NASB.
- The information system to be cloudified is created and administered on behalf of the SCST by Republican Centre for Technology Transfer (http://ictt.by). The system has thousands of visitors and hundreds of active users who regularly post and update their Technology Offers and Requests, disseminate news, upload technology transfer related applications, graphical and video data.
- The primary goal of the pilot project is proving the concept of cloud computing being a good way to go not only for SMEs but for some governmental agencies as well.

Status: UIIP NASB (Belarus) 3/3

Plans:

UIIP NASB have plans for cloud usage growth, expansion, connection to the outside world and to other countries. [e.g. right now we are buying hardware for the expansion of our cloud infrastructure]

Issues:

To increase cloud infrastructure stability we use custom kernel builds for Xen virtual machine images deployed in the cloud.

Status: VGTU (Lithuania) 1/3

- Xen-based Eucalyptus installation
- HW: 12 cores

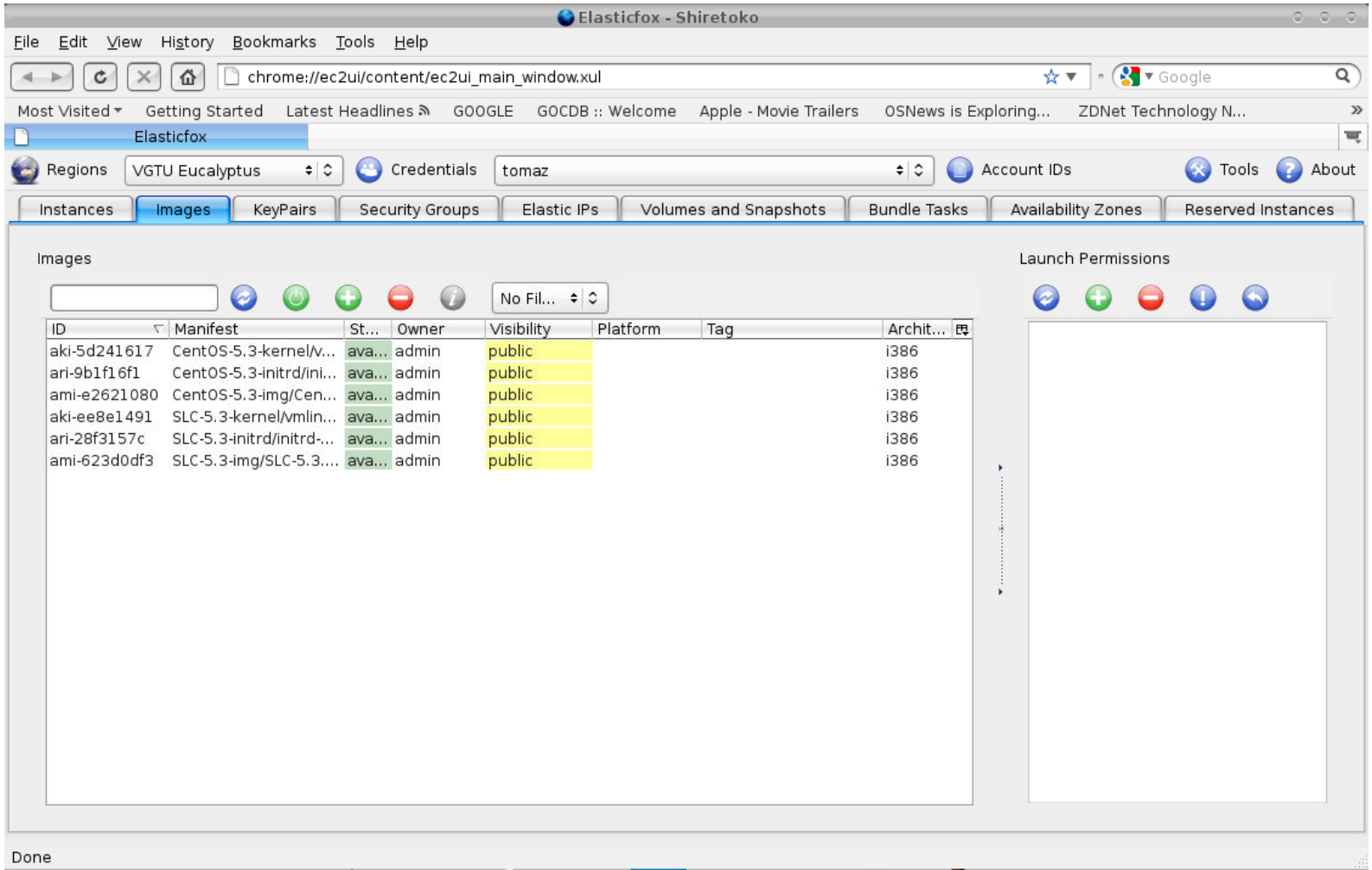
- "Cloud computing" activity is included into LitGrid programme 2009.

- Problems

  In recent eucalyptus version 1.5.2 the famous error: "Error 500 message expired" that prevented graphical tools like Elasticfox, Rightscale, Ylastic, EC2Dream from working with the Eucalyptus instances, was not fixed. Fixed manually.

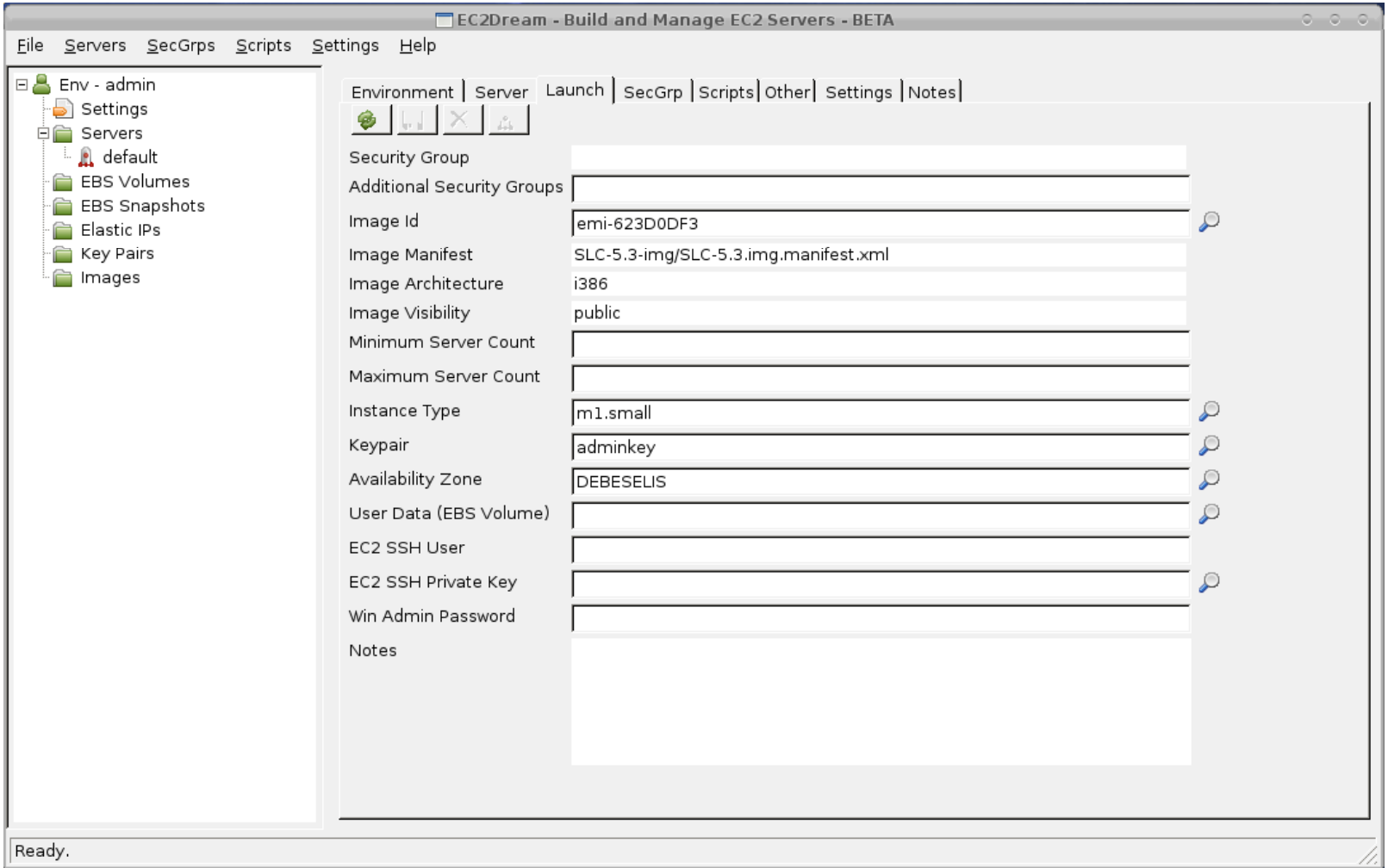
Status: VGTU (Lithuania) 2/3

- We have installed and use ElasticFox for Eucalyptus



Status: VGTU (Lithuania) 3/3

- We have tried EC2Dream for Eucalyptus management



Status: PDC (Sweden)

Ongoing installation

Preparing to use older HPC resources for cloud tesbed

Status: RTU (Latvia)

Small Xen-based Eucalyptus installation

Usage

- Simple tests
- Playground for students

Issues

- System is not stable, not ready for production.

Status: VU (Lithuania)

- **Installation**
  - Small Xen-based Eucalyptus installation
  - Evaluation of VMware and MS Hyper-V
- **Usage:** Small tests, nothing in production
- **Issues:** Current system is not very stable

Status: PSNC (Poland)

- **Installation:** small Xen-based Eucalyptus installation
- **Usage:** Small tests, nothing in production
- **Plans for usage and expansion:** local users (PSNC developers and research team) and

Status: NICPB (Estonia) 1/2

- Installations:
  - KVM-based Eucalyptus installation (40-72 cores)
  - VMware installation (1 node, testing)
  - “new” ~80 core testbed
- On-going
  - Hadoop FS as a replacement for DPM/dCache
  - Large scale graph processing for SNA (Skype)
  - Creation of the virtual private networks using Eucalyptus, OpenVPN and dynamic DNS - to be able to provide something like the recently rolled out Amazon Virtual Private Cloud (http://aws.amazon.com/vpc/)
  - Development of the cloud-based rendering solution in cooperation with 5 estonian companies
  - Test deployment of SOLR (open-source enterprise search engine)

Status: NICPB (Estonia) 2/2

- Problems
  - Eucalyptus sw is still **too alpha/pre-beta**. The 1.6 _should_ be better, incl. support for multiple data centers (availability zones) and more robust operations, but it's not out yet
  - Accounting of consumed resources is complicated
  - Integration with indentity providers
  - Monitoring is complicated
    - Instance
    - Cloud installation
  - Necessity to support existing clients ☺
    - CMS, BG

AOB

- BalticCloud was/is used as a platform for cloud courses
  - More on that in the next talk
- BalticCloud participates as a resource partner in the Estonian entrepreneurship contest
- The upcoming Northern Europe Cloud will make use of the BalticCloud
  - More on that in the next talk

Where next?

- Connecting the clouds
  - Availability zones (Eucalyptus 1.6)
  - OpenNebula
  - Standards for interoperability
    - http://www.opencloudmanifesto.org/
    - Open Cloud Computing Interface (OCCI)
    - http://code.google.com/p/unifiedcloud/
- More work on monitoring and stability
- Proceeding with the current activities

LA ÚLTIMA DIAPOSITIVA

What was that all about?

Thank you!

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