
FG Resource Report

Release 0.4

Hyungro Lee Gregor von Laszewski
Fugang Wang Geoffrey C. Fox

January 05, 2014

CONTENTS

1	Summary Report (All)	3
1.1	Wall Hours by Clusters (Total, monthly)	4
1.2	VM Count by Clusters (Total, monthly)	6
1.3	Users Count by Clusters (Total, monthly)	8
2	Usage Report sierra	11
2.1	Histogram	12
2.2	Distribution	16
2.3	System information	20
3	Usage Report india	23
3.1	Histogram	24
3.2	Distribution	28
3.3	System information	35
4	Usage Report hotel	37
4.1	Histogram	38
4.2	Distribution	42
4.3	System information	48
5	Usage Report alamo	51
5.1	Histogram	52
5.2	Distribution	56
5.3	System information	61
6	Usage Report foxtrot	65
6.1	Histogram	66
6.2	Distribution	70
6.3	System information	74
7	User table (Cloud)	77
8	User table (HPC)	79

Date Created: Sun, 05 Jan 2014

SUMMARY REPORT (ALL)

- Period: January 01 – March 31, 2013
- Cloud(india.futuregrid.org): eucalyptus, openstack
- Cloud(sierra.futuregrid.org): eucalyptus, nimbus
- Cloud(hotel.futuregrid.org): nimbus
- Cloud(alamo.futuregrid.org): nimbus
- Cloud(foxtrot.futuregrid.org): nimbus
- Metrics: VMs count, Users count, Wall hours, Distribution by Wall Hours, Project, Project Leader, and Institution, and Systems

1.1 Wall Hours by Clusters (Total, monthly)

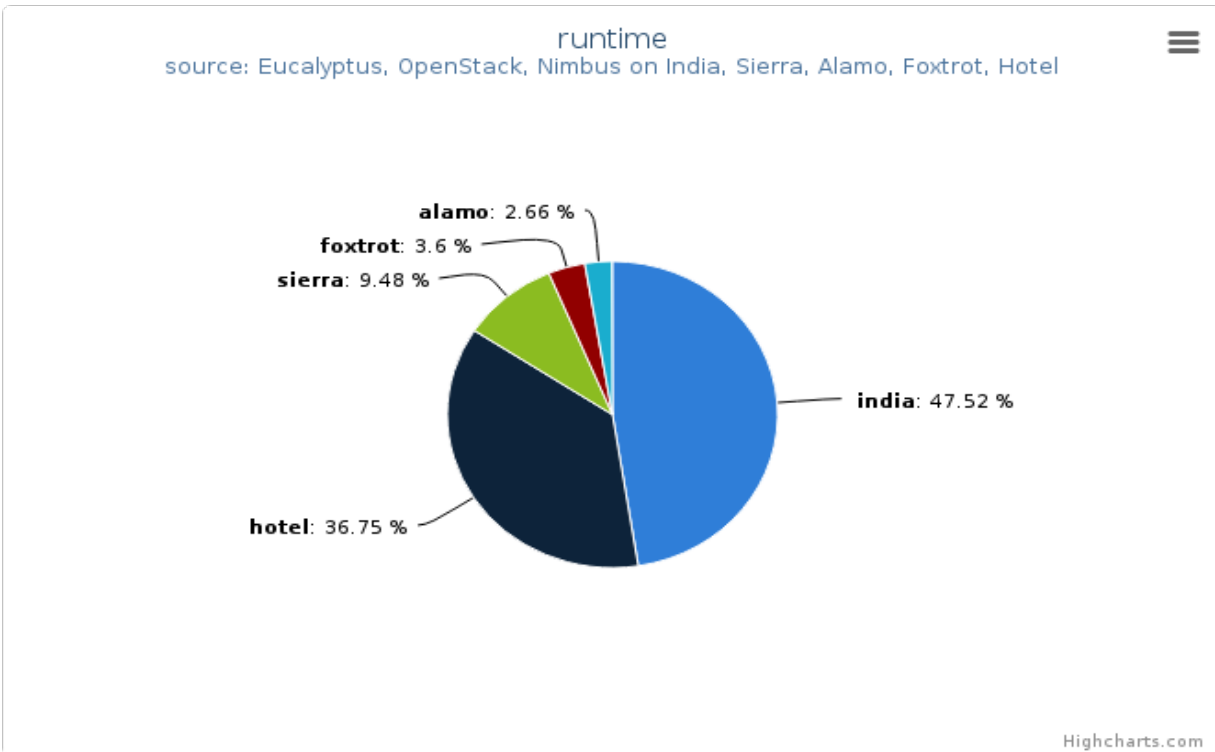


Figure 1. Wall time (hours) by Clusters
This chart represents overall usage of wall time (hours).

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

Table 1.1: Wall time (hours) by Clusters

Total	Value
india	175312.0
hotel	135558.0
sierra	34956.0
foxtrot	13274.0
alamo	9798.0

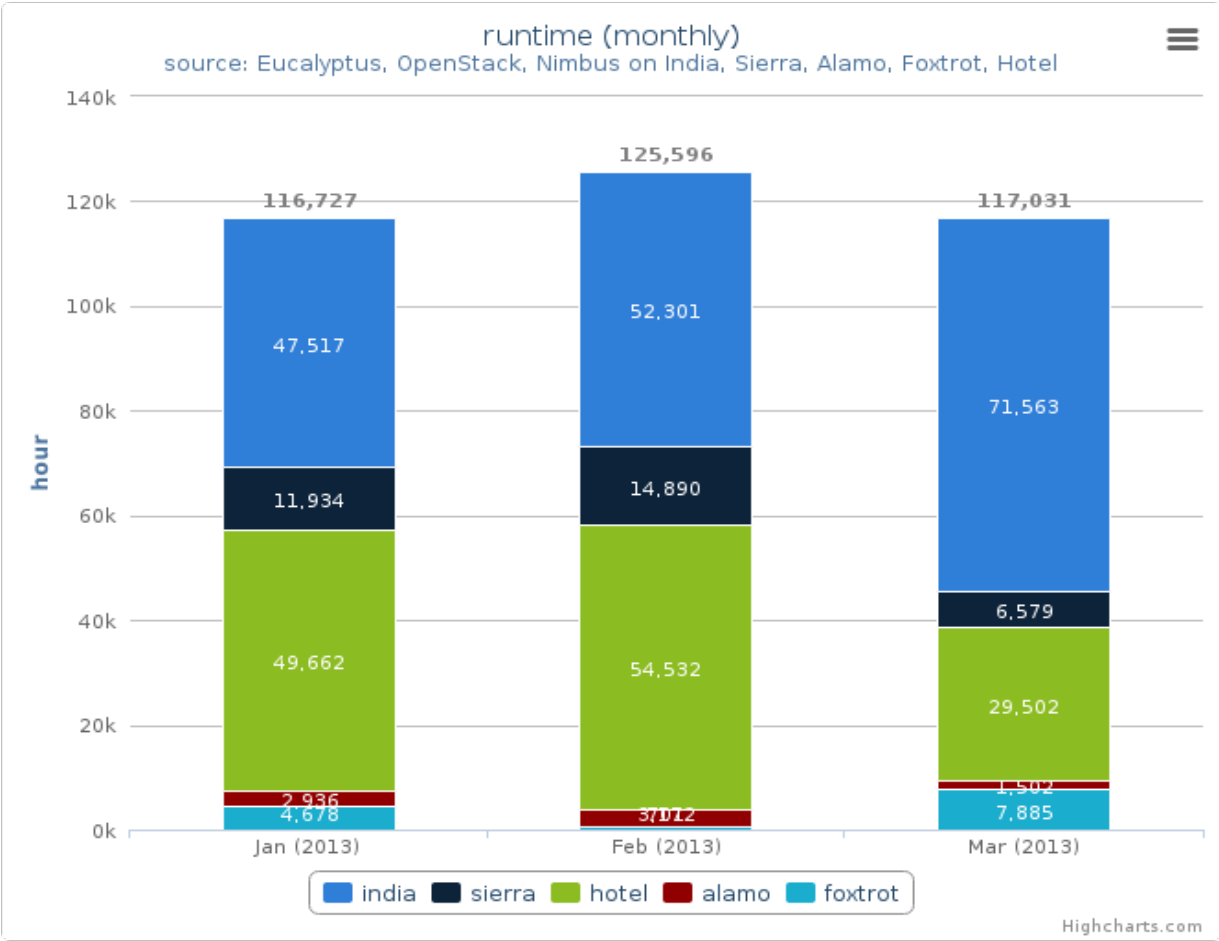


Figure 2. Wall time (hours) by Clusters (monthly)
This stacked column chart represents average monthly usage of wall time (hours).

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

1.2 VM Count by Clusters (Total, monthly)

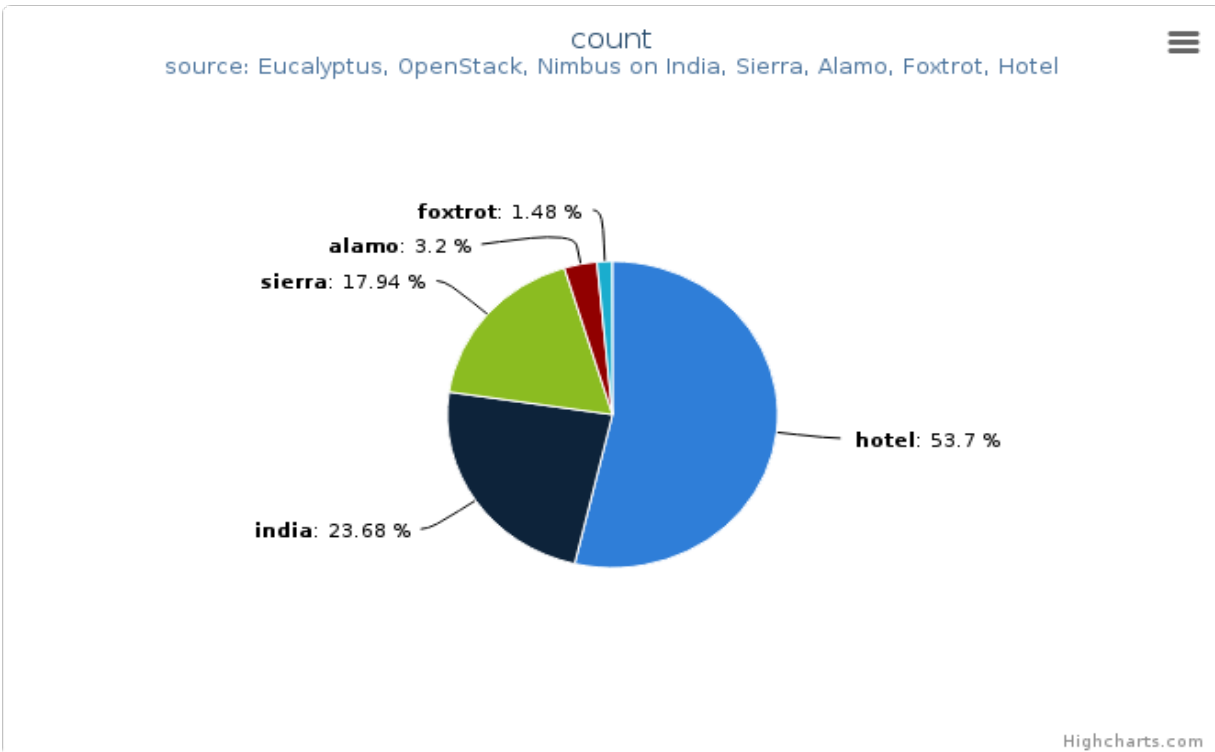


Figure 3. VMs count by Clusters

This chart represents overall VM instances count during the period.

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

Table 1.2: VM instance count by Clusters

Total	Value
hotel	15667
india	6910
sierra	5234
alamo	934
foxtrot	431

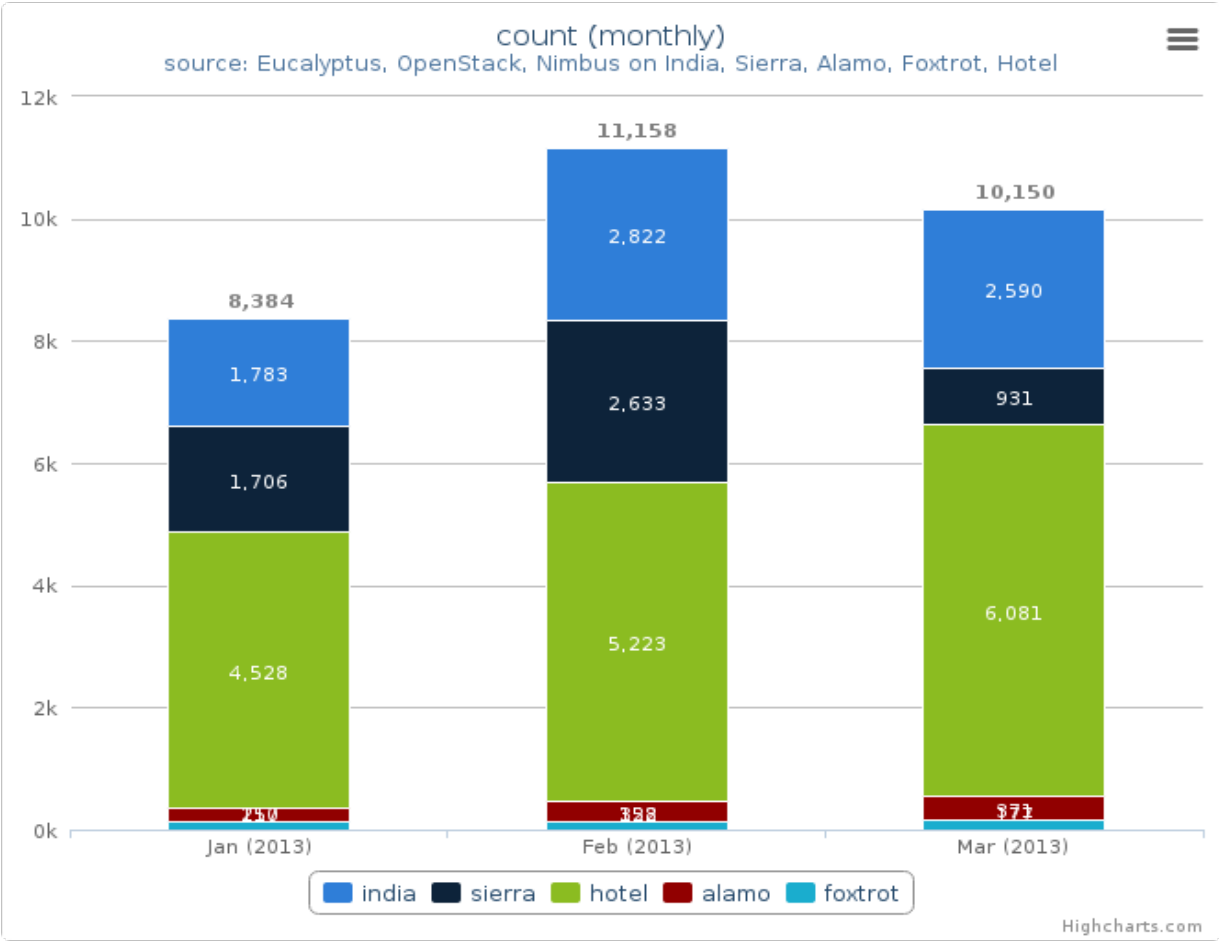


Figure 4. VMs count by Clusters (monthly)
This stacked column chart represents average VM instances count per month.

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

1.3 Users Count by Clusters (Total, monthly)

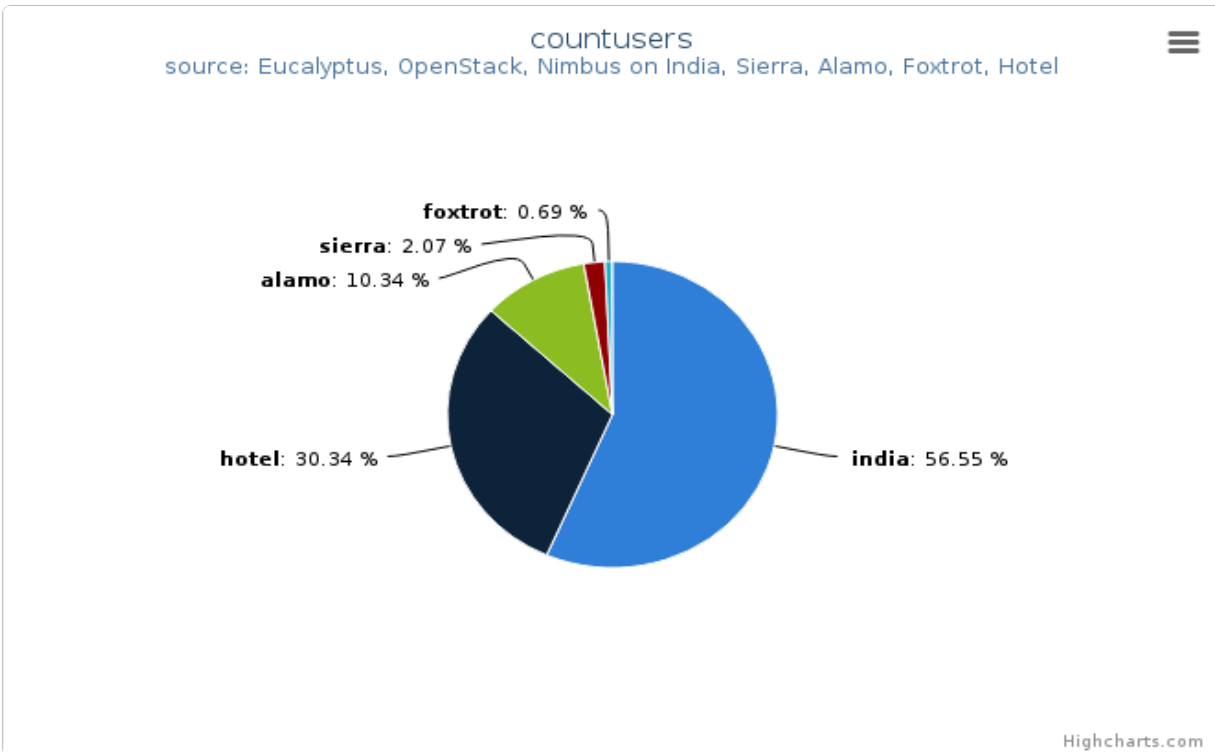


Figure 5. Unique User count by Clusters
This chart represents total number of unique active users.

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

Table 1.3: Unique User count by Clusters

Total	Value
india	82
hotel	44
alamo	15
sierra	3
foxtrot	1

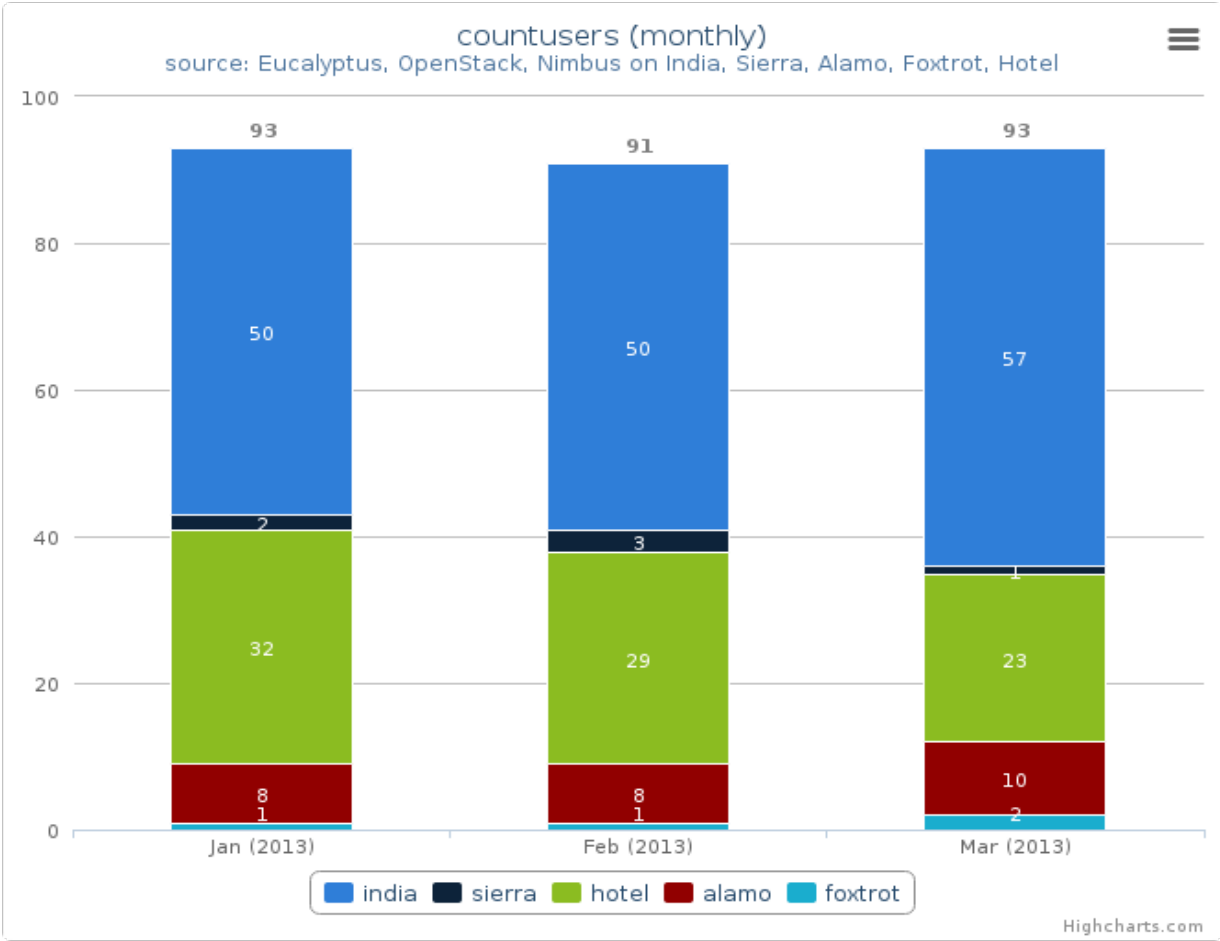


Figure 6. Users count by Clusters (Monthly)
This stacked column chart represents average count of active users per month.

- Period: January 01 – March 31, 2013
- **Cloud:**
 - india: Eucalyptus, Openstack
 - sierra: Eucalyptus, Nimbus
 - hotel: Nimbus
 - alamo: Nimbus
 - foxtrot: Nimbus

USAGE REPORT SIERRA

- Period: January 01 – March 31, 2013
- Hostname: sierra.futuregrid.org
- Services: nimbus, openstack, eucalyptus
- Metrics: VMs count, Users count, Wall time (hours), Distribution by wall time, project, project leader, and institution, and systems

2.1 Histogram

2.1.1 Summary (Monthly)

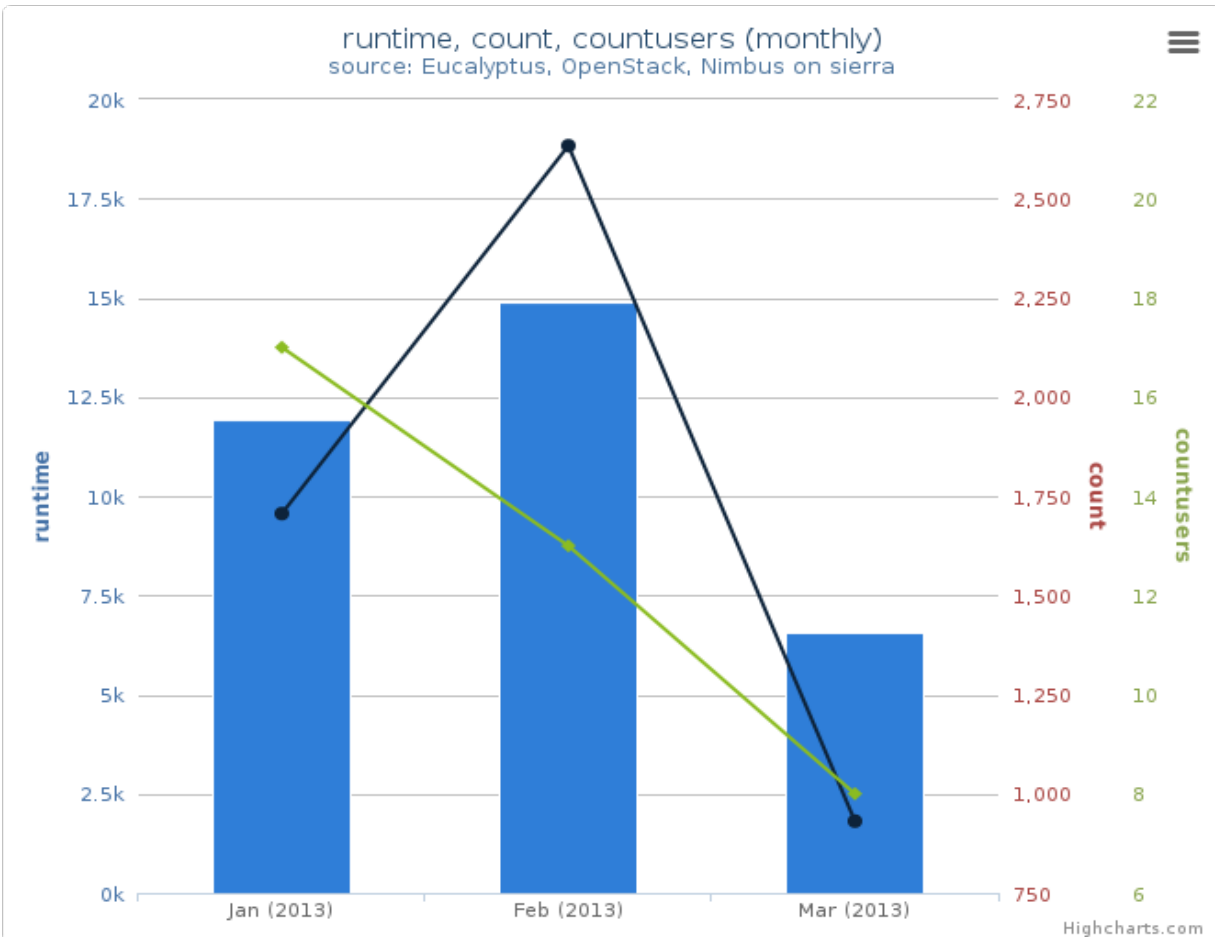


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)

This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra
- **Metric:**
 - Runtime (Wall time hours): Sum of time elapsed from launch to termination of VM instances
 - Count (VM count): The number of launched VM instances
 - User count (Active): The number of users who launched VMs

2.1.2 Summary (Daily)

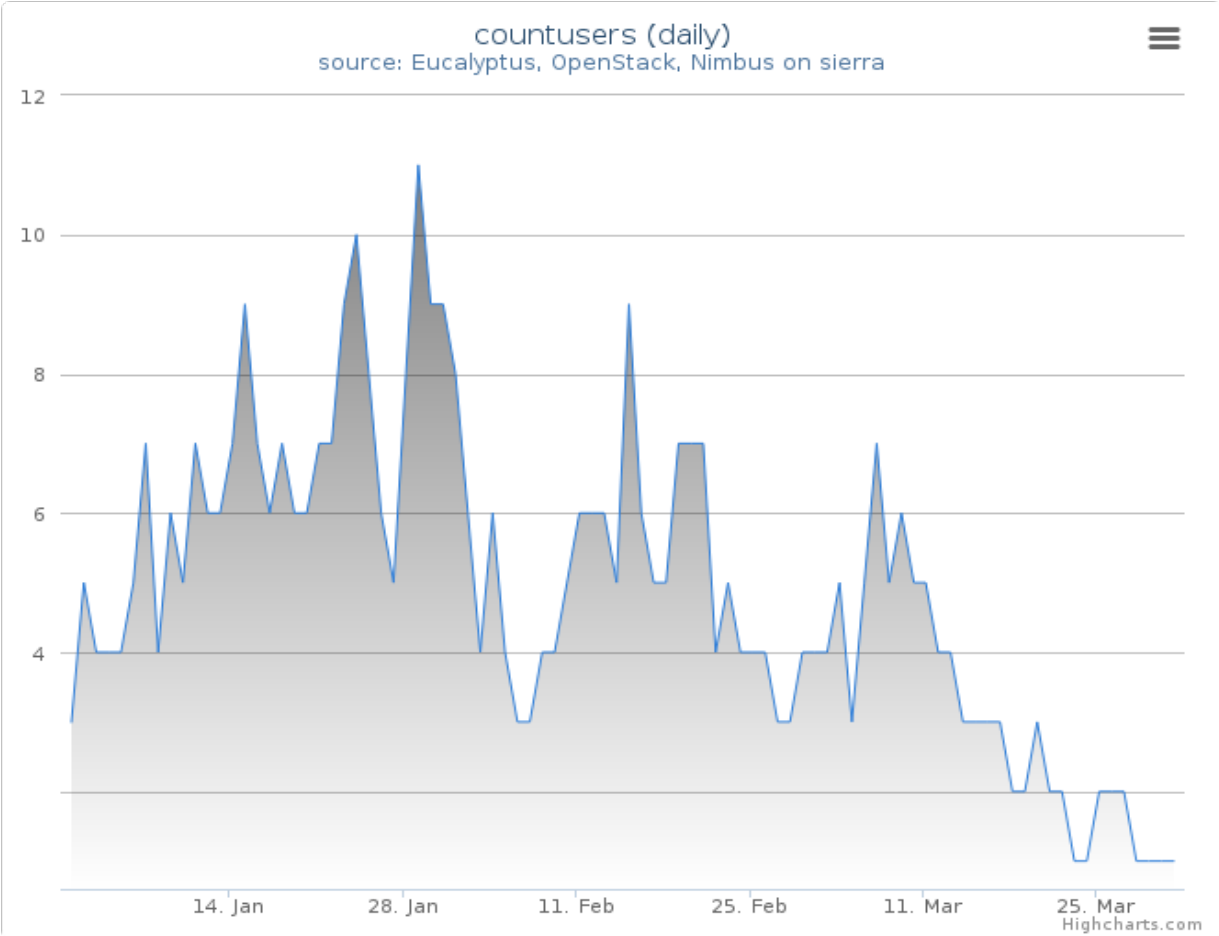


Figure 2: Users count

This time series chart represents daily active user count for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

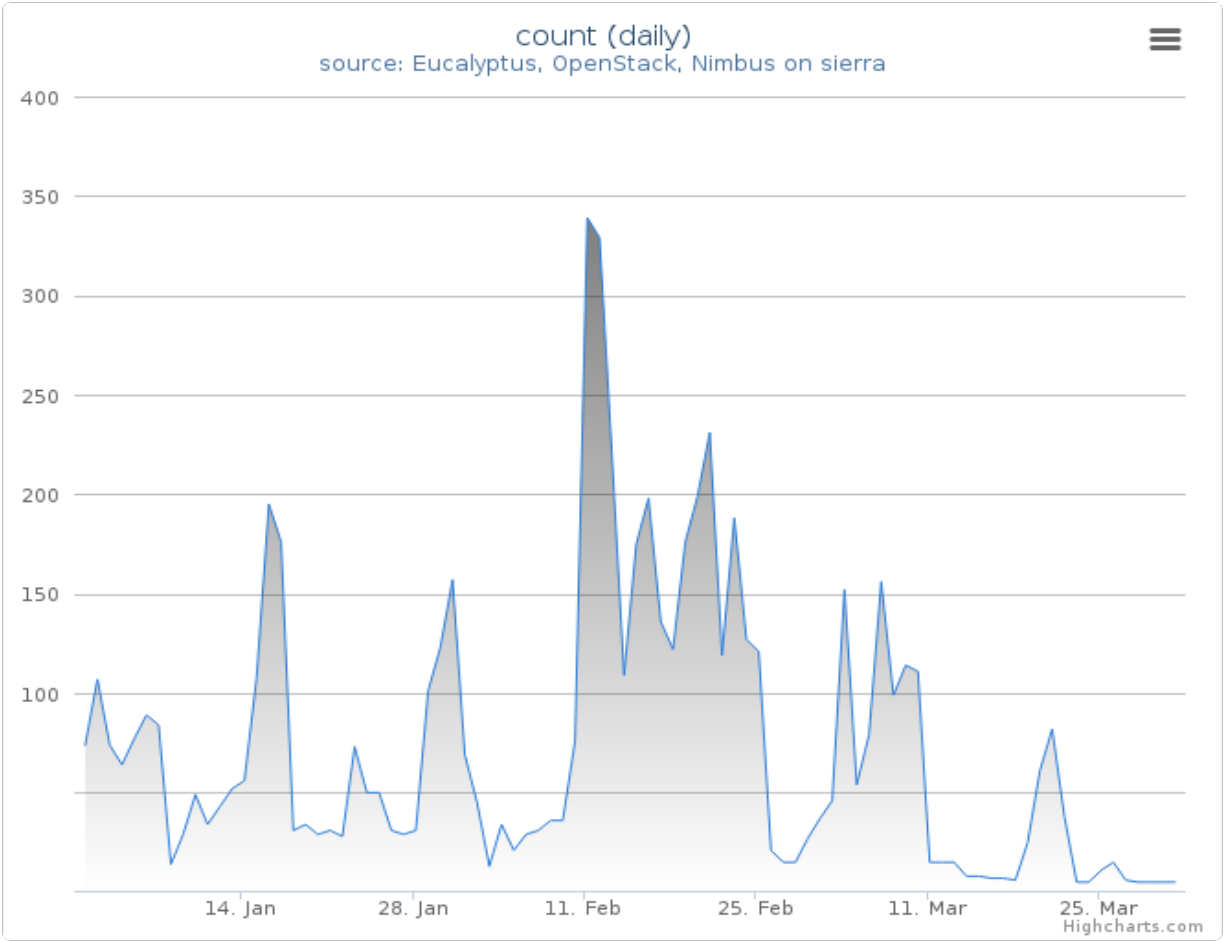


Figure 3: VMs count

This time series chart represents the number of daily launched VM instances for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

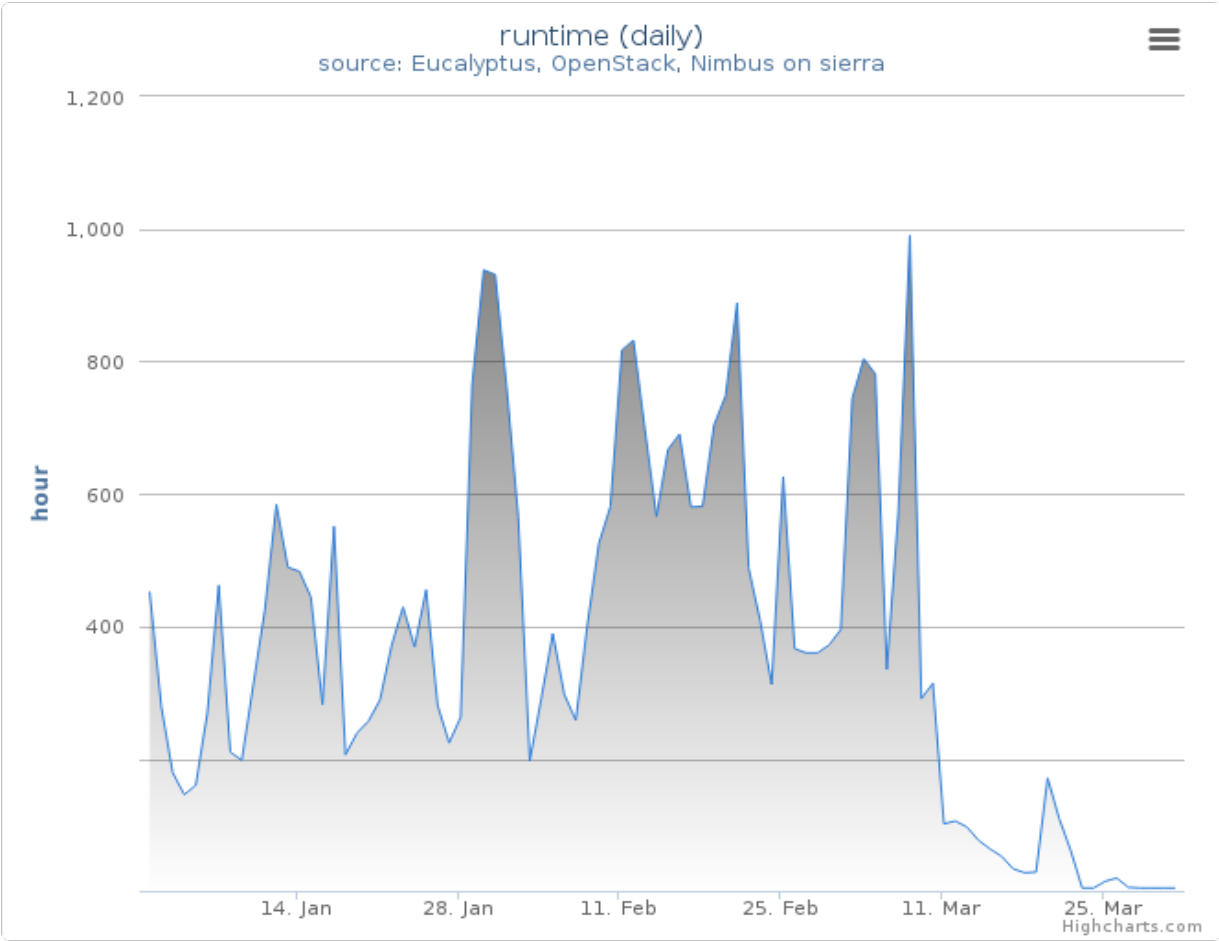


Figure 4: Wall time (hours)
This time series chart represents daily wall time (hours) for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

2.2 Distribution

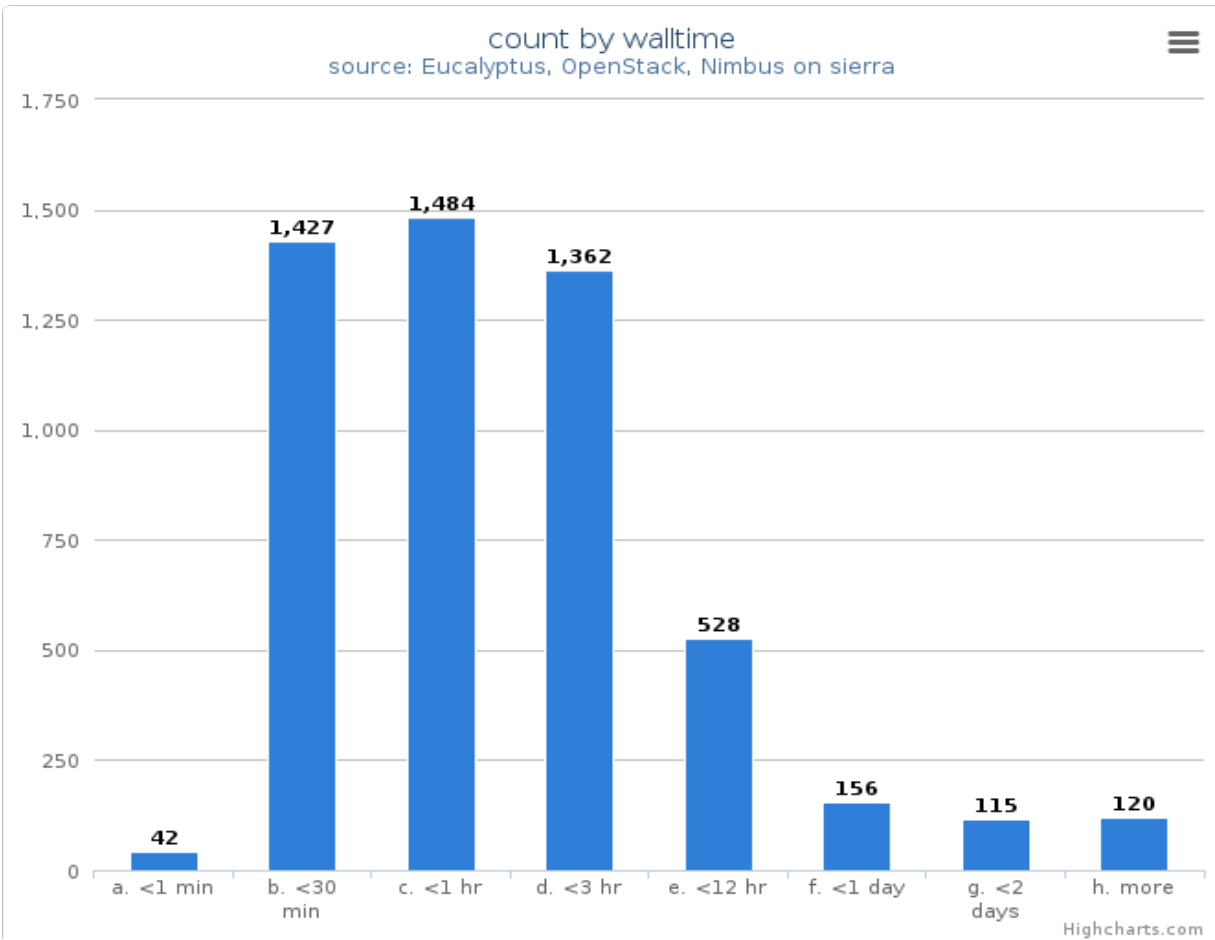


Figure 5: VM count by wall time

This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

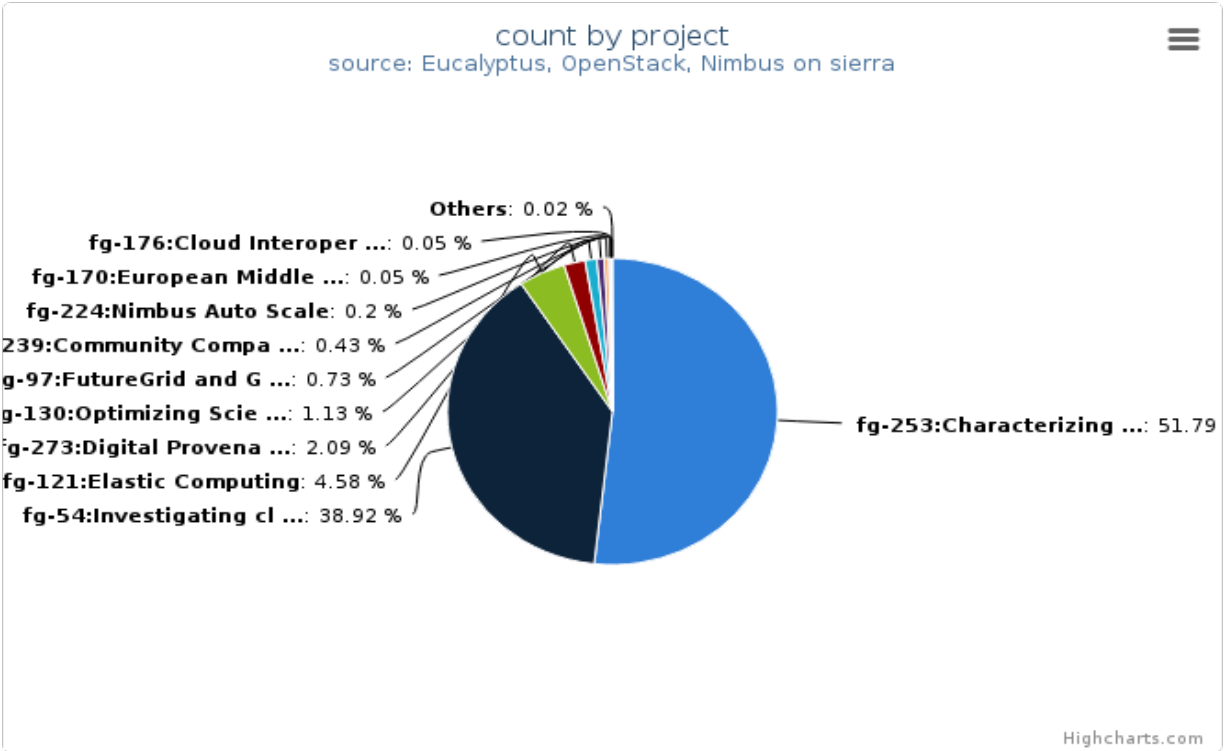


Figure 6: VMs count by project

This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

Table 2.1: VMs count by project

Project	Value
fg-253:Characterizing Performance of Infrastructure Clouds	2282
fg-54:Investigating cloud computing as a solution for analyzing particle physics data	1715
fg-121:Elastic Computing	202
fg-273:Digital Provenance Research	92
fg-130:Optimizing Scientific Workflows on Clouds	50
fg-97:FutureGrid and Grid'5000 Collaboration	32
fg-239:Community Comparison of Cloud frameworks	19
fg-224:Nimbus Auto Scale	9
fg-170:European Middleware Initiative (EMI)	2
fg-176:Cloud Interoperability Testbed	2
Others	1

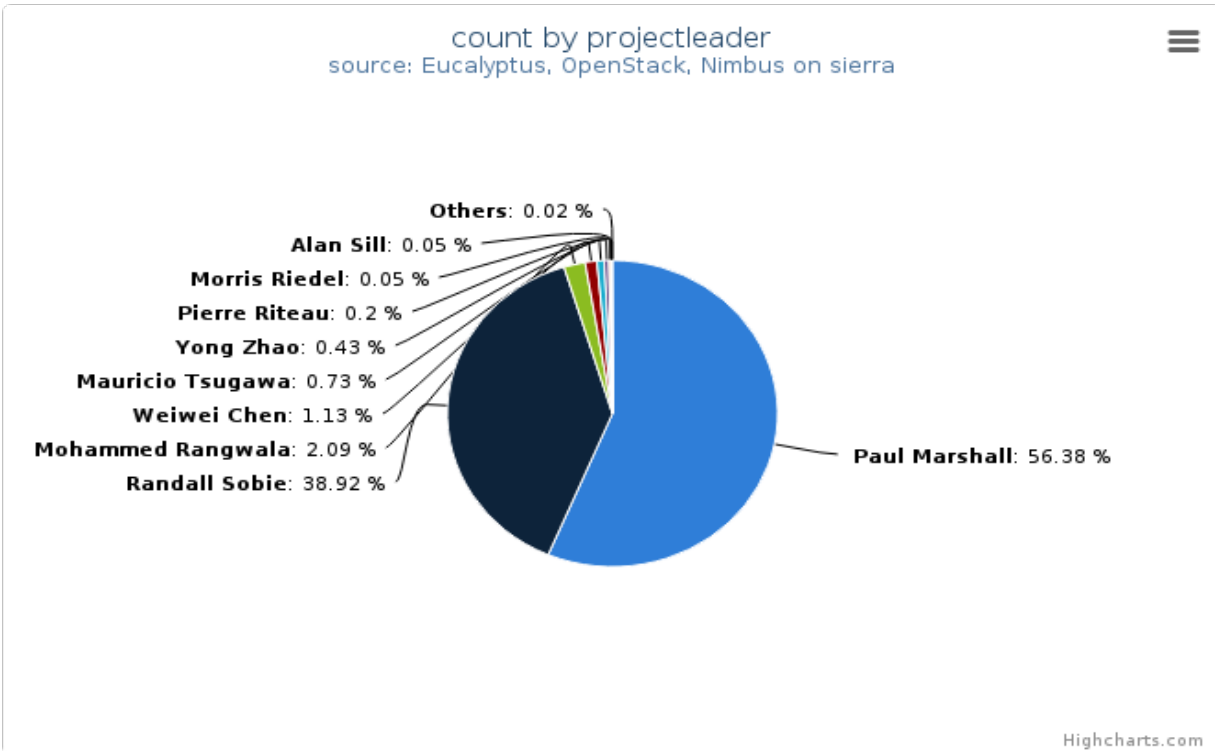


Figure 7: VMs count by project leader

This chart also illustrates the proportion of launched VM instances by project Leader. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

Table 2.2: VMs count by project leader

Projectleader	Value
Paul Marshall	2484
Randall Sobie	1715
Mohammed Rangwala	92
Weiwei Chen	50
Mauricio Tsugawa	32
Yong Zhao	19
Pierre Riteau	9
Morris Riedel	2
Alan Sill	2
Others	1

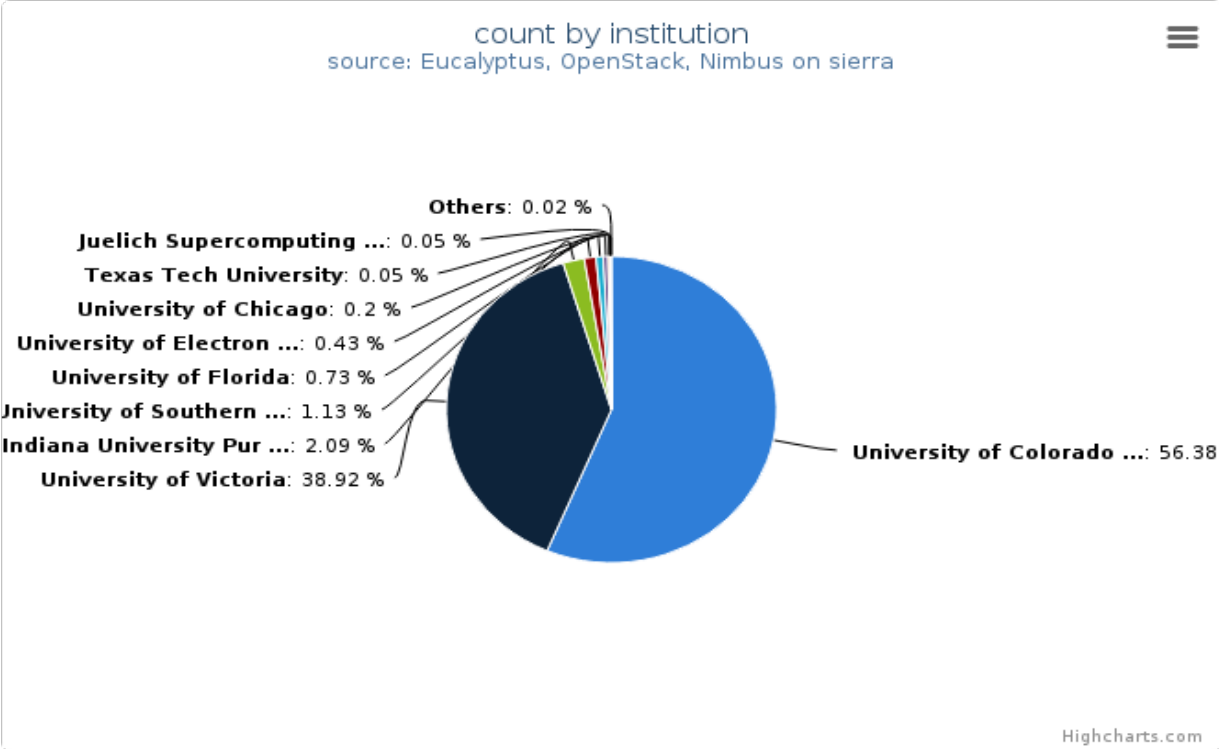


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

Table 2.3: VMs count by institution

Institution	Value
University of Colorado at Boulder	2484
University of Victoria	1715
Indiana University Purdue University Indianapolis	92
University of Southern California	50
University of Florida	32
University of Electronic Science and Technology	19
University of Chicago	9
Texas Tech University	2
Juelich Supercomputing Centre	2
Others	1

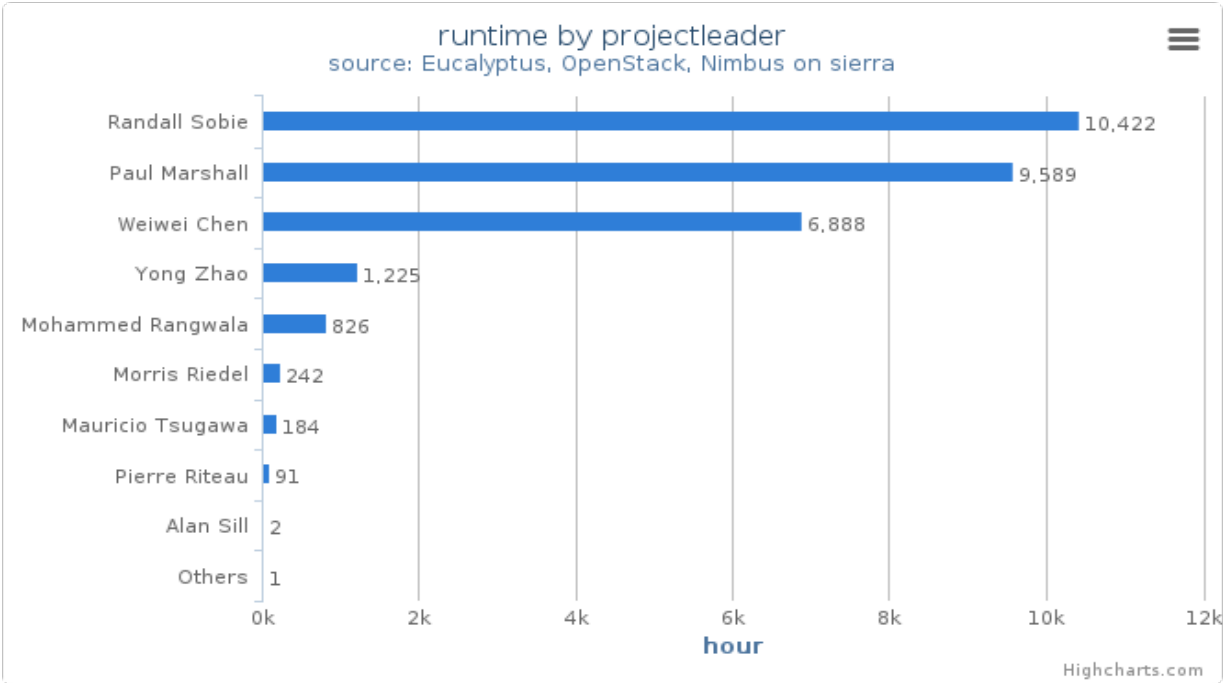


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

2.3 System information

System information shows utilization distribution as to VMs count and wall time. Each cluster represents a compute node.

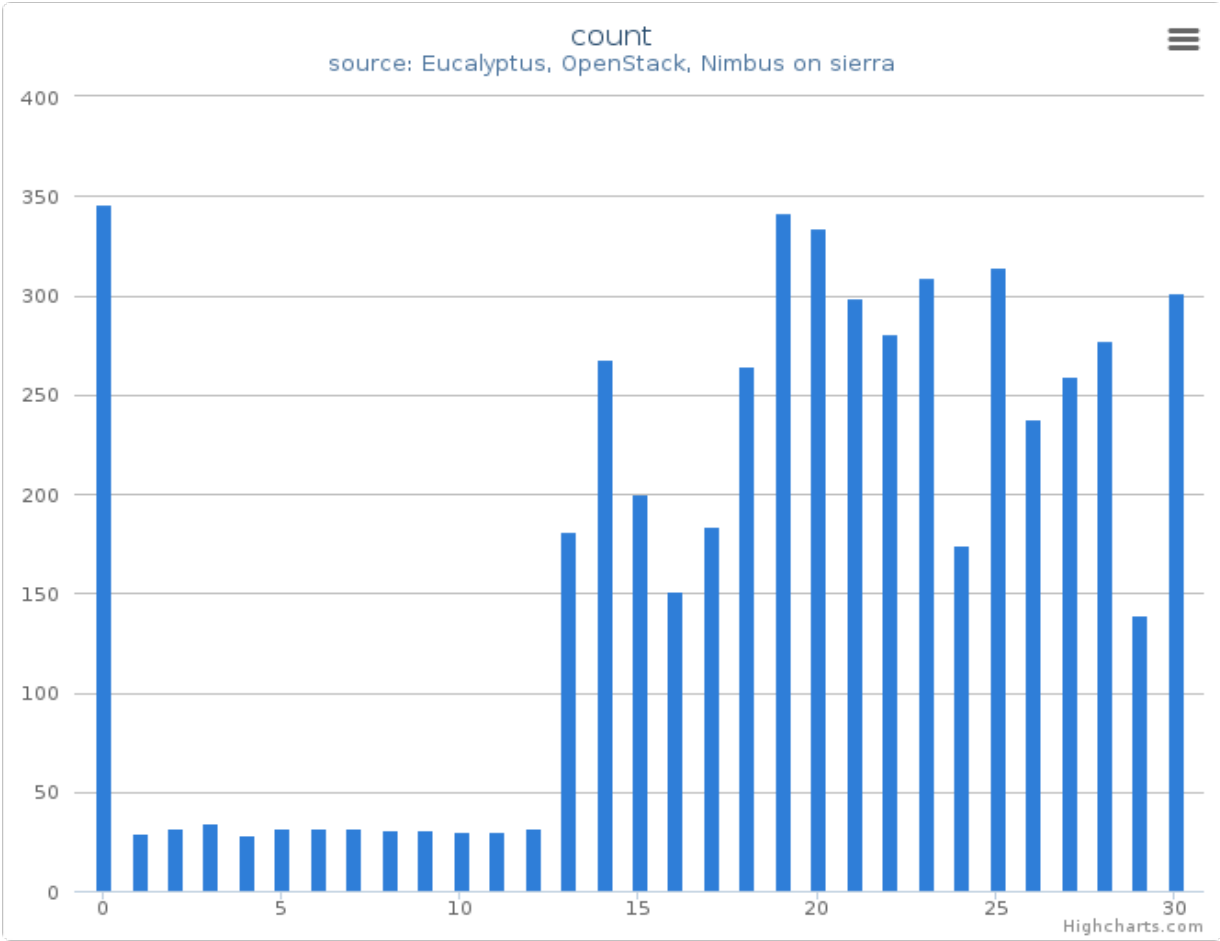


Figure 10: VMs count by systems (compute nodes) in Cluster (sierra)
This column chart represents VMs count among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

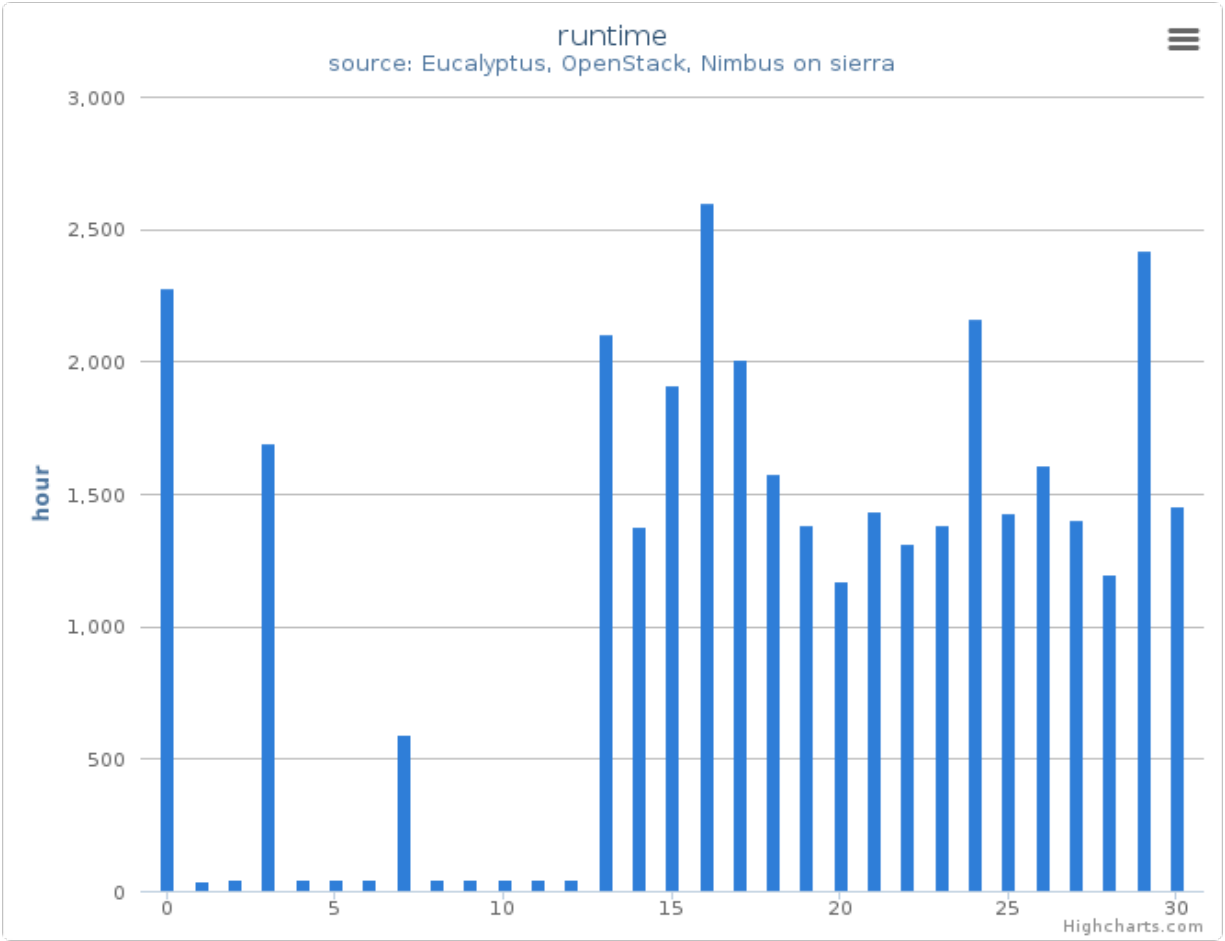


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (sierra)
This column chart represents wall time among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack, eucalyptus
- Hostname: sierra

USAGE REPORT INDIA

- Period: January 01 – March 31, 2013
- Hostname: india.futuregrid.org
- Services: openstack, eucalyptus
- Metrics: VMs count, Users count, Wall time (hours), Distribution by wall time, project, project leader, and institution, and systems

3.1 Histogram

3.1.1 Summary (Monthly)

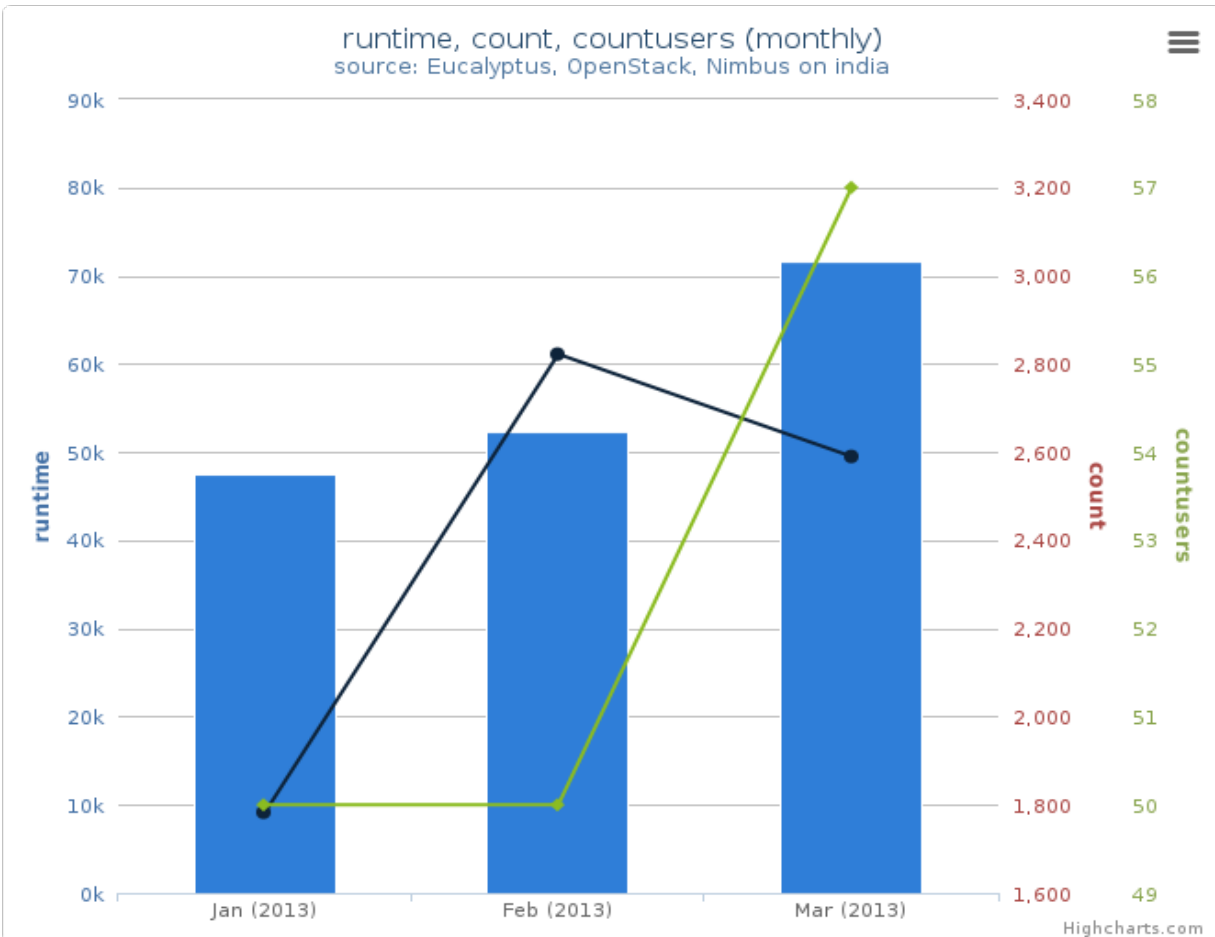


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)

This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india
- **Metric:**
 - Runtime (Wall time hours): Sum of time elapsed from launch to termination of VM instances
 - Count (VM count): The number of launched VM instances
 - User count (Active): The number of users who launched VMs

3.1.2 Summary (Daily)

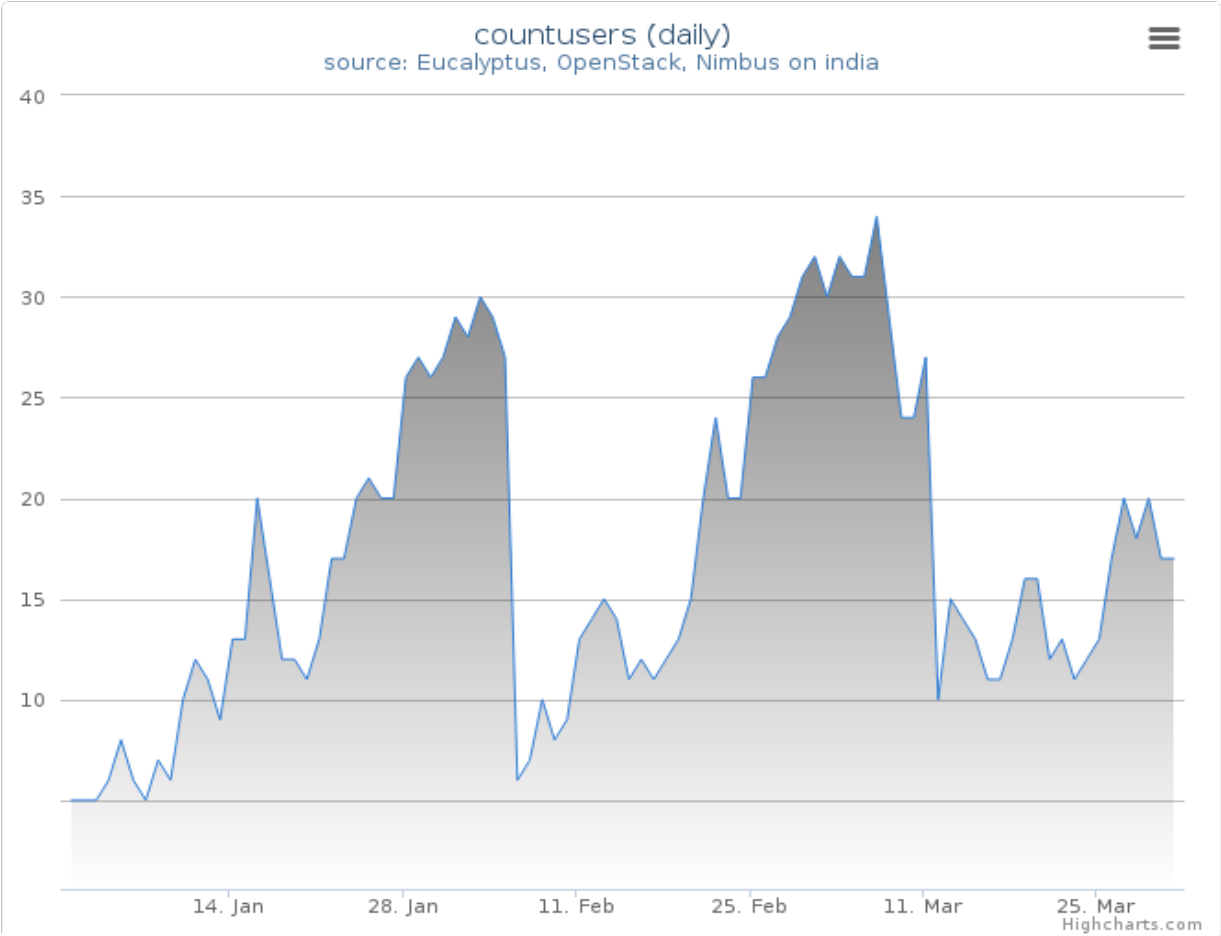


Figure 2: Users count

This time series chart represents daily active user count for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

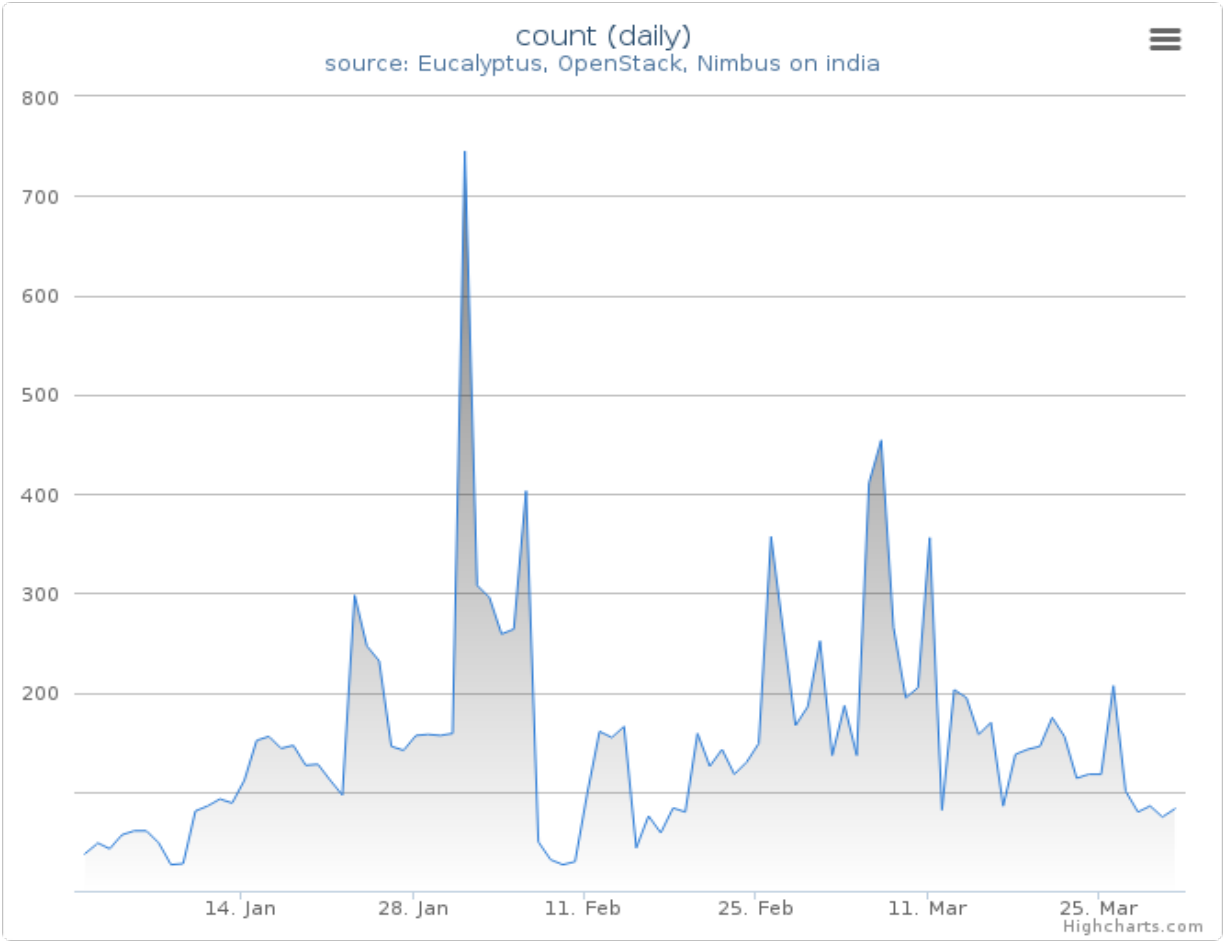


Figure 3: VMs count

This time series chart represents the number of daily launched VM instances for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

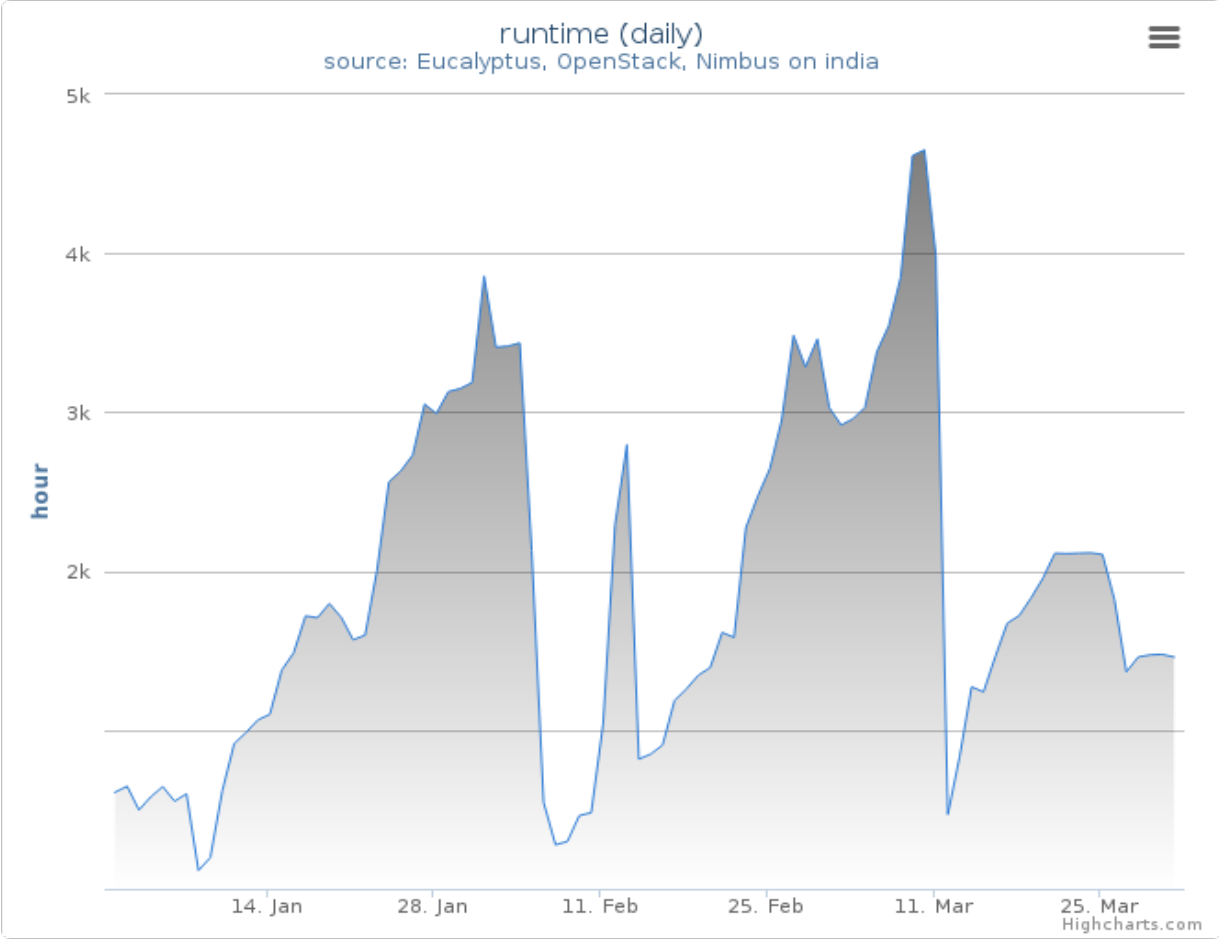


Figure 4: Wall time (hours)
This time series chart represents daily wall time (hours) for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

3.2 Distribution

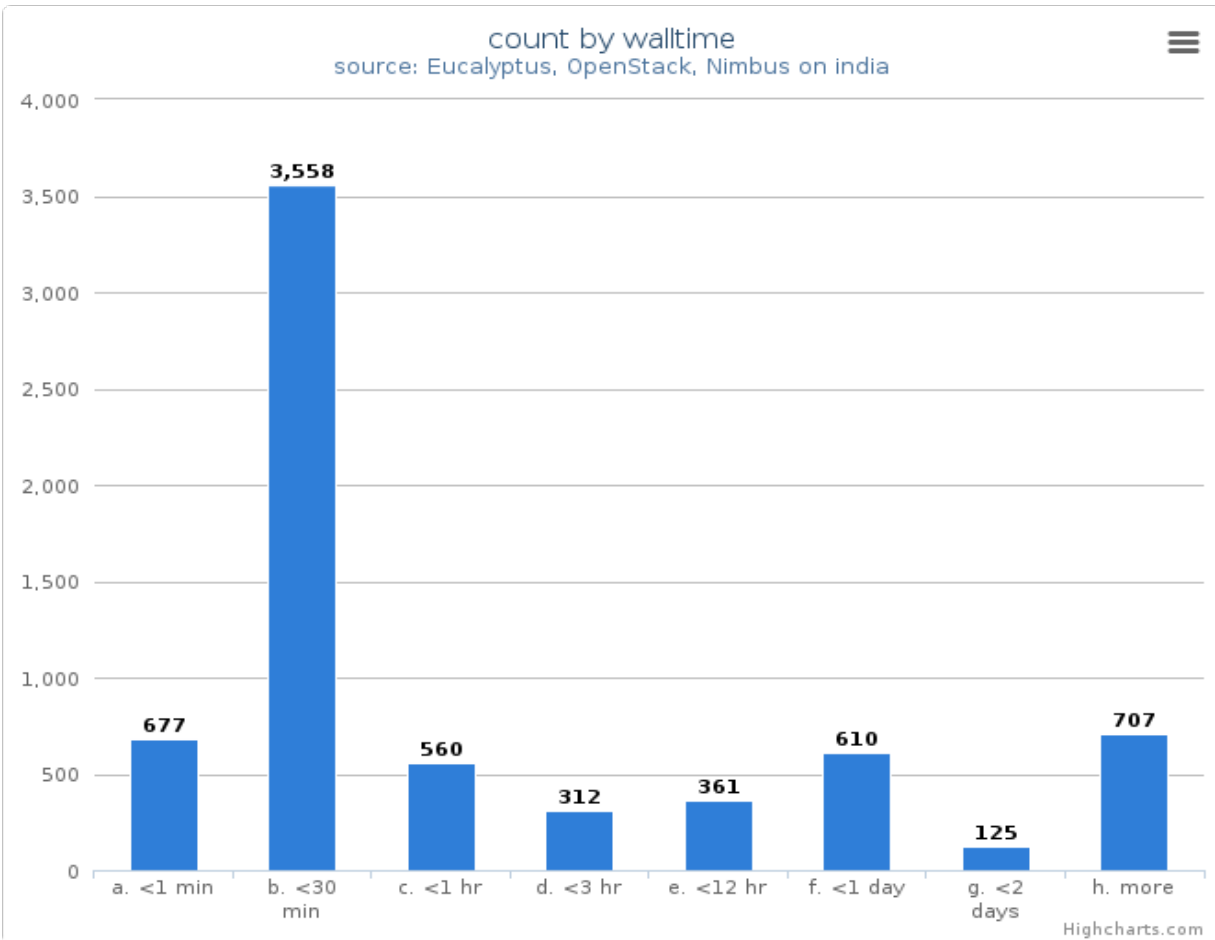


Figure 5: VM count by wall time

This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

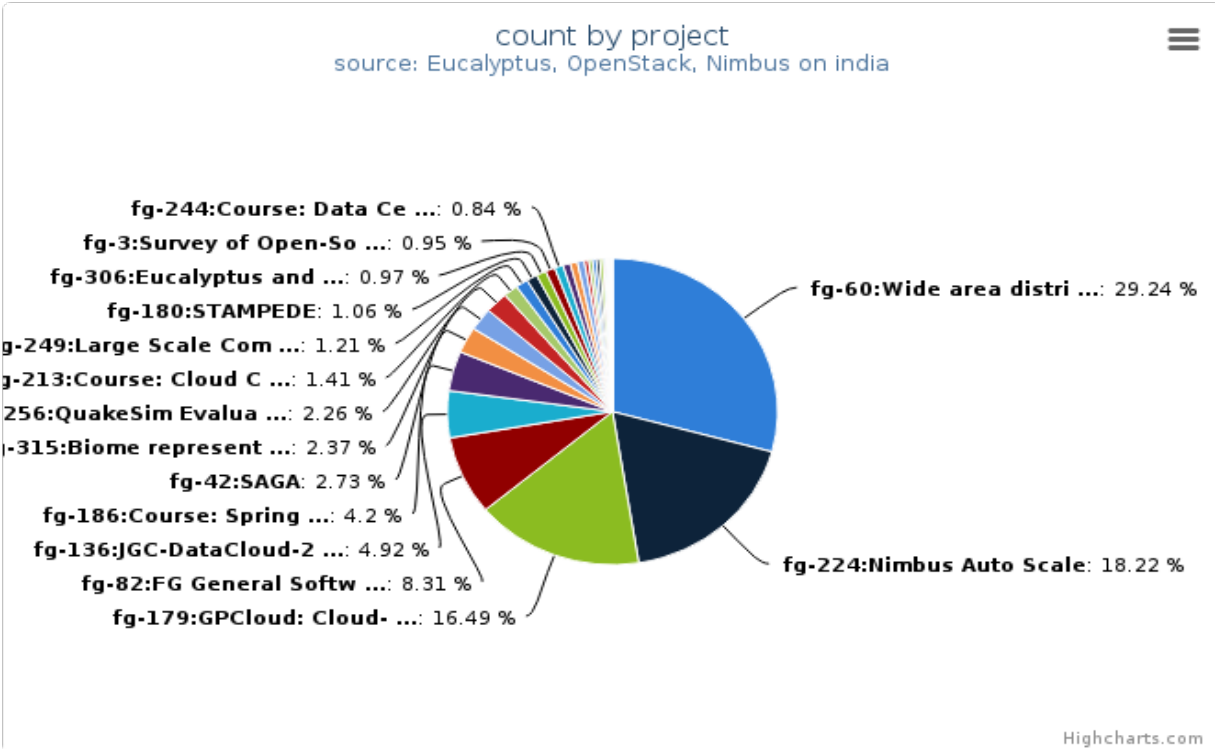


Figure 6: VMs count by project

This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.1: VMs count by project

Project	Value
fg-60:Wide area distributed file system for MapReduce applications on FutureGrid platform	1330
fg-224:Nimbus Auto Scale	829
fg-179:GPCLoud: Cloud-based Automatic Repair of Real-World Software Bugs	750
fg-82:FG General Software Development	378
fg-136:JGC-DataCloud-2012 paper experiments	224
fg-186:Course: Spring 2012 B534 Distributed systems Graduate Course	191
fg-42:SAGA	124
fg-315:Biome representational in silico karyotyping	108
fg-256:QuakeSim Evaluation of FutureGrid for Cloud Computing	103
fg-213:Course: Cloud Computing class - second edition	64
fg-249:Large Scale Computing Infrastructure 2012 Master class	55

Continued on next page

Table 3.1 – continued from previous page

Project	Value
fg-180:STAMPEDE	48
fg-306:Eucalyptus and Openstack	44
fg-3:Survey of Open-Source Cloud Infrastructure using FutureGrid Testbed	43
fg-244:Course: Data Center Scale Computing	38
fg-201:ExTENCI Testing, Validation, and Performance	33
fg-97:FutureGrid and Grid'5000 Collaboration	32
fg-130:Optimizing Scientific Workflows on Clouds	31
fg-316:Course: Cloud Computing Class - third edition	19
fg-297:Network Aware Task Scheduling in Hadoop	17
fg-131:HBase Application and Investigation	17
fg-176:Cloud Interoperability Testbed	16
fg-134:Distributed Mapreduce	14
fg-301:Course: Advanced Networking class University of Colorado	7
fg-168:Next Generation Sequencing in the Cloud	6
fg-4:Word Sense Disambiguation for Web 2.0 Data	4
fg-9:Distributed Execution of Kepler Scientific Workflow on Future Grid	4
fg-189:Pegasus development and improvement platform	4
fg-20:Development of an information service for FutureGrid	3
fg-243:Applied Cyberinfrastructure concepts	2
fg-233:CINET - A Cyber-Infrastructure for Network Science	2
fg-69:Investigate provenance collection for MapReduce	2
fg-23:Hardware Performance Monitoring in the Clouds	2
fg-299:Pluggable Event Architecture for Cloud Environments	1
fg-239:Community Comparison of Cloud frameworks	1
fg-263>Hello MapReduce	1
fg-273:Digital Provenance Research	1
fg-257:Particle Physics Data analysis cluster for ATLAS LHC experiment	1

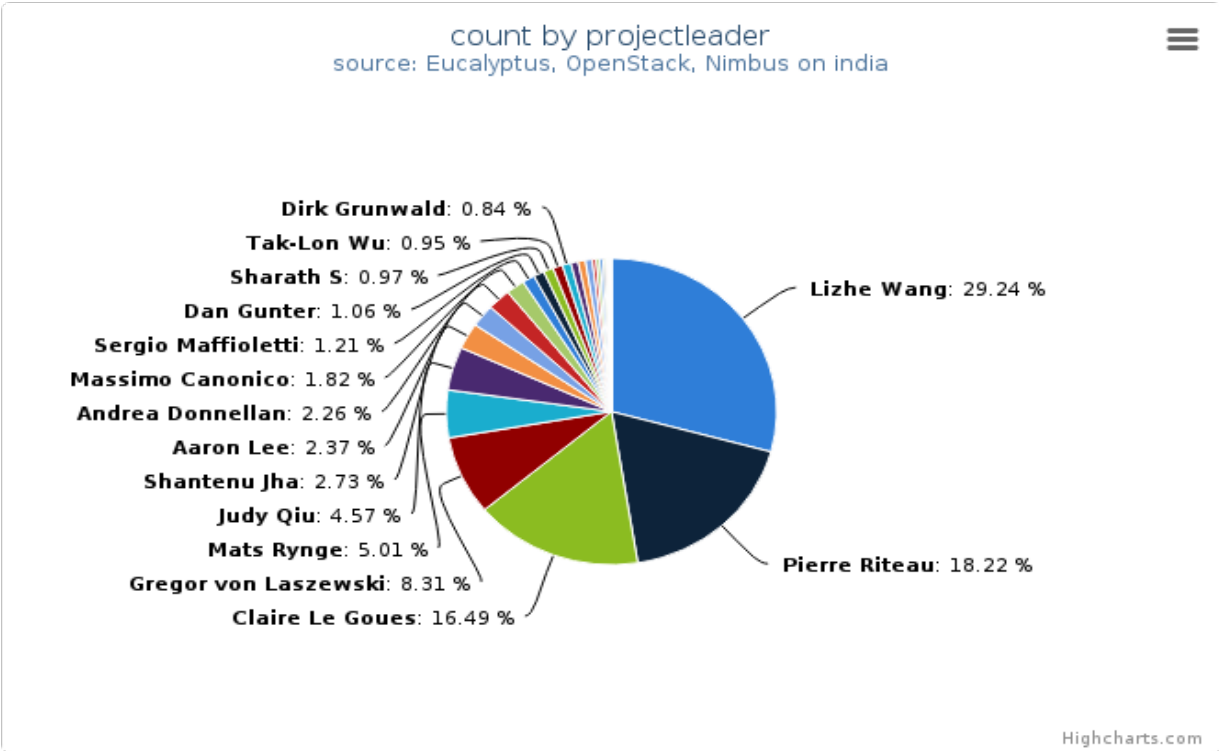


Figure 7: VMs count by project leader
This chart also illustrates the proportion of launched VM instances by project Leader. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.2: VMs count by project leader

Projectleader	Value
Lizhe Wang	1330
Pierre Riteau	829
Claire Le Goues	750
Gregor von Laszewski	378
Mats Rynge	228
Judy Qiu	208
Shantenu Jha	124
Aaron Lee	108
Andrea Donnellan	103
Massimo Canonico	83
Sergio Maffioletti	55
Continued on next page	

Table 3.2 – continued from previous page

Projectleader	Value
Dan Gunter	48
Sharath S	44
Tak-Lon Wu	43
Dirk Grunwald	38
Preston Smith	33
Mauricio Tsugawa	32
Weiwei Chen	31
Lei Ye	17
Alan Sill	16
Chenyu Wang	14
Jonathan Klinginsmith	10
Eric Keller	7
Ilkay Altintas	4
Hyungro Lee	3
Nirav Merchant	2
Keith Bisset	2
Jiaan Zeng	2
Shirley Moore	2
Mohammed Rangwala	1
Yong Zhao	1
Dong Wang	1
Jeffrey Cox	1
Doug Benjamin	1

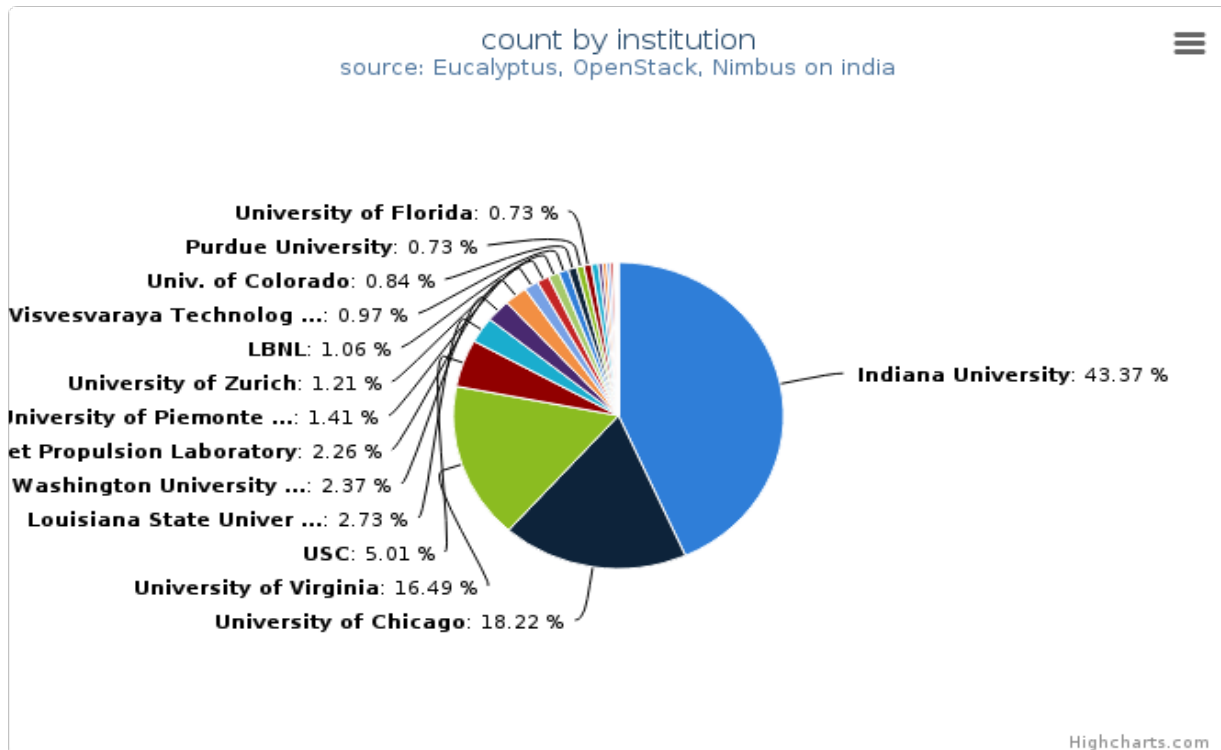


Figure 8: VMs count by institution

This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.3: VMs count by institution

Institution	Value
Indiana University	1973
University of Chicago	829
University of Virginia	750
USC	228
Louisiana State University	124
Washington University at St Louis, School of Medicine, Departmen	108
Jet Propulsion Laboratory	103
University of Piemonte Orientale	64
University of Zurich	55
LBNL	48
Visvesvaraya Technological University, Computer science organiza	44
Univ. of Colorado	38
Purdue University	33
University of Florida	33
University of Southern California	31
University of Arizona	19
University of Piemonte Orientale, Computer Science Department	19
Texas Tech University	16
University of Minnesota	14
University of Colorado	7
UCSD	4
Computer Science	2
University of Tennessee	2
Virginia Tech	2
Indiana University Purdue University Indianapolis	1
University of Electronic Science and Technology	1
Duke University	1

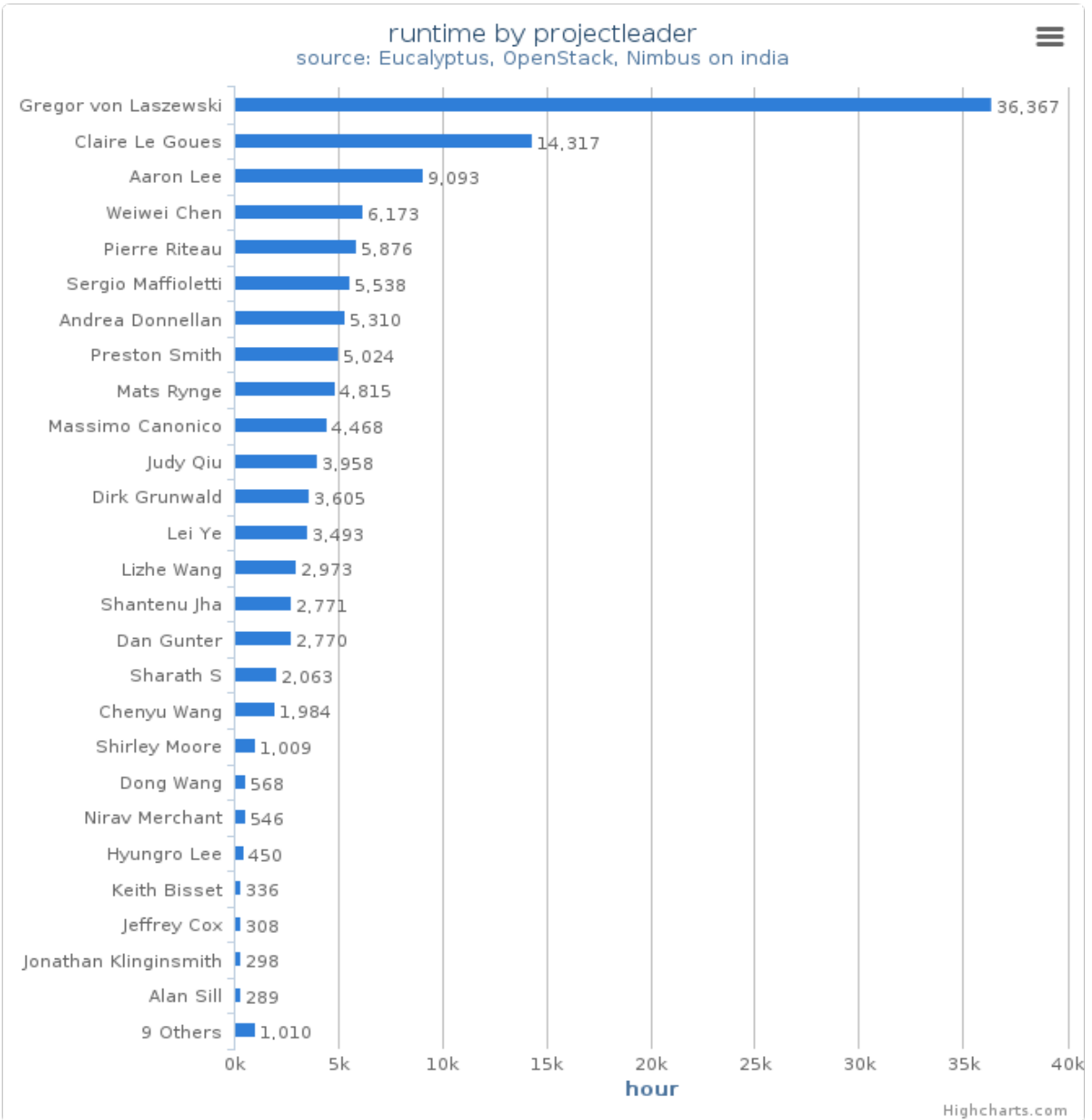


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

3.3 System information

System information shows utilization distribution as to VMs count and wall time. Each cluster represents a compute node.

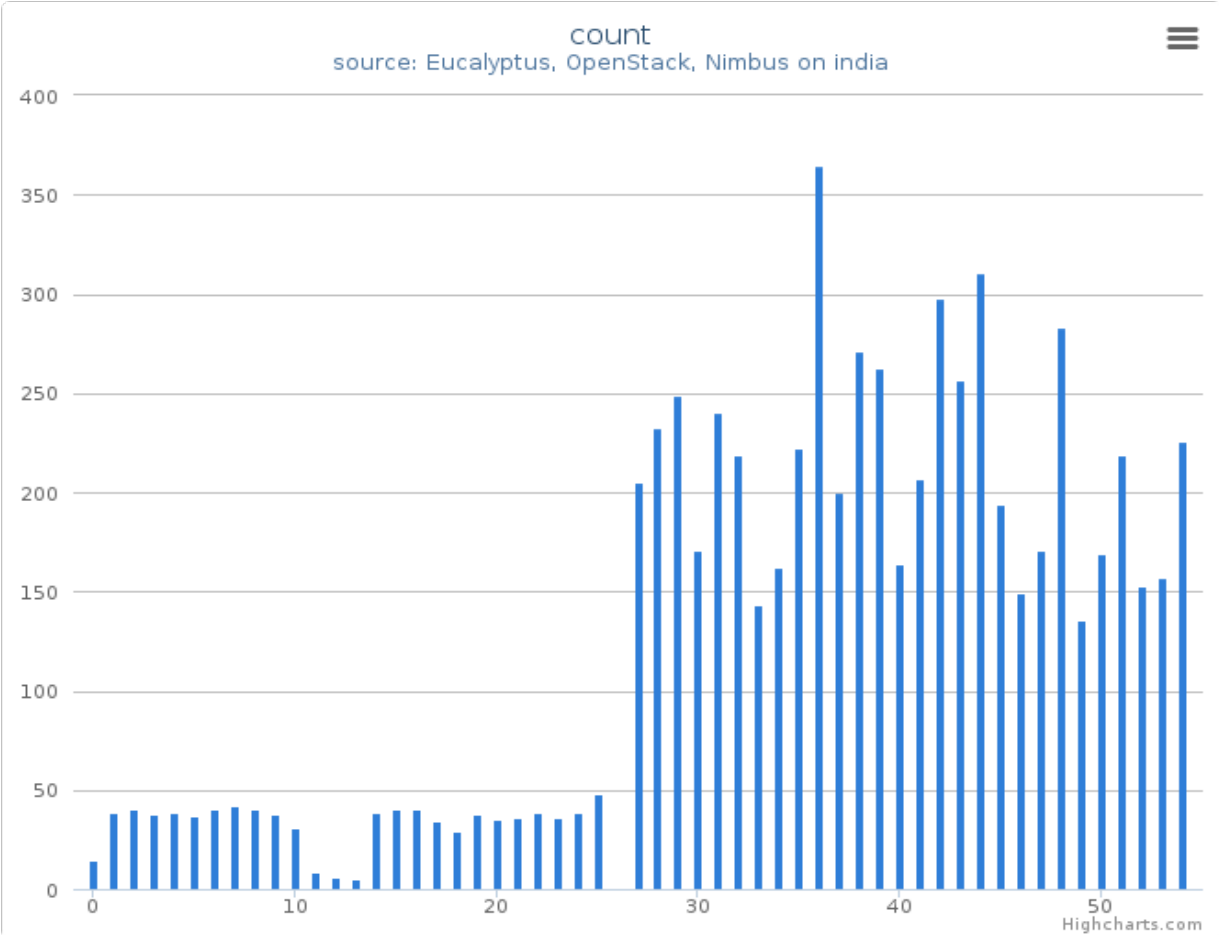


Figure 10: VMs count by systems (compute nodes) in Cluster (india)

This column chart represents VMs count among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

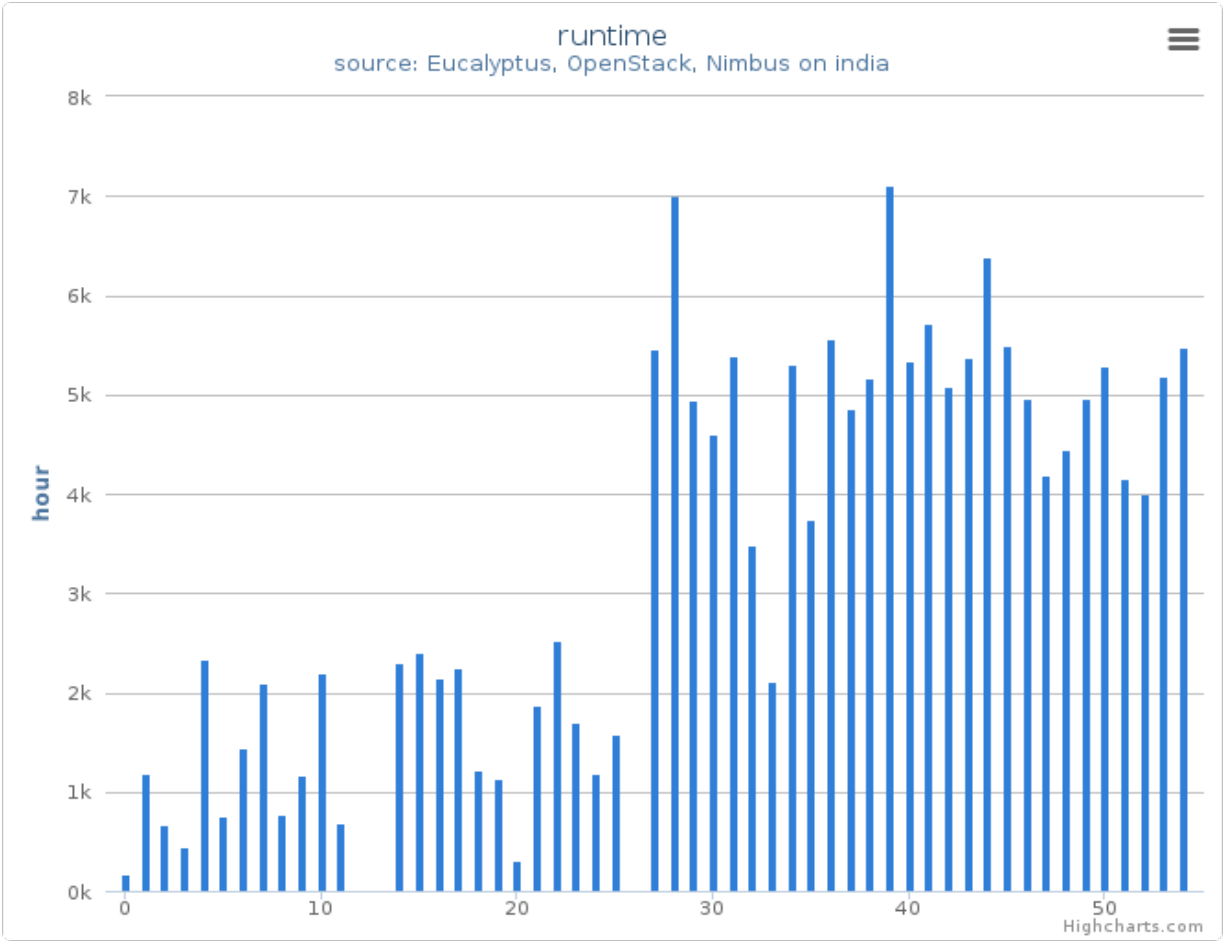


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (india)
 This column chart represents wall time among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

USAGE REPORT HOTEL

- Period: January 01 – March 31, 2013
- Hostname: hotel.futuregrid.org
- Services: nimbus
- Metrics: VMs count, Users count, Wall time (hours), Distribution by wall time, project, project leader, and institution, and systems

4.1 Histogram

4.1.1 Summary (Monthly)

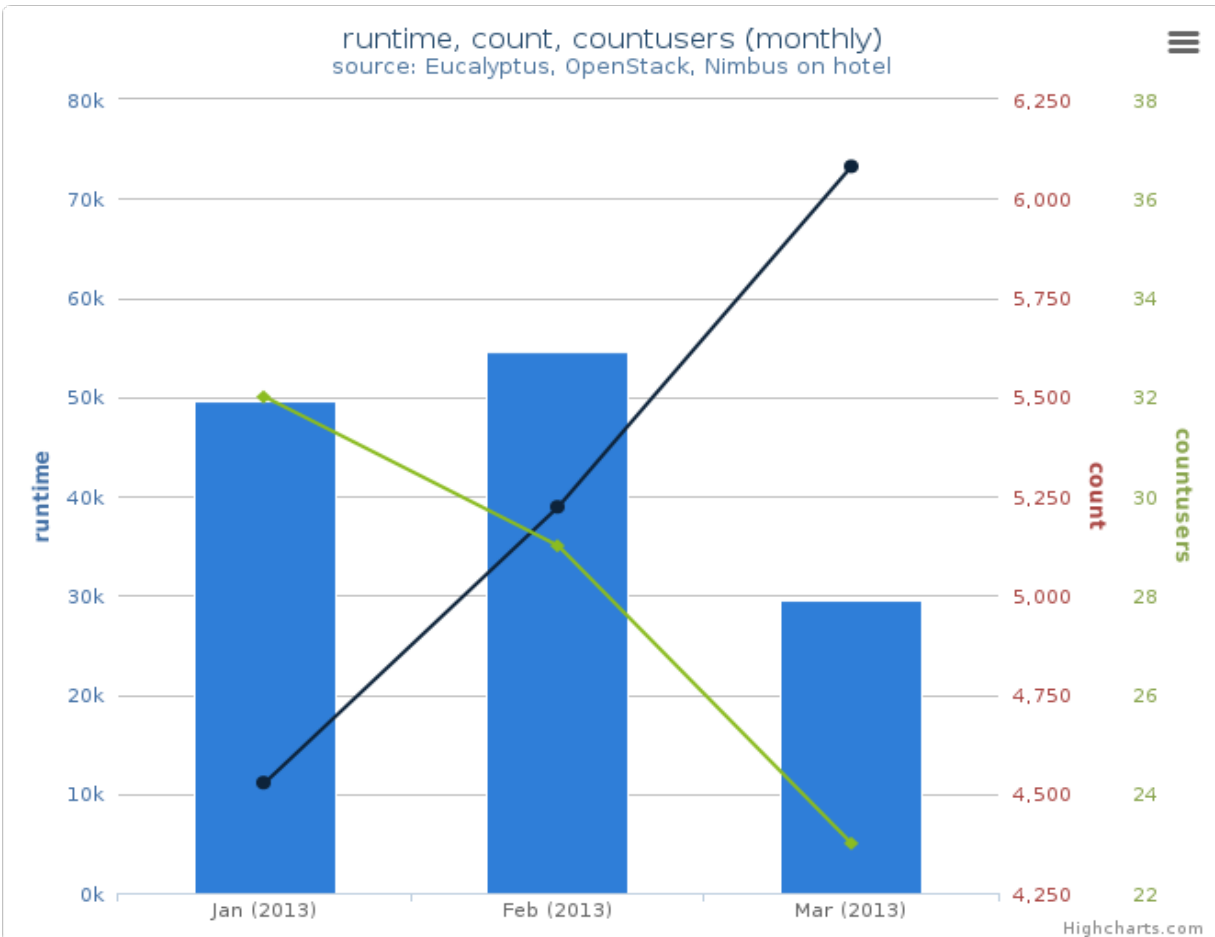


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)

This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel
- **Metric:**
 - Runtime (Wall time hours): Sum of time elapsed from launch to termination of VM instances
 - Count (VM count): The number of launched VM instances
 - User count (Active): The number of users who launched VMs

4.1.2 Summary (Daily)

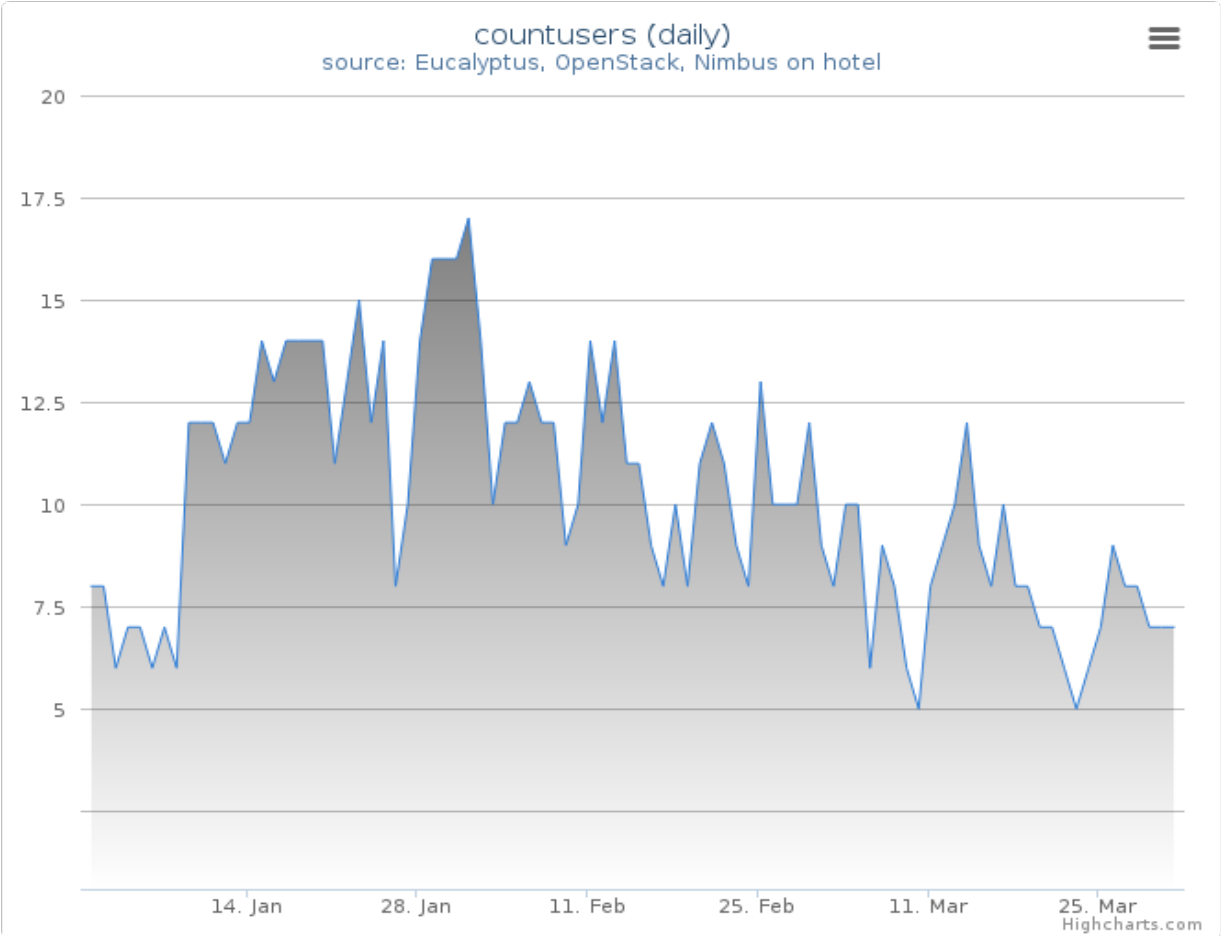


Figure 2: Users count
This time series chart represents daily active user count for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

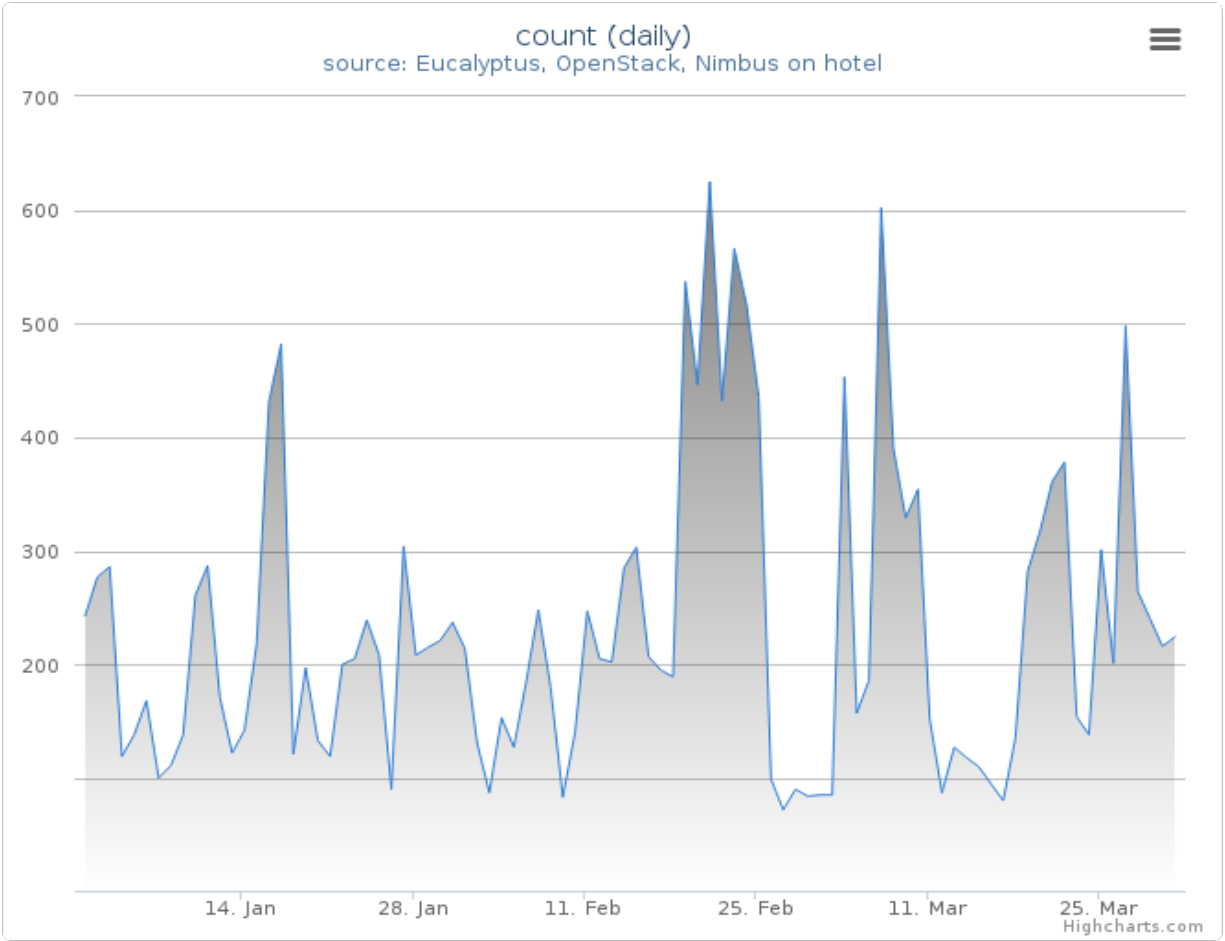


Figure 3: VMs count

This time series chart represents the number of daily launched VM instances for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

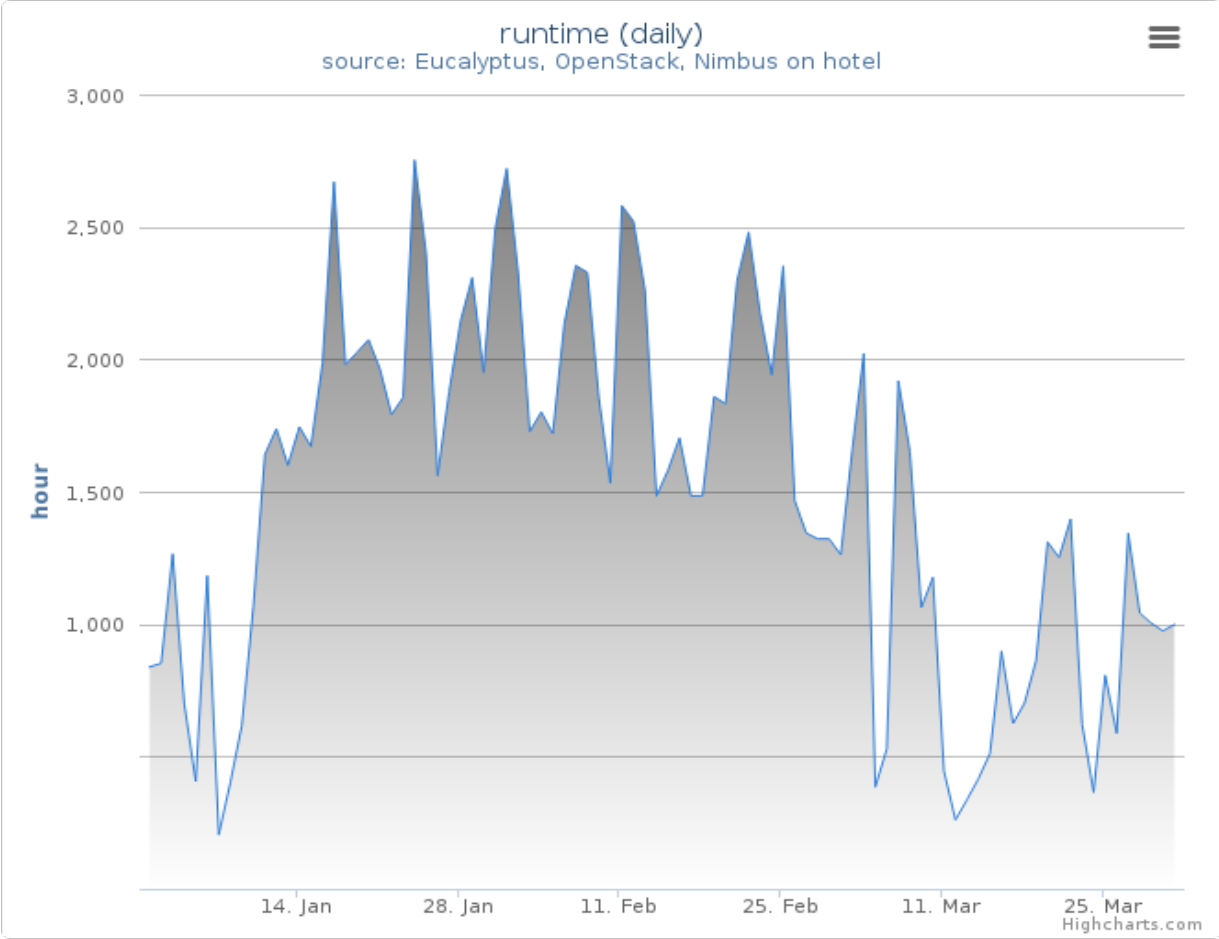


Figure 4: Wall time (hours)
This time series chart represents daily wall time (hours) for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

4.2 Distribution

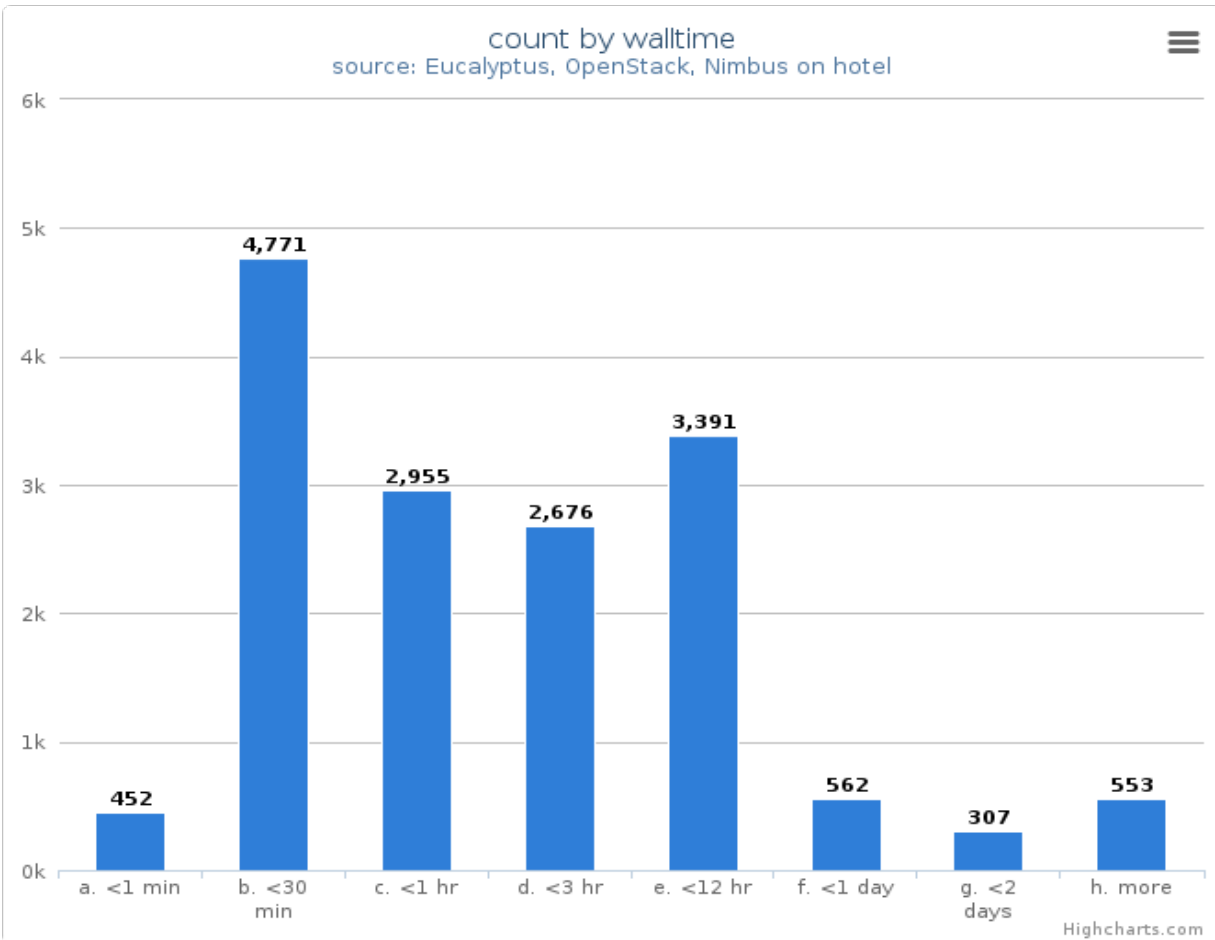


Figure 5: VM count by wall time

This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

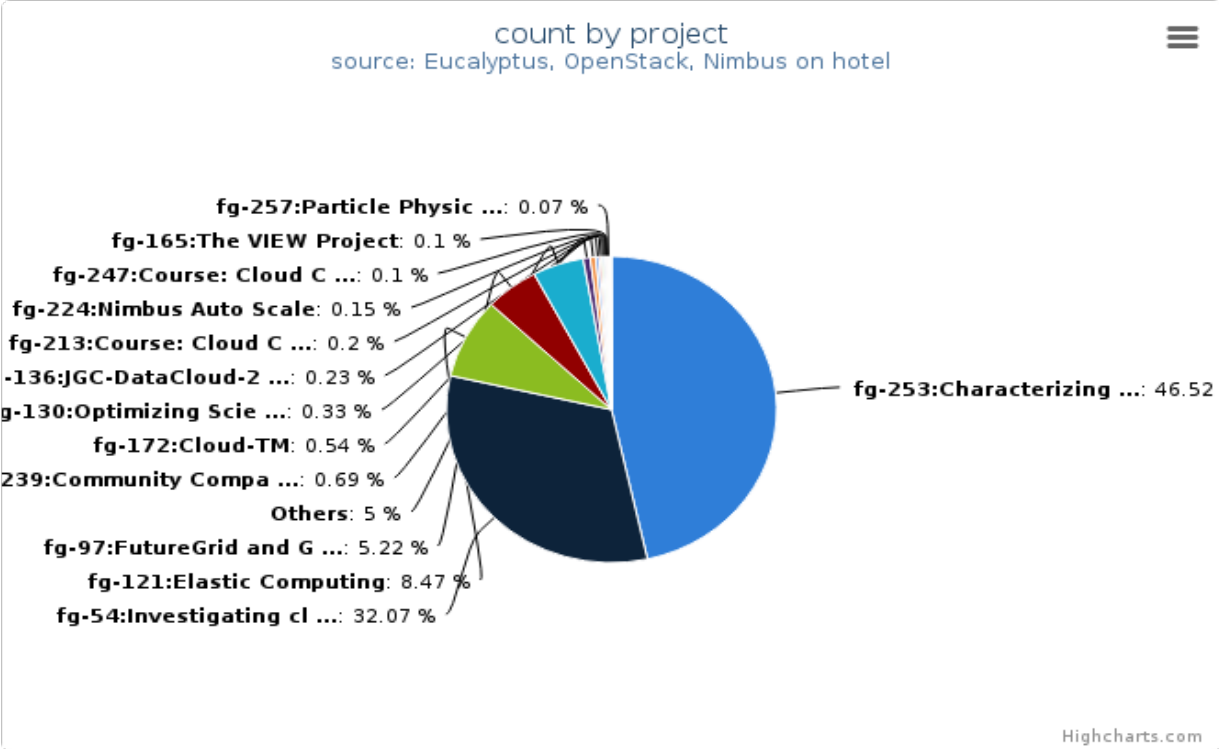


Figure 6: VMs count by project
This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.1: VMs count by project

Project	Value
fg-253:Characterizing Performance of Infrastructure Clouds	6842
fg-54:Investigating cloud computing as a solution for analyzing particle physics data	4717
fg-121:Elastic Computing	1246
fg-97:FutureGrid and Grid'5000 Collaboration	768
Others	735
fg-239:Community Comparison of Cloud frameworks	101
fg-172:Cloud-TM	79
fg-130:Optimizing Scientific Workflows on Clouds	48
fg-136:JGC-DataCloud-2012 paper experiments	34
fg-213:Course: Cloud Computing class - second edition	29
fg-224:Nimbus Auto Scale	22
fg-247:Course: Cloud Computing and Storage Class	15
fg-165:The VIEW Project	14
fg-47:Parallel scripting using cloud resources	10
fg-257:Particle Physics Data analysis cluster for ATLAS LHC experiment	10
fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory	8
fg-241:Course: Science Cloud Summer School 2012	8
fg-125:The VIEW Project	6
fg-273:Digital Provenance Research	6
fg-82:FG General Software Development	4
fg-150:SC11: Using and Building Infrastructure Clouds for Science	4
fg-139:Course: Cloud Computing and Storage Class	1
fg-225:Budget-constrained workflow scheduler	1

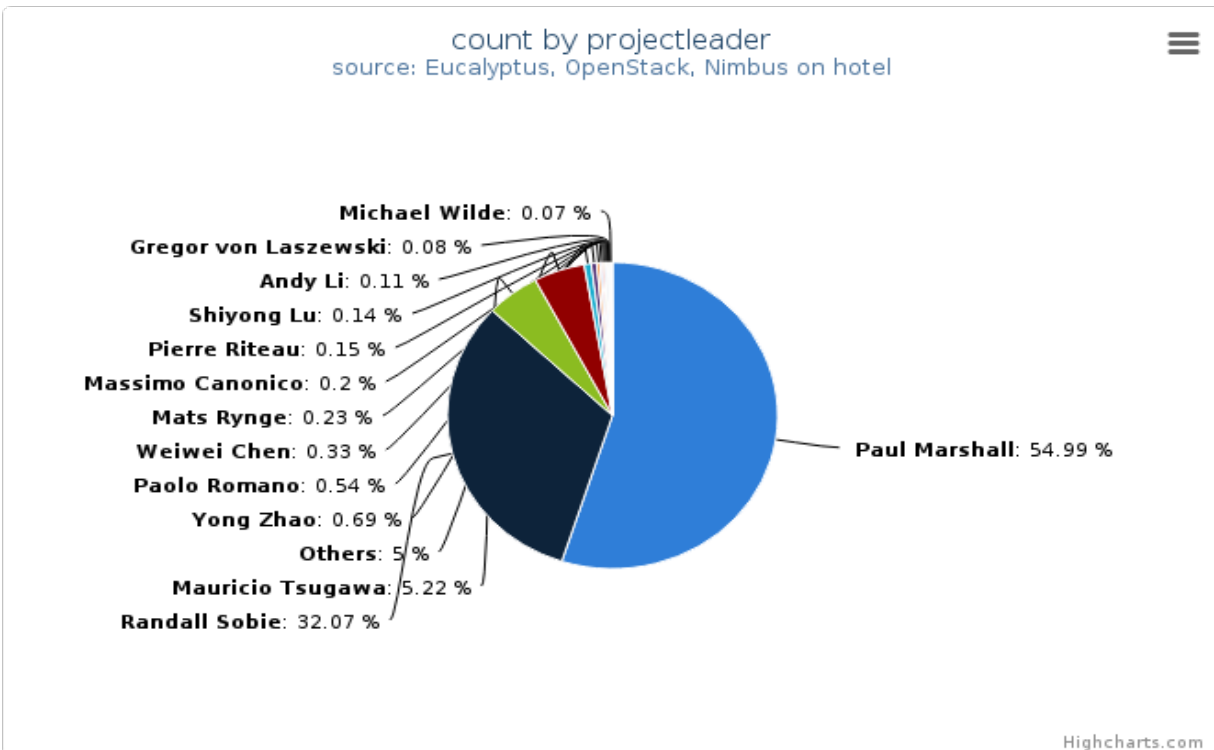


Figure 7: VMs count by project leader

This chart also illustrates the proportion of launched VM instances by project Leader. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.2: VMs count by project leader

Projectleader	Value
Paul Marshall	8088
Randall Sobie	4717
Mauricio Tsugawa	768
Others	735
Yong Zhao	101
Paolo Romano	79
Weiwei Chen	48
Mats Rynge	34
Massimo Canonico	29
Pierre Riteau	22
Shiyong Lu	20
Andy Li	16
Gregor von Laszewski	12
Doug Benjamin	10
Michael Wilde	10
John Lockman	8
Mohammed Rangwala	6
John Bresnahan	4
Adrian Muresan	1

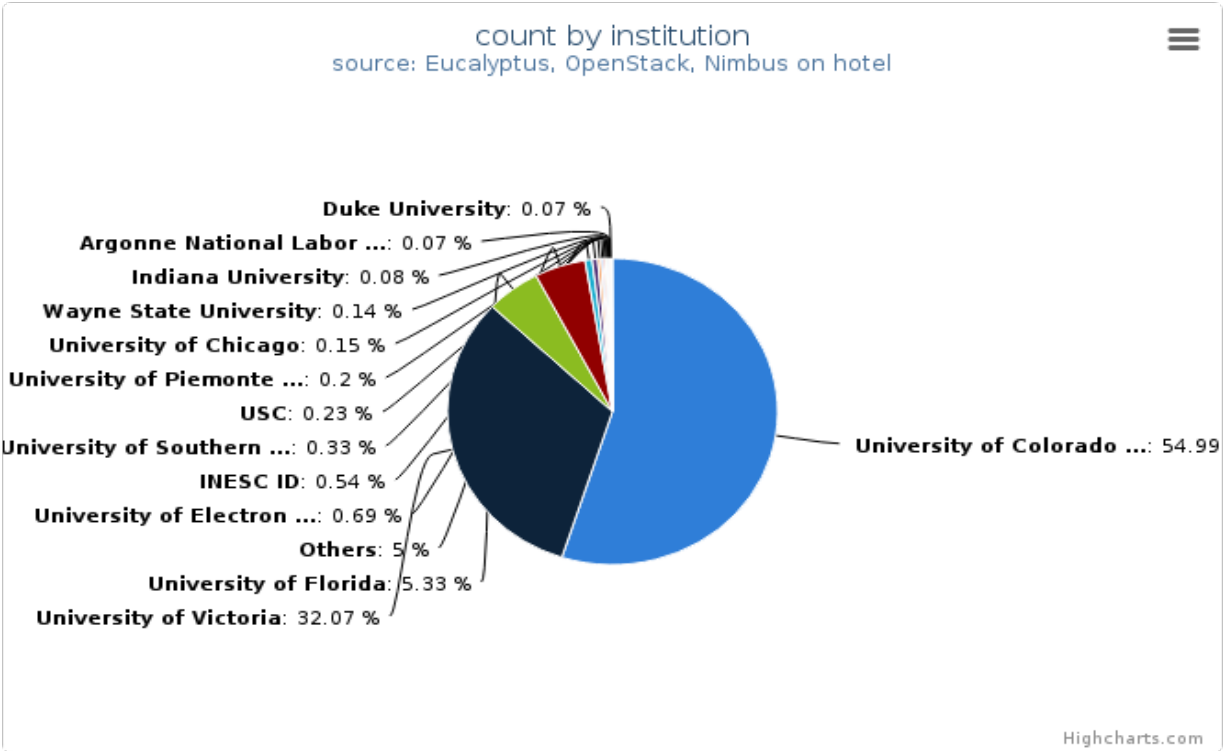


Figure 8: VMs count by institution

This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.3: VMs count by institution

Institution	Value
University of Colorado at Boulder	8088
University of Victoria	4717
University of Florida	784
Others	735
University of Electronic Science and Technology	101
INESC ID	79
University of Southern California	48
USC	34
University of Piemonte Orientale	29
University of Chicago	22
Wayne State University	20
Indiana University	12
Argonne National Laboratory	10
Duke University	10
University of Texas at Austin	8
Indiana University Purdue University Indianapolis	6
Nimbus	4
ENS Lyon	1

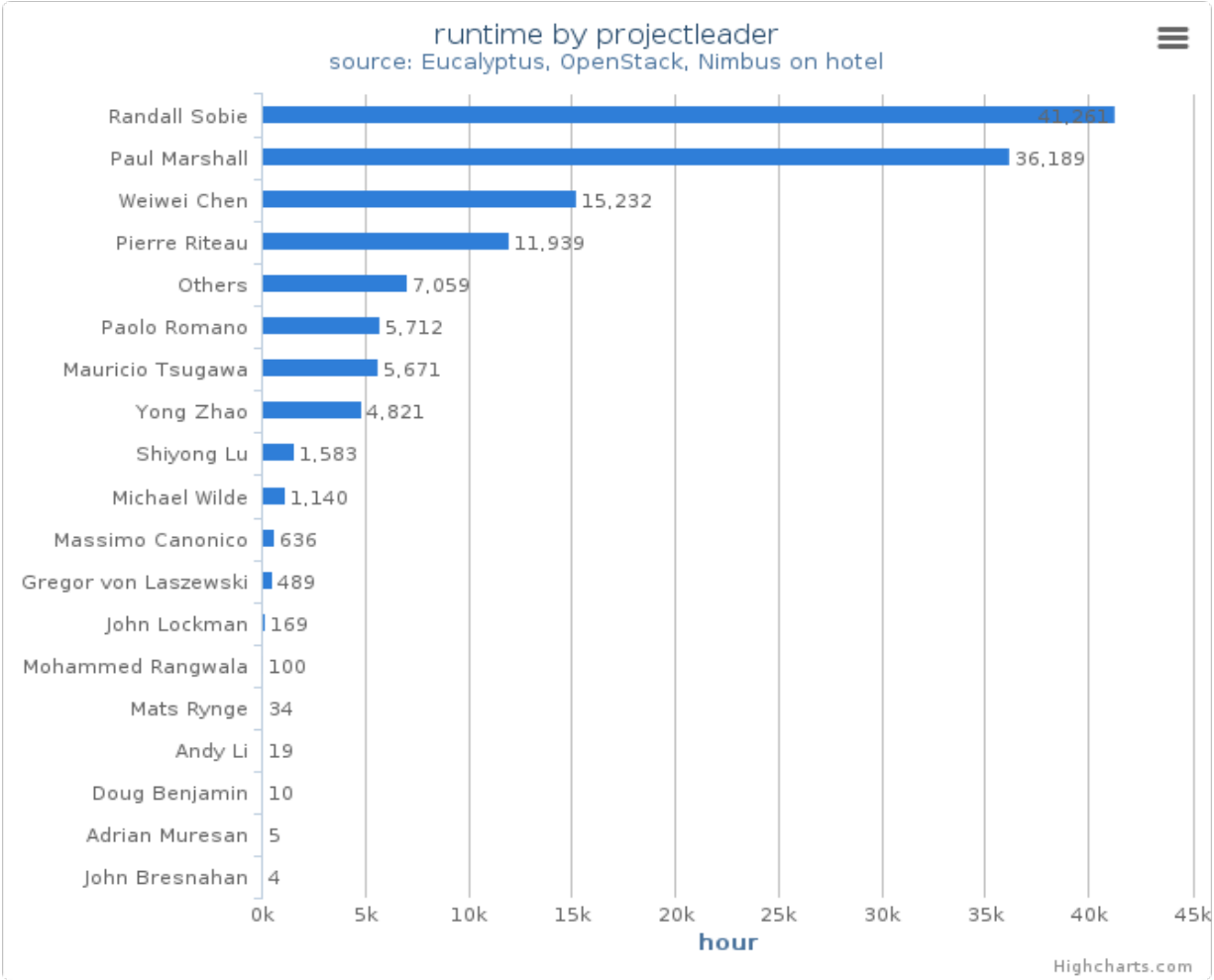


Figure 9: Wall time (hours) by project leader

This chart illustrates proportionate total run times by project leader.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

4.3 System information

System information shows utilization distribution as to VMs count and wall time. Each cluster represents a compute node.

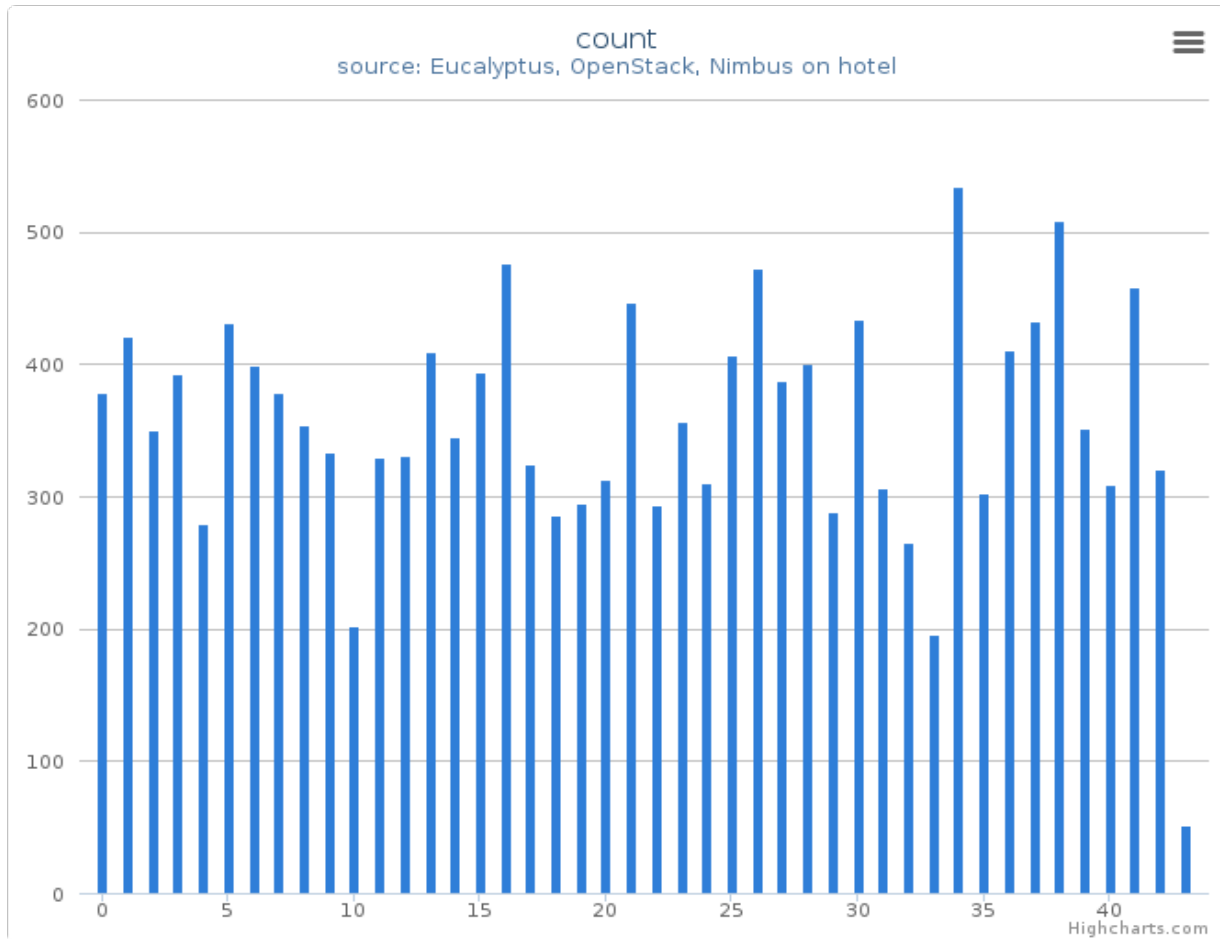


Figure 10: VMs count by systems (compute nodes) in Cluster (hotel)

This column chart represents VMs count among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

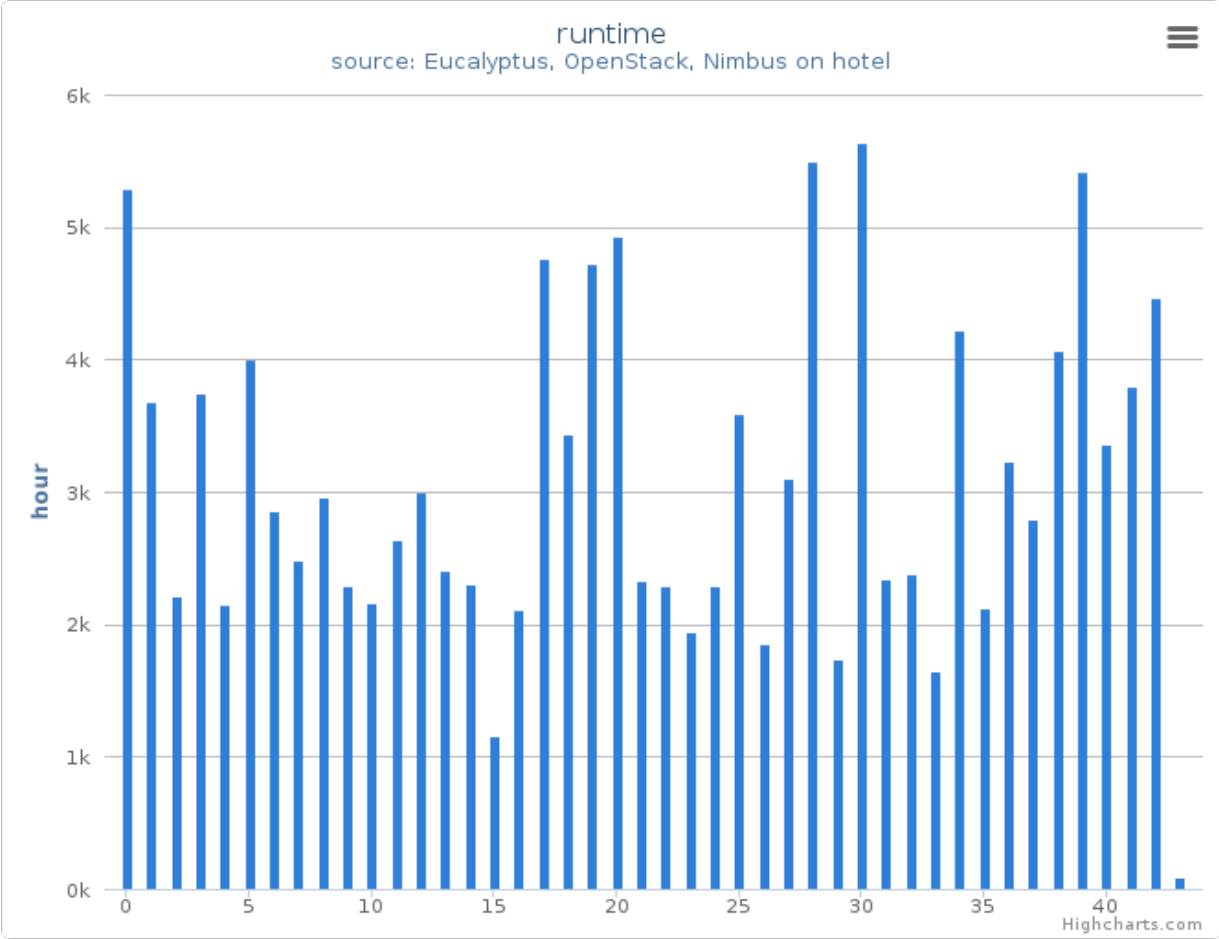


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (hotel)
This column chart represents wall time among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: hotel

USAGE REPORT ALAMO

- Period: January 01 – March 31, 2013
- Hostname: alamo.futuregrid.org
- Services: nimbus, openstack
- Metrics: VMs count, Users count, Wall time (hours), Distribution by wall time, project, project leader, and institution, and systems

5.1 Histogram

5.1.1 Summary (Monthly)

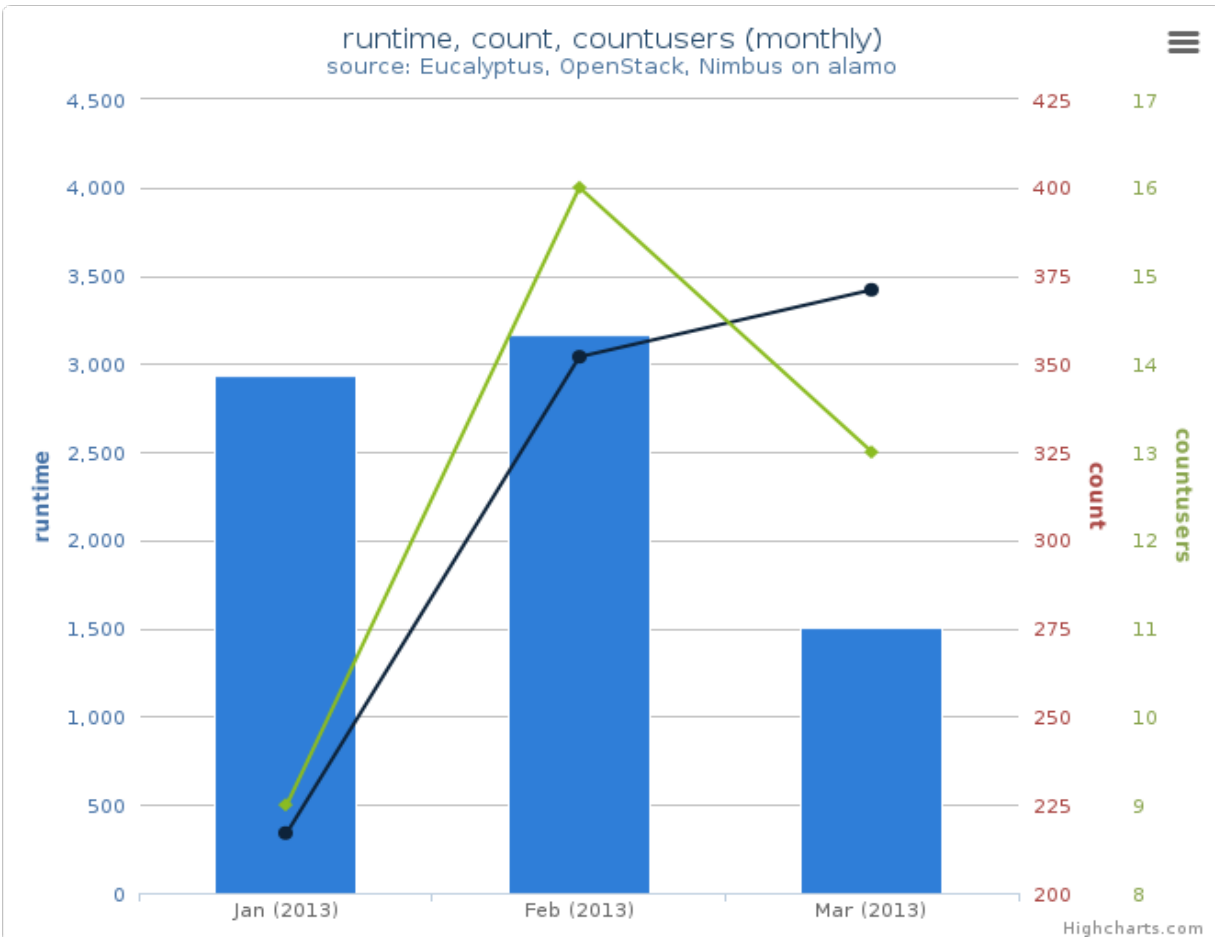


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)

This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo
- **Metric:**
 - Runtime (Wall time hours): Sum of time elapsed from launch to termination of VM instances
 - Count (VM count): The number of launched VM instances
 - User count (Active): The number of users who launched VMs

5.1.2 Summary (Daily)

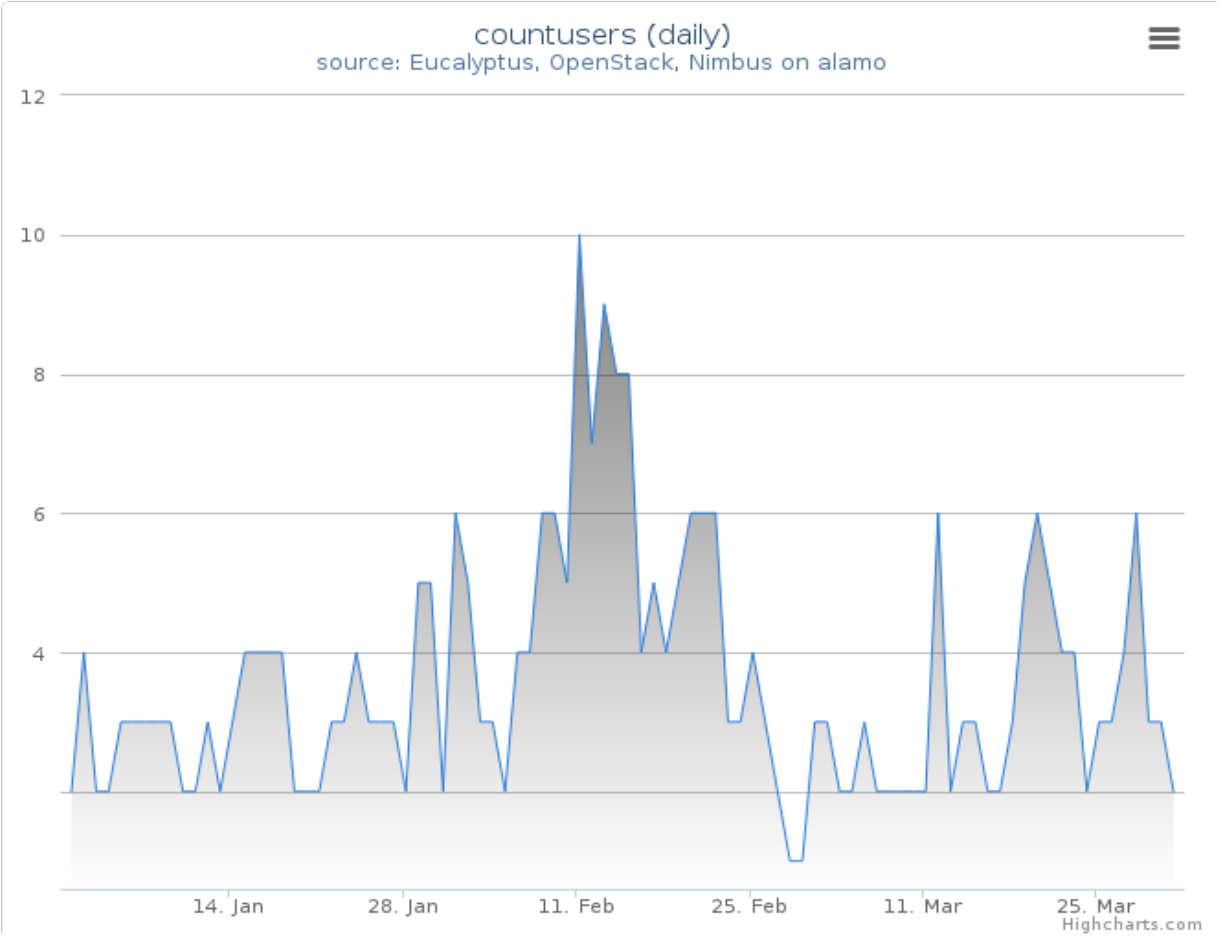


Figure 2: Users count
This time series chart represents daily active user count for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

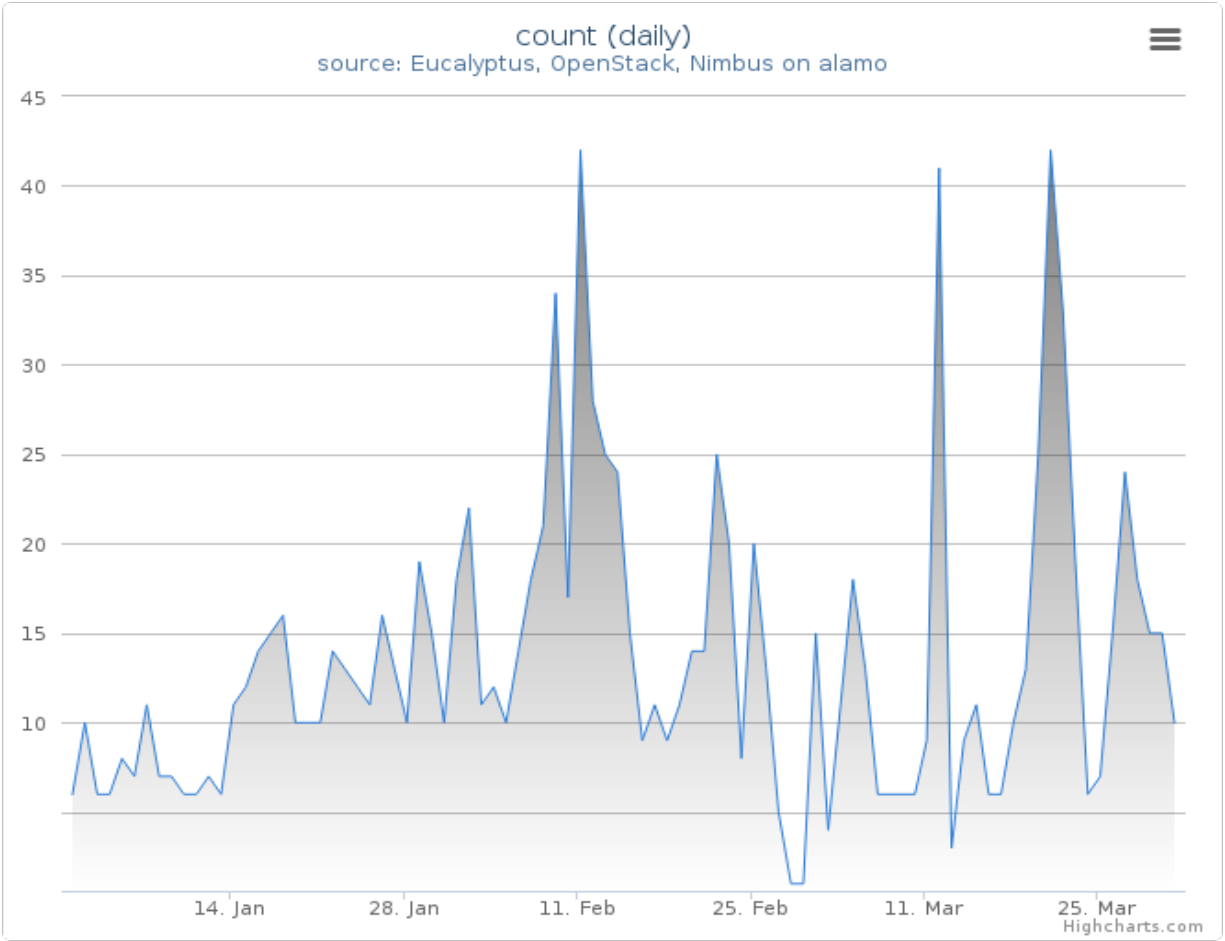


Figure 3: VMs count

This time series chart represents the number of daily launched VM instances for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

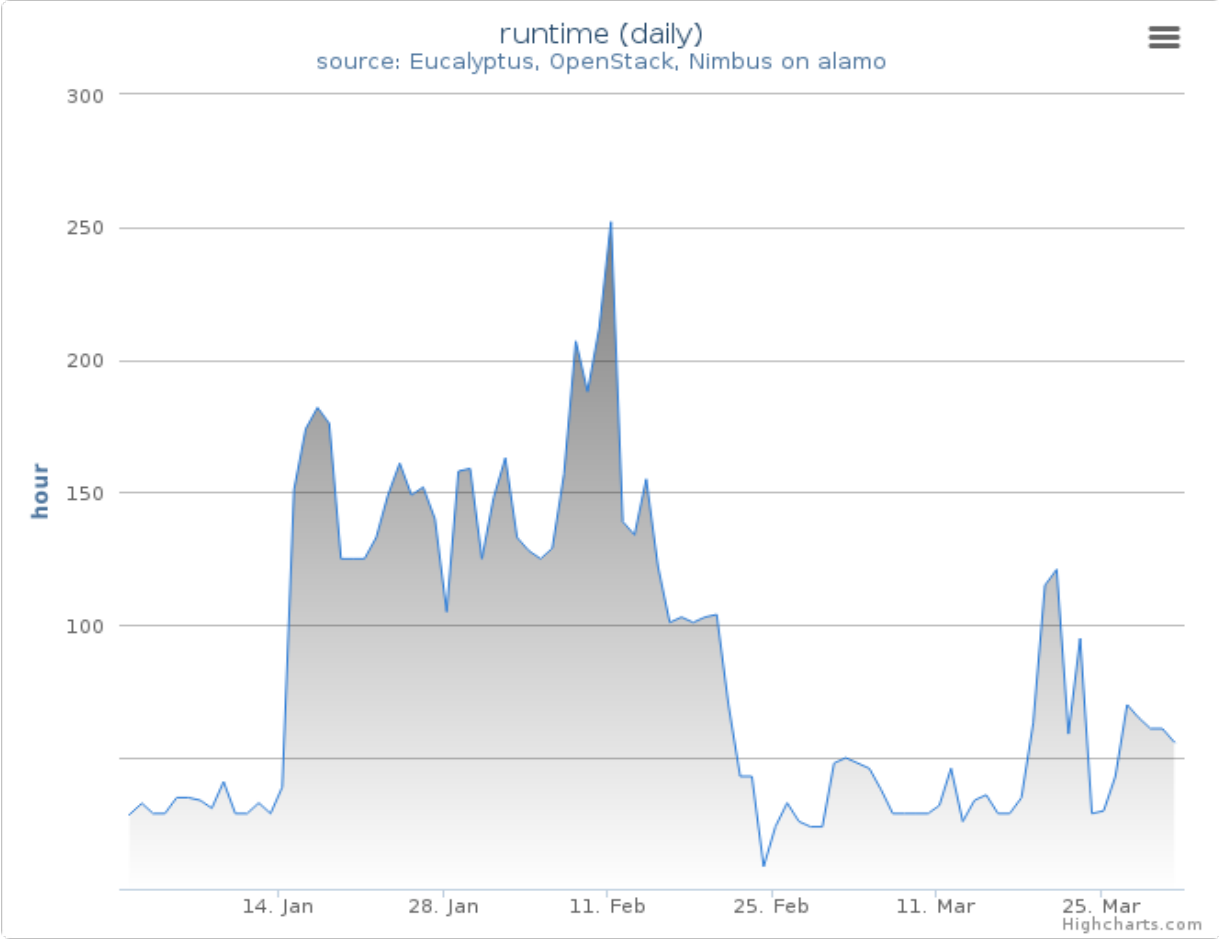


Figure 4: Wall time (hours)
This time series chart represents daily wall time (hours) for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

5.2 Distribution

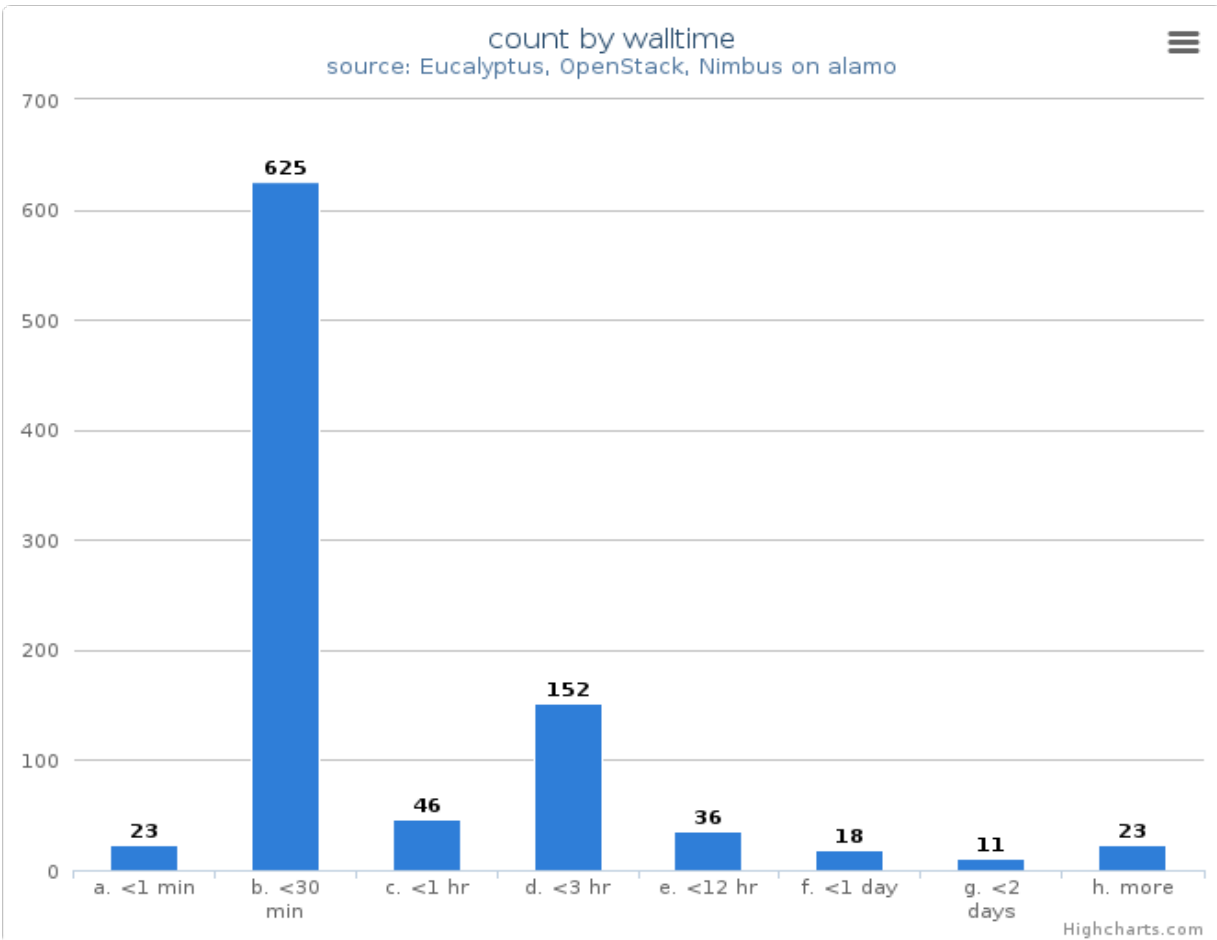


Figure 5: VM count by wall time

This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

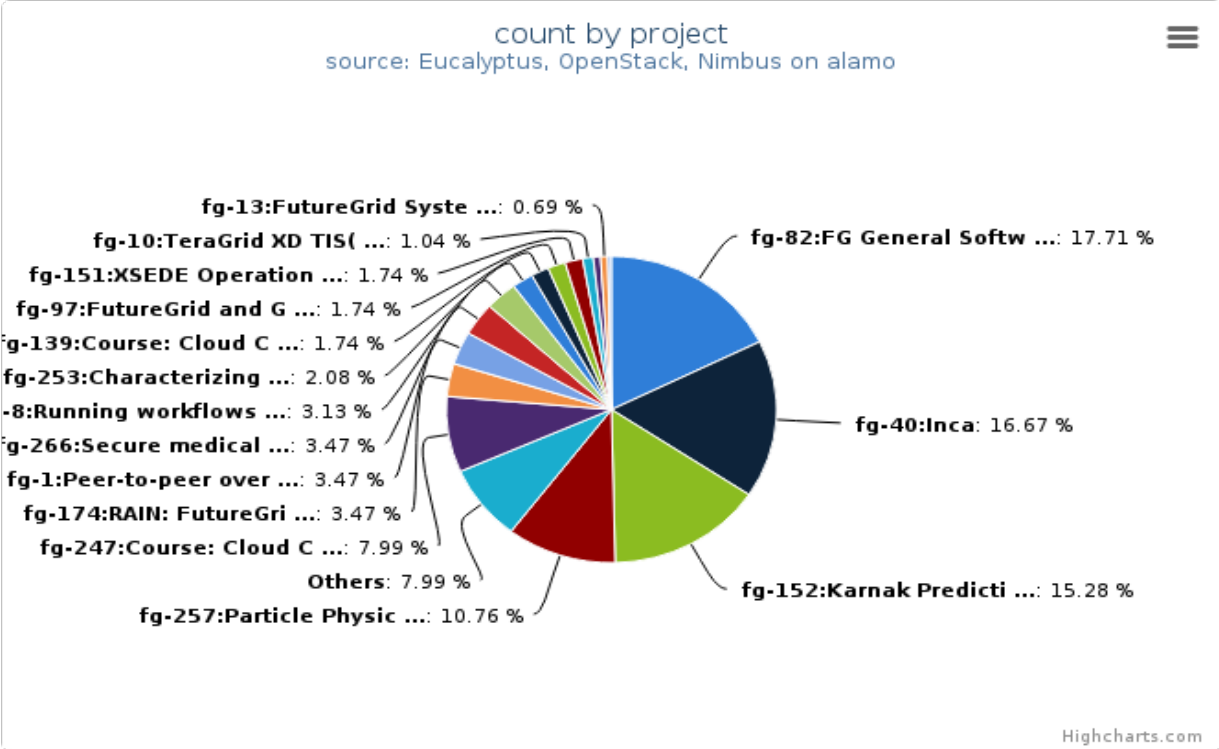


Figure 6: VMs count by project
This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

Table 5.1: VMs count by project

Project	Value
fg-82:FG General Software Development	51
fg-40:Inca	48
fg-152:Karnak Prediction Service	44
fg-257:Particle Physics Data analysis cluster for ATLAS LHC experiment	31
Others	23
fg-247:Course: Cloud Computing and Storage Class	23
fg-174:RAIN: FutureGrid Dynamic provisioning Framework	10
fg-1:Peer-to-peer overlay networks and applications in virtual networks and virtual clusters	10
fg-266:Secure medical files sharing	10
fg-8:Running workflows in the cloud with Pegasus	9
fg-253:Characterizing Performance of Infrastructure Clouds	6
fg-139:Course: Cloud Computing and Storage Class	5
fg-97:FutureGrid and Grid'5000 Collaboration	5
fg-151:XSEDE Operations Group	5
fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory	3
fg-130:Optimizing Scientific Workflows on Clouds	2
fg-13:FutureGrid Systems Development and Prototyping	2
fg-312:Sensor-Rocks: A novel integrated framework to improve software Operations and Management (O&M) and power management in environmental observing systems	1

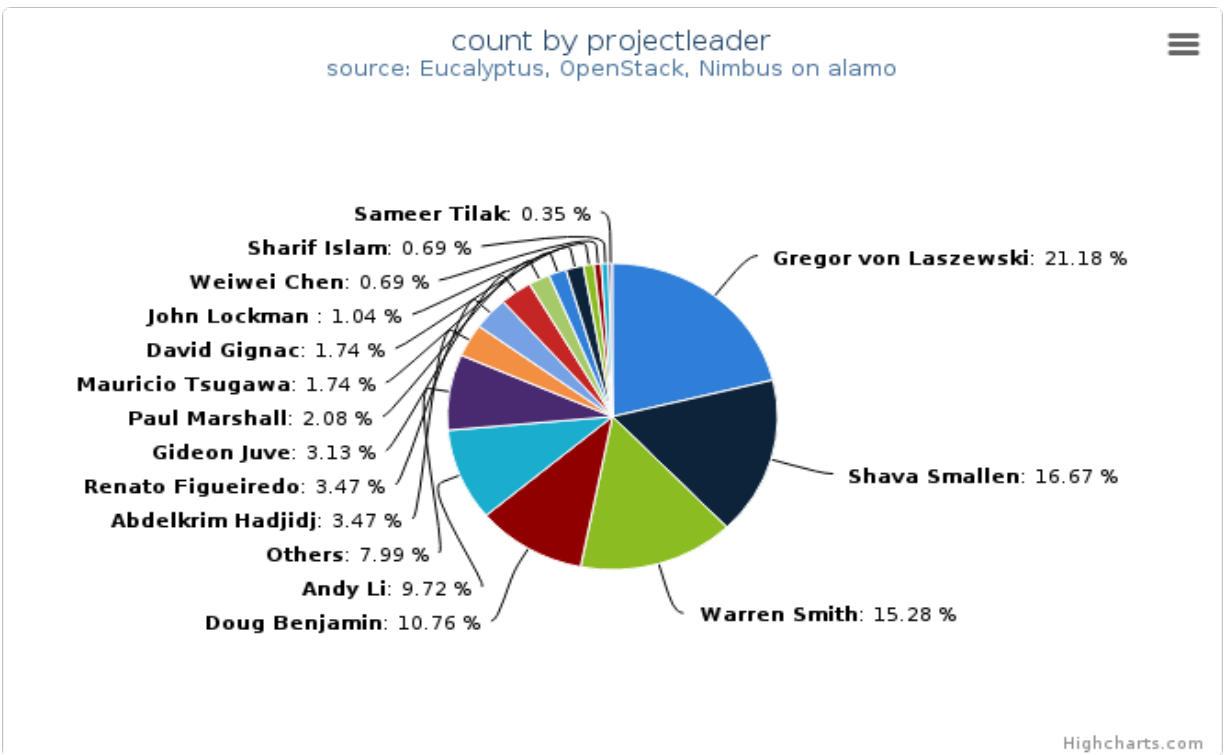


Figure 7: VMs count by project leader

This chart also illustrates the proportion of launched VM instances by project Leader. The same data in tabular form

follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

Table 5.2: VMs count by project leader

Projectleader	Value
Gregor von Laszewski	61
Shava Smallen	48
Warren Smith	44
Doug Benjamin	31
Andy Li	28
Others	23
Abdelkrim Hadjidj	10
Renato Figueiredo	10
Gideon Juve	9
Paul Marshall	6
Mauricio Tsugawa	5
David Gignac	5
John Lockman	3
Weiwei Chen	2
Sharif Islam	2
Sameer Tilak	1

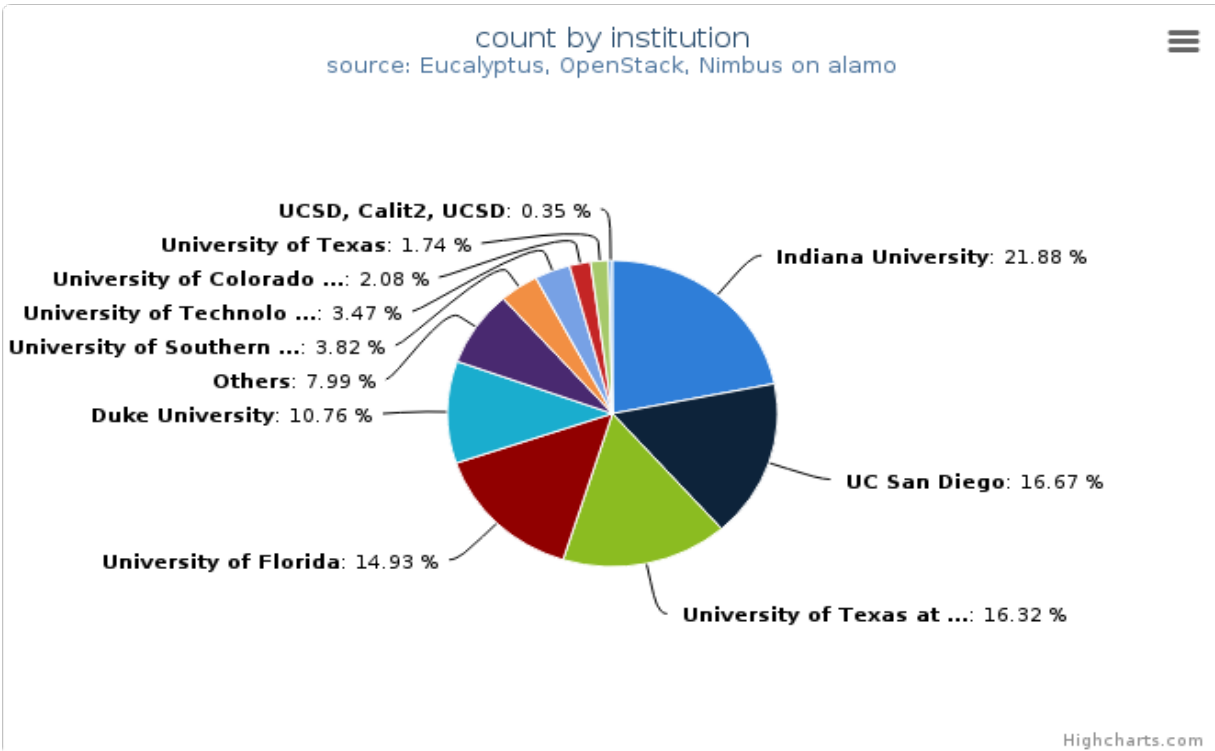


Figure 8: VMs count by institution

This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

Table 5.3: VMs count by institution

Institution	Value
Indiana University	63
UC San Diego	48
University of Texas at Austin	47
University of Florida	43
Duke University	31
Others	23
University of Southern California	11
University of Technology of Compiegne	10
University of Colorado at Boulder	6
University of Texas	5
UCSD, Calit2, UCSD	1

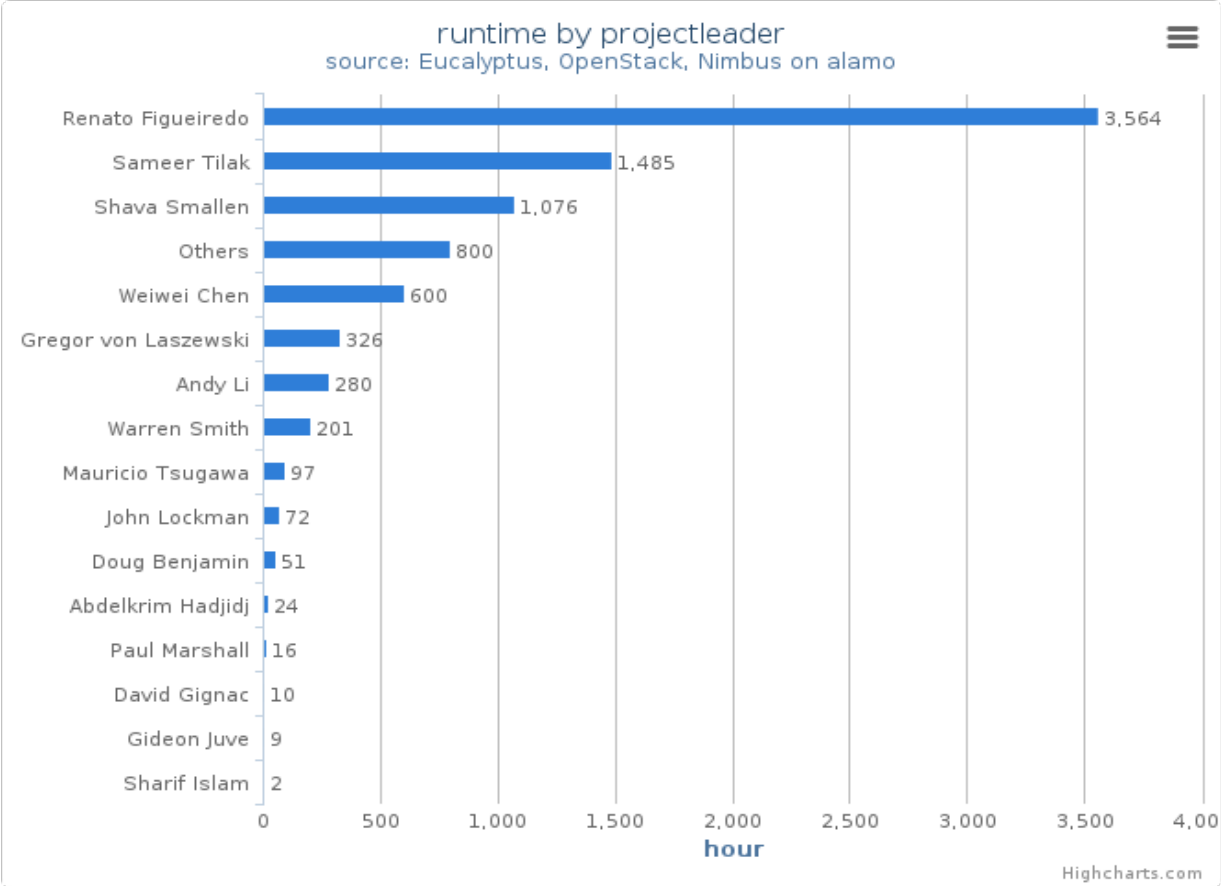


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

5.3 System information

System information shows utilization distribution as to VMs count and wall time. Each cluster represents a compute node.

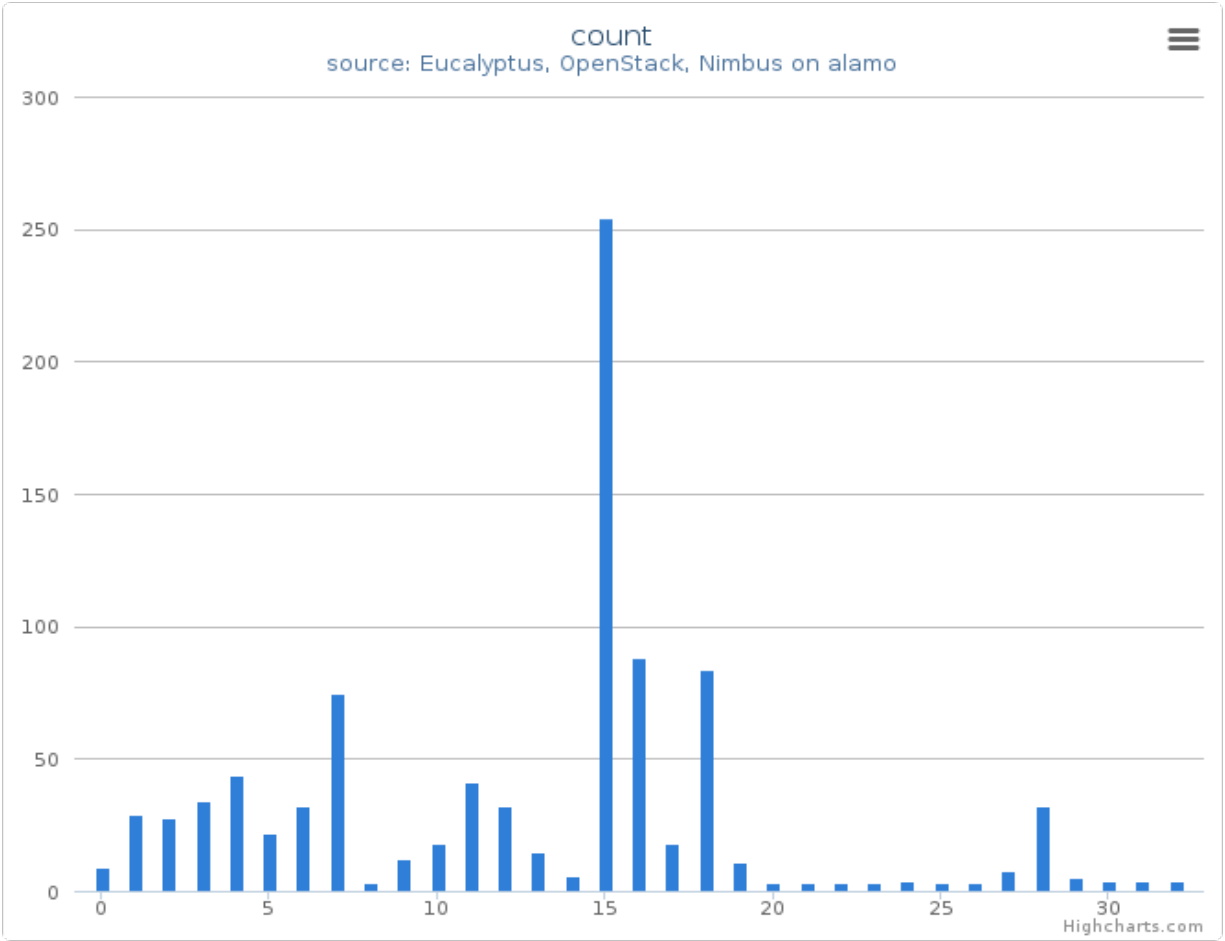


Figure 10: VMs count by systems (compute nodes) in Cluster (alamo)
This column chart represents VMs count among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

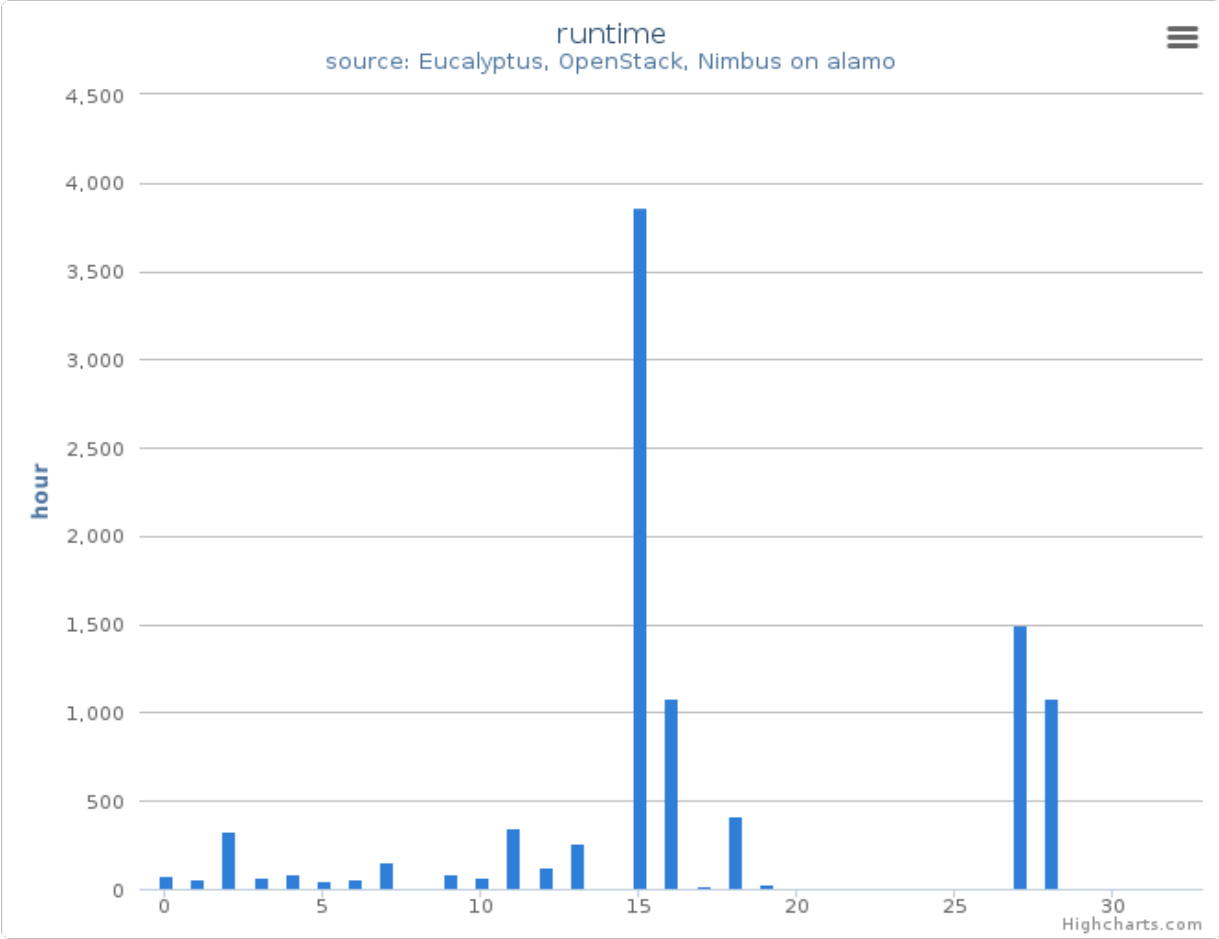


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (alamo)
This column chart represents wall time among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus, openstack
- Hostname: alamo

USAGE REPORT FOXTROT

- Period: January 01 – March 31, 2013
- Hostname: foxtrot.futuregrid.org
- Services: nimbus
- Metrics: VMs count, Users count, Wall time (hours), Distribution by wall time, project, project leader, and institution, and systems

6.1 Histogram

6.1.1 Summary (Monthly)

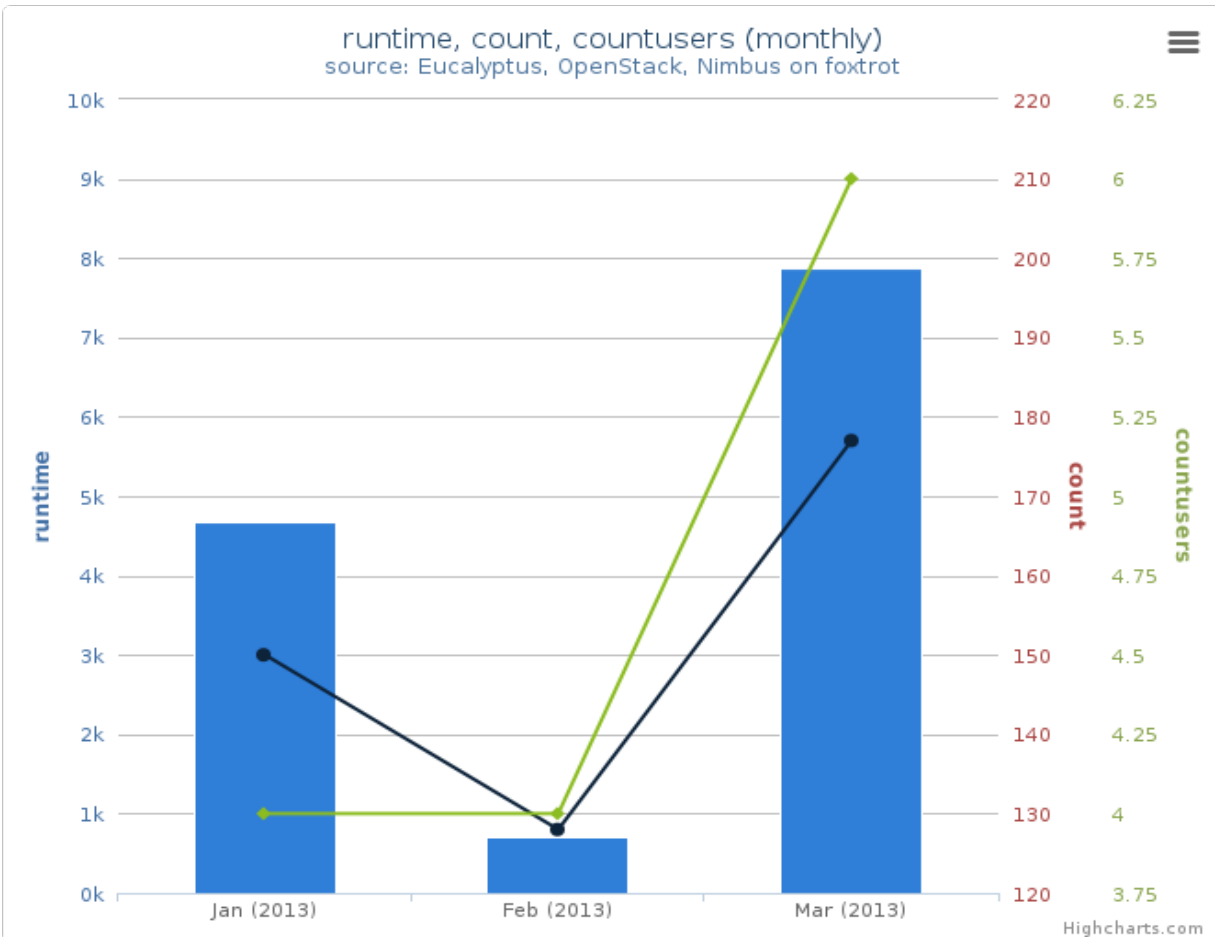


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)

This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot
- **Metric:**
 - Runtime (Wall time hours): Sum of time elapsed from launch to termination of VM instances
 - Count (VM count): The number of launched VM instances
 - User count (Active): The number of users who launched VMs

6.1.2 Summary (Daily)

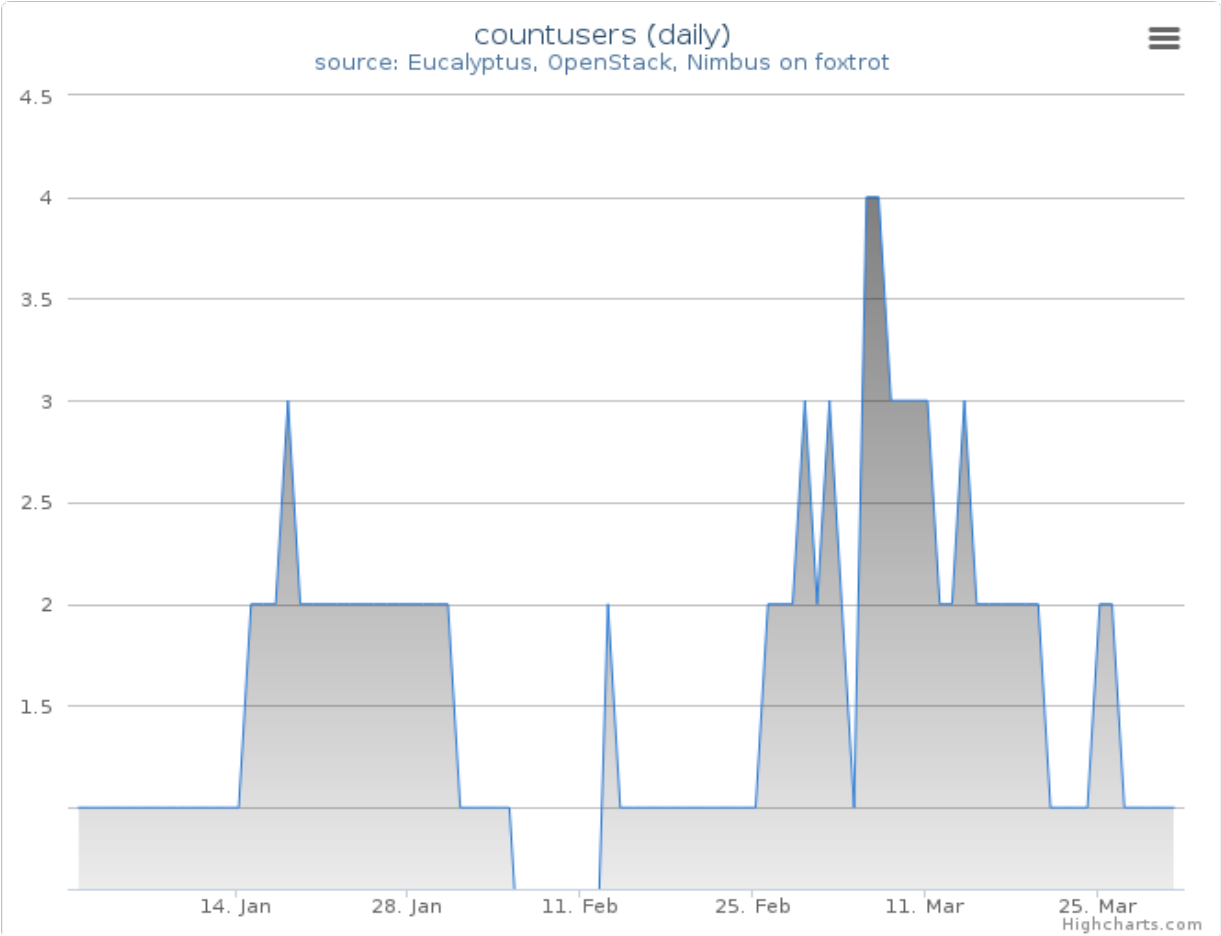


Figure 2: Users count
This time series chart represents daily active user count for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

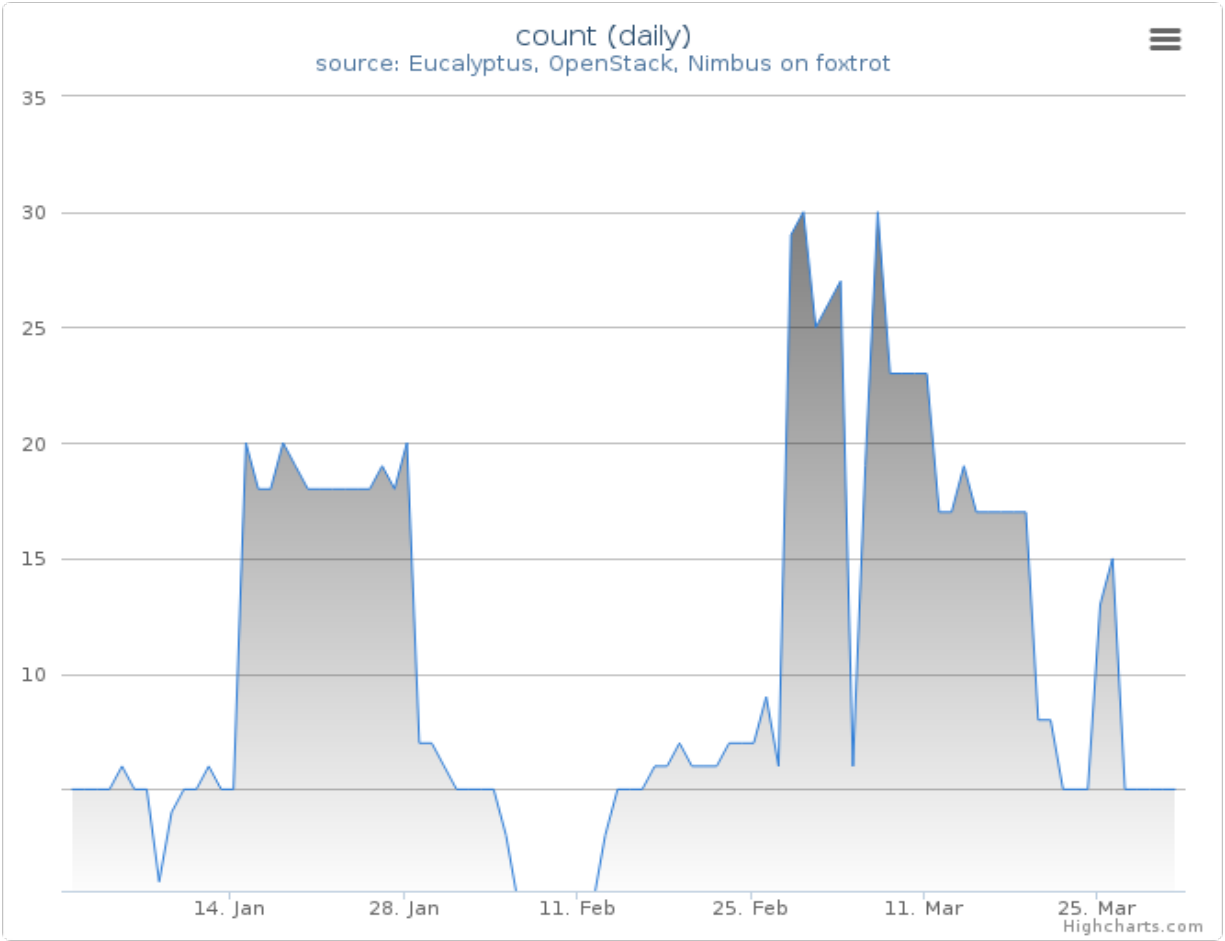


Figure 3: VMs count

This time series chart represents the number of daily launched VM instances for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

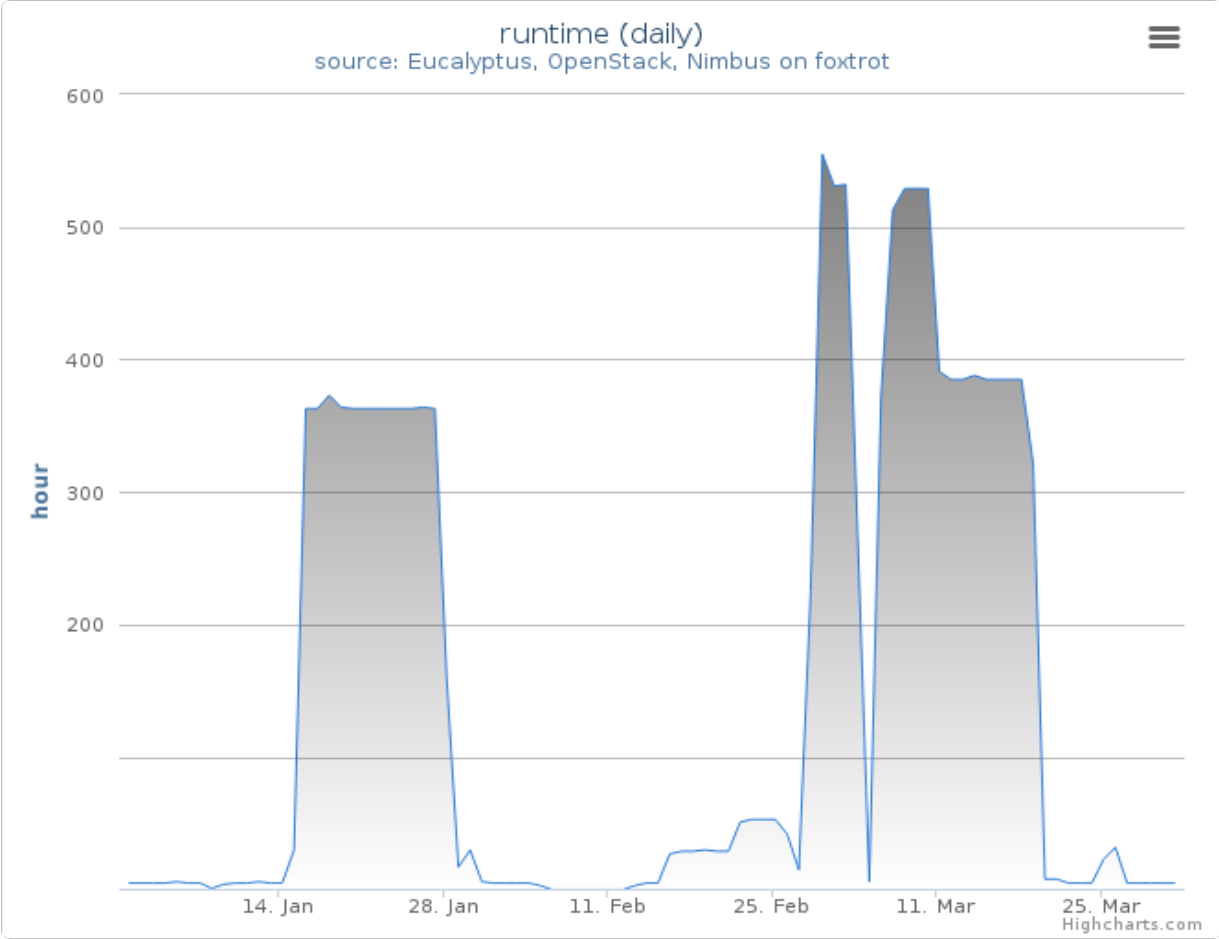


Figure 4: Wall time (hours)
This time series chart represents daily wall time (hours) for cloud services and shows historical changes during the period.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

6.2 Distribution

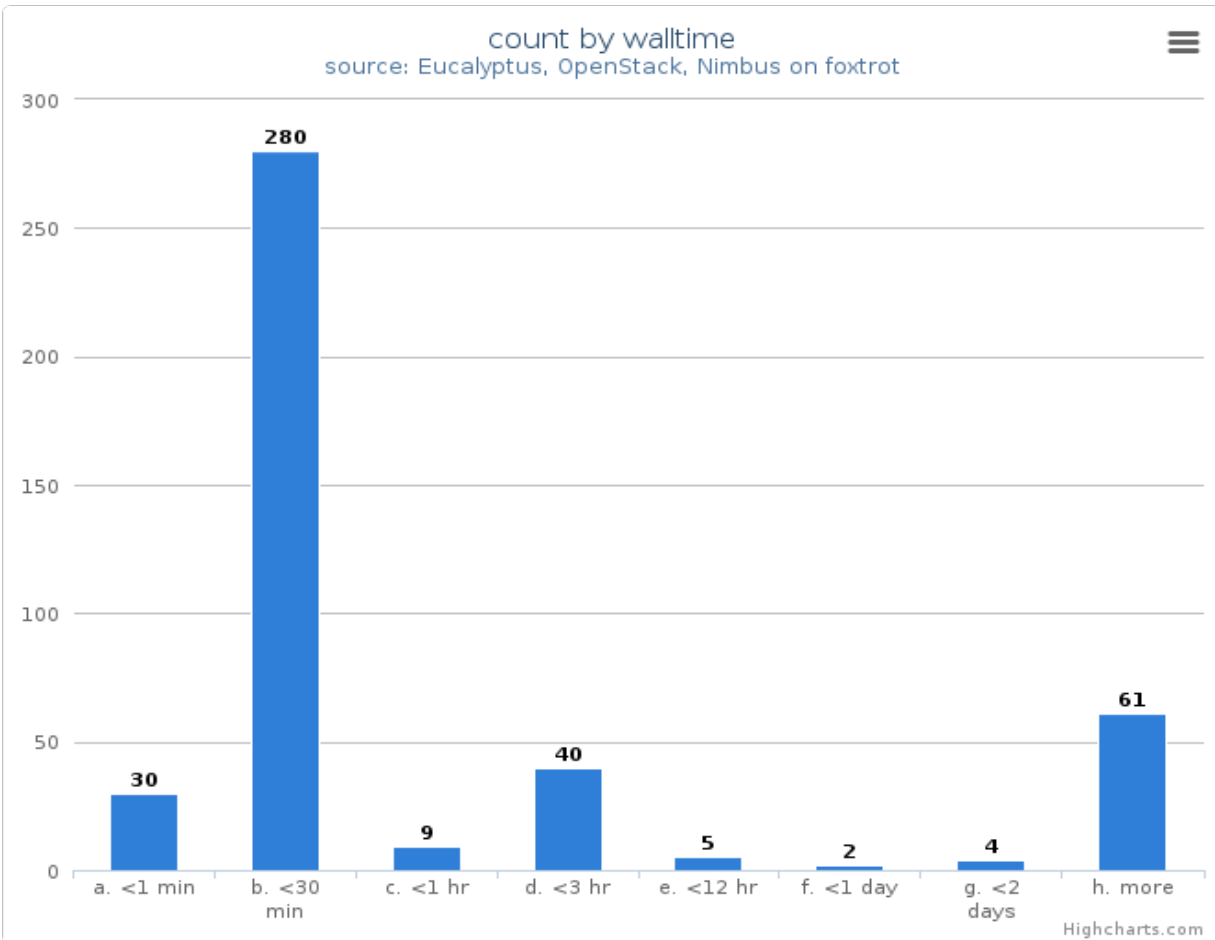


Figure 5: VM count by wall time

This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

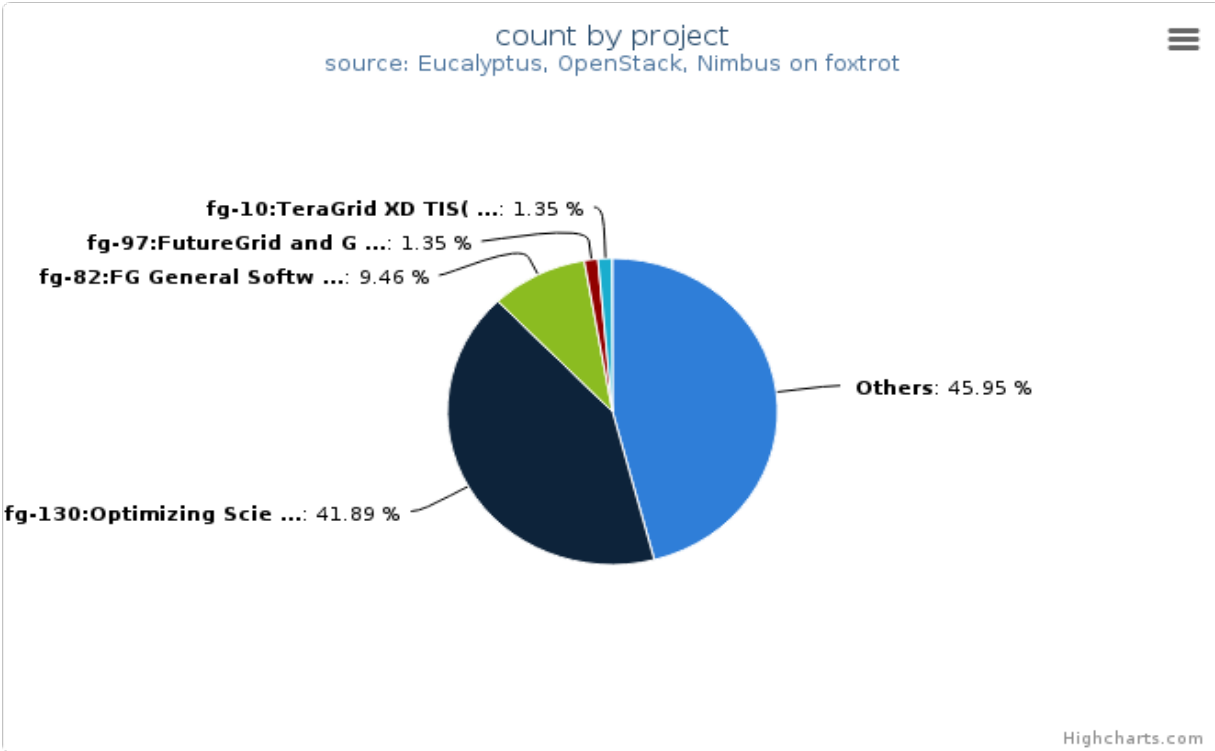


Figure 6: VMs count by project

This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.1: VMs count by project

Project	Value
Others	34
fg-130:Optimizing Scientific Workflows on Clouds	31
fg-82:FG General Software Development	7
fg-97:FutureGrid and Grid'5000 Collaboration	1
fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory	1

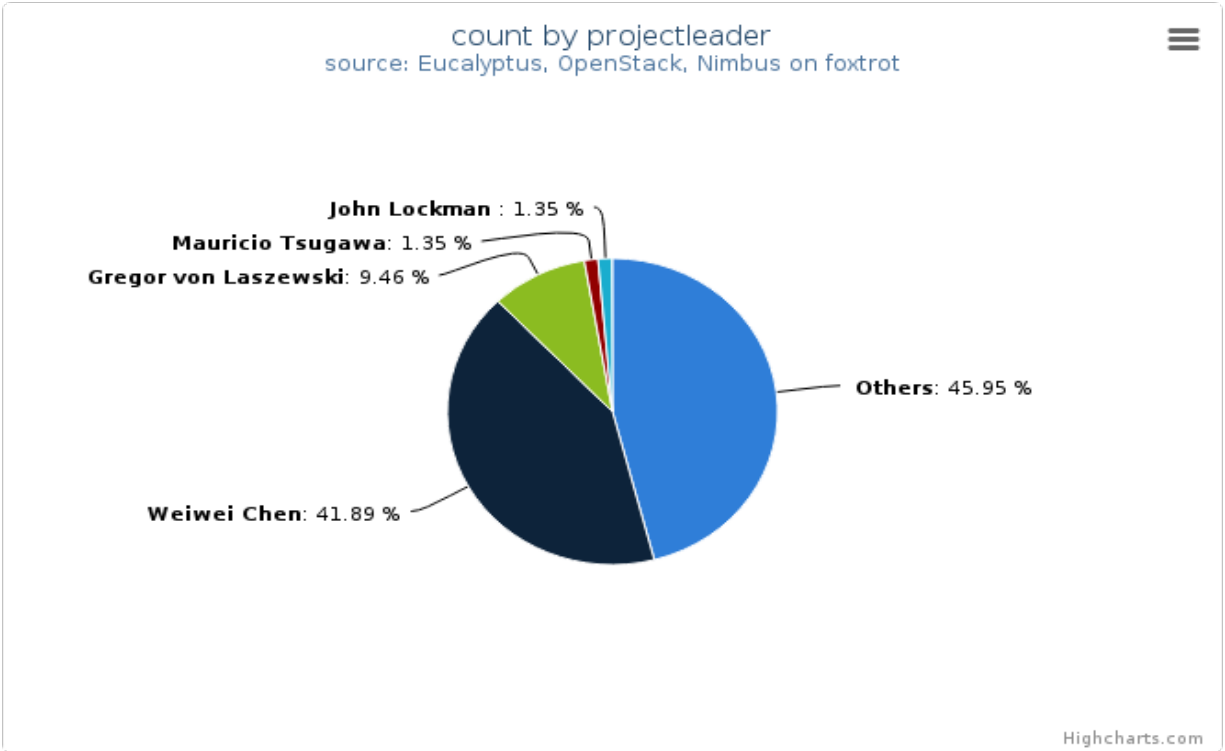


Figure 7: VMs count by project leader

This chart also illustrates the proportion of launched VM instances by project Leader. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.2: VMs count by project leader

Projectleader	Value
Others	34
Weiwei Chen	31
Gregor von Laszewski	7
Mauricio Tsugawa	1
John Lockman	1

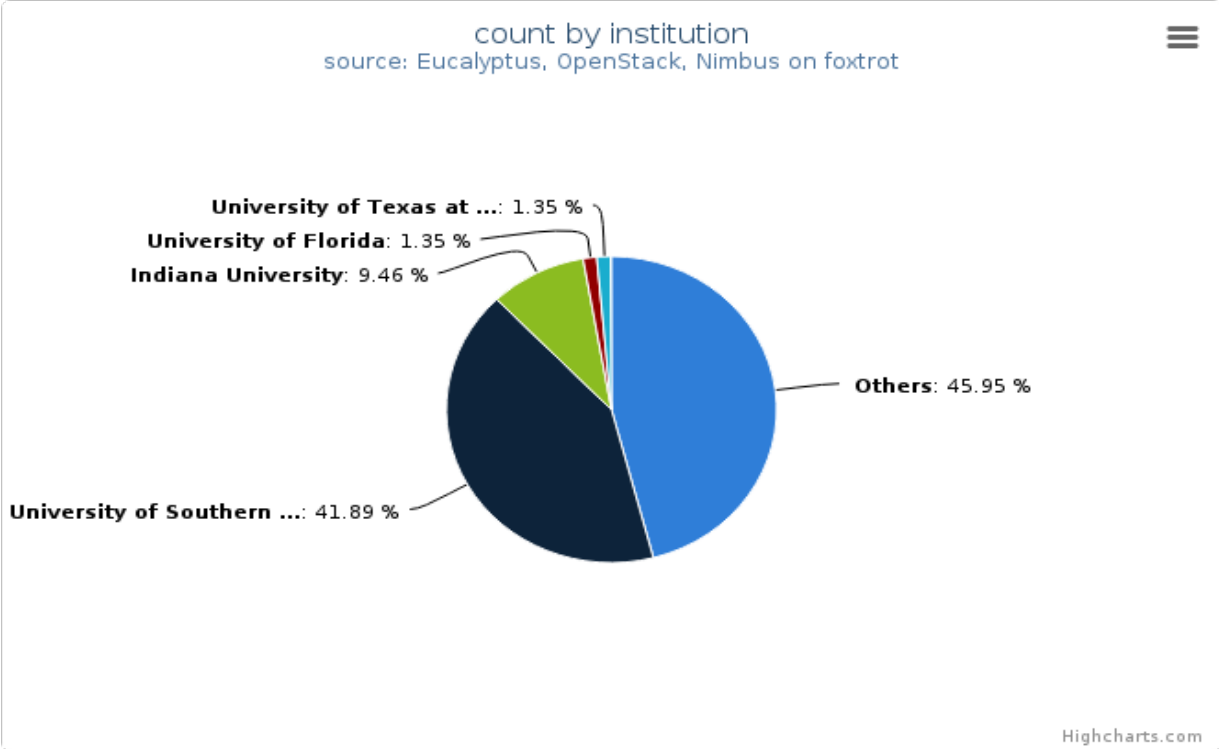


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.3: VMs count by institution

Institution	Value
Others	34
University of Southern California	31
Indiana University	7
University of Florida	1
University of Texas at Austin	1

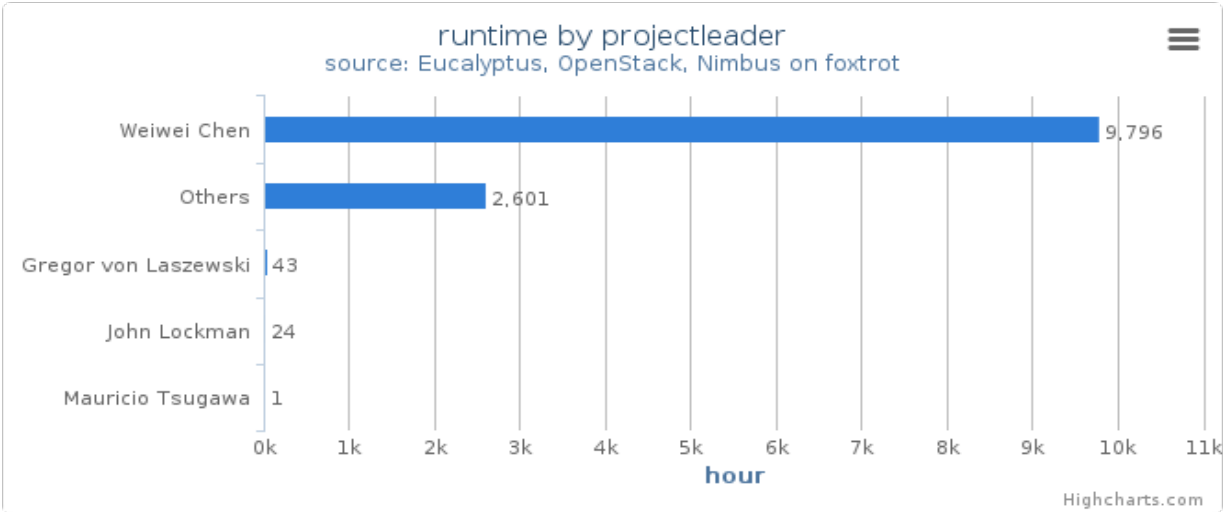


Figure 9: Wall time (hours) by project leader

This chart illustrates proportionate total run times by project leader.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

6.3 System information

System information shows utilization distribution as to VMs count and wall time. Each cluster represents a compute node.

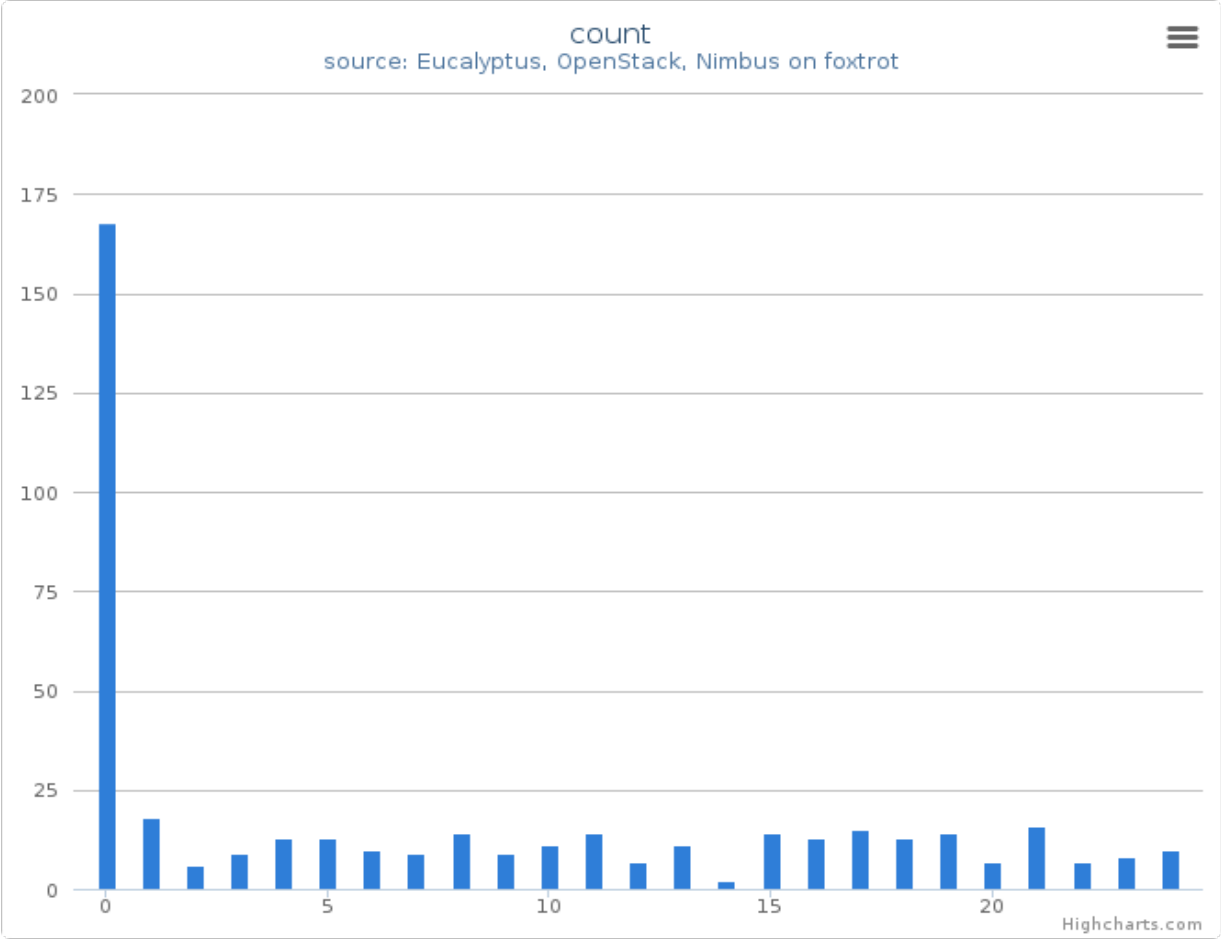


Figure 10: VMs count by systems (compute nodes) in Cluster (foxtrot)
This column chart represents VMs count among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

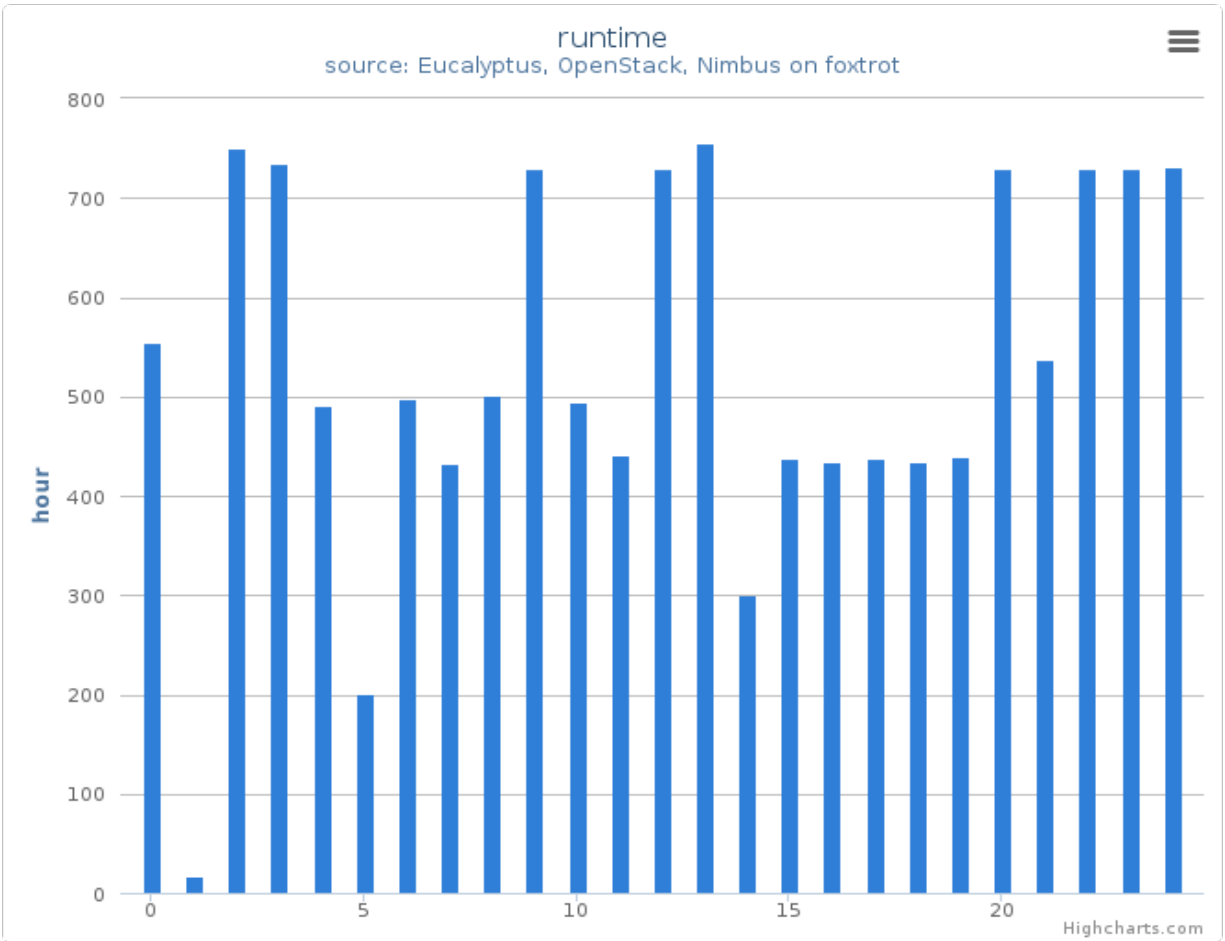


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (foxtrot)
 This column chart represents wall time among systems.

- Period: January 01 – March 31, 2013
- Cloud(IaaS): nimbus
- Hostname: foxtrot

USER TABLE (CLOUD)

This table provides wall time usage of cloud users with the project id (first appearance). - Cloud:

- india.futuregrid.org: openstack, eucalyptus
- sierra.futuregrid.org: nimbus, (openstack expected soon)
- hotel.futuregrid.org: nimbus
- alamo.futuregrid.org: nimbus, (openstack expected soon)
- foxtrot.futuregrid.org: nimbus

USER TABLE (HPC)

This table provides detailed information on users, including average job size, average wait time, and average run time.
- HPC: alamo, bravo, hotel, india xray, sierra - Data obtained from ubmod.futuregrid.org **** Missing user name is represented as a hidden userid under asterisks.