# FG Resource Report

***Release 0.4***

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June 19, 2013

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Date Created: Wed, 19 Jun 2013

CHAPTER

ONE

# SUMMARY REPORT (ALL)

- Period: April 01 – June 30, 2012
- 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)

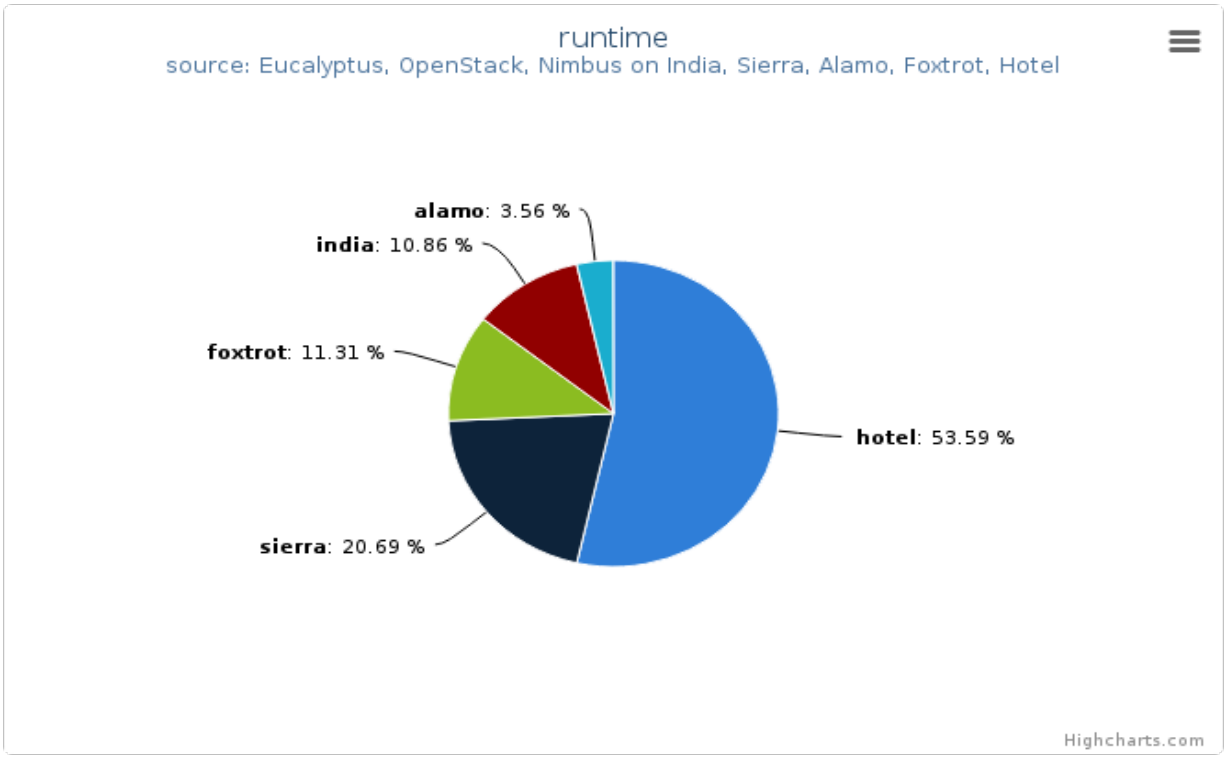


Figure 1. Wall time (hours) by Clusters
This chart represents overall usage of wall time (hours).

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

Table 1.1: Wall time (hours) by Clusters

| Total | Value |
|---|---|
| hotel | 190746.0 |
| sierra | 73631.0 |
| foxtrot | 40261.0 |
| india | 38640.0 |
| alamo | 12668.0 |

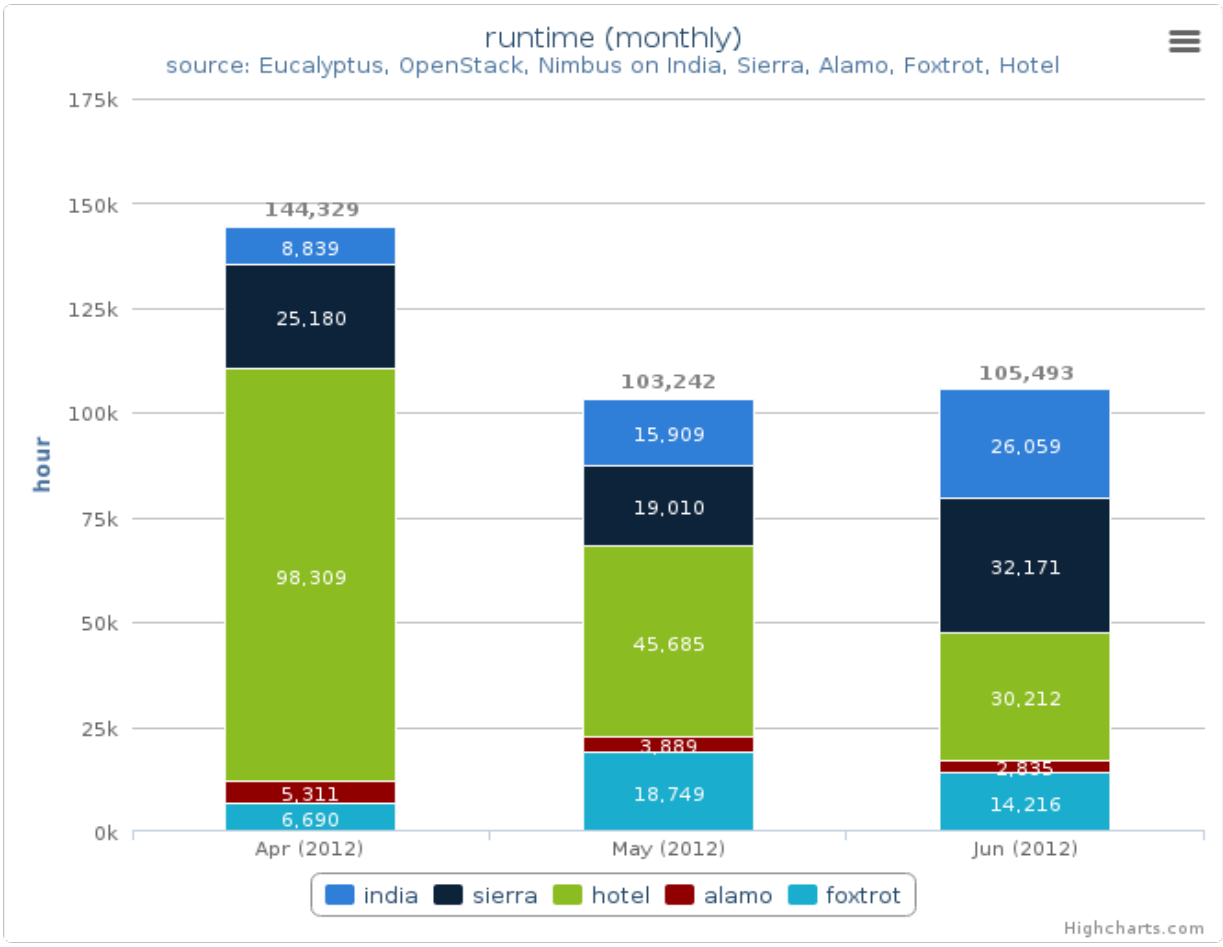


Figure 2. Wall time (hours) by Clusters (monthly)
This stacked column chart represents average monthly usage of wall time (hours).

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

## 1.2 VM Count by Clusters (Total, monthly)

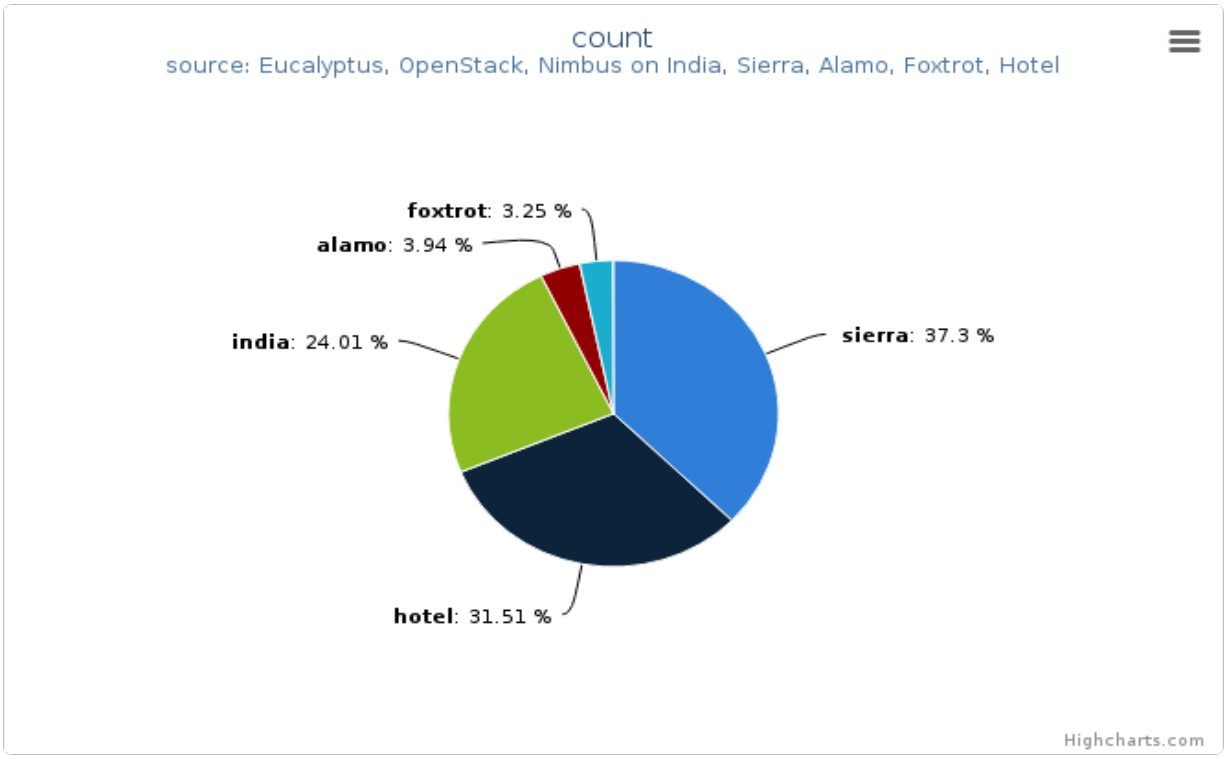


Figure 3. VMs count by Clusters
This chart represents overall VM instances count during the period.

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

Table 1.2: VM instance count by Clusters

| Total | Value |
|---|---|
| sierra | 20191 |
| hotel | 17059 |
| india | 12997 |
| alamo | 2131 |
| foxtrot | 1759 |

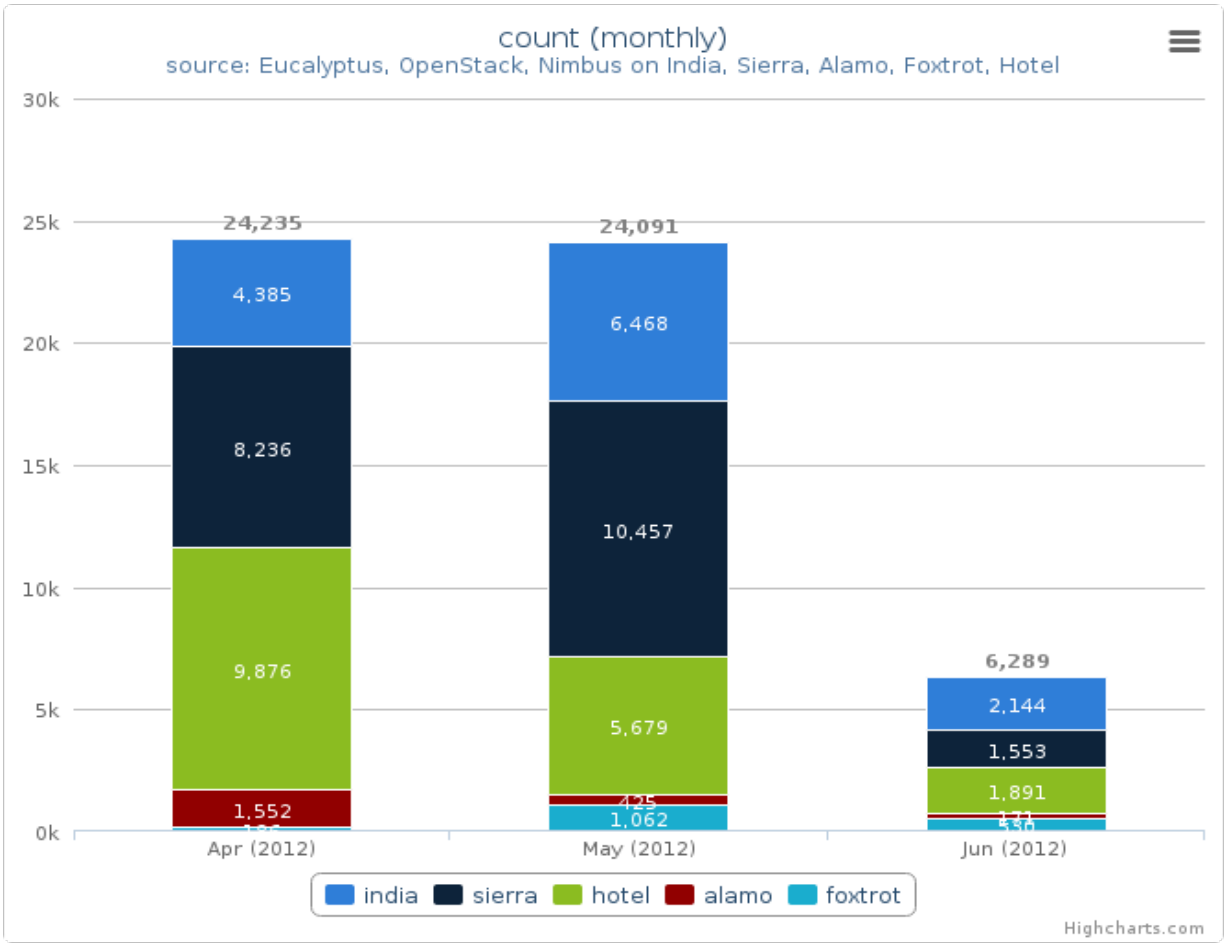


Figure 4. VMs count by Clusters (monthly)
This stacked column chart represents average VM instances count per month.

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

## 1.3 Users Count by Clusters (Total, monthly)

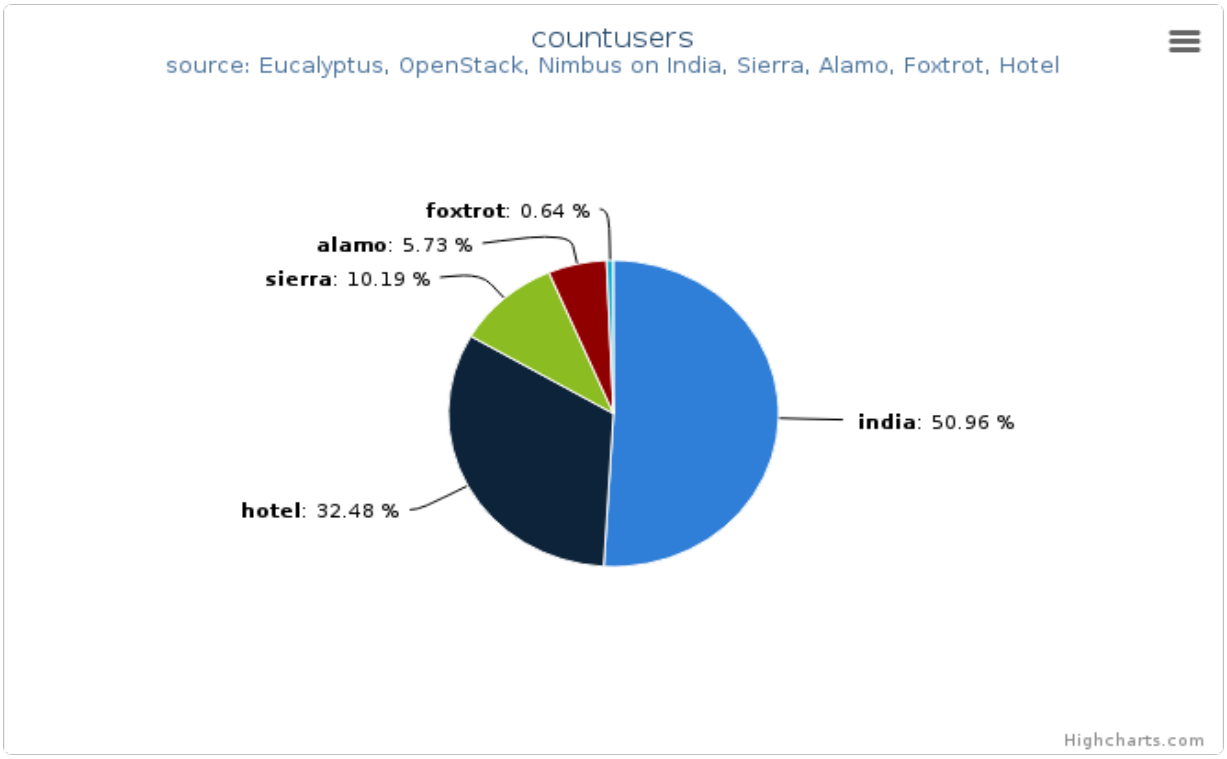


Figure 5. Users count by Clusters
This chart represents total number of active users.

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

Table 1.3: User count by Clusters

| Total | Value |
|---|---|
| india | 80 |
| hotel | 51 |
| sierra | 16 |
| alamo | 9 |
| foxtrot | 1 |

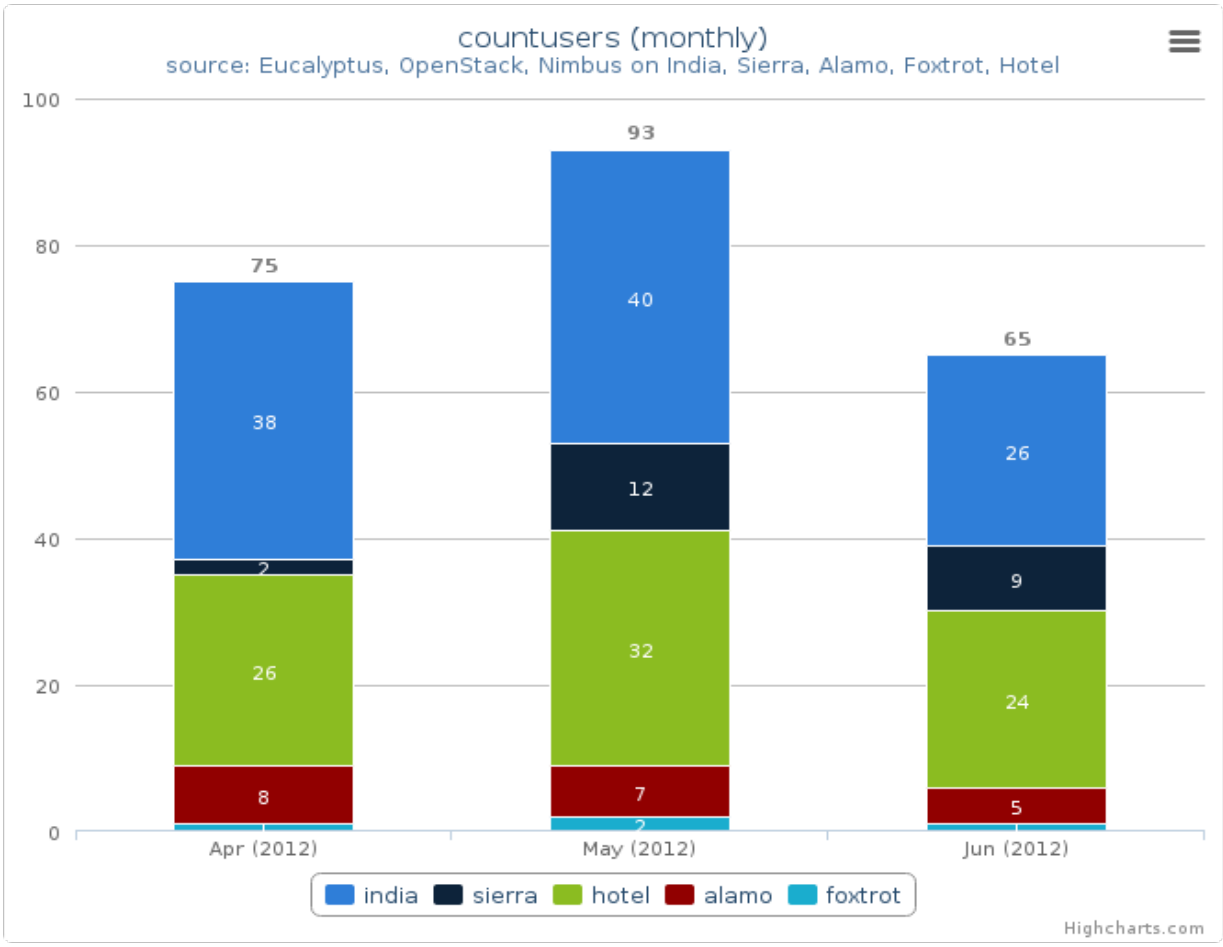


Figure 6. Users count by Clusters (Monthly)
This stacked column chart represents average count of active users per month.

- Period: April 01 – June 30, 2012
- **Cloud:**
  - india: Eucalyptus, Openstack
  - sierra: Eucalyptus, Nimbus
  - hotel: Nimbus
  - alamo: Nimbus
  - foxtrot: Nimbus

CHAPTER

TWO

# USAGE REPORT SIERRA

- Period: April 01 – June 30, 2012
- Hostname: sierra.futuregrid.org
- Services: nimbus, 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)

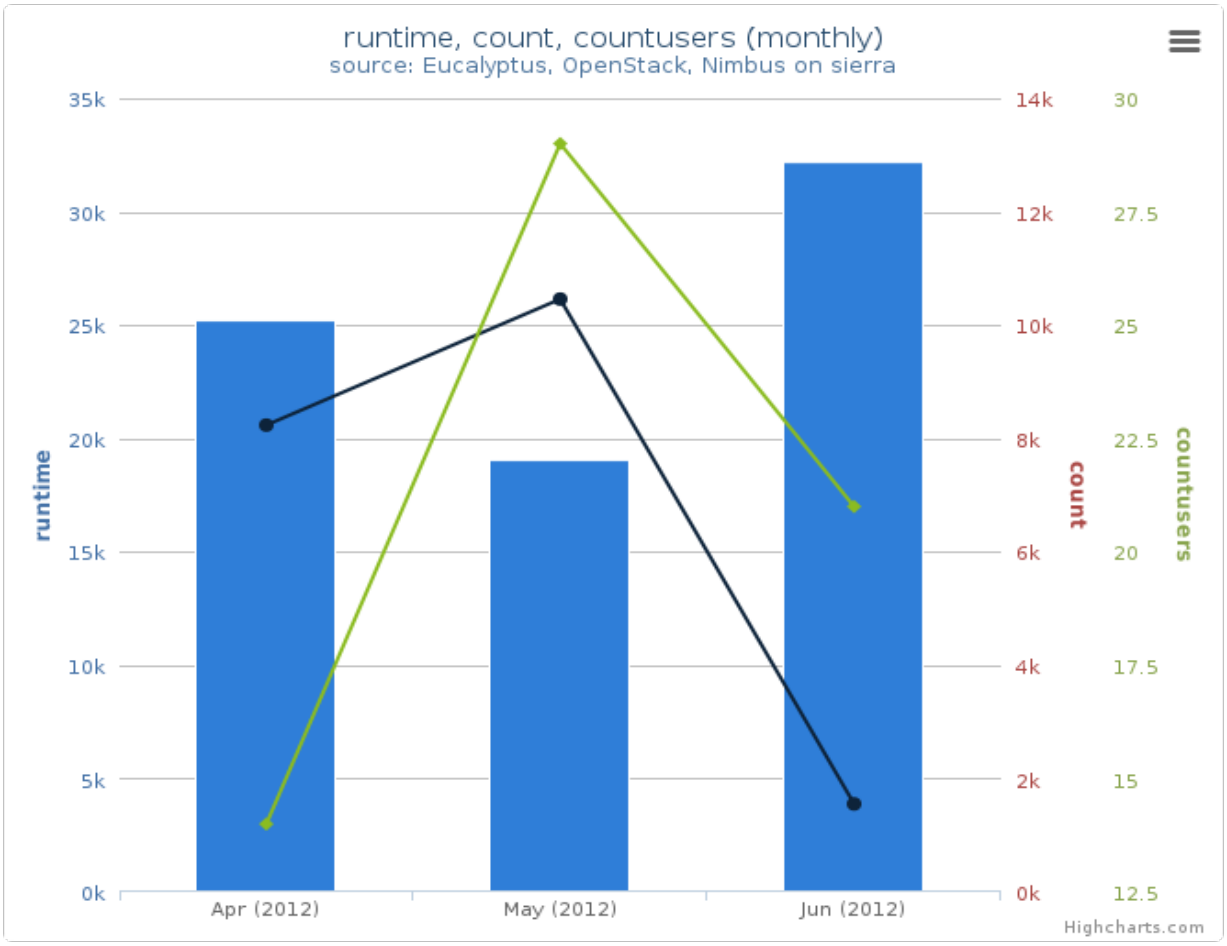


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)
This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, 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)

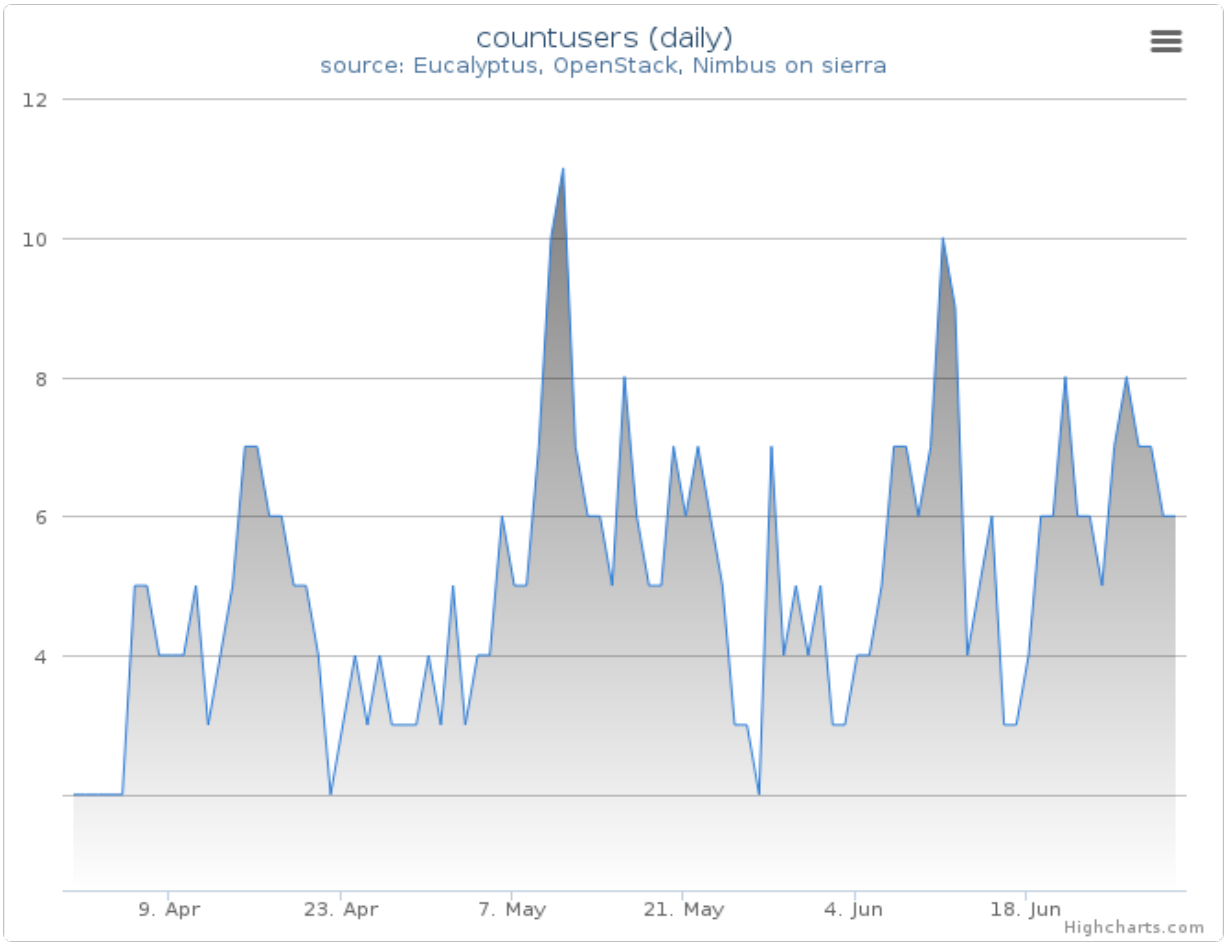


Figure 2: Users count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

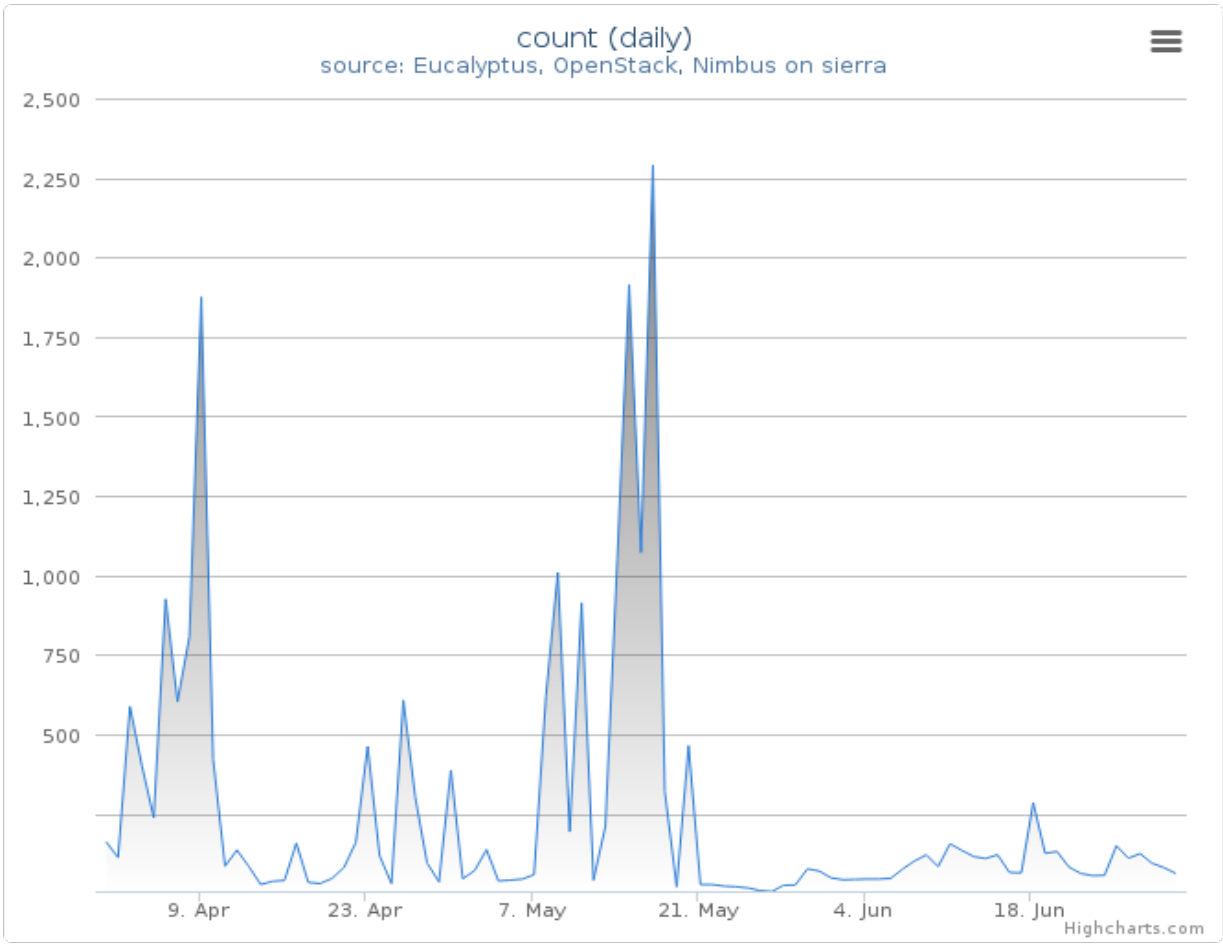


Figure 3: VMs count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

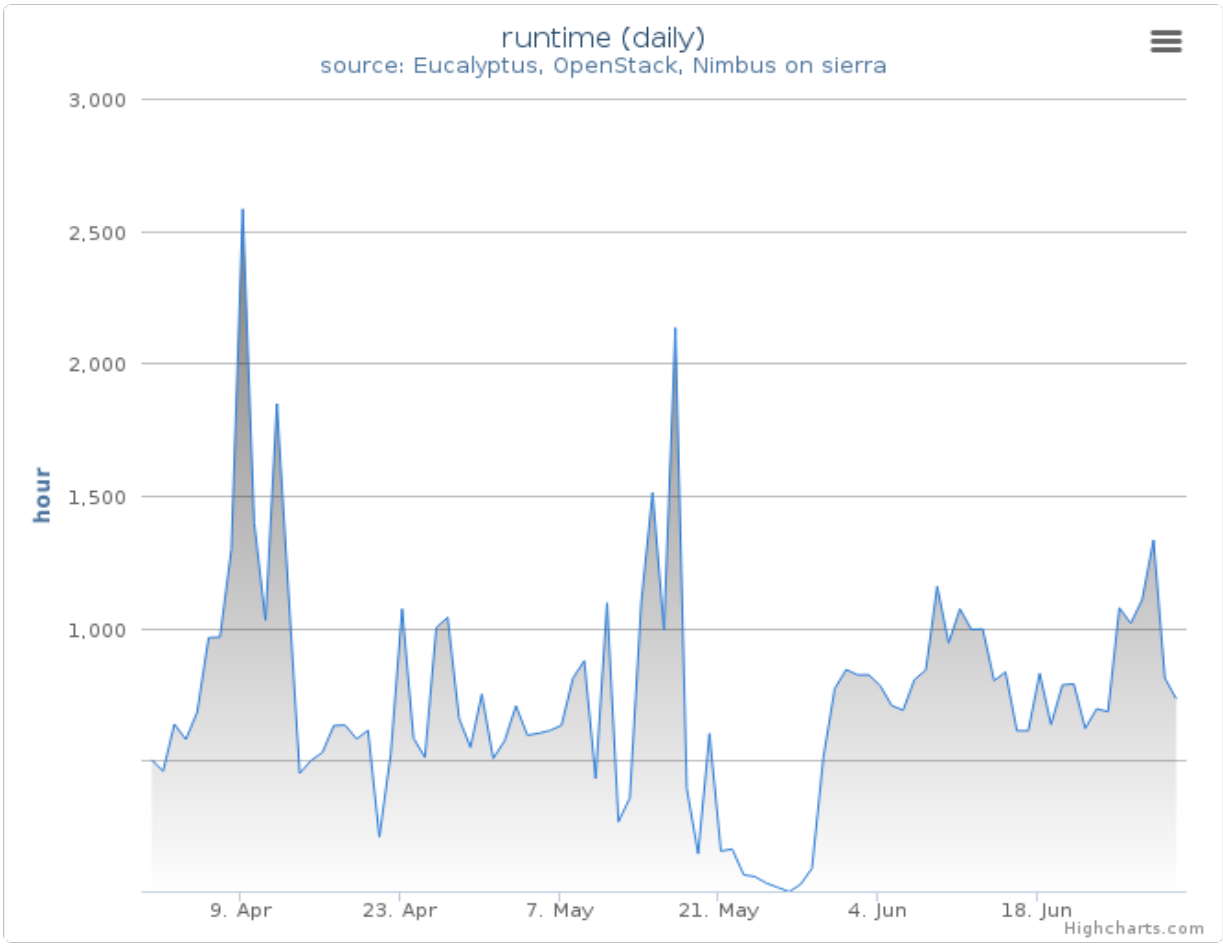


Figure 4: Wall time (hours)

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

## 2.2 Distribution

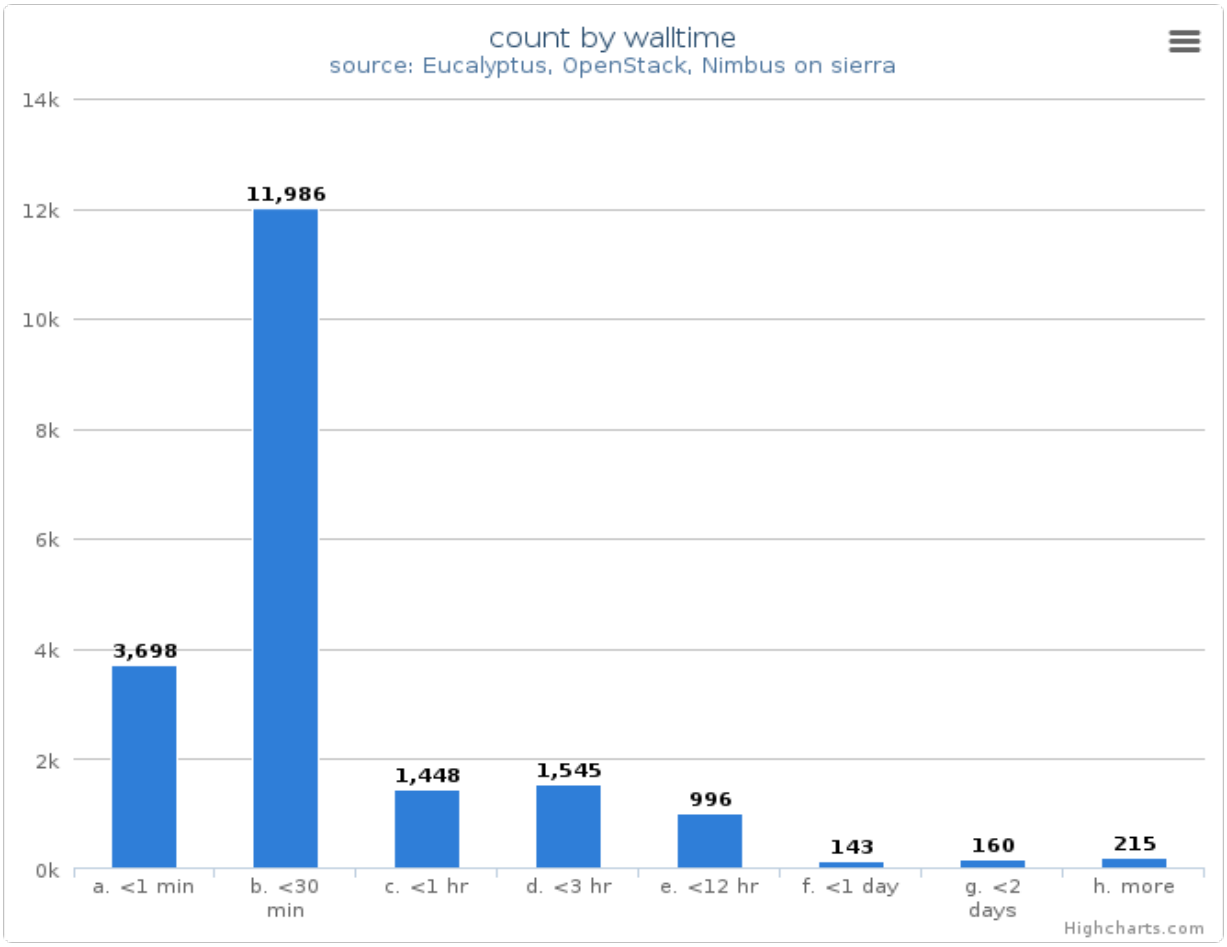


Figure 5: VM count by wall time
This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

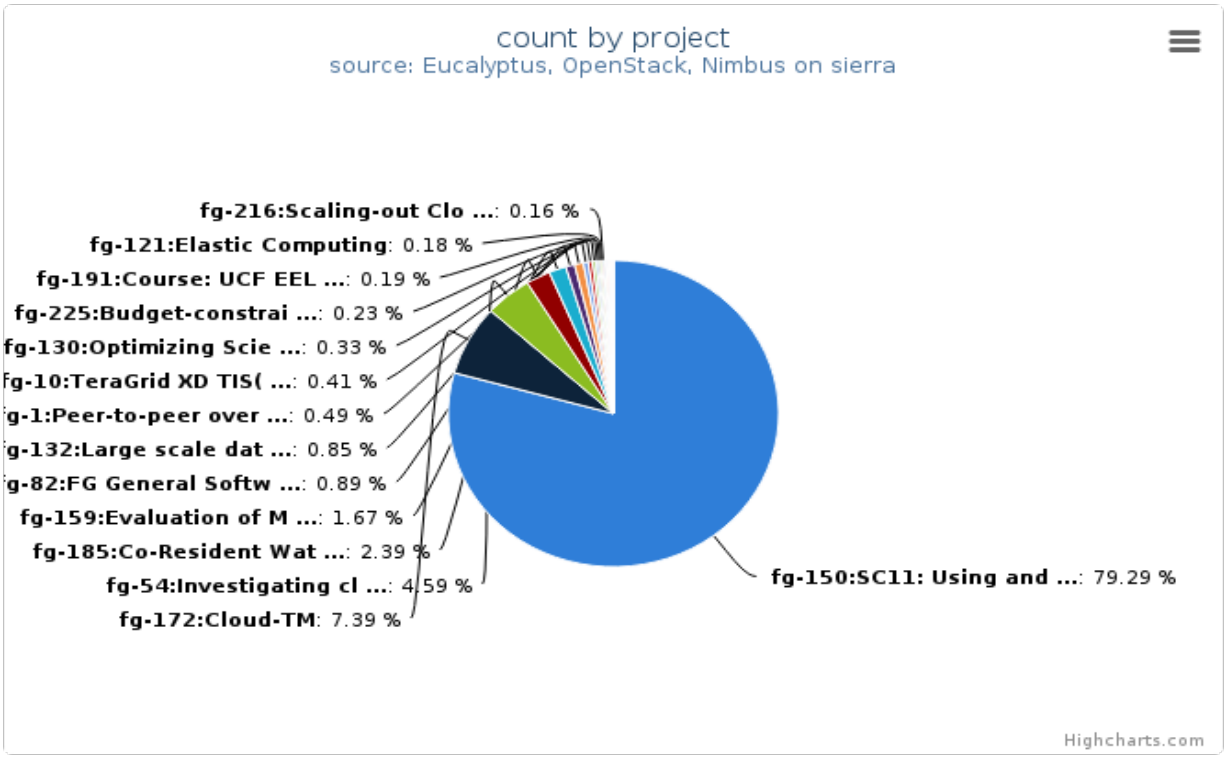


Figure 6: VMs count by project

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

Table 2.1: VMs count by project

| Project | Value |
|---|---|
| fg-150:SC11: Using and Building Infrastructure Clouds for Science | 6533 |
| fg-172:Cloud-TM | 609 |
| fg-54:Investigating cloud computing as a solution for analyzing particle physics data | 378 |
| fg-185:Co-Resident Watermarking | 197 |
| fg-159:Evaluation of MPI Collectives for HPC Applications on Distributed Virtualized Environments | 138 |
| fg-82:FG General Software Development | 73 |
| fg-132:Large scale data analytics | 70 |
| fg-1:Peer-to-peer overlay networks and applications in virtual networks and virtual clusters | 40 |
| fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory | 34 |
| fg-130:Optimizing Scientific Workflows on Clouds | 27 |
| fg-225:Budget-constrained workflow scheduler | 19 |
| fg-191:Course: UCF EEL6938 Data-intensive computing and Cloud Class | 16 |
| fg-121:Elastic Computing | 15 |
| fg-216:Scaling-out CloudBLAST: Deploying Elastic MapReduce across Geographically Distributed Virtulized Resources for BLAST | 13 |
| fg-13:FutureGrid Systems Development and Prototyping | 11 |
| fg-170:European Middleware Initiative (EMI) | 11 |
| fg-122:Course: Cloud computing class | 9 |
| Others | 8 |
| fg-52:Cost-Aware Cloud Computing | 8 |
| fg-97:FutureGrid and Grid‘5000 Collaboration | 8 |
| fg-213:Course: Cloud Computing class - second edition | 7 |
| fg-176:Cloud Interoperability Testbed | 6 |
| fg-143:Course: Cloud Computing for Data Intensive Science Class | 5 |
| fg-201:ExTENCI Testing, Validation, and Performance | 2 |
| fg-60:Wide area distributed file system for MapReduce applications on FutureGrid platform | 1 |
| fg-47:Parallel scripting using cloud resources | 1 |

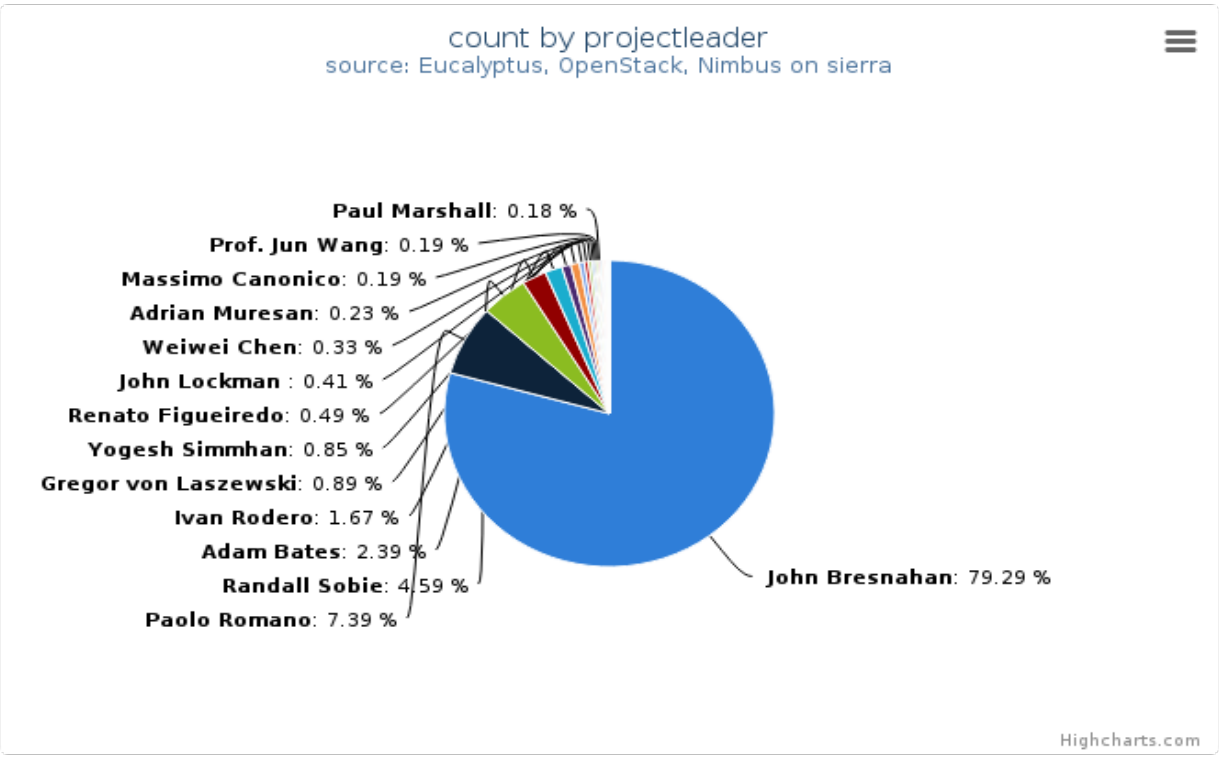


Figure 7: VMs count by project leader

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

Table 2.2: VMs count by project leader

| Projectleader | Value |
|---|---|
| John Bresnahan | 6533 |
| Paolo Romano | 609 |
| Randall Sobie | 378 |
| Adam Bates | 197 |
| Ivan Rodero | 138 |
| Gregor von Laszewski | 73 |
| Yogesh Simmhan | 70 |
| Renato Figueiredo | 40 |
| John Lockman | 34 |
| Weiwei Chen | 27 |
| Adrian Muresan | 19 |
| Massimo Canonico | 16 |
| Prof. Jun Wang | 16 |
| Paul Marshall | 15 |
| Andrea Matsunaga | 13 |
| Sharif Islam | 11 |
| Morris Riedel | 11 |
| David Lowenthal | 8 |
| Others | 8 |
| Mauricio Tsugawa | 8 |
| Alan Sill | 6 |
| Judy Qiu | 5 |
| Preston Smith | 2 |
| Michael Wilde | 1 |
| Lizhe Wang | 1 |

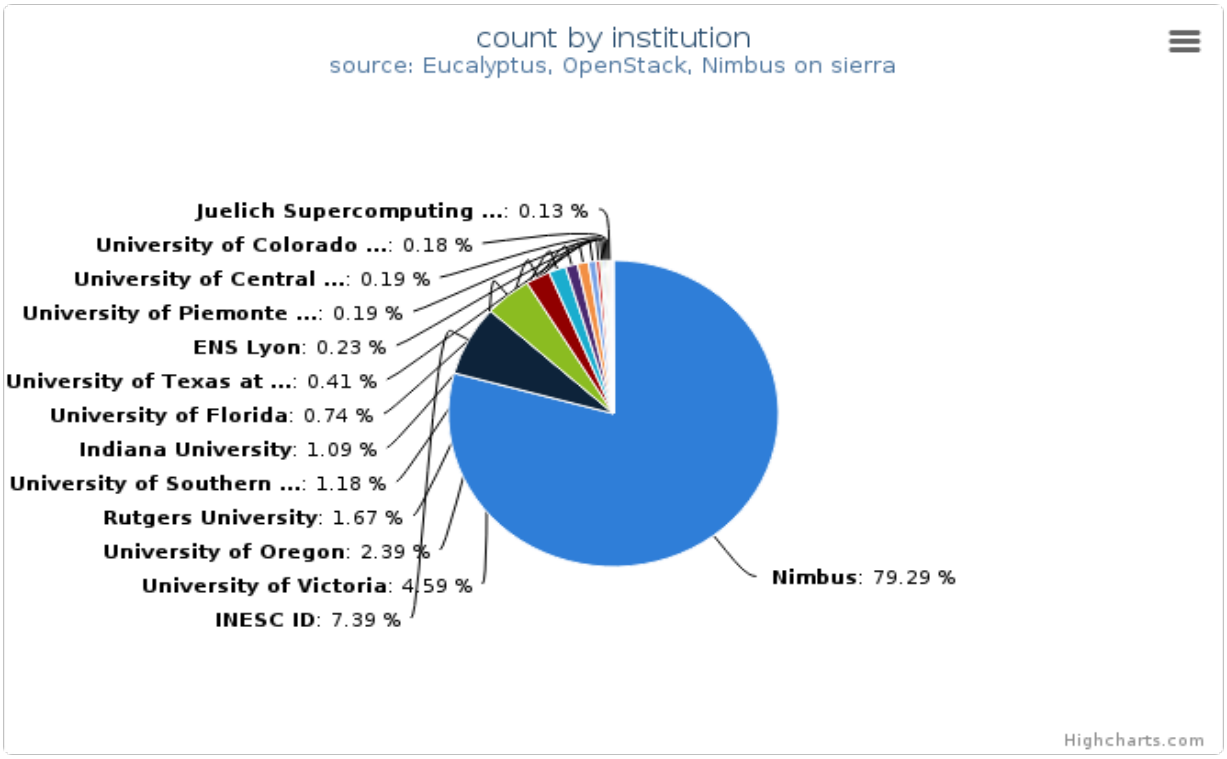


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

Table 2.3: VMs count by institution

| Institution | Value |
|---|---|
| Nimbus | 6533 |
| INESC ID | 609 |
| University of Victoria | 378 |
| University of Oregon | 197 |
| Rutgers University | 138 |
| University of Southern California | 97 |
| Indiana University | 90 |
| University of Florida | 61 |
| University of Texas at Austin | 34 |
| ENS Lyon | 19 |
| University of Piemonte Orientale | 16 |
| University of Central Florida | 16 |
| University of Colorado at Boulder | 15 |
| Juelich Supercomputing Centre | 11 |
| Others | 8 |
| University of Arizona | 8 |
| Texas Tech University | 6 |
| Purdue University | 2 |
| Argonne National Laboratory | 1 |

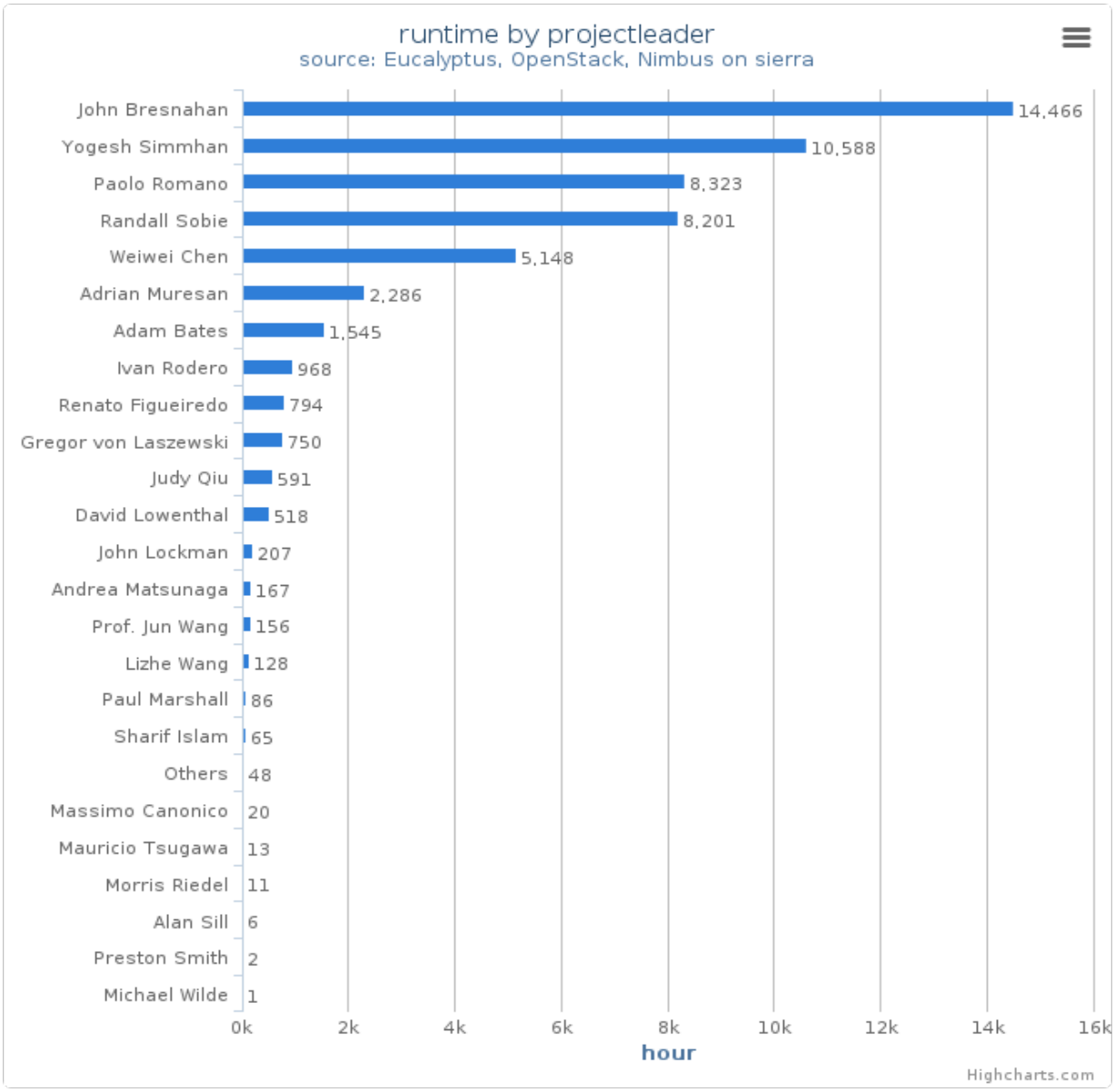


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, 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.

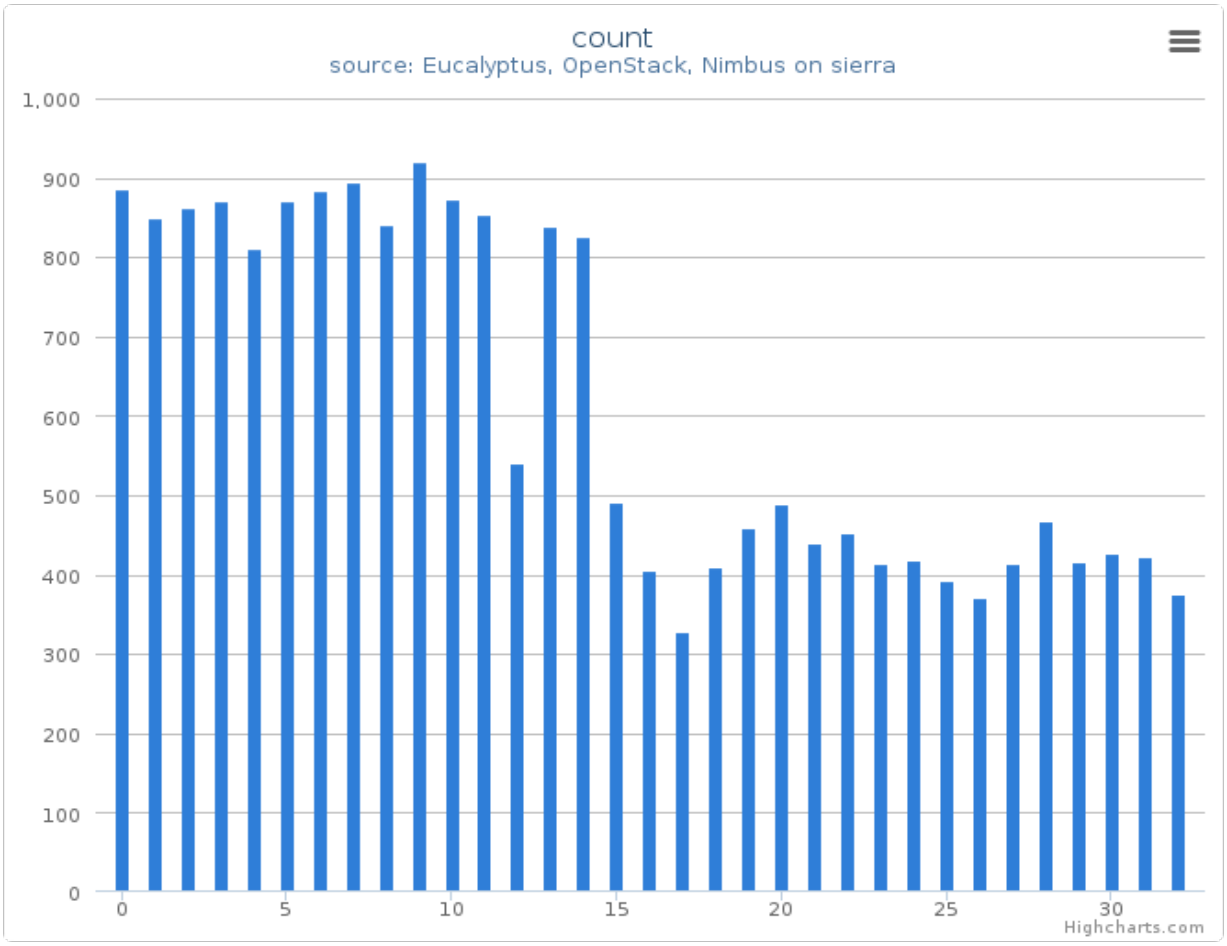


Figure 10: VMs count by systems (compute nodes) in Cluster (sierra)
This column chart represents VMs count among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

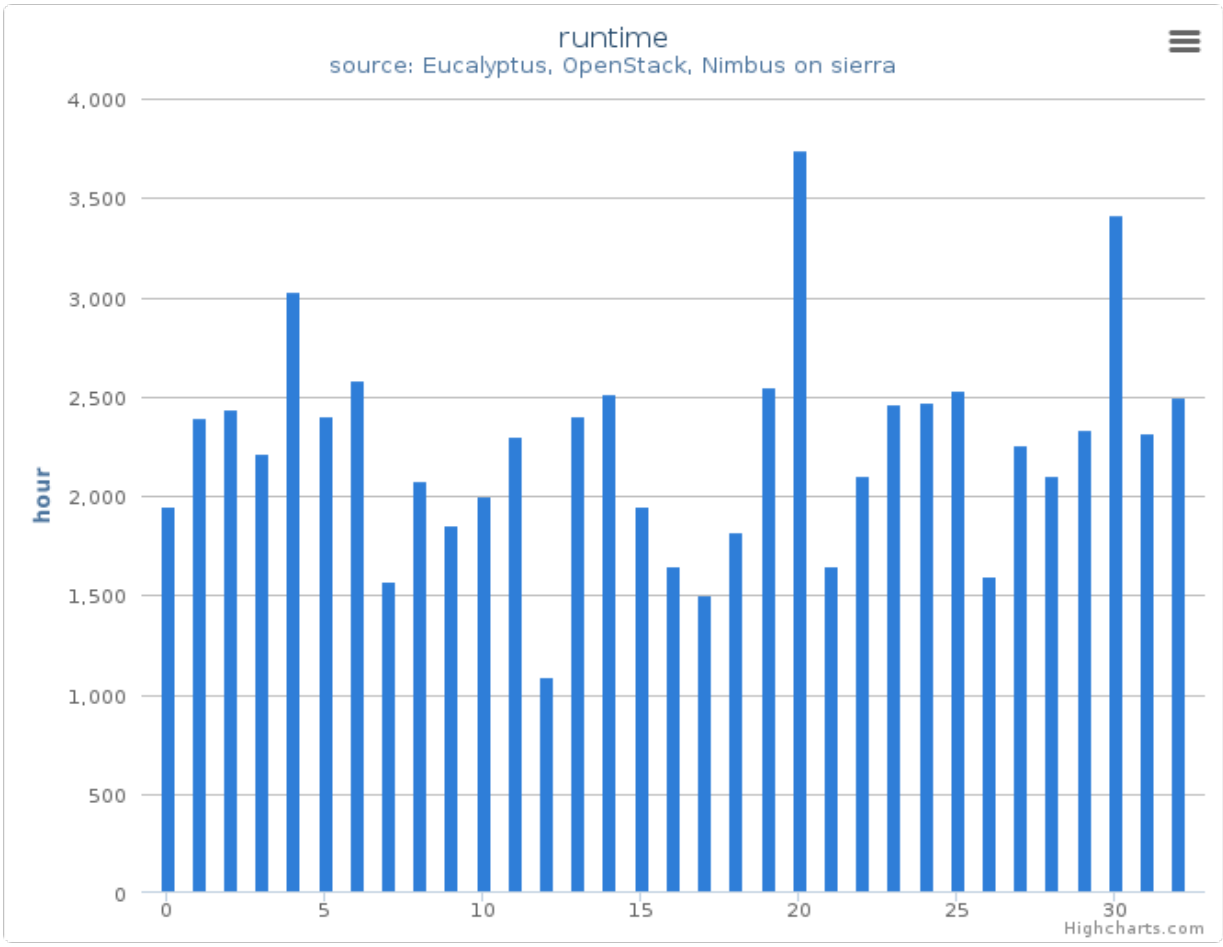


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (sierra)
This column chart represents wall time among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus, eucalyptus
- Hostname: sierra

CHAPTER

THREE

# USAGE REPORT INDIA

- Period: April 01 – June 30, 2012
- 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)

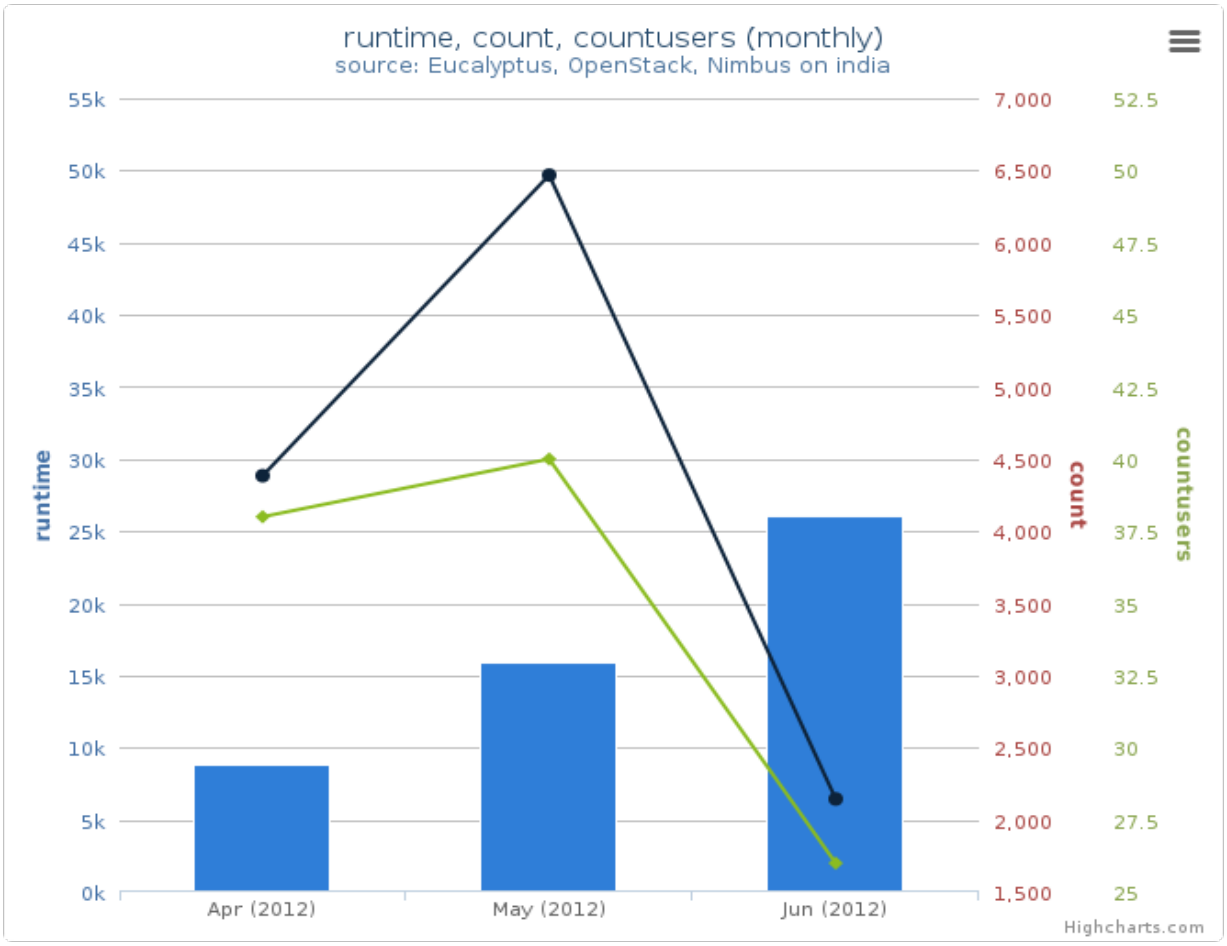


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)
This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: April 01 – June 30, 2012
- 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)

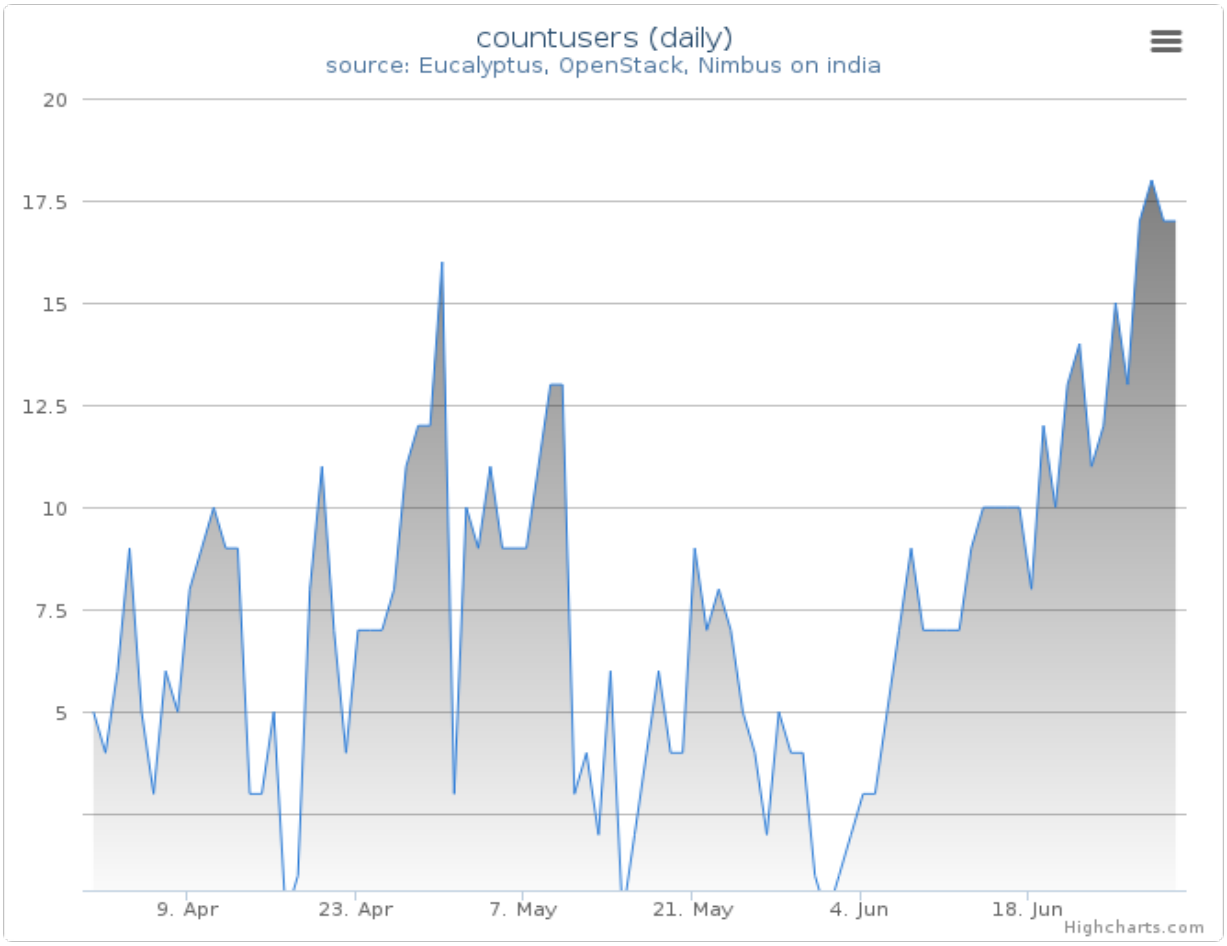


Figure 2: Users count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

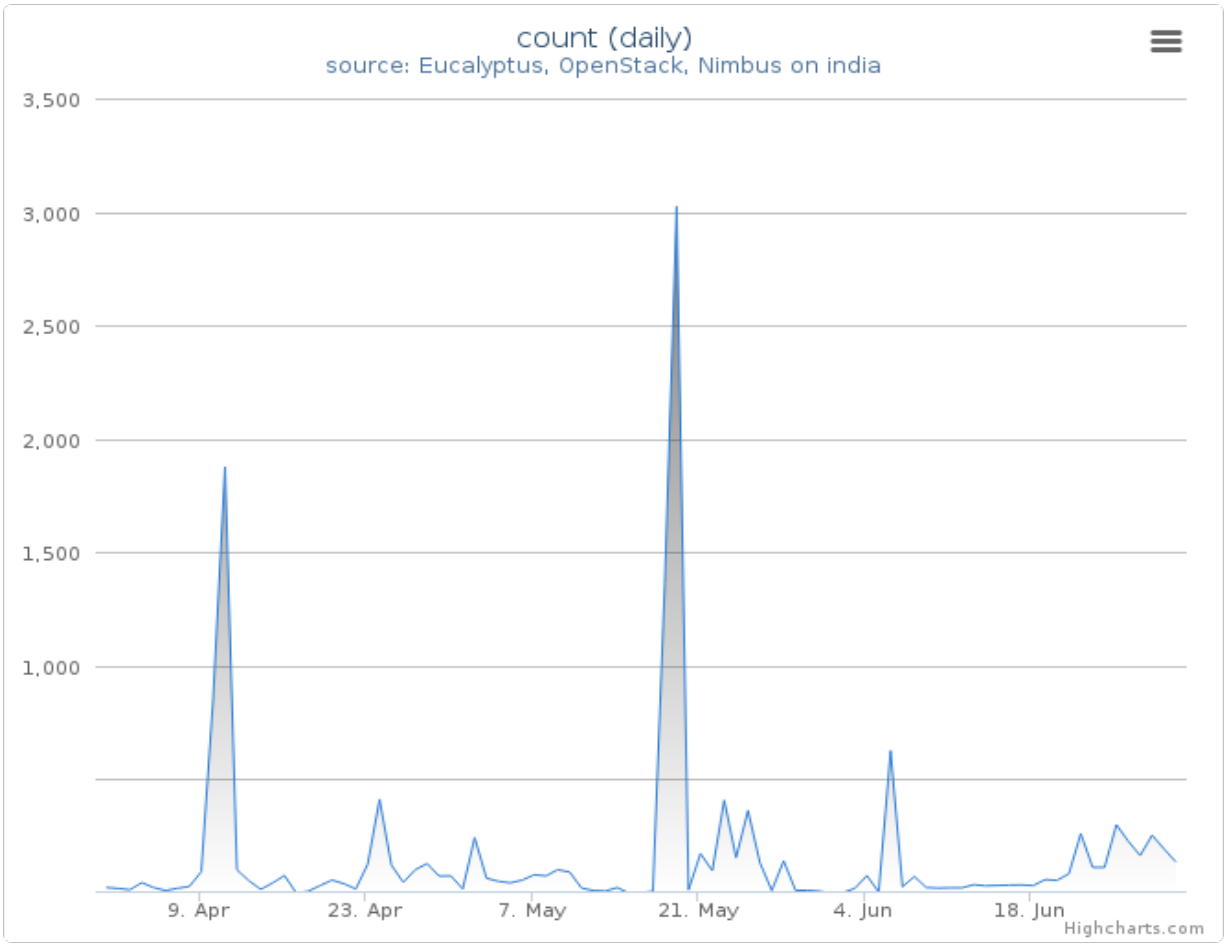


Figure 3: VMs count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

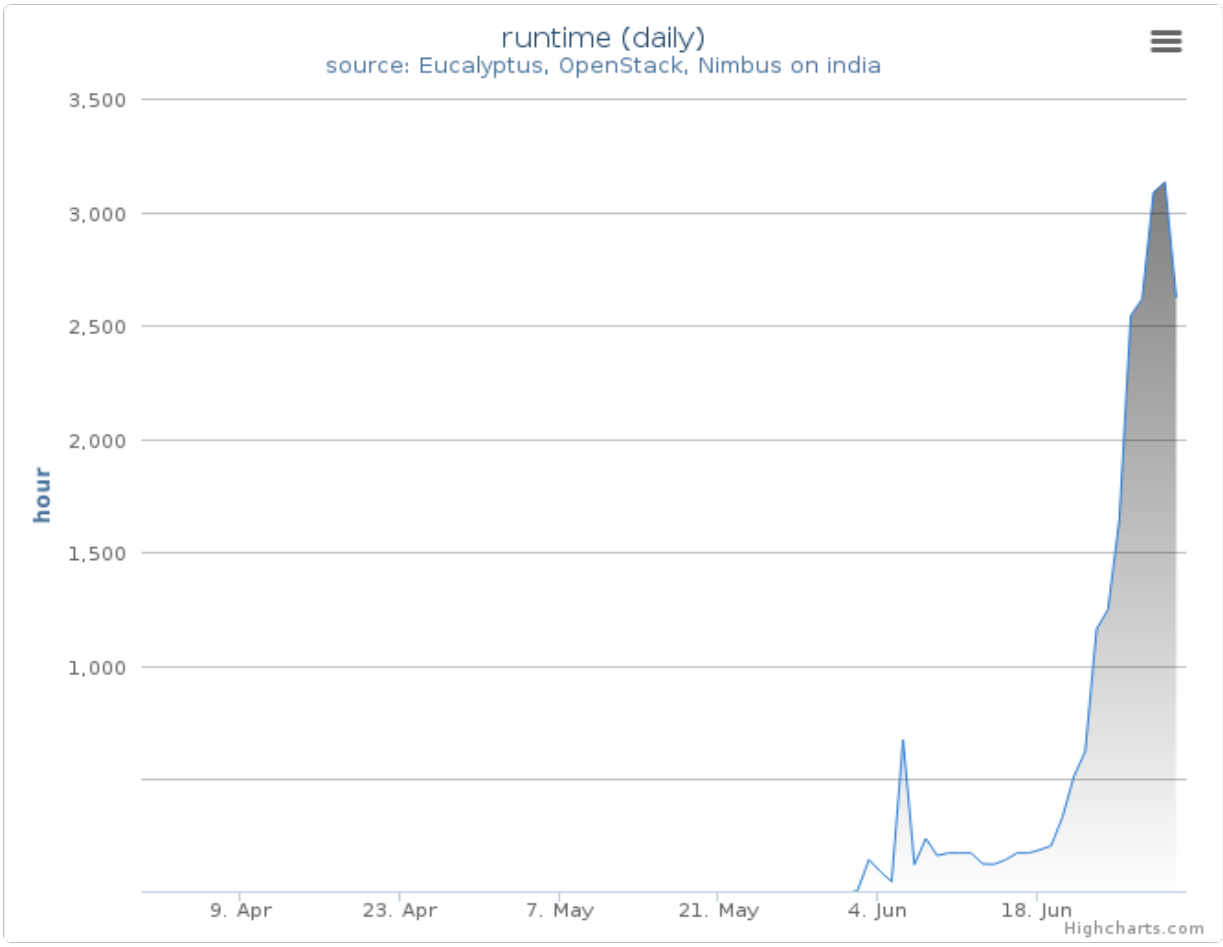


Figure 4: Wall time (hours)

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

## 3.2 Distribution

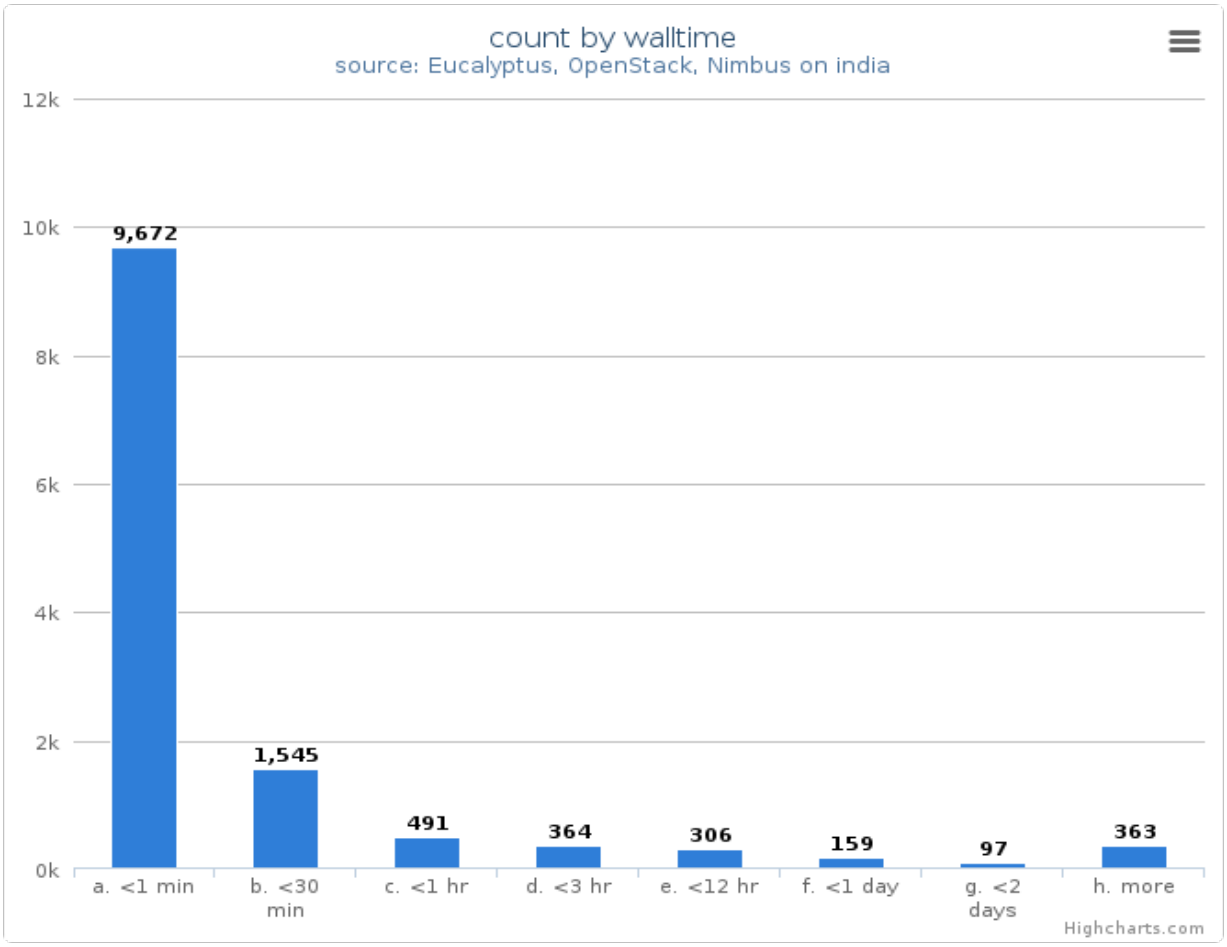


Figure 5: VM count by wall time
This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

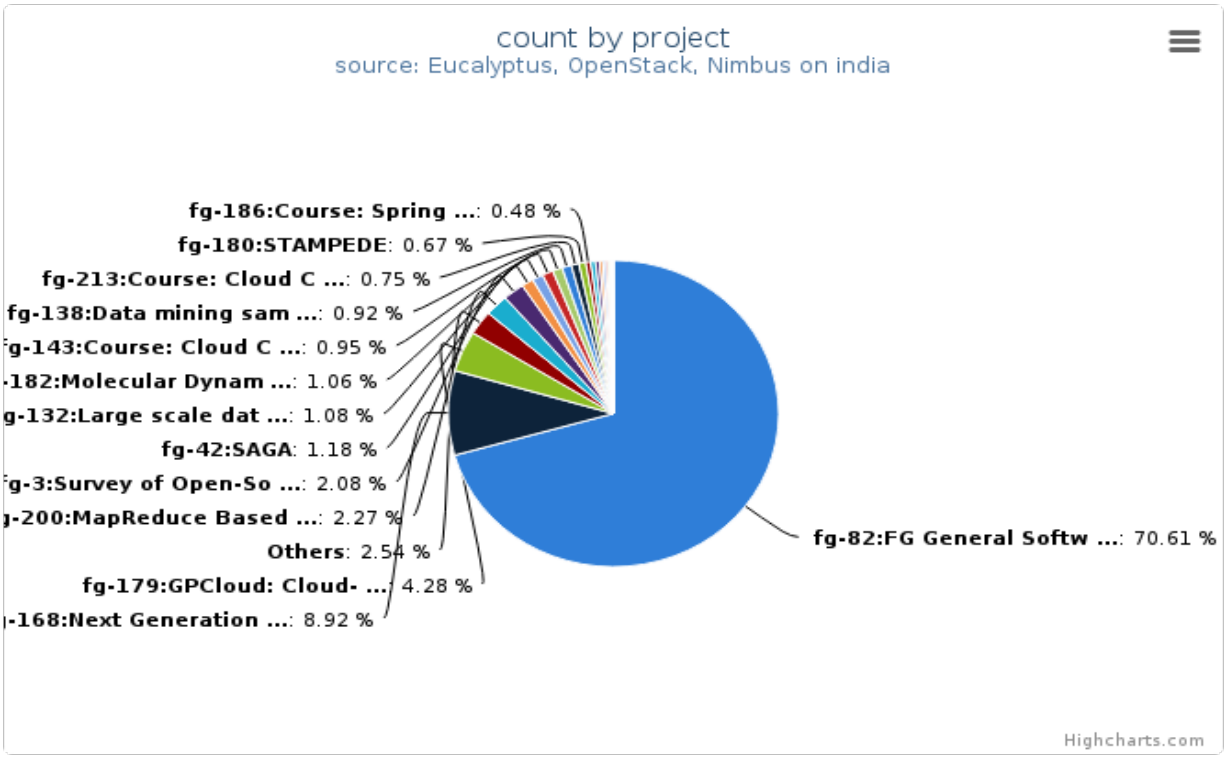


Figure 6: VMs count by project

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.1: VMs count by project

| Project | Value |
|---|---|
| fg-82:FG General Software Development | 7880 |
| fg-168:Next Generation Sequencing in the Cloud | 996 |
| fg-179:GPCloud: Cloud-based Automatic Repair of Real-World Software Bugs | 478 |
| Others | 284 |
| fg-200:MapReduce Based Ray Tracing Class Project | 253 |
| fg-3:Survey of Open-Source Cloud Infrastructure using FutureGrid Testbed | 232 |
| fg-42:SAGA | 132 |
| fg-132:Large scale data analytics | 120 |
| fg-182:Molecular Dynamics on Hadoop | 118 |
| fg-143:Course: Cloud Computing for Data Intensive Science Class | 106 |
| fg-138:Data mining samples based on Twister | 103 |
| fg-213:Course: Cloud Computing class - second edition | 84 |
| fg-180:STAMPEDE | 75 |
| fg-186:Course: Spring 2012 B534 Distributed systems Graduate Course | 54 |
| fg-4:Word Sense Disambiguation for Web 2.0 Data | 51 |
| fg-72:Course: B534 Distributed systems Graduate/Undergraduate Class | 44 |
| fg-69:Investigate provenance collection for MapReduce | 36 |
| fg-148:Developing Virtual Clusters for Science Gateways and HPC Education | 32 |
| fg-99:Cloud-Based Support for Distributed Multiscale Applications | 23 |
| fg-12:The Virtual Block Store system | 19 |
| fg-60:Wide area distributed file system for MapReduce applications on FutureGrid platform | 11 |
| fg-122:Course: Cloud computing class | 8 |
| fg-141:High Performance Spatial Data Warehouse over MapReduce | 5 |
| fg-125:The VIEW Project | 4 |
| fg-201:ExTENCI Testing, Validation, and Performance | 3 |
| fg-23:Hardware Performance Monitoring in the Clouds | 3 |
| fg-176:Cloud Interoperability Testbed | 2 |
| fg-211:Performance evaluation of cloud storage placement | 2 |
| fg-233:CINET - A Cyber-Infrastructure for Network Science | 2 |

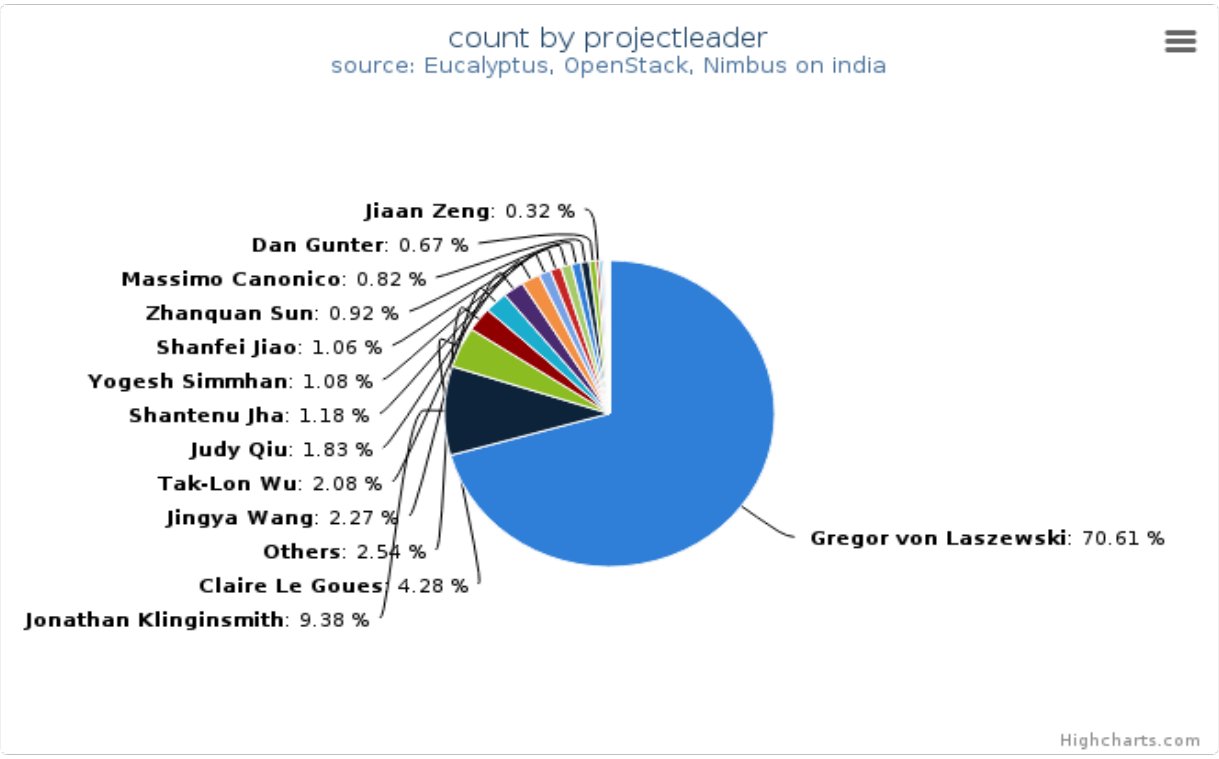


Figure 7: VMs count by project leader

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.2: VMs count by project leader

| Projectleader | Value |
|---|---|
| Gregor von Laszewski | 7880 |
| Jonathan Klinginsmith | 1047 |
| Claire Le Goues | 478 |
| Others | 284 |
| Jingya Wang | 253 |
| Tak-Lon Wu | 232 |
| Judy Qiu | 204 |
| Shantenu Jha | 132 |
| Yogesh Simmhan | 120 |
| Shanfei Jiao | 118 |
| Zhanquan Sun | 103 |
| Massimo Canonico | 92 |
| Dan Gunter | 75 |
| Jiaan Zeng | 36 |
| Thomas Hacker | 32 |
| Katarzyna Rycerz | 23 |
| Xiaoming Gao | 19 |
| Lizhe Wang | 11 |
| Fusheng Wang | 5 |
| Shiyong Lu | 4 |
| Shirley Moore | 3 |
| Preston Smith | 3 |
| Keith Bisset | 2 |
| Alan Sill | 2 |
| Zhan Wang | 2 |

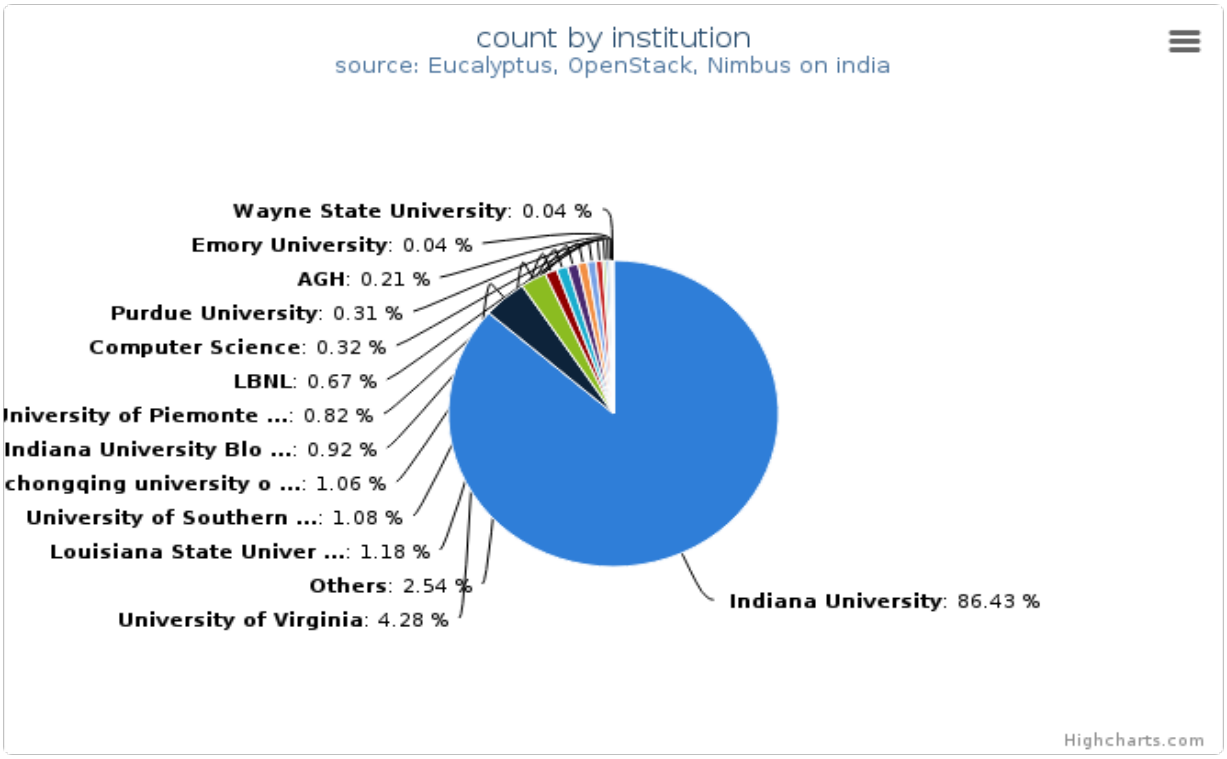


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

Table 3.3: VMs count by institution

| Institution | Value |
|---|---|
| Indiana University | 9646 |
| University of Virginia | 478 |
| Others | 284 |
| Louisiana State University | 132 |
| University of Southern California | 120 |
| chongqing university of posts and telecommunications | 118 |
| Indiana University Bloomington | 103 |
| University of Piemonte Orientale | 92 |
| LBNL | 75 |
| Computer Science | 36 |
| Purdue University | 35 |
| AGH | 23 |
| Emory University | 5 |
| Wayne State University | 4 |
| University of Tennessee | 3 |
| Texas Tech University | 2 |
| George Mason University | 2 |
| Virginia Tech | 2 |

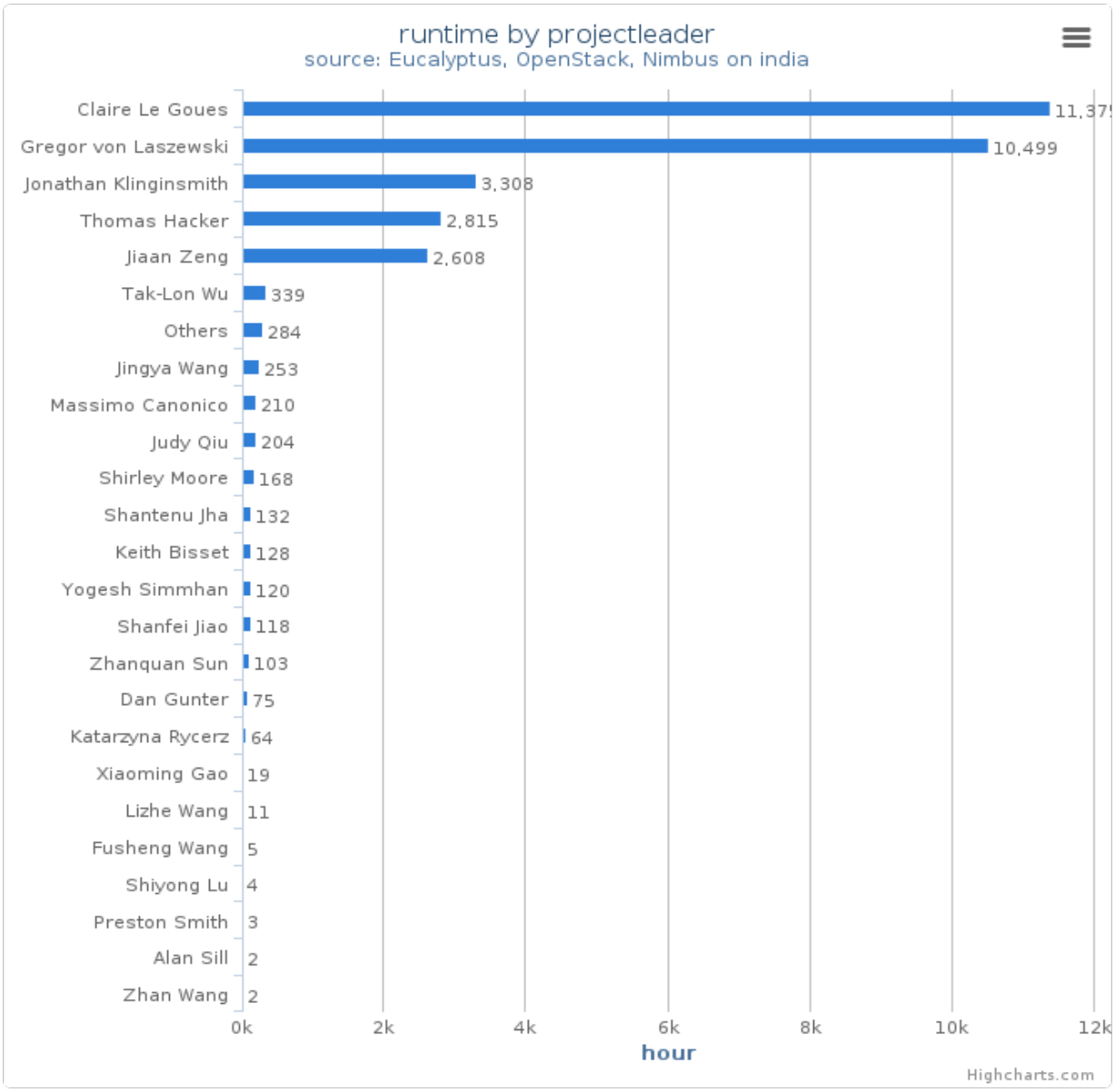


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: April 01 – June 30, 2012
- 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.

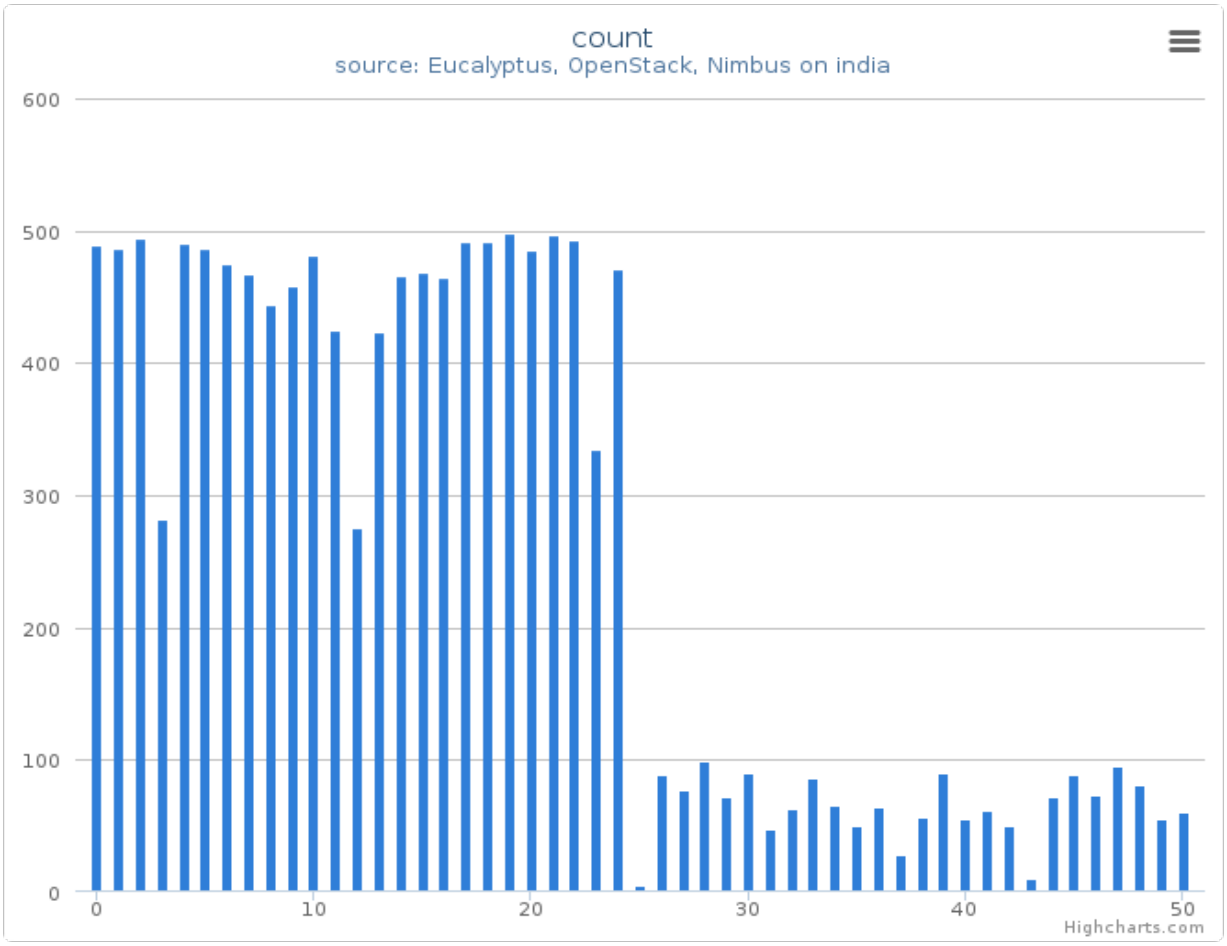


Figure 10: VMs count by systems (compute nodes) in Cluster (india)
This column chart represents VMs count among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

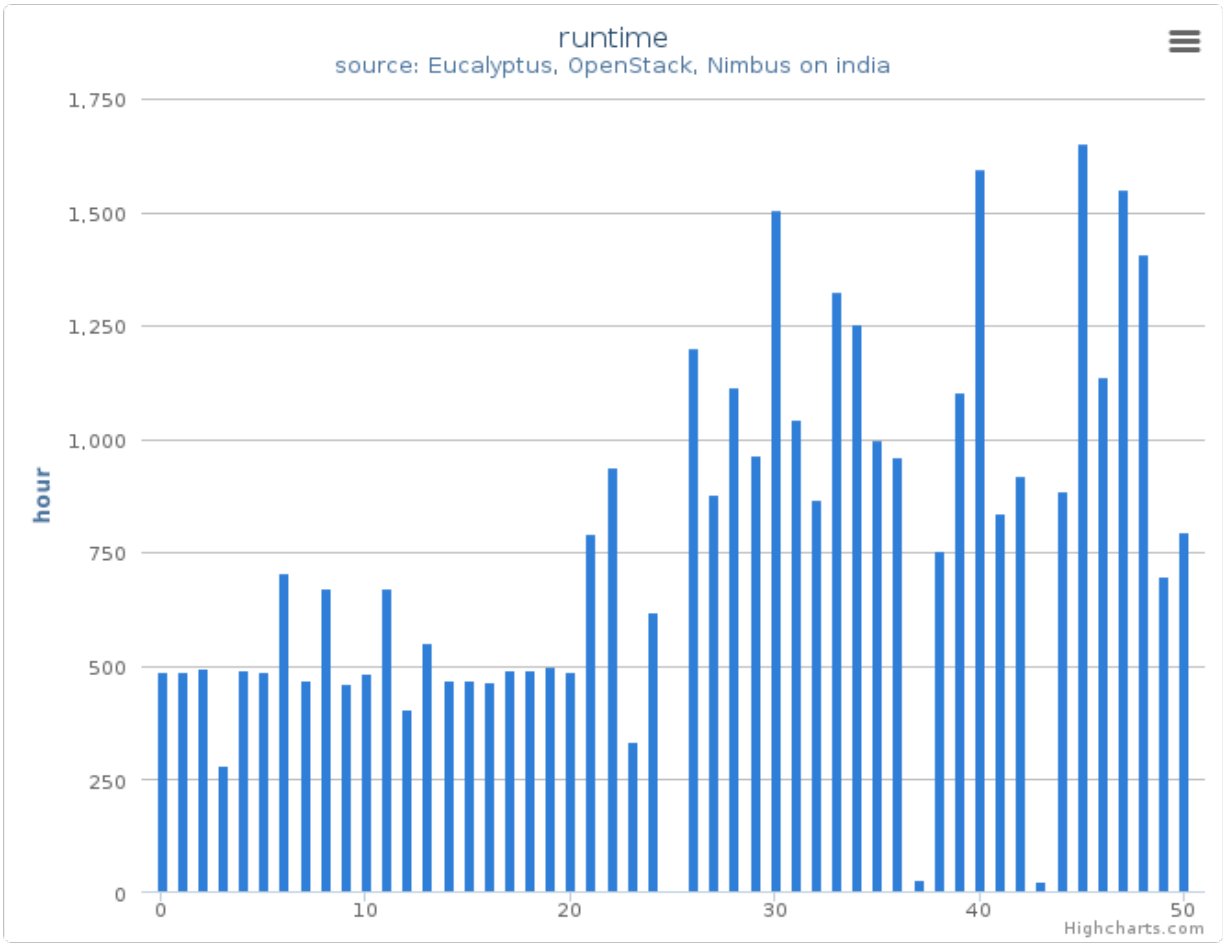


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (india)
This column chart represents wall time among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): openstack, eucalyptus
- Hostname: india

CHAPTER

FOUR

# USAGE REPORT HOTEL

- Period: April 01 – June 30, 2012
- 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)

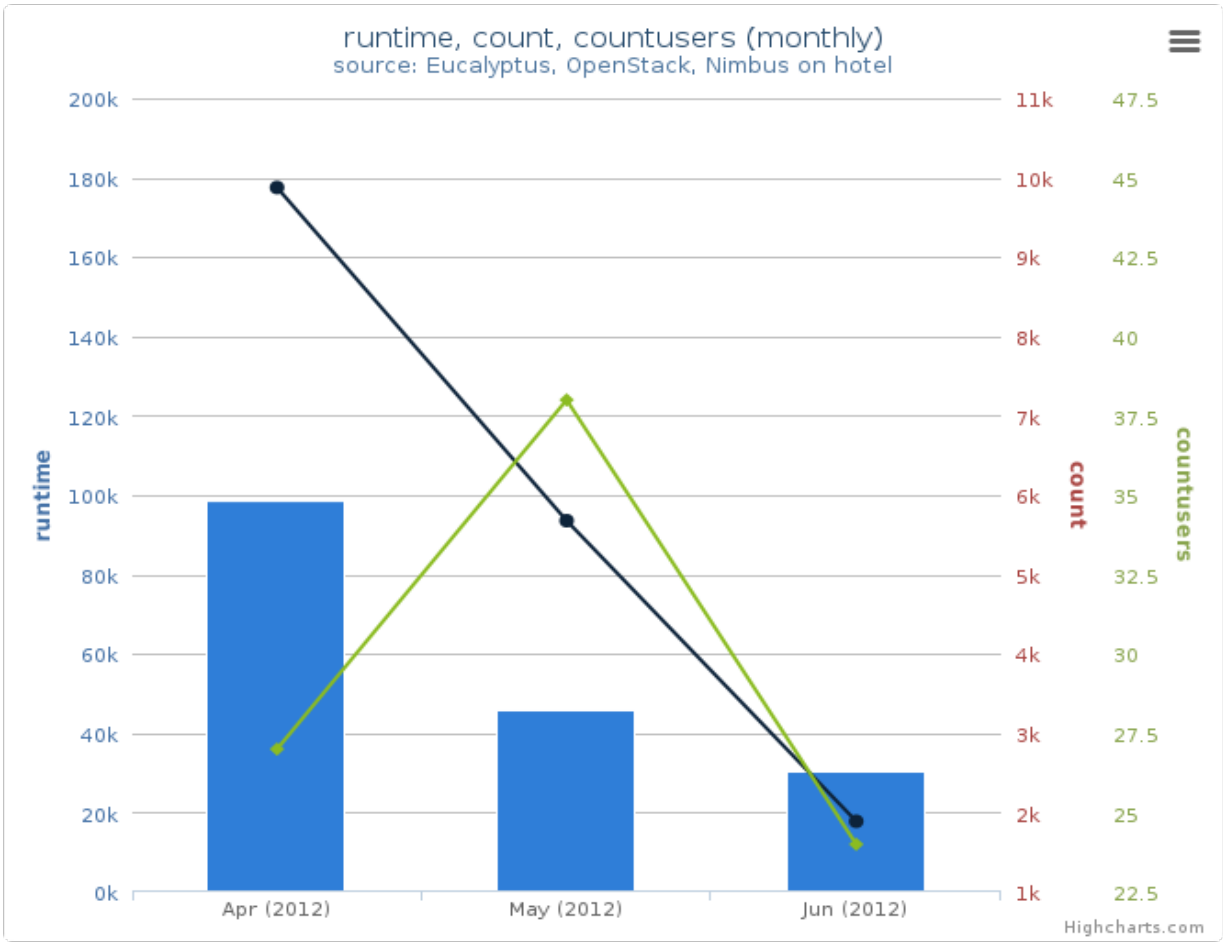


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)
This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: April 01 – June 30, 2012
- 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)

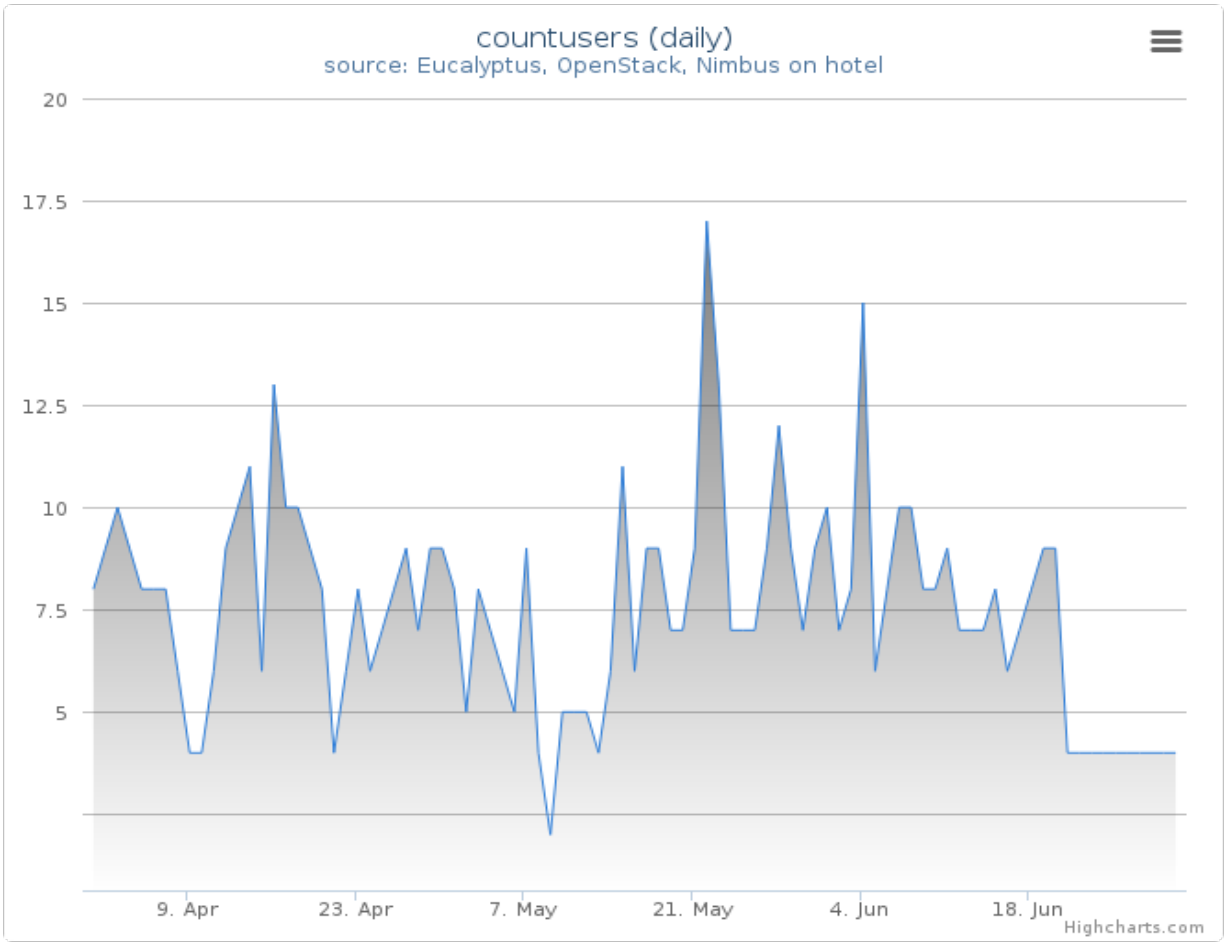


Figure 2: Users count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

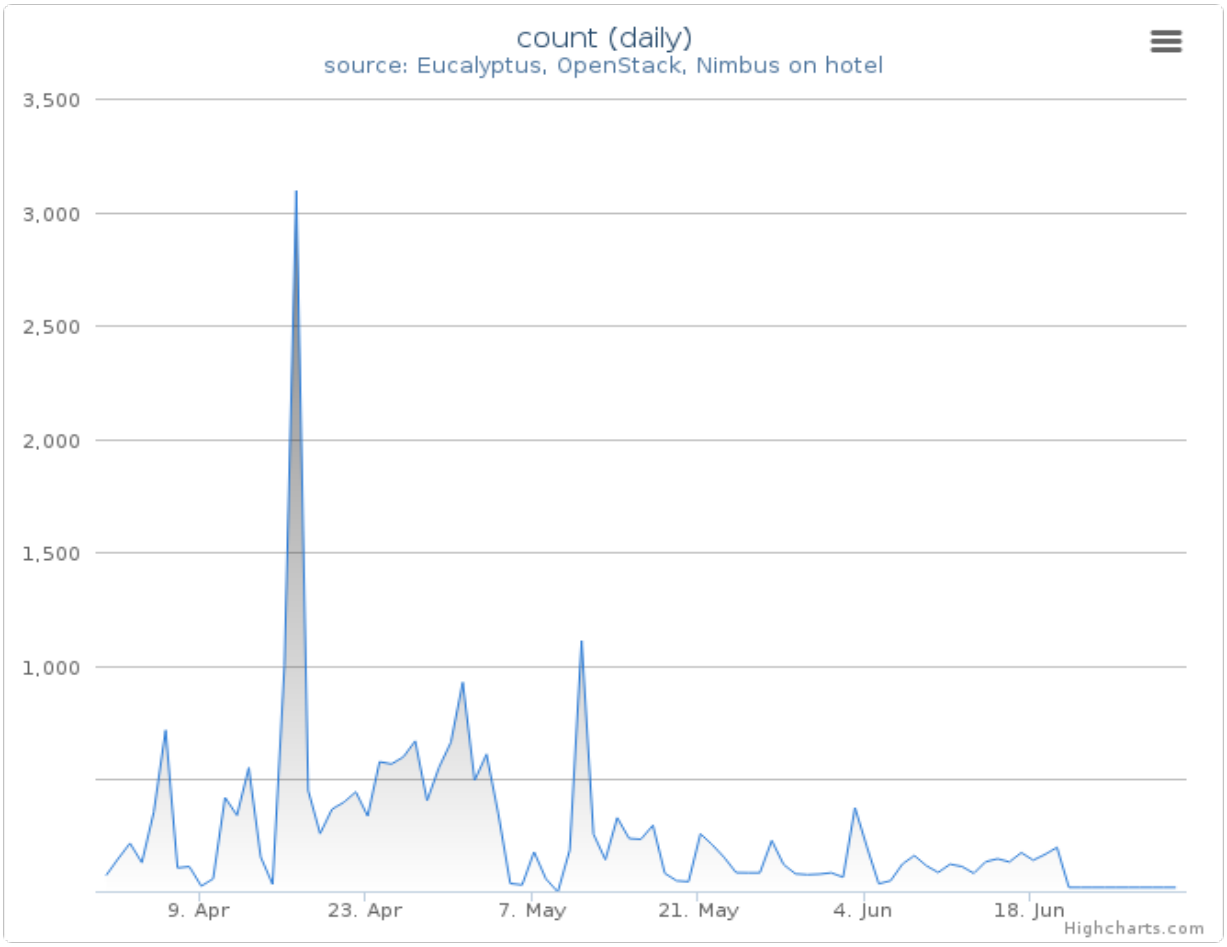


Figure 3: VMs count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

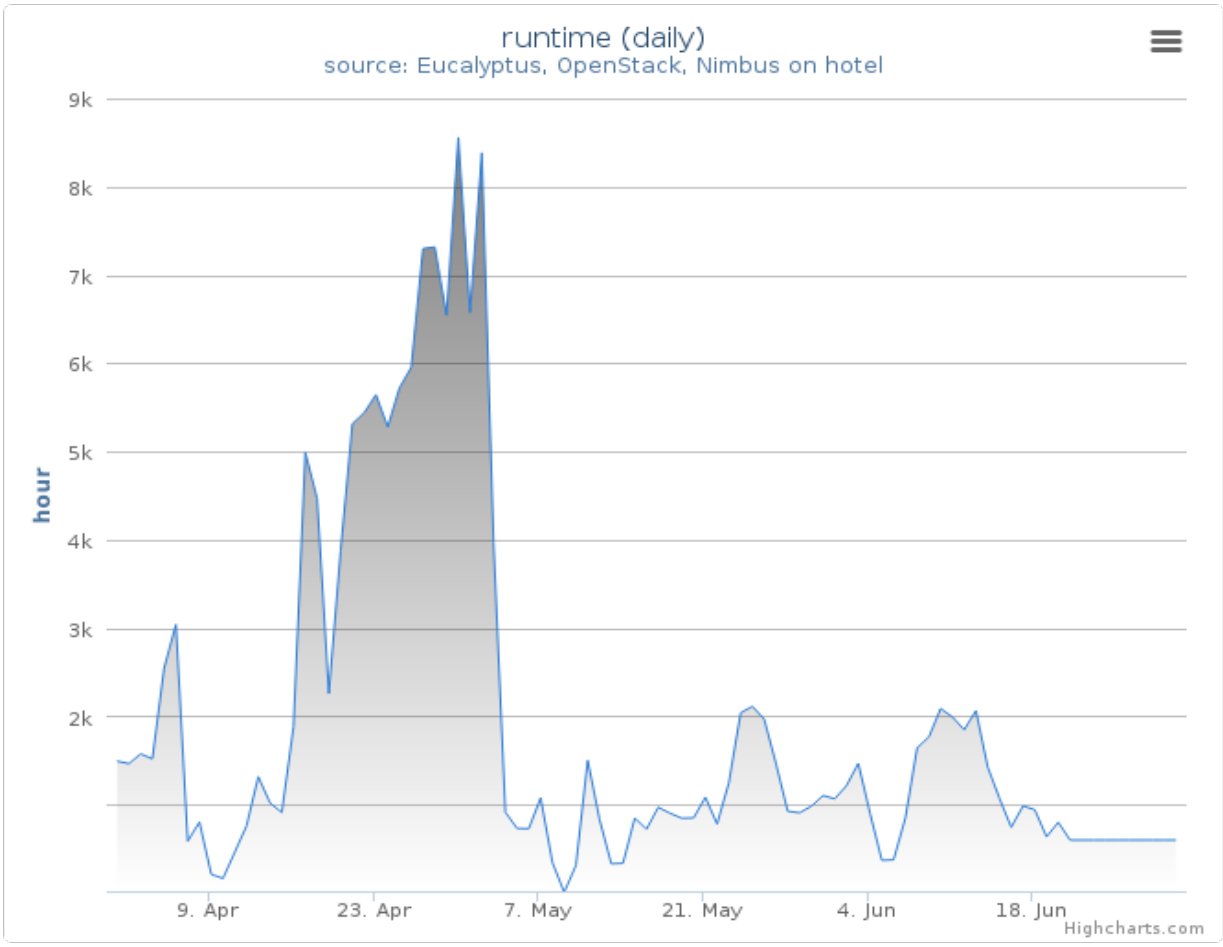


Figure 4: Wall time (hours)

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

## 4.2 Distribution

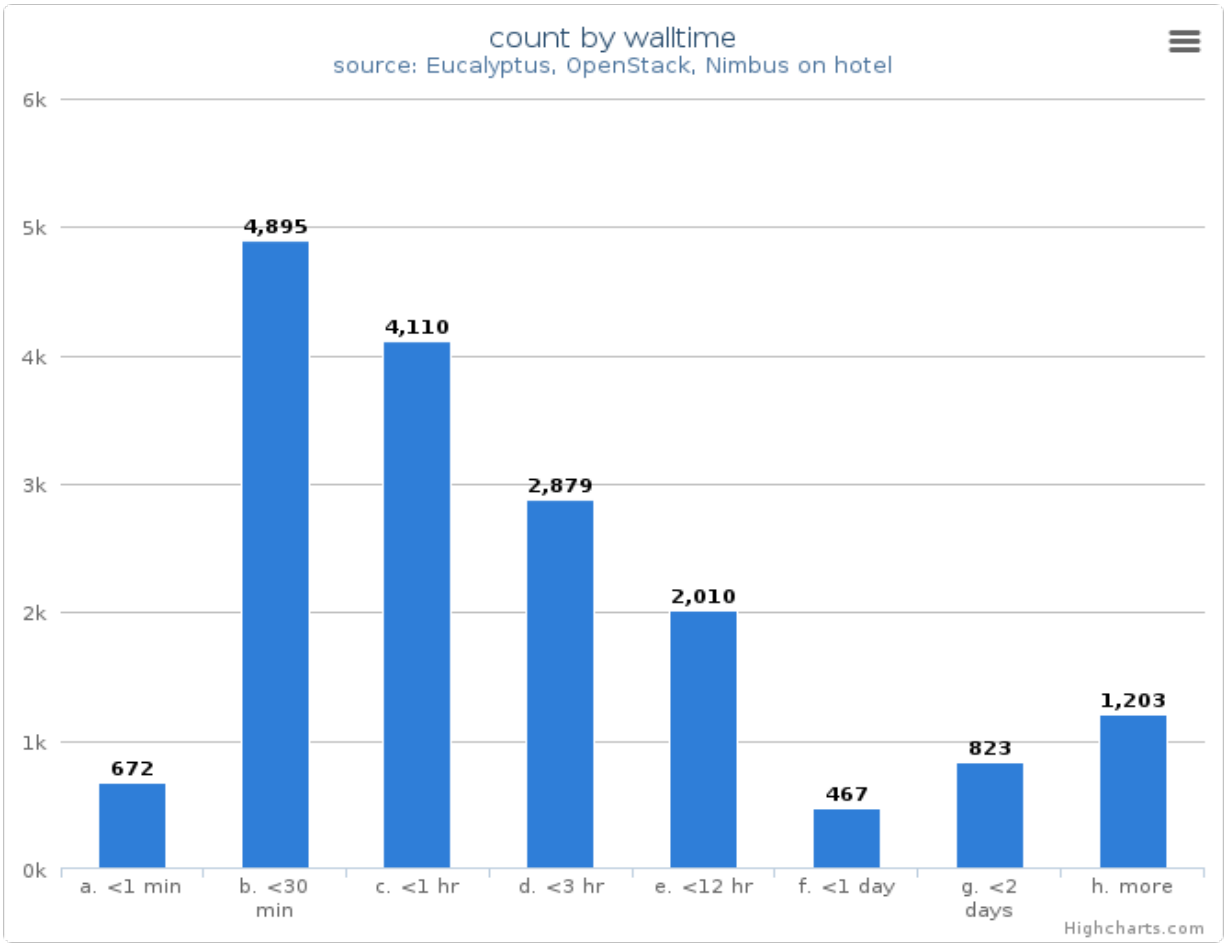


Figure 5: VM count by wall time
This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

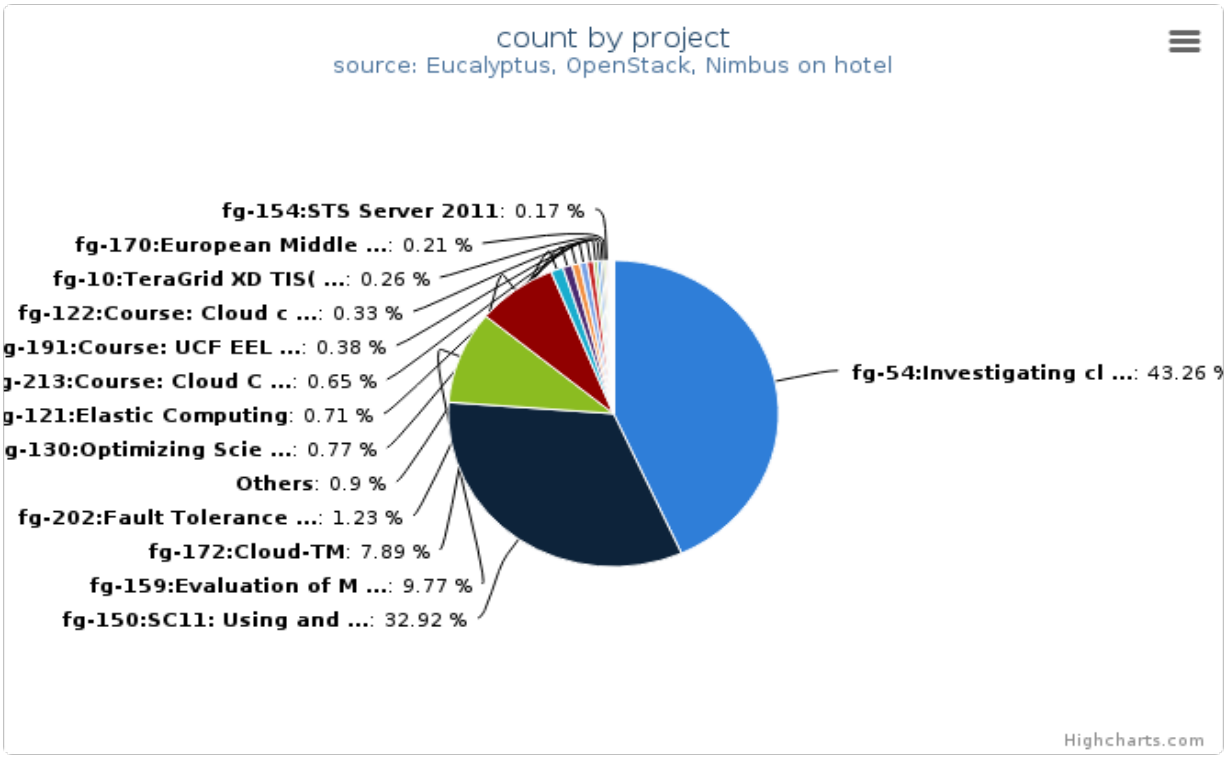


Figure 6: VMs count by project
This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.1: VMs count by project

| Project | Value |
|---|---|
| fg-54:Investigating cloud computing as a solution for analyzing particle physics data | 7234 |
| fg-150:SC11: Using and Building Infrastructure Clouds for Science | 5506 |
| fg-159:Evaluation of MPI Collectives for HPC Applications on Distributed Virtualized Environments | 1634 |
| fg-172:Cloud-TM | 1319 |
| fg-202:Fault Tolerance of HPC systems | 205 |
| Others | 151 |
| fg-130:Optimizing Scientific Workflows on Clouds | 128 |
| fg-121:Elastic Computing | 118 |
| fg-213:Course: Cloud Computing class - second edition | 108 |
| fg-191:Course: UCF EEL6938 Data-intensive computing and Cloud Class | 64 |
| fg-122:Course: Cloud computing class | 56 |

Continued on next page

**Table 4.1 – continued from previous page**

| Project | Value |
|---|---|
| fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory | 43 |
| fg-170:European Middleware Initiative (EMI) | 35 |
| fg-154:STS Server 2011 | 28 |
| fg-97:FutureGrid and Grid'5000 Collaboration | 21 |
| fg-225:Budget-constrained workflow scheduler | 15 |
| fg-1:Peer-to-peer overlay networks and applications in virtual networks and virtual clusters | 11 |
| fg-47:Parallel scripting using cloud resources | 10 |
| fg-125:The VIEW Project | 7 |
| fg-201:ExTENCI Testing, Validation, and Performance | 5 |
| fg-146:SLASH2 Testing in a Wide Area Environment | 5 |
| fg-82:FG General Software Development | 4 |
| fg-143:Course: Cloud Computing for Data Intensive Science Class | 4 |
| fg-127:Fresno System Architecture and Cloud Computing Class | 4 |
| fg-185:Co-Resident Watermarking | 3 |
| fg-138:Data mining samples based on Twister | 1 |
| fg-176:Cloud Interoperability Testbed | 1 |
| fg-194:SGVO Cloud Options Working Group | 1 |
| fg-133:Supply Chain Network Simulator Using Cloud Computing | 1 |
| fg-18:Privacy preserving gene read mapping using hybrid cloud | 1 |

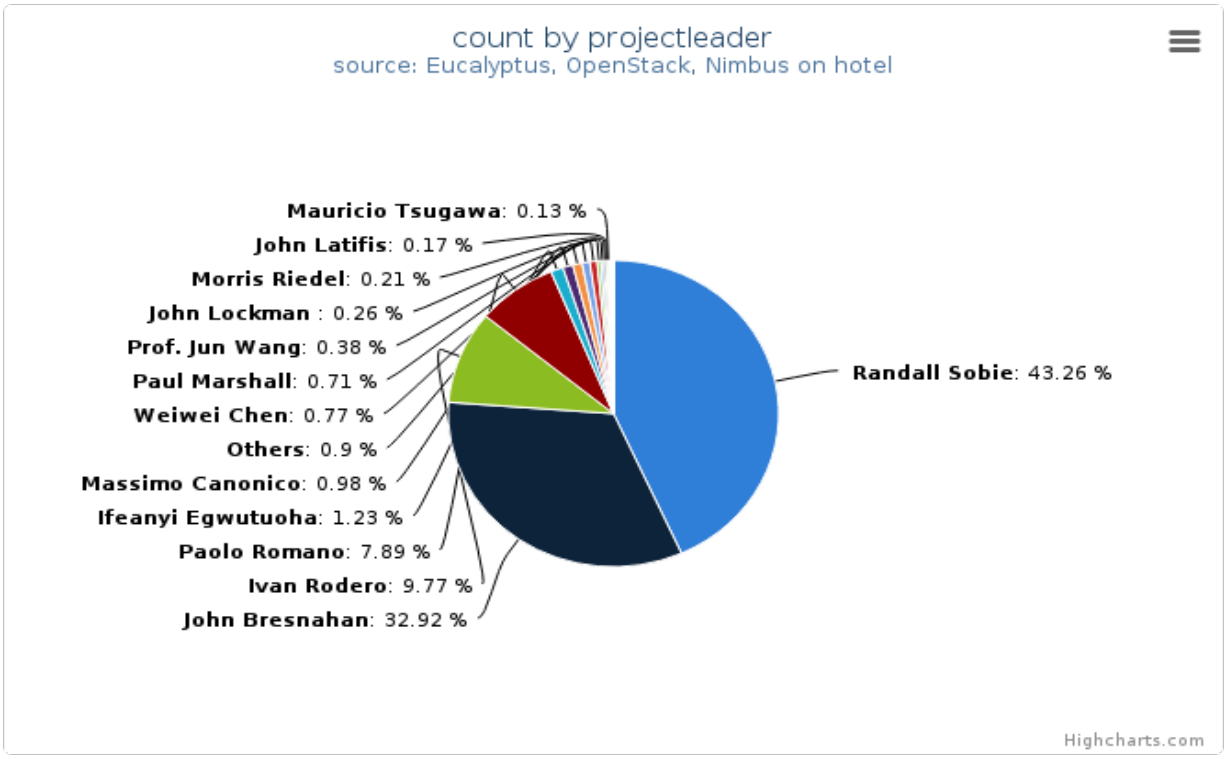


Figure 7: VMs count by project leader

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

follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.2: VMs count by project leader

| Projectleader | Value |
|---|---|
| Randall Sobie | 7234 |
| John Bresnahan | 5506 |
| Ivan Rodero | 1634 |
| Paolo Romano | 1319 |
| Ifeanyi Egwutuoha | 205 |
| Massimo Canonico | 164 |
| Others | 151 |
| Weiwei Chen | 128 |
| Paul Marshall | 118 |
| Prof. Jun Wang | 64 |
| John Lockman | 43 |
| Morris Riedel | 35 |
| John Latifis | 28 |
| Mauricio Tsugawa | 21 |
| Adrian Muresan | 15 |
| Renato Figueiredo | 11 |
| Michael Wilde | 10 |
| Shiyong Lu | 7 |
| Preston Smith | 5 |
| J Ray Scott | 5 |
| Judy Qiu | 4 |
| Cui Lin | 4 |
| Gregor von Laszewski | 4 |
| Adam Bates | 3 |
| Alan Sill | 2 |
| Manuel Rossetti | 1 |
| Zhanquan Sun | 1 |
| Yangyi Chen | 1 |

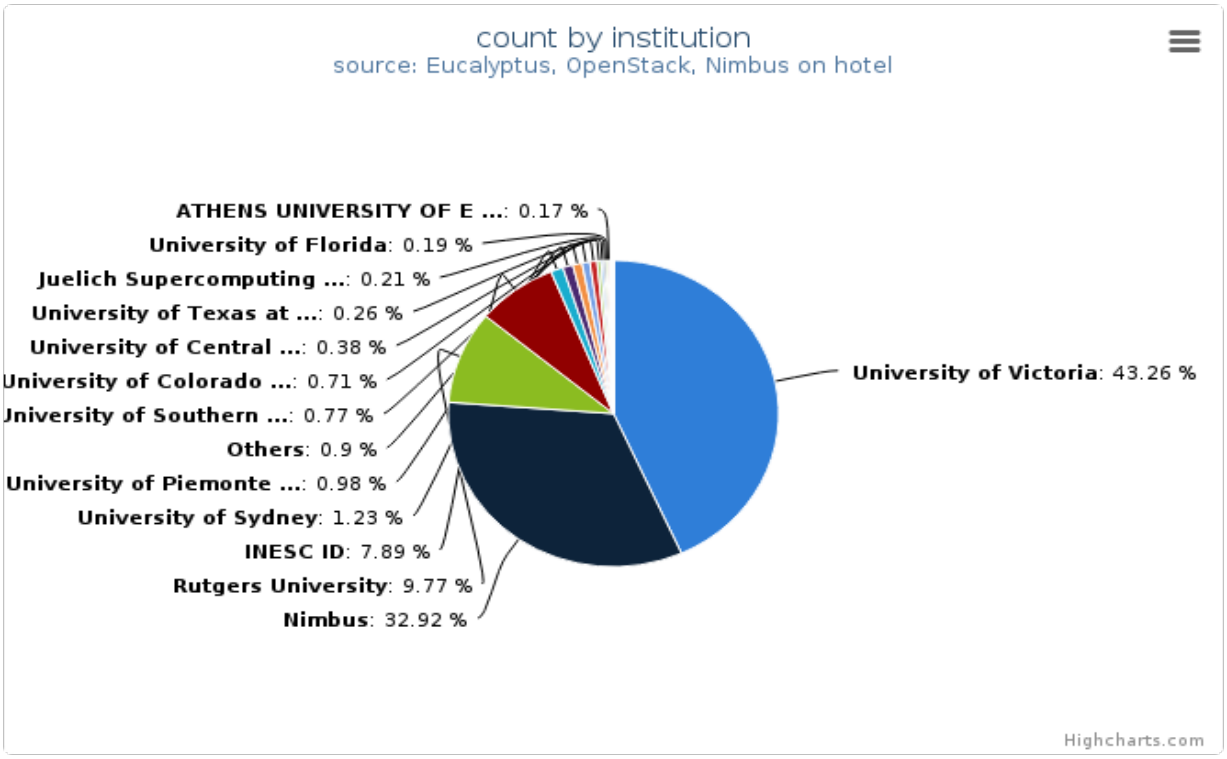


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

Table 4.3: VMs count by institution

| Institution | Value |
|---|---|
| University of Victoria | 7234 |
| Nimbus | 5506 |
| Rutgers University | 1634 |
| INESC ID | 1319 |
| University of Sydney | 205 |
| University of Piemonte Orientale | 164 |
| Others | 151 |
| University of Southern California | 128 |
| University of Colorado at Boulder | 118 |
| University of Central Florida | 64 |
| University of Texas at Austin | 43 |
| Juelich Supercomputing Centre | 35 |
| University of Florida | 32 |
| ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS | 28 |
| ENS Lyon | 15 |
| Argonne National Laboratory | 10 |
| Indiana University | 8 |
| Wayne State University | 7 |
| Purdue University | 5 |
| Carnegie Mellon University | 5 |
| California State University | 4 |
| University of Oregon | 3 |
| Indiana University Bloomington | 2 |
| Texas Tech University | 2 |
| University of Arkansas | 1 |

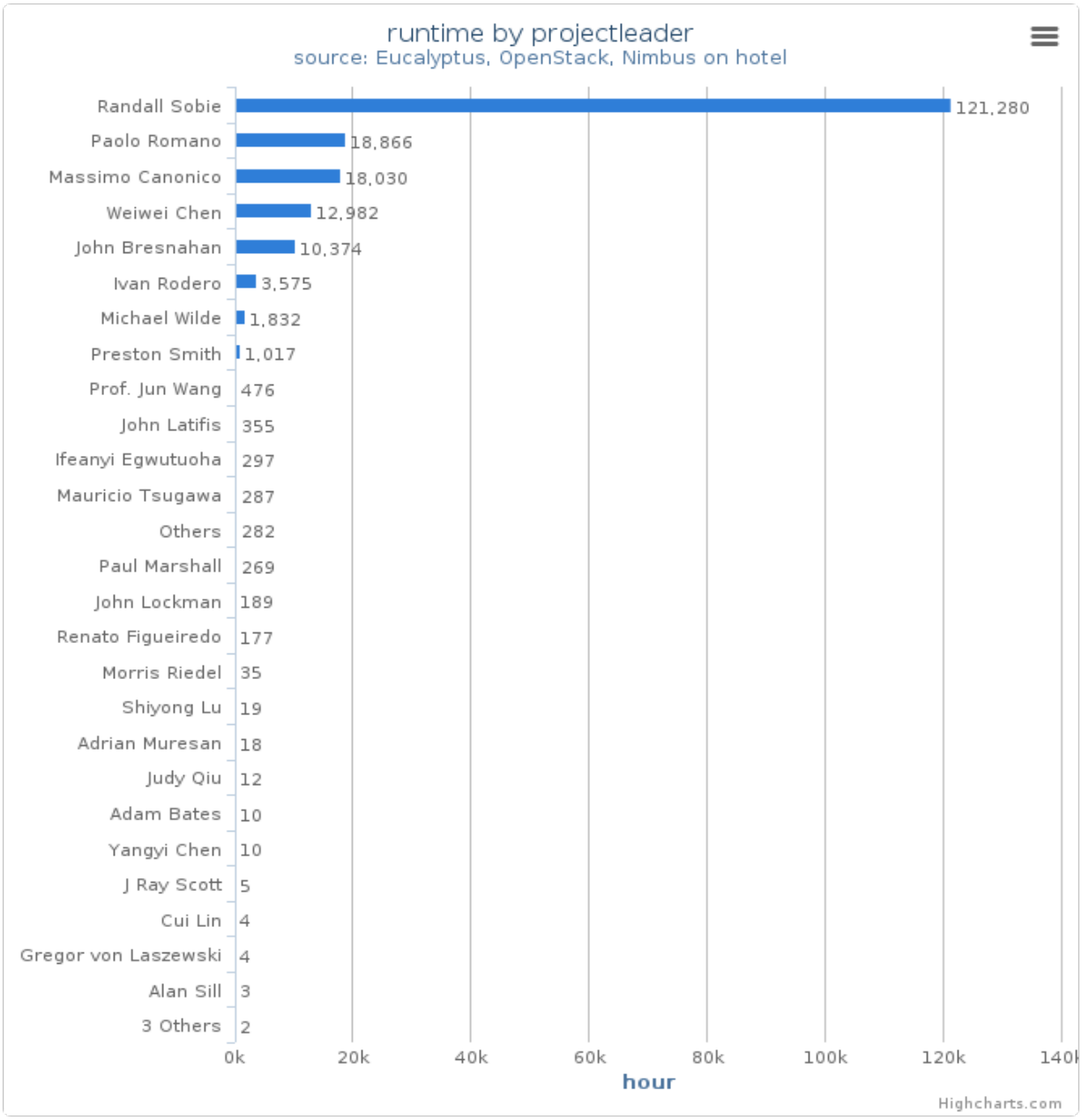


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: April 01 – June 30, 2012
- 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.

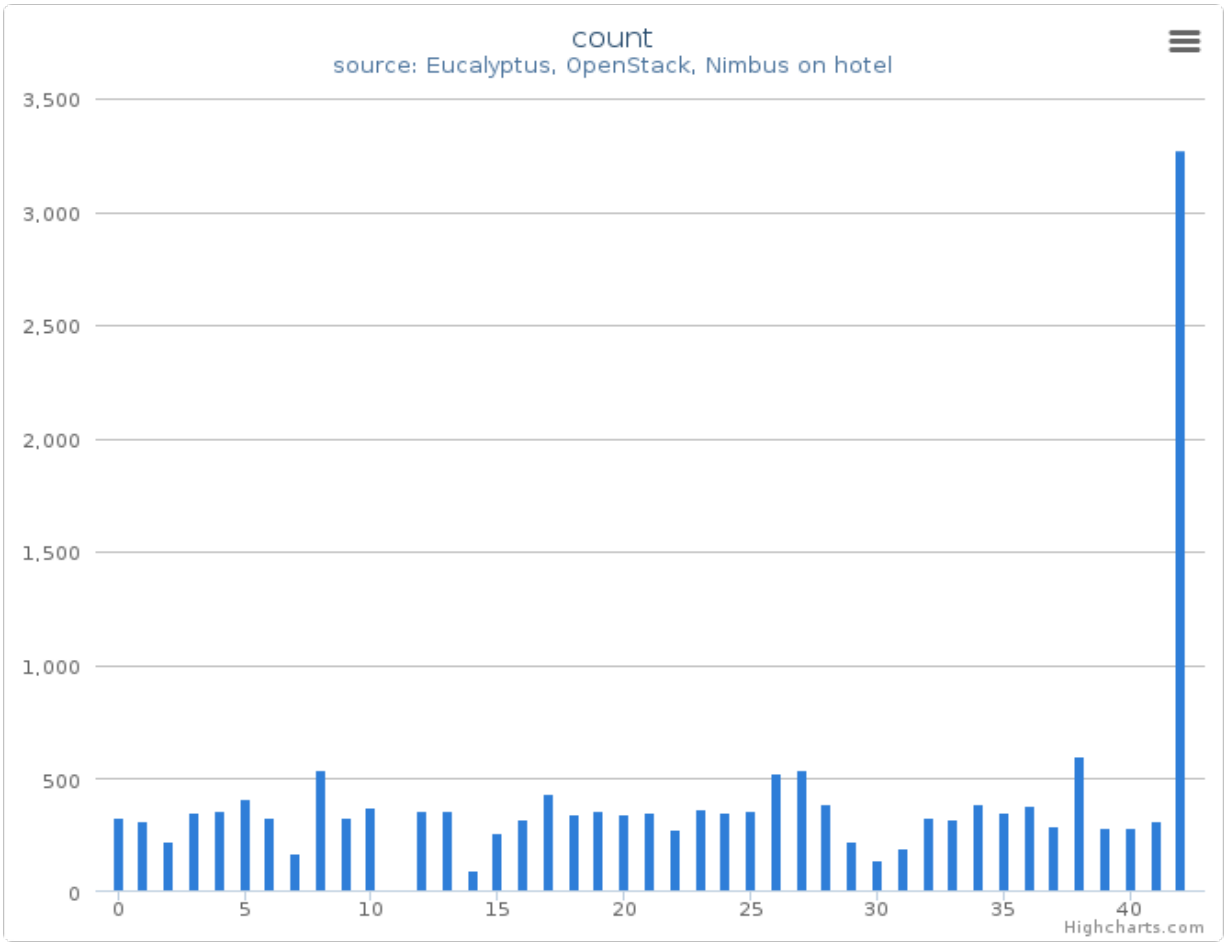


Figure 10: VMs count by systems (compute nodes) in Cluster (hotel)
This column chart represents VMs count among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

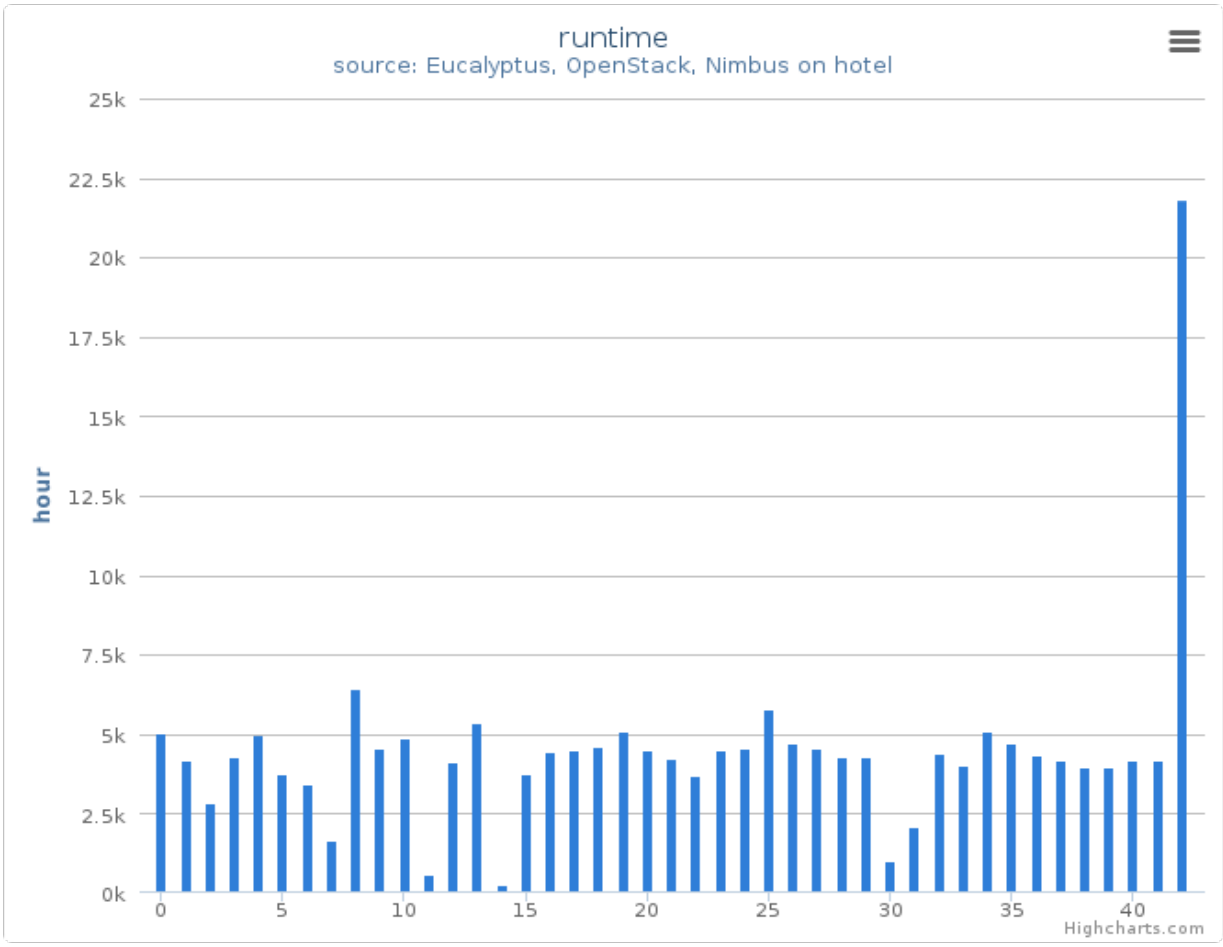


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (hotel)
This column chart represents wall time among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: hotel

CHAPTER

FIVE

# USAGE REPORT ALAMO

- Period: April 01 – June 30, 2012
- Hostname: alamo.futuregrid.org
- Services: nimbus
- 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)

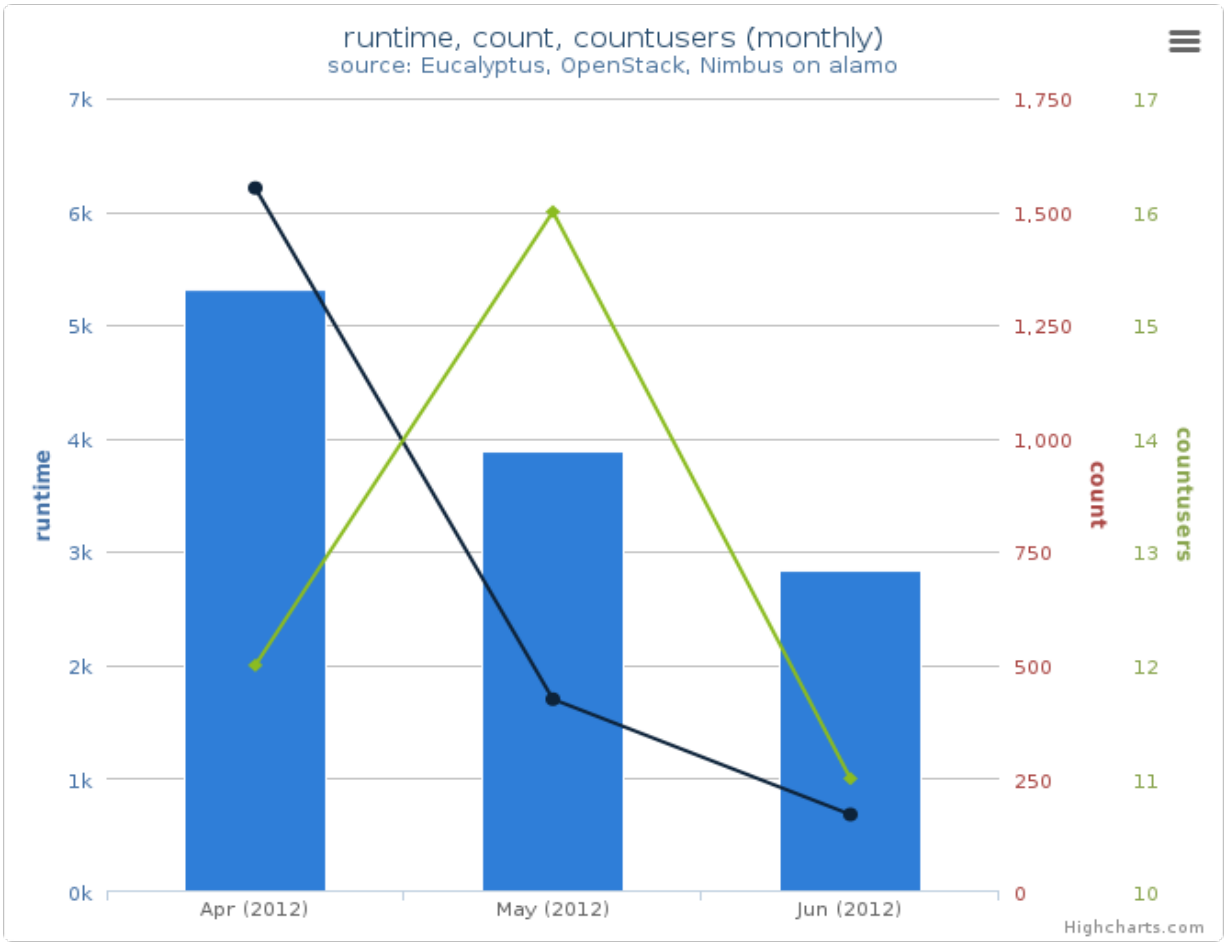


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)
This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- 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)

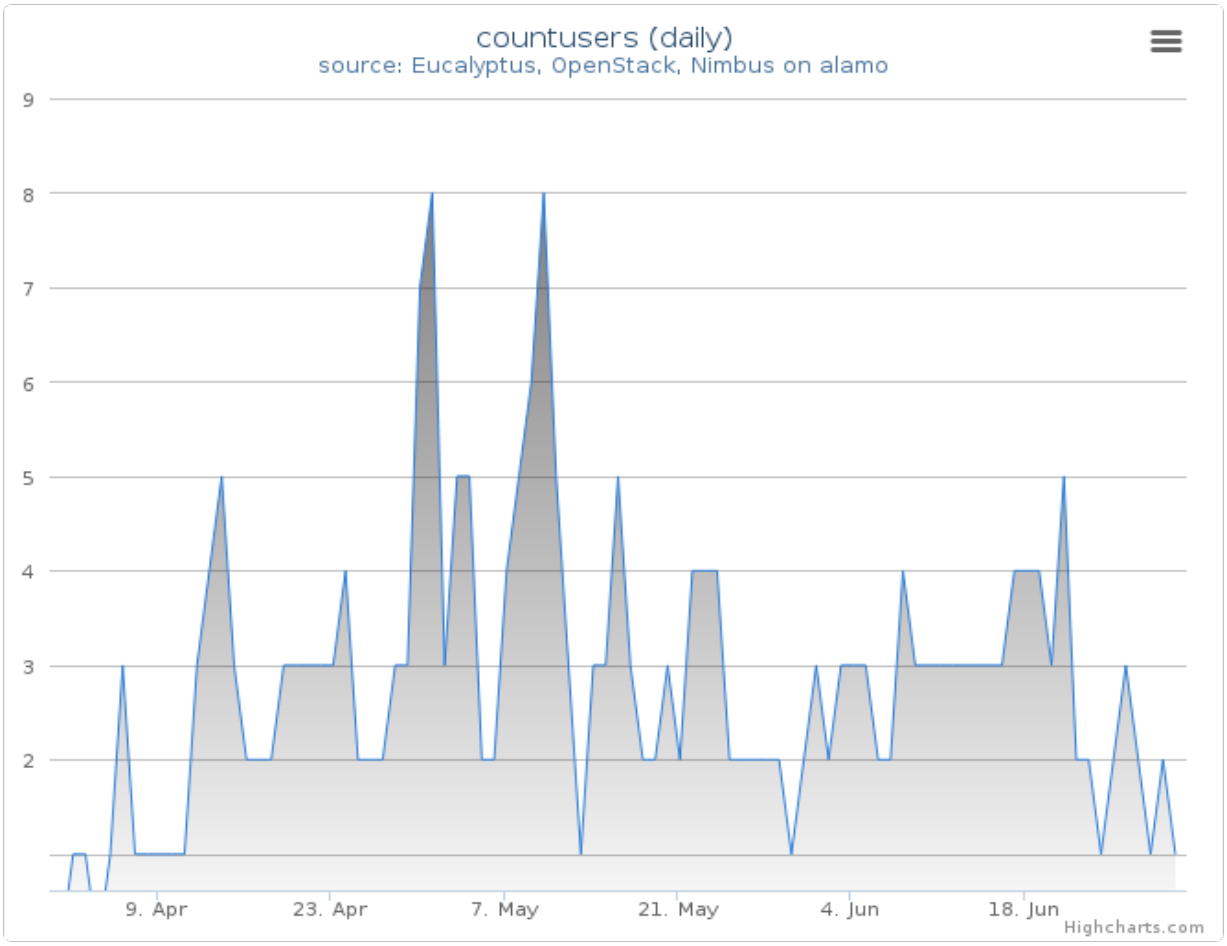


Figure 2: Users count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

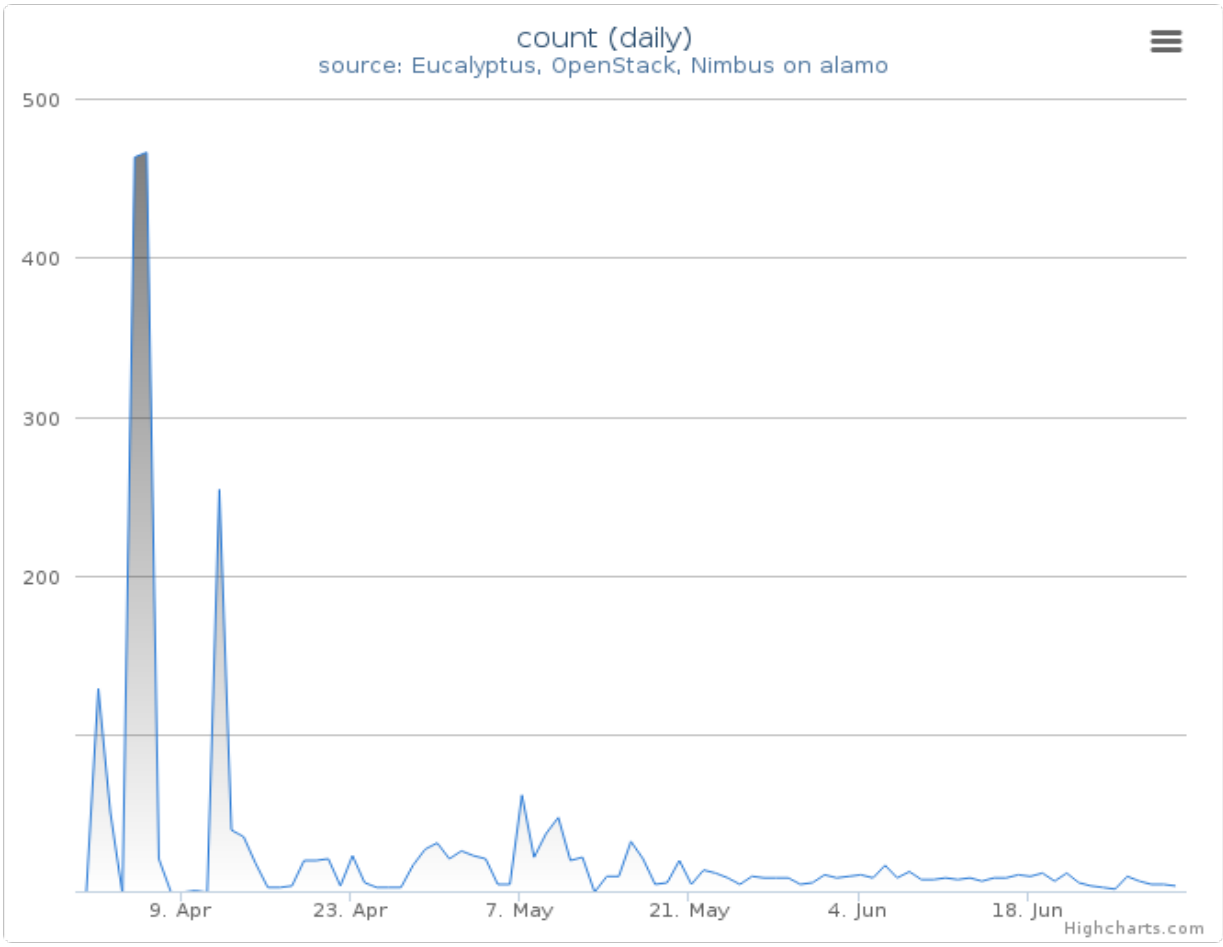


Figure 3: VMs count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

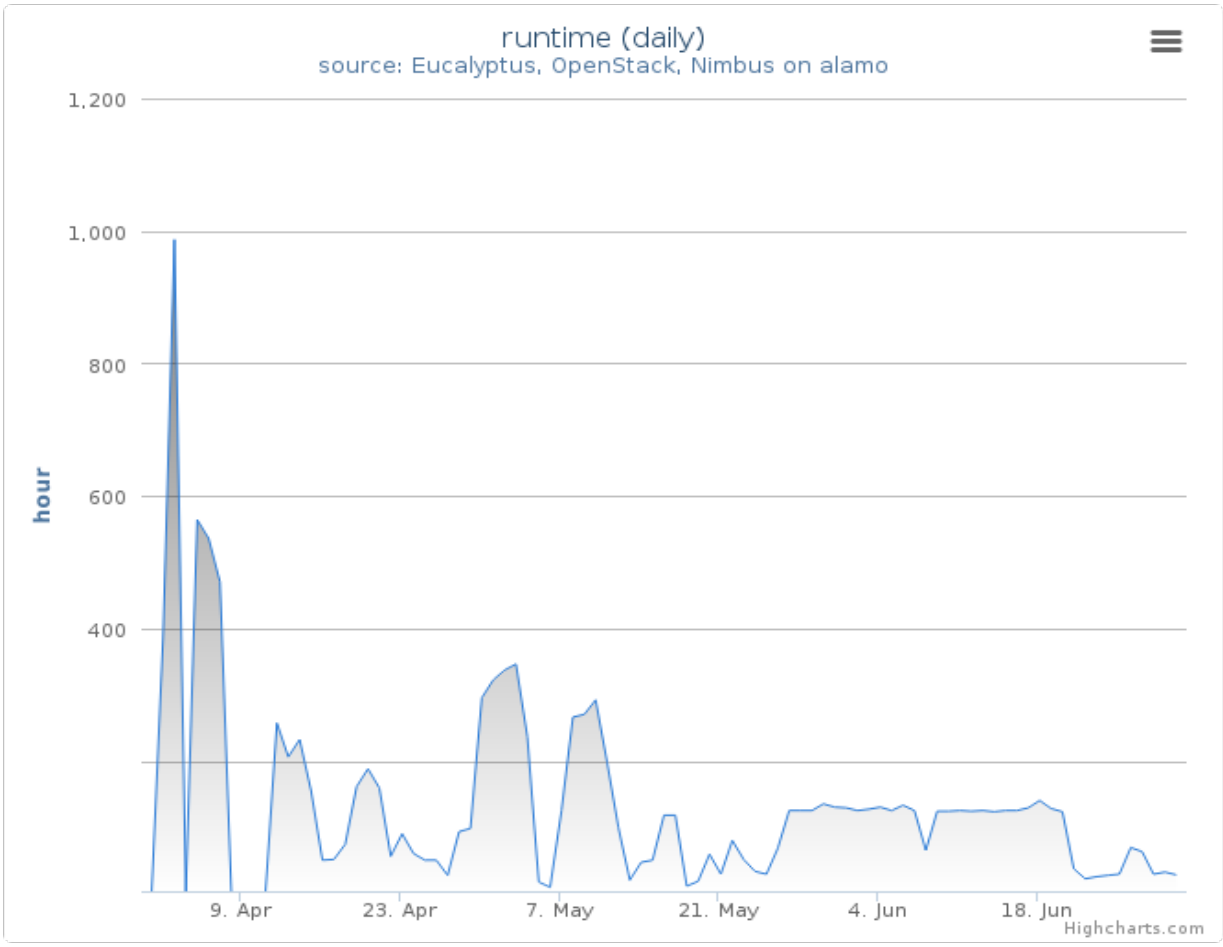


Figure 4: Wall time (hours)

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

## 5.2 Distribution

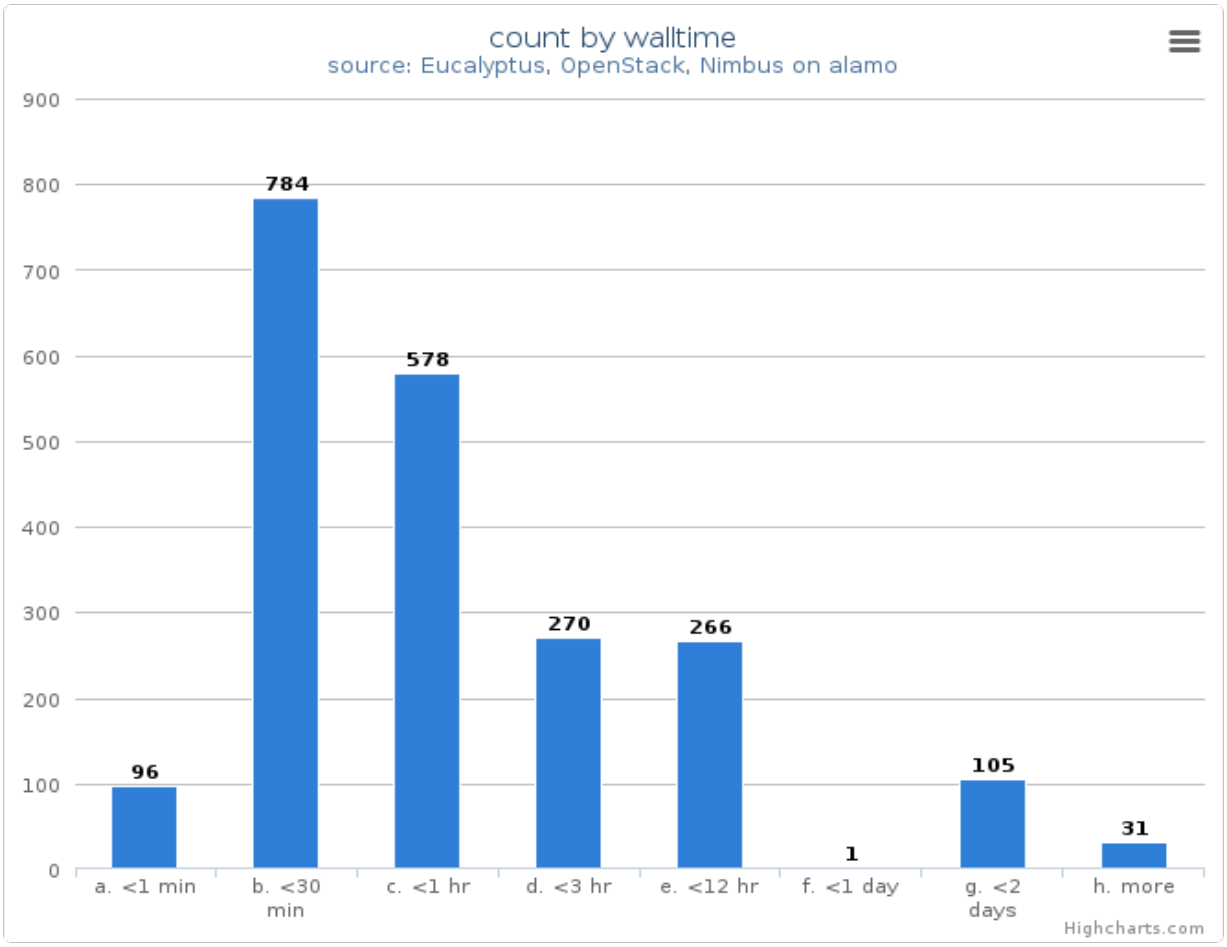


Figure 5: VM count by wall time
This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

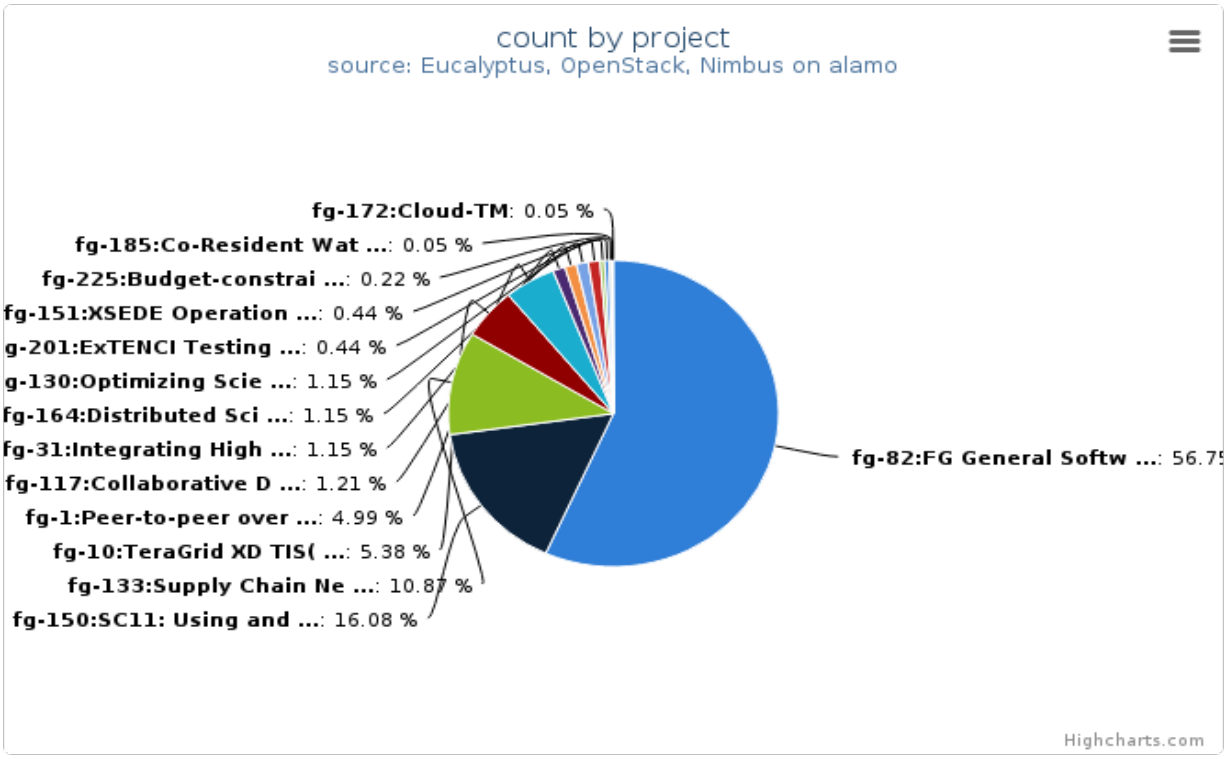


Figure 6: VMs count by project
This chart illustrates the proportion of launched VM instances by project groups. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

Table 5.1: VMs count by project

| Project | Value |
|---|---|
| fg-82:FG General Software Development | 1034 |
| fg-150:SC11: Using and Building Infrastructure Clouds for Science | 293 |
| fg-133:Supply Chain Network Simulator Using Cloud Computing | 198 |
| fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory | 98 |
| fg-1:Peer-to-peer overlay networks and applications in virtual networks and virtual clusters | 91 |
| fg-117:Collaborative Data Distribution and VM Provisioning | 22 |
| fg-31:Integrating High Performance Computing in Research and Education for Simulation, Visualization and RealTime Prediction | 21 |
| fg-164:Distributed Scientific Computing Class | 21 |
| fg-130:Optimizing Scientific Workflows on Clouds | 21 |
| fg-201:ExTENCI Testing, Validation, and Performance | 8 |
| fg-151:XSEDE Operations Group | 8 |
| fg-225:Budget-constrained workflow scheduler | 4 |
| fg-170:European Middleware Initiative (EMI) | 1 |
| fg-185:Co-Resident Watermarking | 1 |
| fg-172:Cloud-TM | 1 |

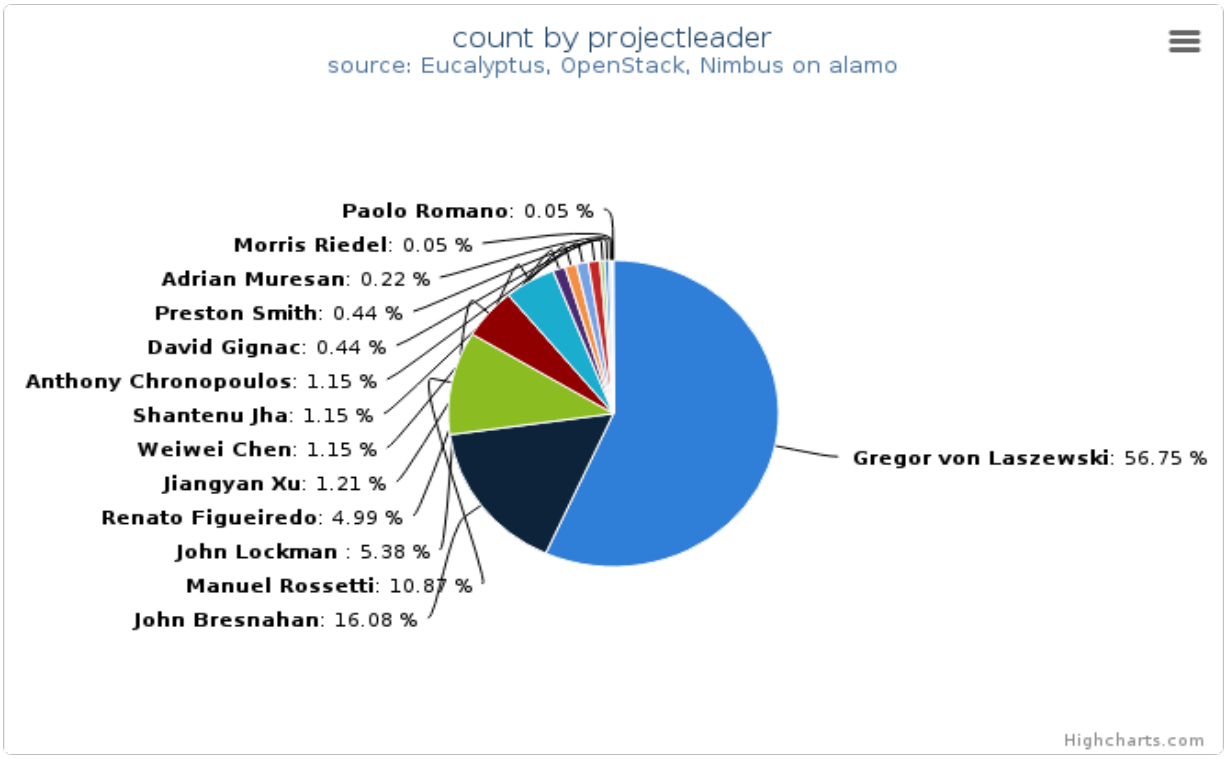


Figure 7: VMs count by project leader

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

- Period: April 01 – June 30, 2012

- Cloud(IaaS): nimbus
- Hostname: alamo

Table 5.2: VMs count by project leader

| Projectleader | Value |
|---|---|
| Gregor von Laszewski | 1034 |
| John Bresnahan | 293 |
| Manuel Rossetti | 198 |
| John Lockman | 98 |
| Renato Figueiredo | 91 |
| Jiangyan Xu | 22 |
| Weiwei Chen | 21 |
| Shantenu Jha | 21 |
| Anthony Chronopoulos | 21 |
| David Gignac | 8 |
| Preston Smith | 8 |
| Adrian Muresan | 4 |
| Adam Bates | 1 |
| Morris Riedel | 1 |
| Paolo Romano | 1 |

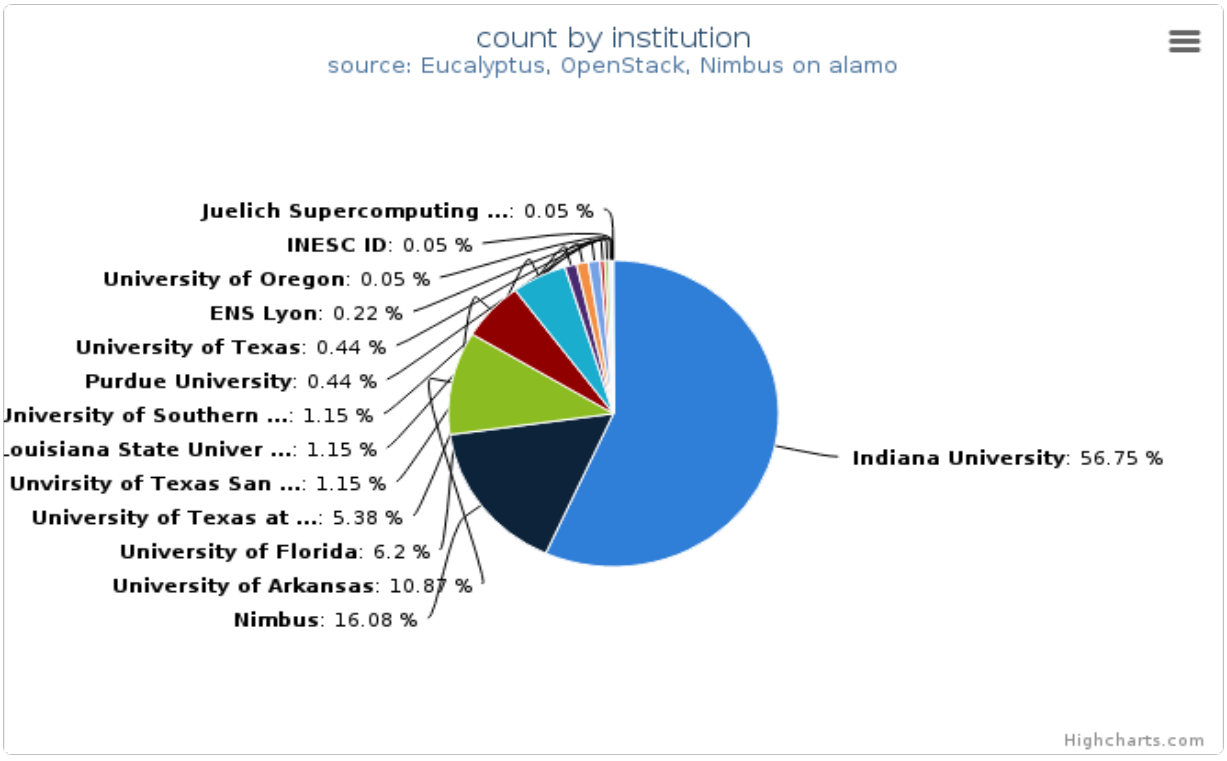


Figure 8: VMs count by institution

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

Table 5.3: VMs count by institution

| Institution | Value |
|---|---|
| Indiana University | 1034 |
| Nimbus | 293 |
| University of Arkansas | 198 |
| University of Florida | 113 |
| University of Texas at Austin | 98 |
| Unvirsity of Texas San Antonio | 21 |
| Louisiana State University | 21 |
| University of Southern California | 21 |
| Purdue University | 8 |
| University of Texas | 8 |
| ENS Lyon | 4 |
| University of Oregon | 1 |
| INESC ID | 1 |
| Juelich Supercomputing Centre | 1 |

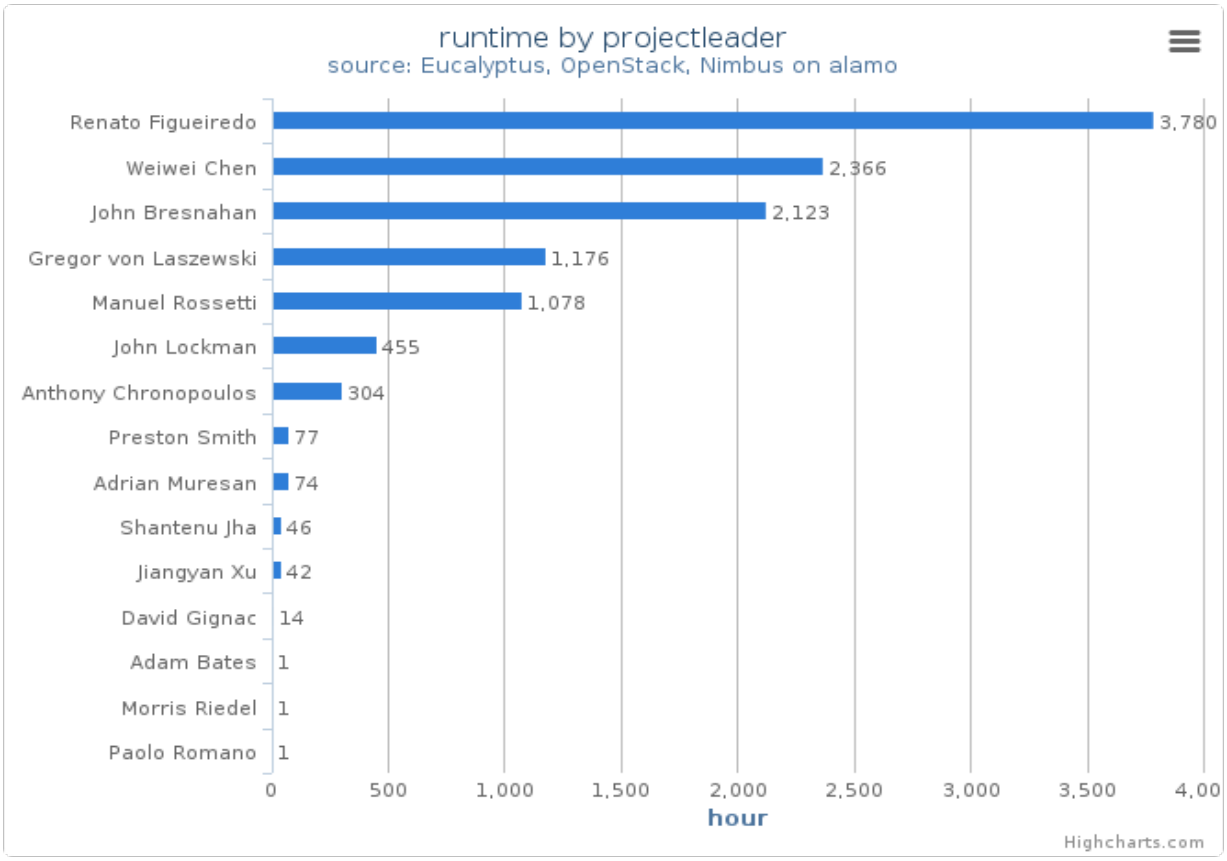


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

## 5.3 System information

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

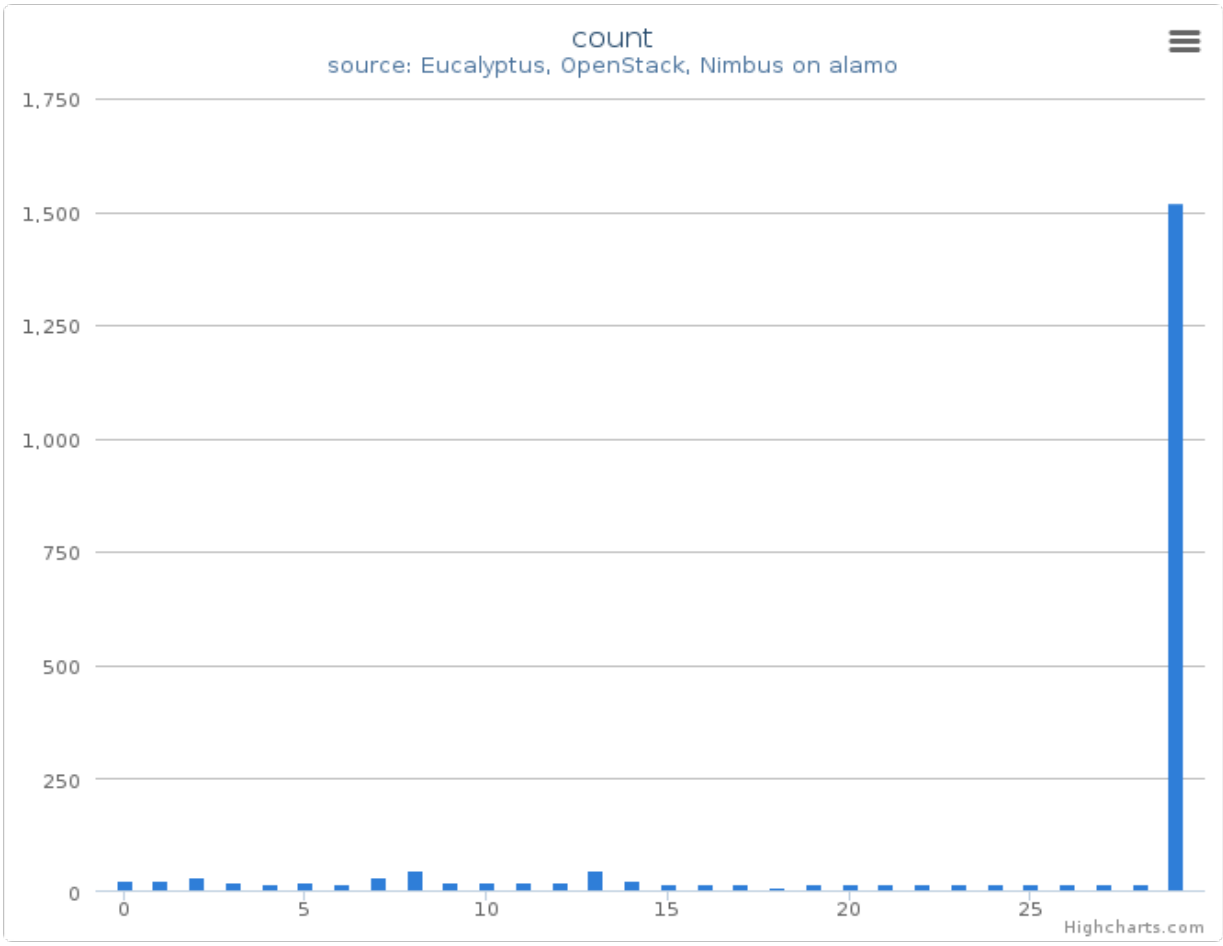


Figure 10: VMs count by systems (compute nodes) in Cluster (alamo)
This column chart represents VMs count among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

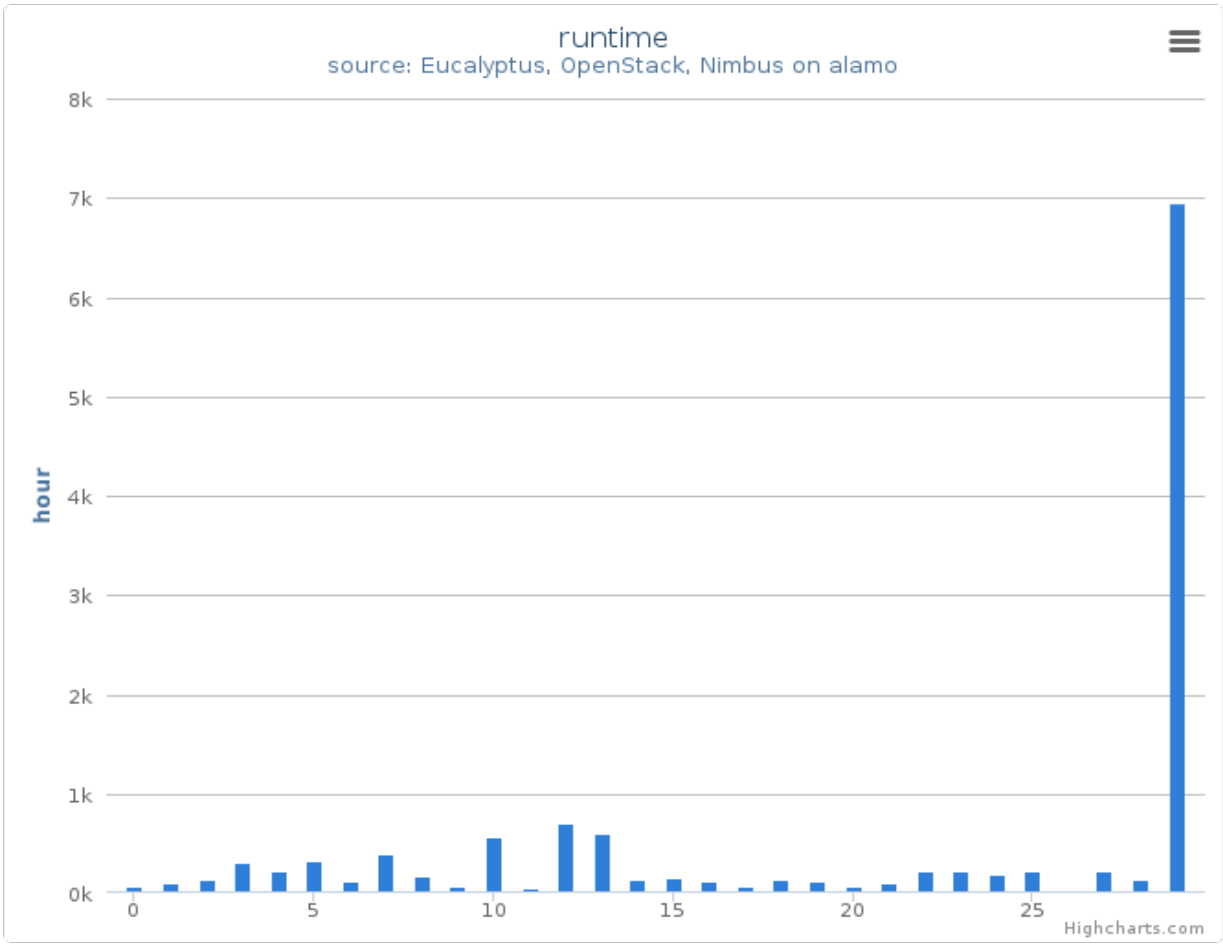


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (alamo)
This column chart represents wall time among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: alamo

CHAPTER

SIX

# USAGE REPORT FOXTROT

- Period: April 01 – June 30, 2012
- 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)

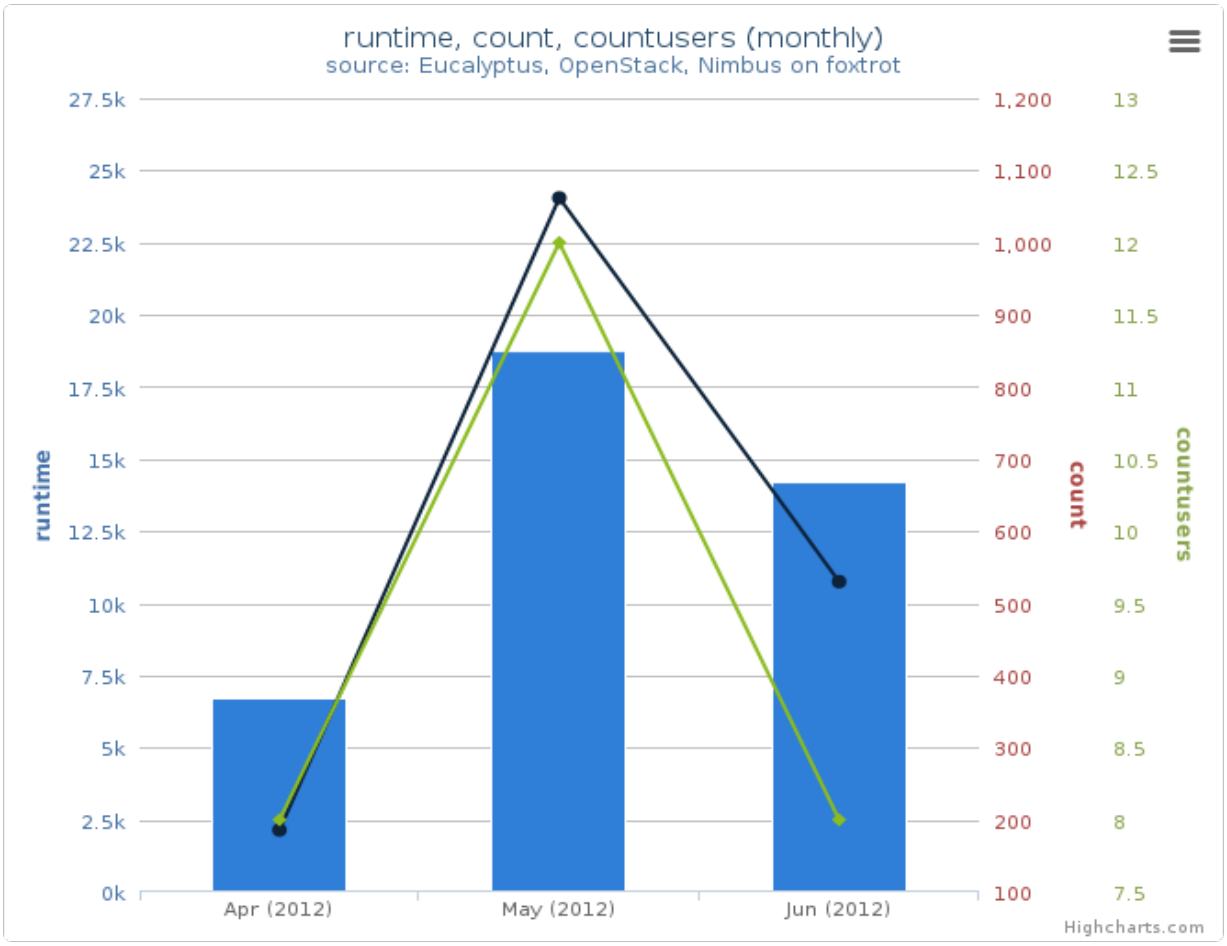


Figure 1: Average monthly usage data (wall time (hour), launched VMs, users)
This mixed chart represents average monthly usage as to wall time (hour), the number of VM instances and active users.

- Period: April 01 – June 30, 2012
- 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)

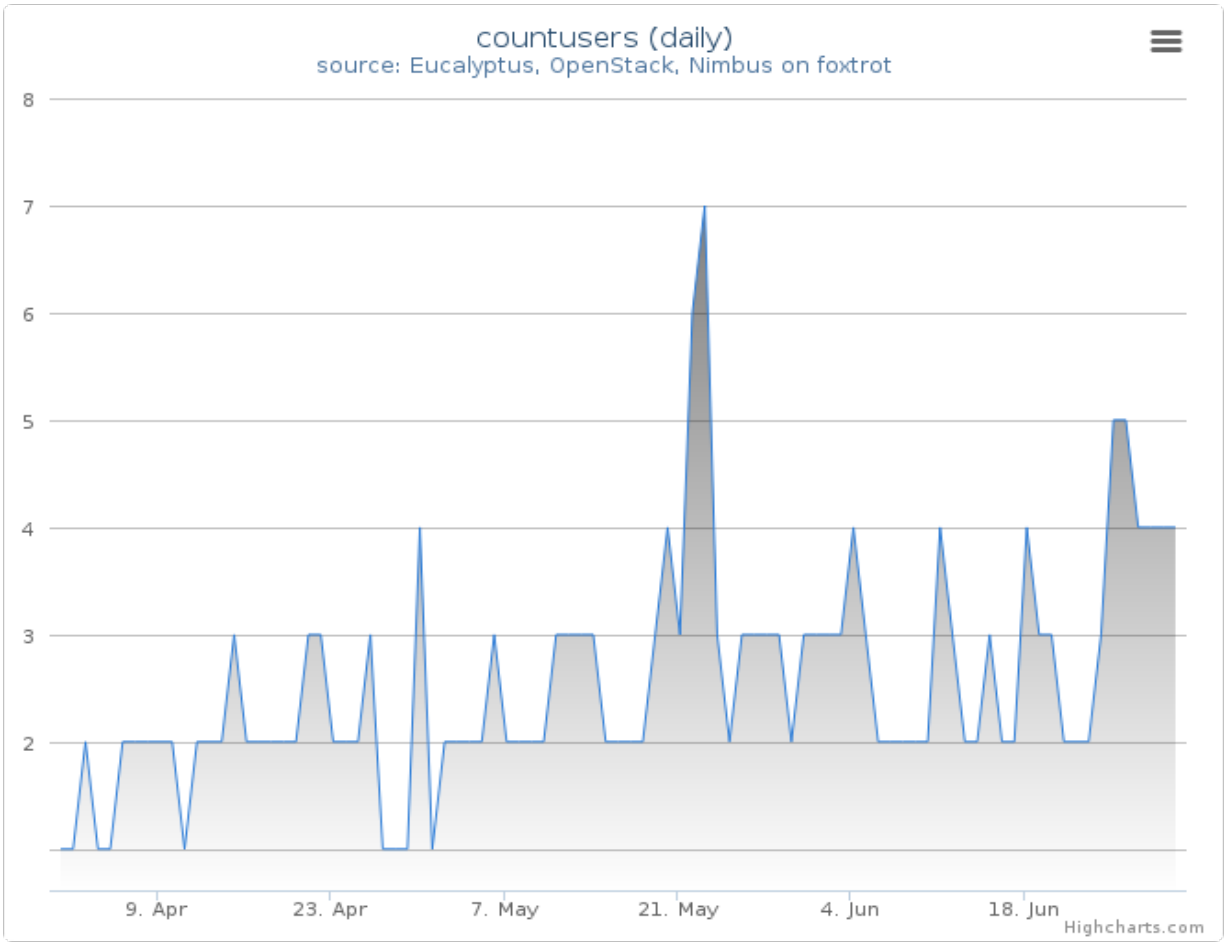


Figure 2: Users count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

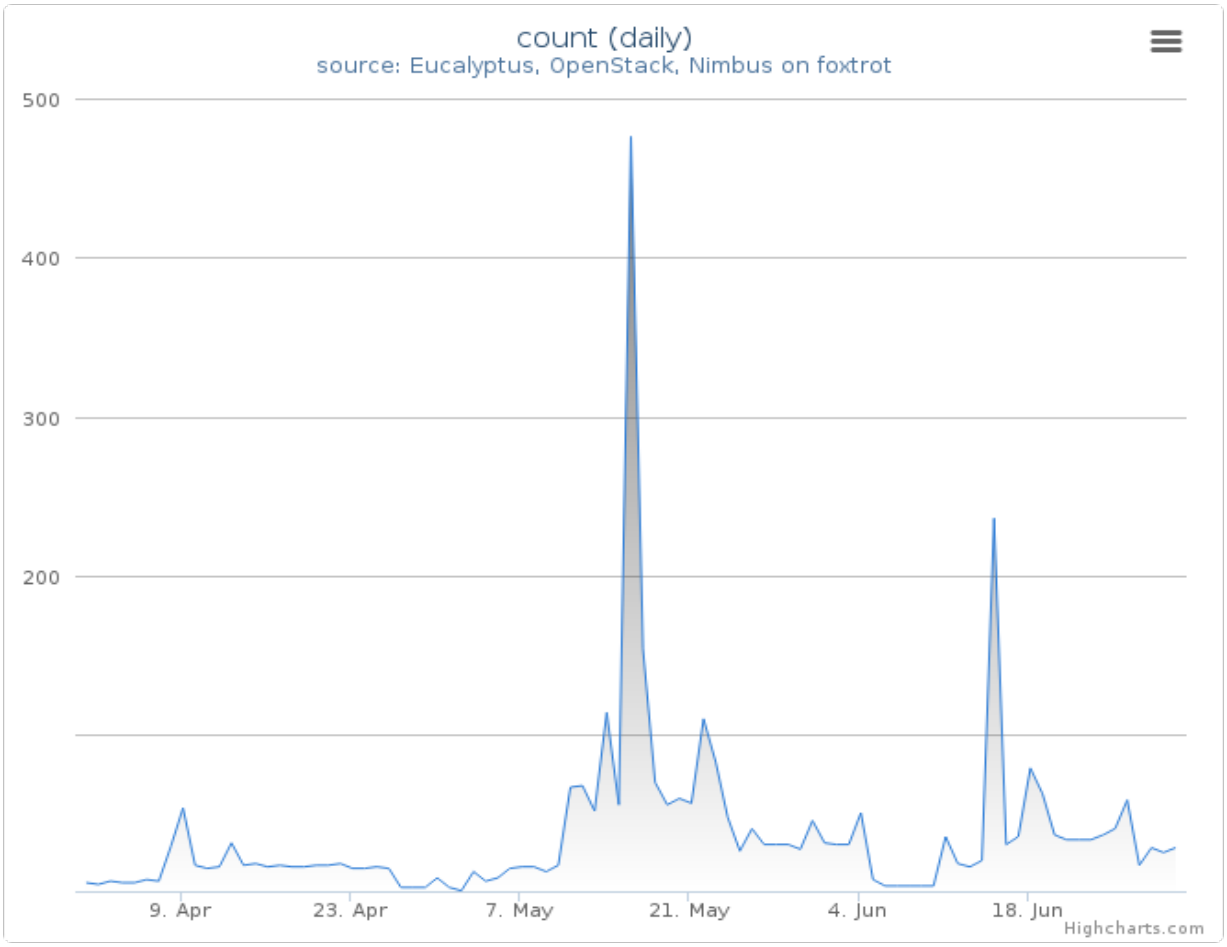


Figure 3: VMs count

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

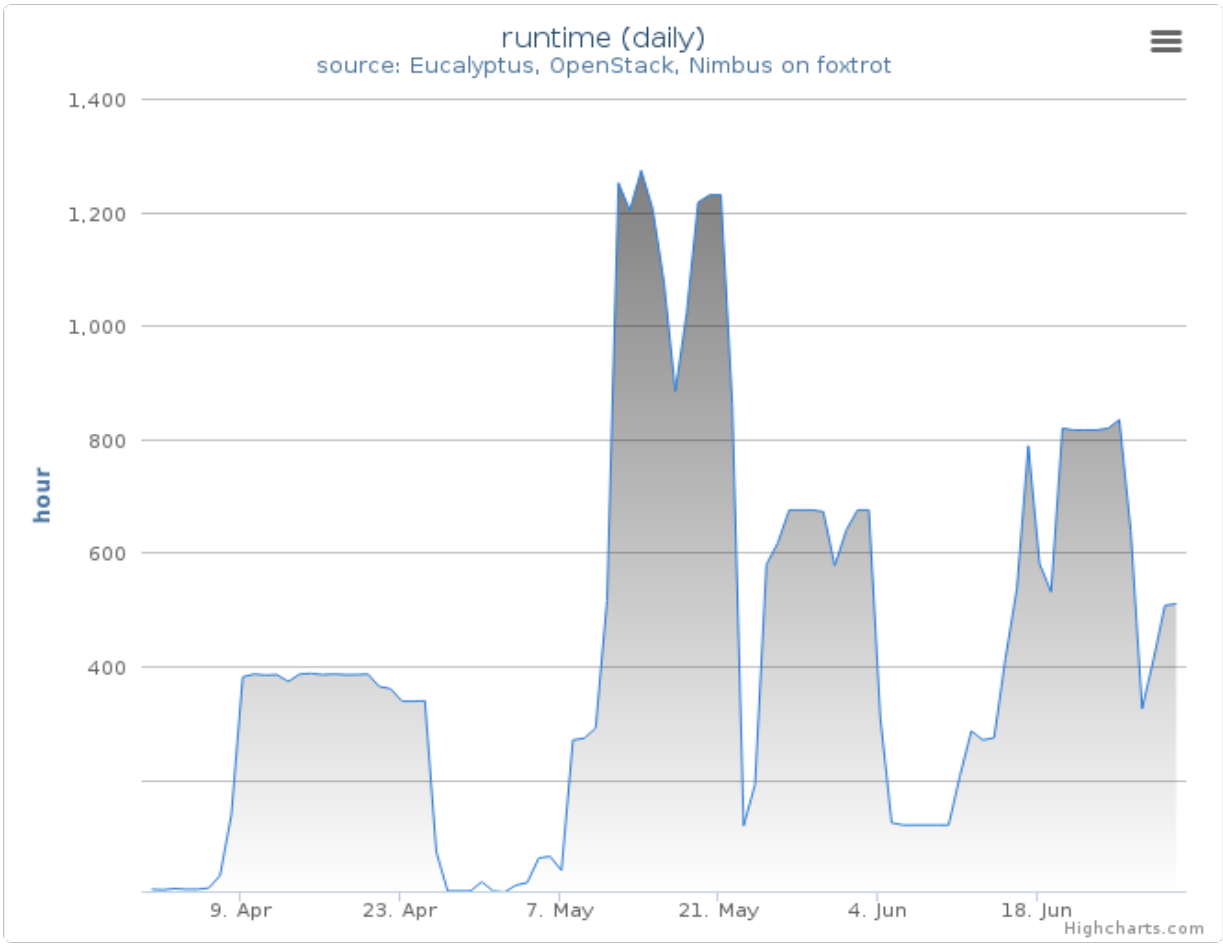


Figure 4: Wall time (hours)

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

## 6.2 Distribution

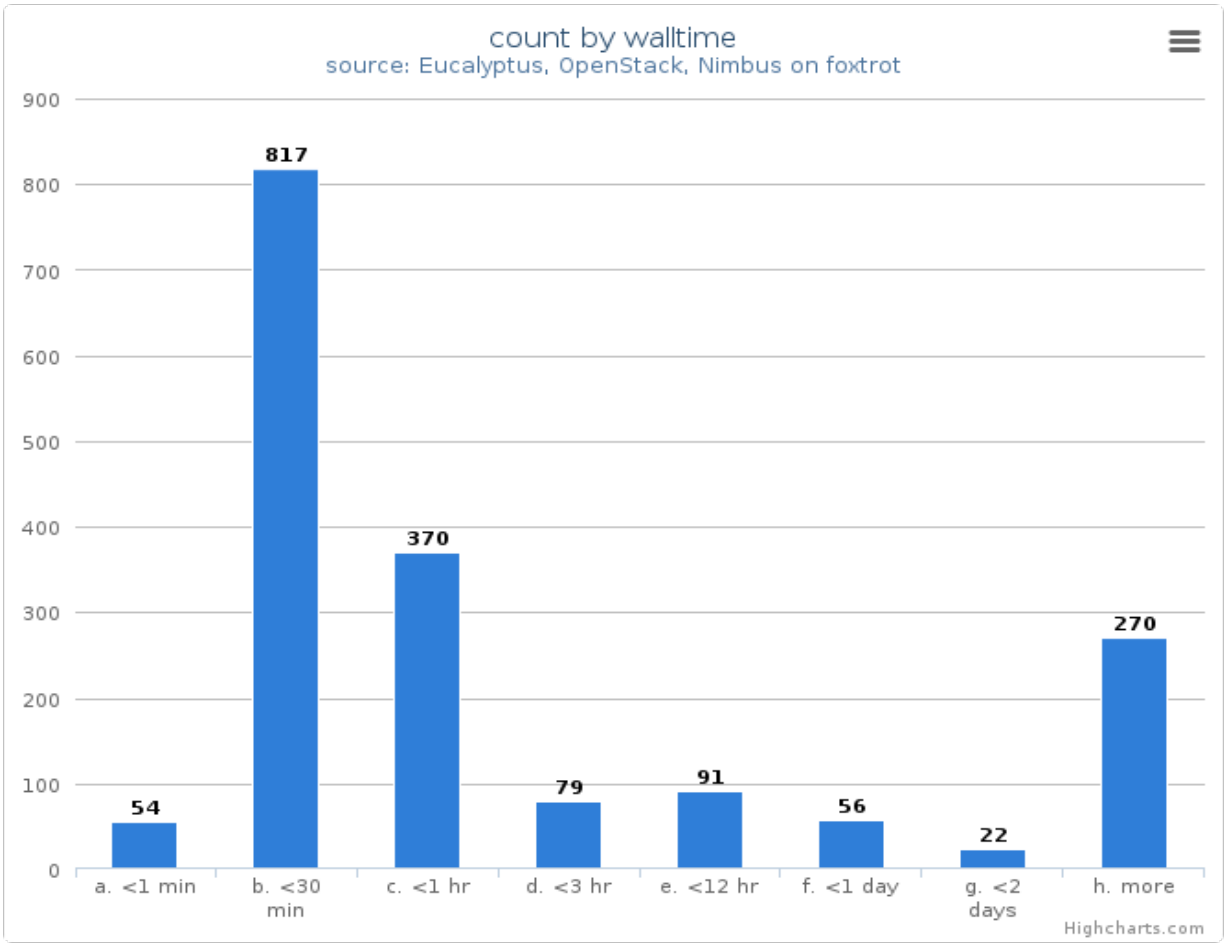


Figure 5: VM count by wall time
This chart illustrates usage patterns of VM instances in terms of running wall time.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

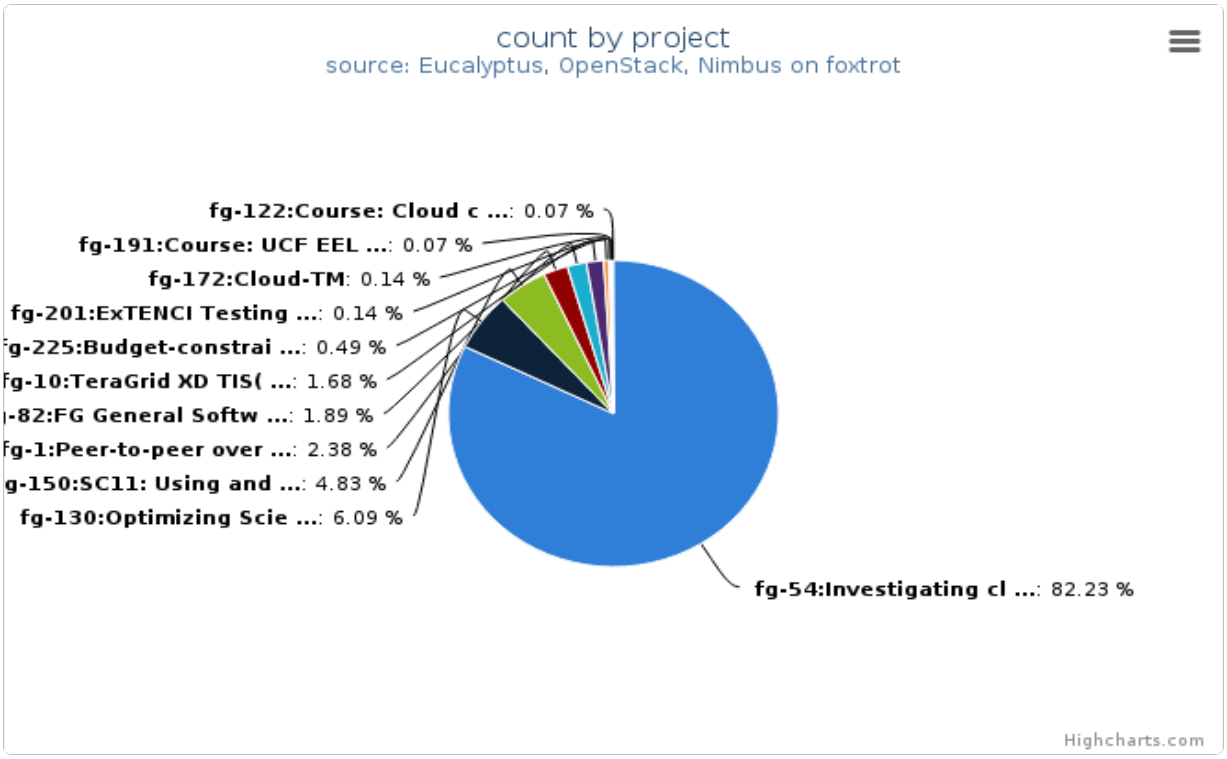


Figure 6: VMs count by project

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.1: VMs count by project

| Project | Value |
|---|---|
| fg-54:Investigating cloud computing as a solution for analyzing particle physics data | 1175 |
| fg-130:Optimizing Scientific Workflows on Clouds | 87 |
| fg-150:SC11: Using and Building Infrastructure Clouds for Science | 69 |
| fg-1:Peer-to-peer overlay networks and applications in virtual networks and virtual clusters | 34 |
| fg-82:FG General Software Development | 27 |
| fg-10:TeraGrid XD TIS(Technology Insertion Service) Technology Evaluation Laboratory | 24 |
| fg-225:Budget-constrained workflow scheduler | 7 |
| fg-201:ExTENCI Testing, Validation, and Performance | 2 |
| fg-172:Cloud-TM | 2 |
| fg-191:Course: UCF EEL6938 Data-intensive computing and Cloud Class | 1 |
| fg-122:Course: Cloud computing class | 1 |

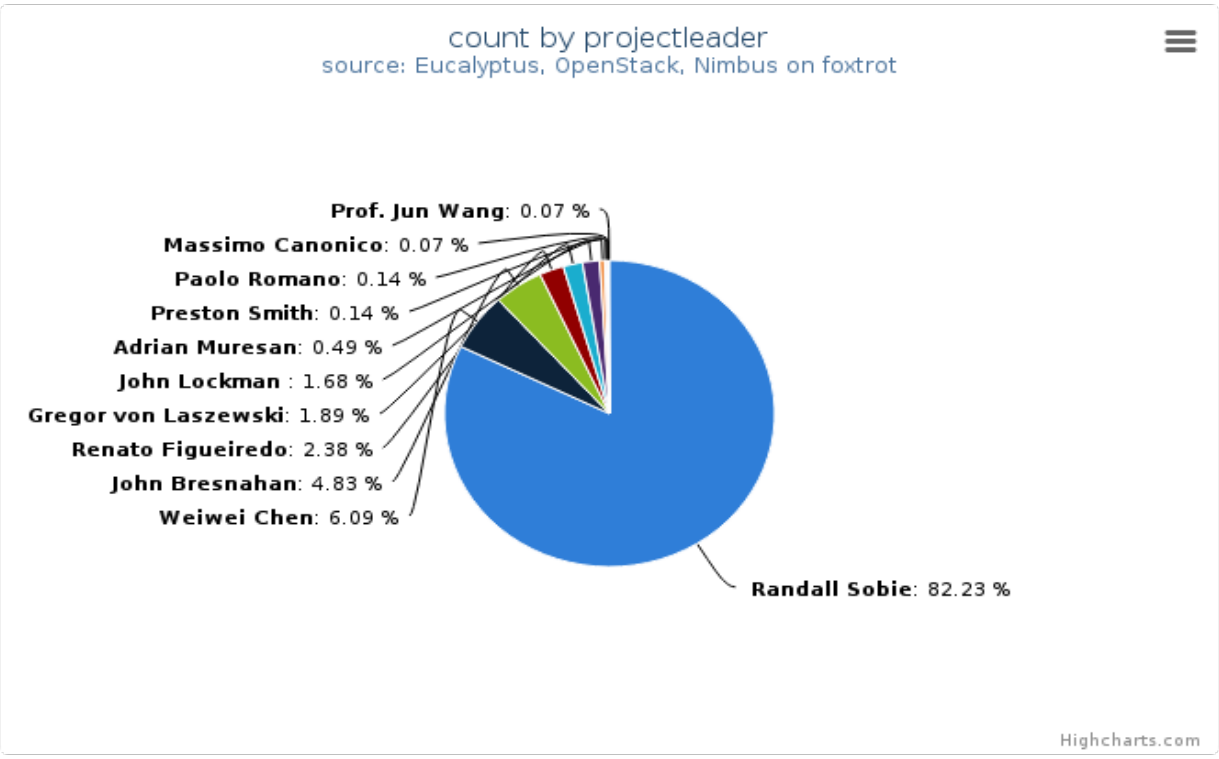


Figure 7: VMs count by project leader

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

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.2: VMs count by project leader

| Projectleader | Value |
|---|---|
| Randall Sobie | 1175 |
| Weiwei Chen | 87 |
| John Bresnahan | 69 |
| Renato Figueiredo | 34 |
| Gregor von Laszewski | 27 |
| John Lockman | 24 |
| Adrian Muresan | 7 |
| Preston Smith | 2 |
| Paolo Romano | 2 |
| Massimo Canonico | 1 |
| Prof. Jun Wang | 1 |

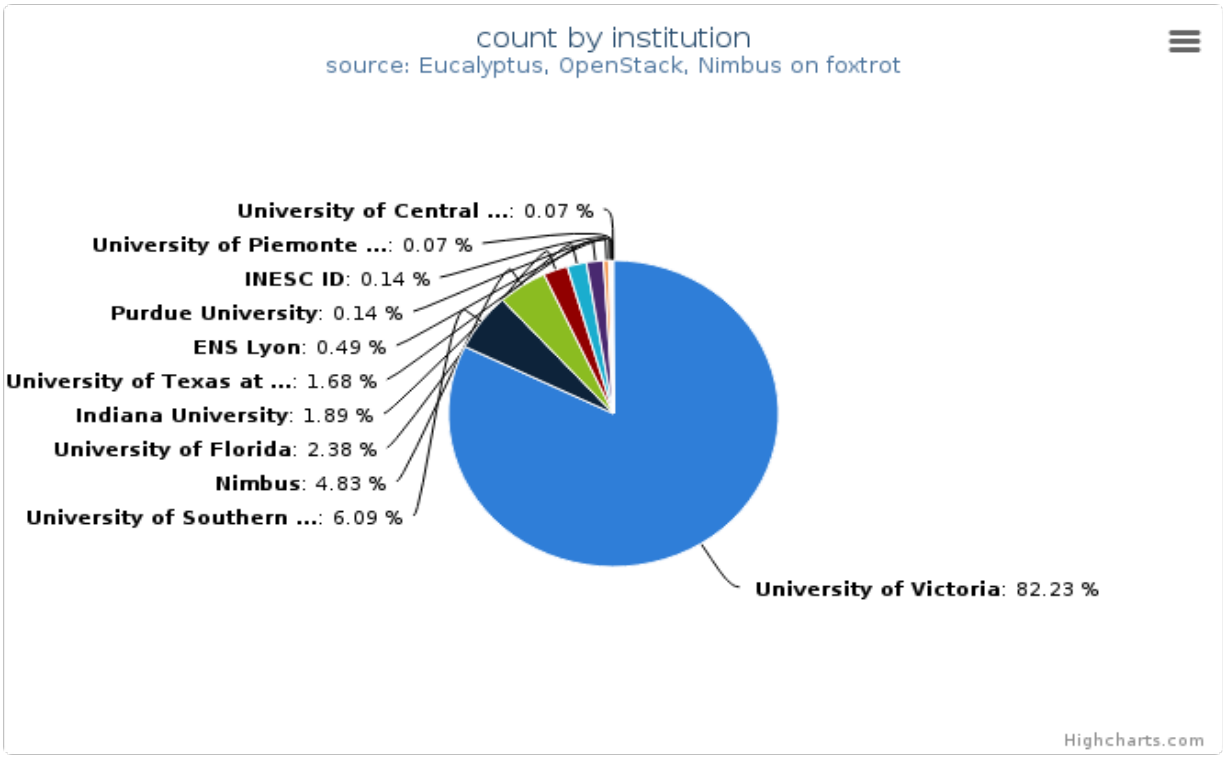


Figure 8: VMs count by institution
This chart illustrates the proportion of launched VM instances by Institution. The same data in tabular form follows.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

Table 6.3: VMs count by institution

| Institution | Value |
|---|---|
| University of Victoria | 1175 |
| University of Southern California | 87 |
| Nimbus | 69 |
| University of Florida | 34 |
| Indiana University | 27 |
| University of Texas at Austin | 24 |
| ENS Lyon | 7 |
| Purdue University | 2 |
| INESC ID | 2 |
| University of Piemonte Orientale | 1 |
| University of Central Florida | 1 |

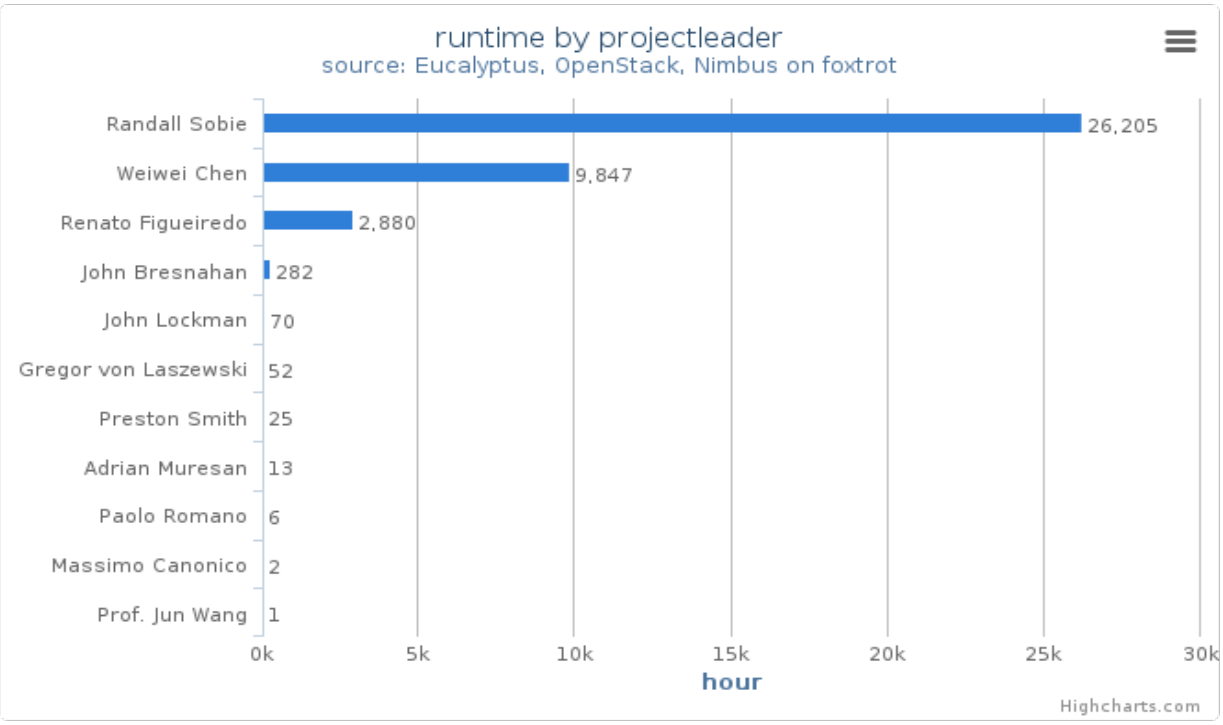


Figure 9: Wall time (hours) by project leader
This chart illustrates proportionate total run times by project leader.

- Period: April 01 – June 30, 2012
- 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.

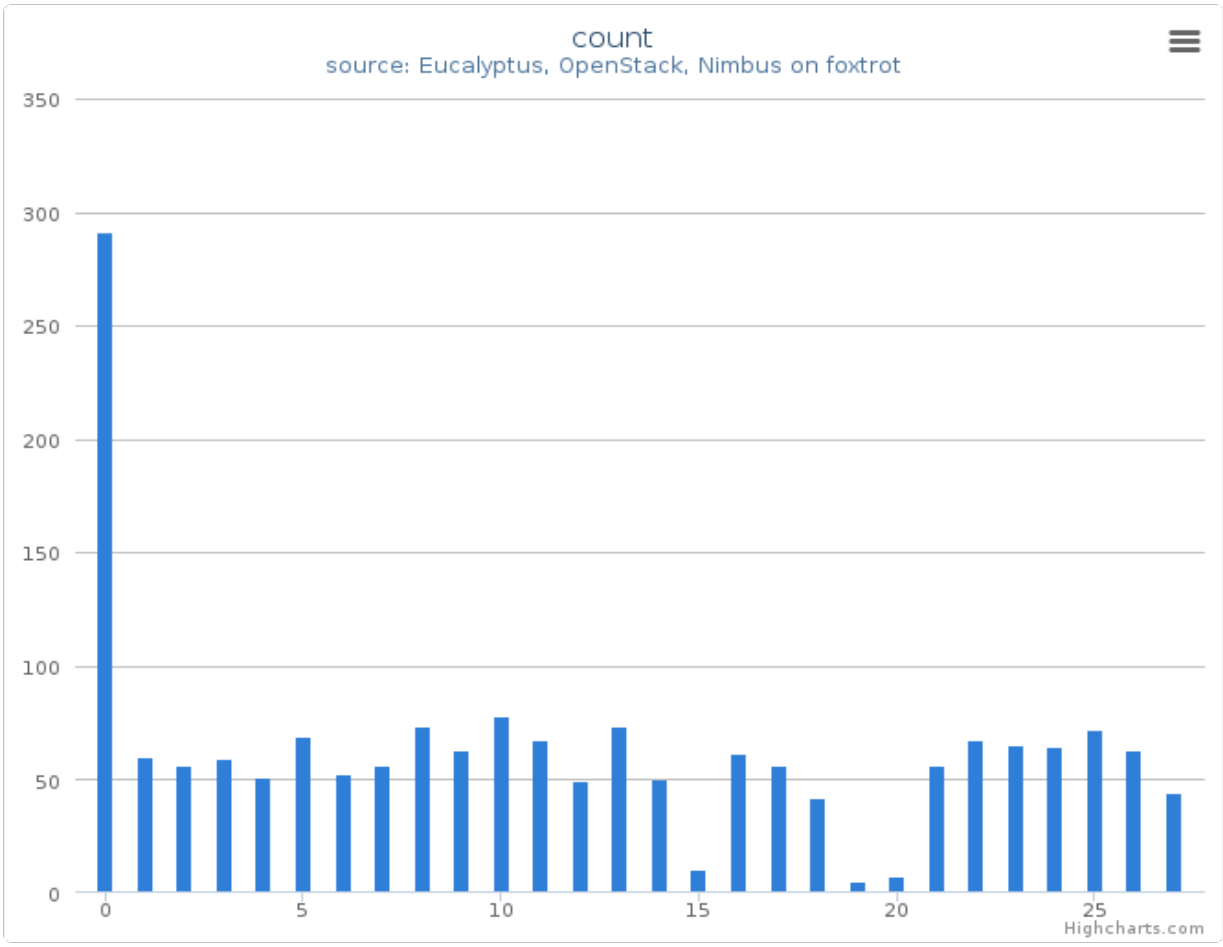


Figure 10: VMs count by systems (compute nodes) in Cluster (foxtrot)
This column chart represents VMs count among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

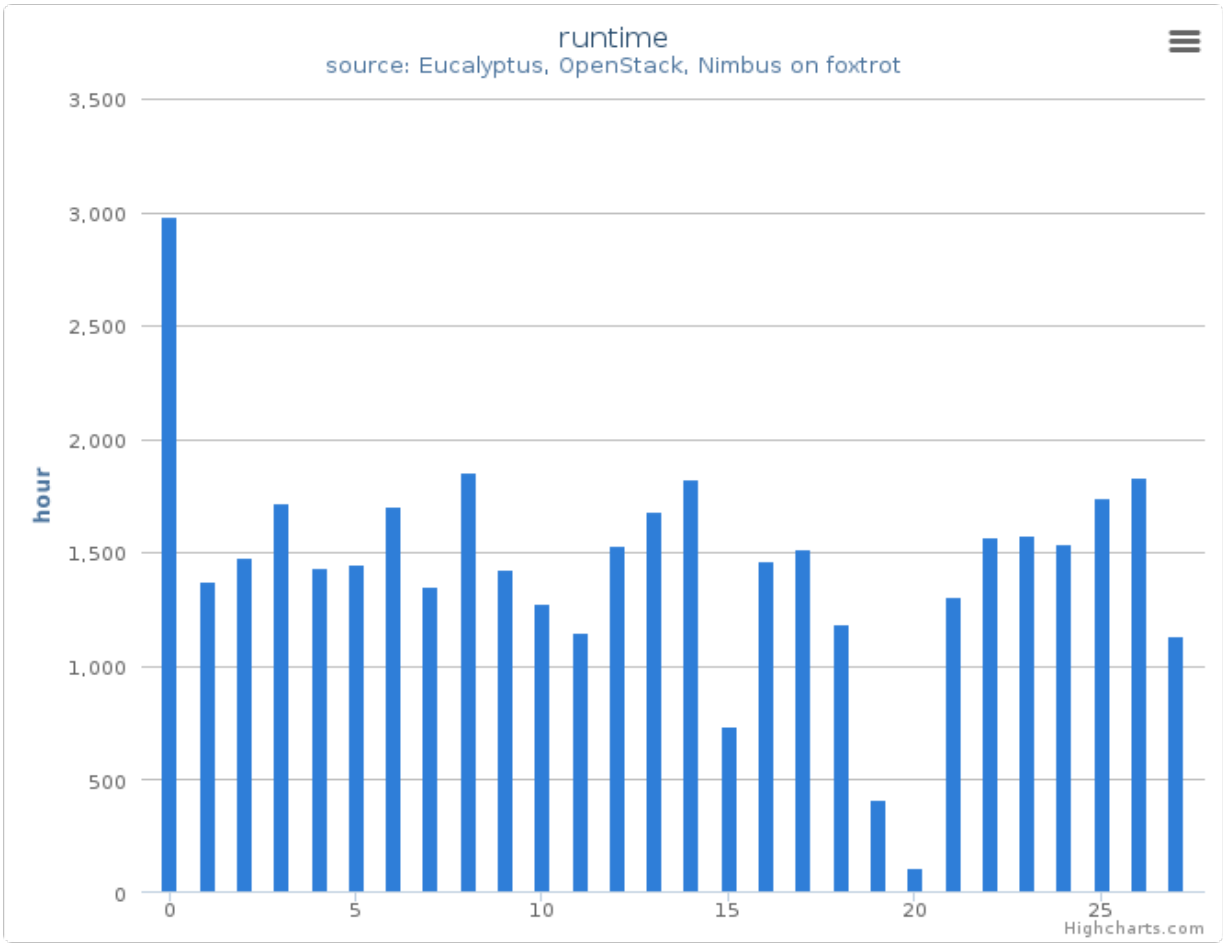


Figure 11: Wall time (hours) by systems (compute nodes) in Cluster (foxtrot)
This column chart represents wall time among systems.

- Period: April 01 – June 30, 2012
- Cloud(IaaS): nimbus
- Hostname: foxtrot

CHAPTER

SEVEN

# 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

CHAPTER

EIGHT

# 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.