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OpenStack Solutions:



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OpenStack Solutions: The Growing Open Source Movement



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**Wait... we've
been doing
open source
and cluster
computing for
years!**







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Until now.

Underutilization

Inability / poor scaling

Evolving apps

Cost

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Cost



Problem Solved.



**Problem Solved.
(sort of.)**

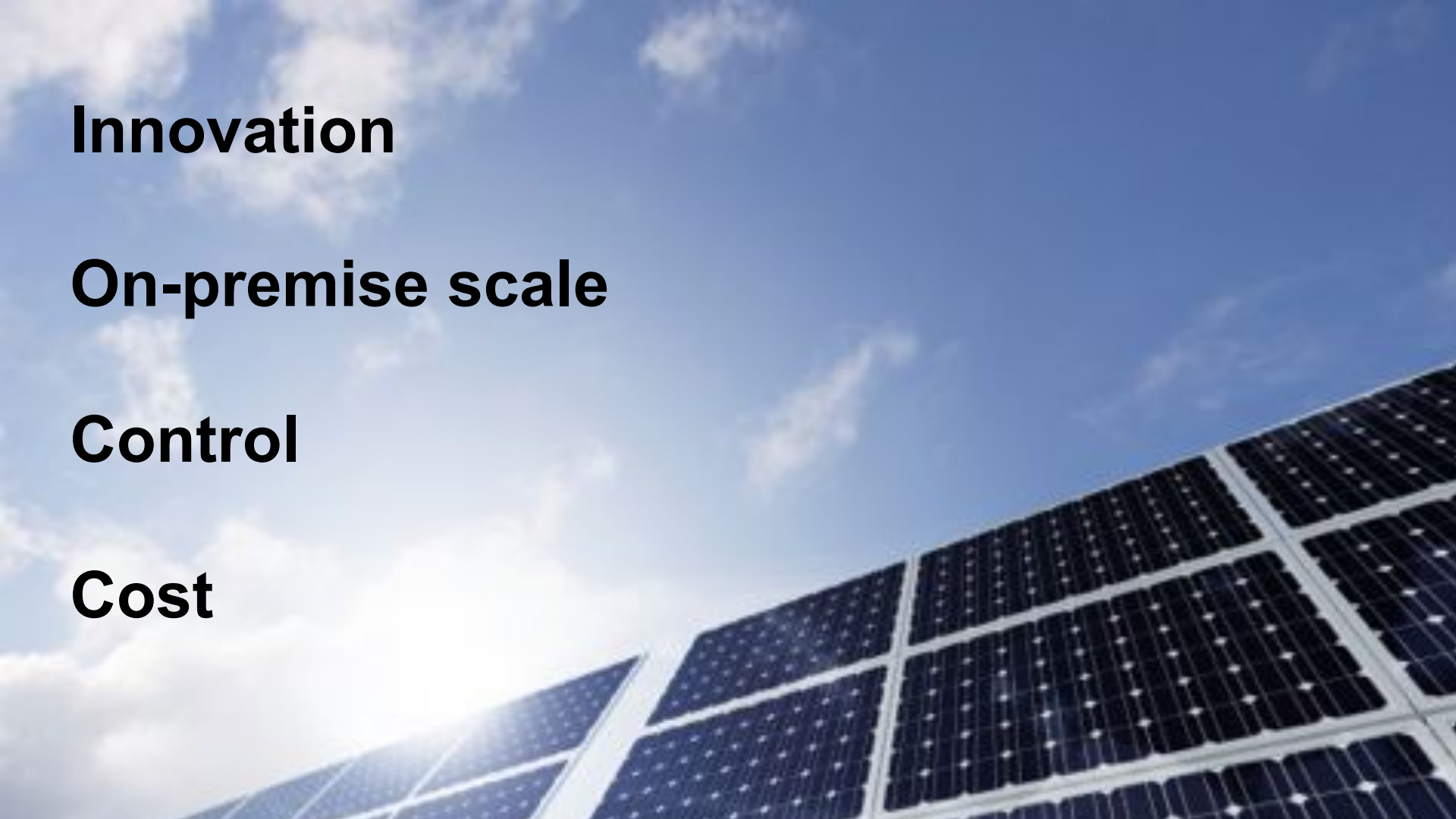


Innovation

On-premise scale

Control

Cost



2013 Future of Open Source Survey



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- Perceptions of open source software
 - Innovation
 - Quality
 - New Growth



2013 Future of Open Source Survey

- **Perceptions of open source software**
 - **Innovation**
 - **Quality**
 - **New Growth**
- **57% believe they will collaborate with their competitors in next three years**



**Why is broader adoption of open source
important?**

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important?**

**It drives collaboration, solves problems
faster, and advances innovation.**



**Solving emerging issues
using cloud technology
but with the innovation, pace, and
community of open source.**

OpenStack: Fast Growing Community

COMPANIES

231

INDIVIDUAL MEMBERS

10,149

TOTAL CONTRIBUTORS

1,036

AVERAGE MONTHLY
CONTRIBUTORS

238

COUNTRIES

121

CODE CONTRIBUTIONS

70,137

As of July 2013

Cloud service
management,
security, and
compliance

Service Layer

- Billing
- Monitoring
- Configuration management
- Customer management
- Provisioning
- Security, identity management

Cloud service orchestration

Platform as a Services (PaaS) / Software as a Service (SaaS)

Infrastructure as a Service (IaaS) Layer

Compute
services

Storage
services

Network
services

Software abstraction layer and control layer

Virtualiza-
tion

Operating
systems

Resource
access
allocation,
mon

Physical Layer

Compute

Storage

Network

A man with dark hair, wearing a dark blue long-sleeved shirt, is leaning over a server rack. He is focused on a server unit, with his hands near the front panel. The server rack is filled with various hardware components, including what looks like network switches or routers. The background is dark, suggesting a server room environment.

- **Content Delivery Networks**

- **Test / Dev Environments**

- **Delivering SaaS**

- **Internal IT optimization**

CERN OpenStack cloud offers physicists the resources they need to analyze and model data from the Large Hadron Collider (LHC).

OpenStack enables a flexible, low cost computing resource accessed on demand by Australian researchers at NeCTAR.

OpenStack at Argonne National Laboratory enables an environment for prototyping, software development, and testing for large-scale scientific applications.

San Diego Supercomputer Center uses an OpenStack storage system to provide a convenient, affordable way to store, share, and archive data.

HPC Topics of Discussion in OpenStack

- **Using GPUs for remote visualization**
- **Provisioning single-user clusters on demand for MPI-type applications.**
- **Provisioning multi-user clusters on demand.**
- **Large memory instances for vertically scaling applications.**
- **Addressing network latency**
- **Make jumbo frames tunable**
- **And more...**

**GET
INVOLVED!!!**

www.OpenStack.org

www.OpenStack.org/user-stories

[http://lists.openstack.org/cgi-bin/
mailman/listinfo/openstack-hpc](http://lists.openstack.org/cgi-bin/mailman/listinfo/openstack-hpc)

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