

FACT SHEET

Open Cirrus Cloud Computing

Introduction

In July 2008, IDA became a centre of excellence (COE) for the Open Cirrus collaboration, in partnership with Yahoo!, Hewlett-Packard, Intel, University of Illinois at Urbana-Champaign (USA), and Karlsruhe Institute of Technology (Germany). An objective of this joint effort is to establish a cloud that spans the COEs, such that R&D can be undertaken on the testbed.

Each COE provides non-sensitive and non-proprietary comments and input pertaining to the detailed site information, collaboration, research interests and issues.

Open Cirrus aims to achieve the following goals:

- ***Foster systems-level research in cloud computing.*** Researchers must typically rely on simulations or small clusters. In creating Open Cirrus, we hope to help democratize innovation in this area by providing researchers with the resources they need to do credible systems research. Open Cirrus provides two unique features that we believe are essential to enabling systems-level research. First, Open Cirrus sites allow access to low-level hardware and software resources (e.g., install OS, access hardware features, run daemons). Second, the testbed comprises heterogeneous sites in different administrative domains around the world, so researchers can study issues in leveraging multiple datacenters.
- ***Encourage new cloud computing applications and applications-level research.*** Providing a platform for real world applications and services is an important part of Open Cirrus. Particularly exciting are (1) the potential for developing new application models and using these models to understand the necessary systems level support, and (2) using the federated nature of Open Cirrus to provide a platform for new kinds of federated applications and services that run across multiple data centers.
- ***Collection of experimental datasets.*** Researchers in cloud computing often lack datasets that would enable them to conduct high-quality experimental evaluations. Open Cirrus sites will enable researchers to import, store, and share large-scale datasets such as web crawls and datacenter workload traces. With such facilities, we hope that Open Cirrus will become a “watering hole” where researchers with similar interests may exchange datasets and develop standard cloud computing benchmarks.
- ***Develop open-source stacks and APIs for the cloud.*** If cloud computing is to become widespread, it will be important to have a non-proprietary and vendor-neutral software stack. We envision Open Cirrus as a platform that the open source community can use to design, implement, and evaluate such codes and interfaces for all levels of the cloud stack. Open source is as much about

FACT SHEET

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community as it is about software, and we see Open Cirrus as a foundation of a larger open cloud community.

There are three reasons the participating Open Cirrus sites are working together to provide a single federated testbed, as opposed to each site building and operating a separate cluster:

- *Increased impact.* Collaborating on a single larger effort provides us with greater impact than we could achieve individually.
- *Validation through heterogeneity.* The quality of software and services can be improved by testing in the different site environments,
- *Shared innovation.* We expect that pooling resources and collaborating on a larger testbed will improve efficiency because the sites will be sharing innovations.

Areas of Interest

1. Hadoop Framework
2. System & Service

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