

Cells as a Service

Automated Infrastructure Lab

An emerging world of dynamic cloud services is being made possible by very-large-scale, intelligent, automated computing infrastructures. HP Labs, the central research arm of HP, is helping to create this world through its Cells as a Service project, which includes development of a prototype management system for cloud infrastructures that will support highly demanding applications and services.

The technology aims to create Service Cells – secure “containers” for virtual infrastructure elements, including virtual machines, virtual storage volumes and virtual networks – as well as a rich set of virtual services. Cells will be securely isolated from one another, although it will be possible to connect them in controlled ways.

HP Labs’ Cell management system will be entirely model-driven. Customers can specify a model of the virtual infrastructure they want and it will be automatically created by the management system. As a result, the configuration of a Cell can be changed by simply changing the model.

The Cell management system will be scalable, reliable and secure – running on infrastructures containing thousands of physical machines and thousands of Cells. It must also gracefully tolerate the continuous failures that occur in large-scale IT infrastructures.

Automation is vital to accommodating the sheer scale and rate of change in cloud infrastructures. The Cell management system includes sophisticated automation and orchestration technologies to create and manage Cells, control physical and virtual resources, and allow Cells to react to failures.

And, to meet the requirements of the cloud, the system is designed to run on general-purpose hardware and to support multiple operating systems and virtualization technologies.

Cells as a Service will deploy its virtual infrastructure management technology on the open, distributed cloud test bed launched by HP, Intel and Yahoo!. The research team will test the ability of the technology to support a diverse range of dynamic services securely and reliably.

The project will be conducted by researchers in the Automated Infrastructure Lab at HP Labs Bristol.

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