DiCloud Deliverable S2d – Feb 10, 2010

Policy to track usage

Michael Zink, Prashant Shenoy, Jim Kurose, David Irwin and Emmanuel Cecchet
{zink, shenoy, kurose, irwin, cecchet}@cs.umass.edu

University of Massachusetts, Amherst
140 Governors Drive
Amherst, MA 01003-9264

This description of this deliverable is the following:

- Develop a first-come first-served (FCFS) clearinghouse (broker) policy that tracks the amount of resource time incurred by each cloud user. Note that this policy does not track fine-grained usage costs, such as the number of I/Os (for EBS) or the aggregate network traffic (for EC2/S3). The proxy will serve this function.

Without resource EC2 resource monitoring, existing Orca brokers accounting node resources can be used. Figure 1 gives a list of existing Orca brokers in the code base.

Figure 1. Currently available hierarchy of Orca brokers

A given EC2 budget can be exposed as a fixed number of nodes available for a fixed amount of time. The current EC2 pricing policy is given in Table 1. These values can be used to expose conservatively a fixed set of server instances. Note that this price does not include the network traffic in and out of the instance that will only be reported by the proxy (future deliverables). If network intensive applications are expected, the price per hour can be increased to factor the network cost.

For example, a budget of $100 of EC2 resources can be exposed as:

- 4 large servers (4*$0.34) for 48 hours each = $65.28
- 10 small servers (10*$0.085) for 40 hours = $34

Table 1. EC2 server instance pricing

Standard On-Demand Instances	US – N. Virginia	US – N. California	EU – Ireland
Small (Default)	$0.085 per hour	$0.095 per hour	$0.095 per hour
Large	$0.34 per hour	$0.38 per hour	$0.38 per hour
Extra Large	$0.68 per hour	$0.76 per hour	$0.76 per hour
High-Memory On-Demand Instances	US – N. Virginia	US – N. California	EU – Ireland
Double Extra Large	$1.20 per hour	$1.34 per hour	$1.34 per hour
Quadruple Extra Large	$2.40 per hour	$2.68 per hour	$2.68 per hour
High-CPU On-Demand Instances	US – N. Virginia	US – N. California	EU – Ireland
Medium	$0.17 per hour	$0.19 per hour	$0.19 per hour
Extra Large	$0.68 per hour	$0.76 per hour	$0.76 per hour

The availability of resource monitoring with Cloudwatch (deliverable S2.f) will allow us to develop new broker policies based on server, network and disk resource usage.