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scale
infra

A Whitepaper

The art of running a high-traffic portalS

100% uptime is like the Holy Grail. No one gets their hands on it. But the more closer you try to get to the 100% mark, the more challenging it becomes. The last 5% is the toughest to achieve. The closer you get to 100%, the more exotic the techniques that are used to achieve it become. Downtime is serious loss of money, so a lot of money is spent on keeping portals up and running no matter what. Since a few years, x86 virtualization has come a long way and matured to such an extent that it is now usable in production environments to achieve very high server utilization with great flexibility in management. With virtualization comes the ease of automation and management.

Application	Cost of Downtime / Hr in thousands of $	Annual losses (In Millions) with downtime of		
		1% (87.6 Hrs/Yr)	0.5% (43.8 Hrs /Yr)	0.1% (8.8 Hrs /Yr)
Brokerage Operations	$6450	$565	$28	$56 .5
Credit Card Auth .	$2600	$228	$114	$22.8
Package Shipping	$150	$13	$6.6	$1.3
Home Shopping	$113	$9.9	$4.9	$1.0
Catalogue Sales	$90	$7.9	$3.9	$0.8
Airline Reservation	$89	$7.9	$3.9	$0.8
Cellular Activation	$41	$3.6	$1.8	$0.4
ATM Service fees	$14	$1.2	$0.6	$0.1

ScaleInfra, a new paradigm in web services automation

How simple it would be if you could just visually assemble a web application that can automatically scale up or down in response to traffic conditions? That is exactly how easy ScaleInfra makes it. With a simple and intuitive browser based user interface, ScaleInfra lets you design highly scalable web applications. ScaleInfra's automation is done by cleanly defining Appliances, CloudScripts and Events. Appliances are virtual servers that can serve a purpose, like a MySQL database or a Ruby on Rails based application server or an HAProxy based load balancer. There are various events, defined by the system. These events can be specified by the user to be monitored and based on when they reach a particular threshold value, a chain of actions can be executed to perform a wide range of tasks. The possibilities are limited only by imagination. For example, on a new PHP appliance's "came alive" event, you can configure the script "Add Application Server IPs to HAProxy Load Balancer" to run making the load balancer aware of the new appliance's presence.

Software Appliances and CloudScripts

While the most commonly used load balancers, application servers and database server appliances are provided by ScaleInfra, it is not too difficult to create new ones either. Appliances start as a base template based on a particular Linux distribution and are configured by CloudScripts to install packages and tweak settings. CloudScripts can be developed in any language. Various Script Variables can also be passed to CloudScripts. Variables can also assume special meanings with support for complex expressions that are context aware.

Single click auto scaling

While you can setup various events and tweak thresholds, you can simply have an application server automatically scale up and down depending on load conditions with a single click. The application is made elastic with sane defaults, but nothing stops you from tweaking various parameters to suit your particular application.

High Availability with ScaleInfra's ServiceEnsure

When running on Public or Private clouds, loss of compute nodes where the virtual machines run is a certainty. In that case, ScaleInfra can monitor and re-instantiate appliances if the user has configured the "ServiceEnsure" option. Depending on the function of the appliance in question, this can mean there might be a service disruption, but not for long. Typically, in a few minutes, the appliance will be re-instantiated, setup and brought back to service.

End-to-end software from K7 Computing

Right from the physical infrastructure management to web application management, K7 Computing provides you all the software you might need to provide a scalable and highly available Cloud service to your customers. ScaleInfra's architecture allows your customers to run current or legacy applications on your infrastructure. With a machine based architecture (as opposed to an API based architecture as in PaaS), there is usually little or no change to customer's existing web applications.

True On-demand System

ScaleInfra enables you to provide a truly on-demand billing solution on your own private cloud. With a minimum resolution of 1 hour, it is enough for most applications. Along with K7 Computing's CloudCart, you have billing automation from day one. On-demand systems enable your clients to start out with minimal cost and let them pay as and when they use resources. This enables them to make infrastructure costs a small fraction of their budget, a very important factor for growing businesses and startups.

Upgrade path to a PaaS solution

With K7 Computing, you have the option of upselling a Platform-as-a-Service solution to yourcustomers. K7 Computing's Cyclozzo is a state-of-the-art PaaS solution with support for Python and Java currently available and support for other languages like Ruby and PHP being added. Cyclozzo is a PaaS solution for private clouds, enabling hosting provides and data centers to provide a platform as a service solution using their own infrastructure.

A Simple to use, Browser based Interface

ScaleInfra's browser based interface is very simple to use and intuitive. Auto scalable web applications can be constructed visually just by dragging and dropping appliances into different layers. These appliances can then be managed and monitored right from within the browser. The interface supports admin and normal users, where normal users can only manage projects or applications assigned to them. Admins can create and manage users, create projects and perform other low level functions. Admins can also assign projects to other users.

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