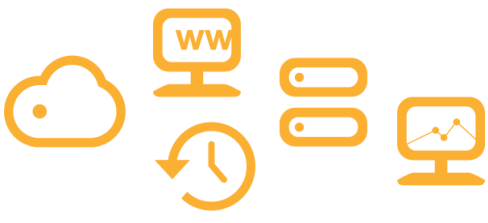
CITY CLOUD - THE LEADING KVM BASED IAAS IN EUROPE

HOW CITY NETWORK CREATED ONE OF THE LEADING IAAS IN EUROPE USING KVM AND OP5

Author:
Özgür Bal - City Network
Andreas Månsson - op5 AB



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Content

Executive Summary

Open source virtualization and KVM in particular have come a long way in a relatively short time. A widespread adoption and an increasing number of KVM implementations around the world are just a few of the signs of just how mature KVM has become. This makes it important not only for virtualization applications themselves, but also as a part of the larger open source software stack for the cloud.

This paper details how City Cloud, an IaaS (Infrastructure as a Service) from City Network, use KVM and op5 Monitor as key components to deliver one of the most cost efficient and flexible cloud computing services in Europe.

Overview City Network

City Network created one of the leading IaaS services in Europe using KVM and op5 Monitor. City Cloud is cloud computing made in Sweden for the European market. City Network's core services include public as well as private clouds, dedicated environments, shared hosting and domain services.

The background

Approximately five years ago the term cloud computing had just gained tremendous attention and everyone wanted to discuss what it meant, how it was supposed to be used and the pros and cons of outsourcing your data to the cloud. City Network took part in these discussions and during 2009 they launched what was going to be one of the leading IaaS in Europe based on KVM - City Cloud.

"*Launching City Cloud back in 2009 took us from being a small web hosting company to one of the leading hosting providers in Europe*" - Johan Christenson, CEO of City Network

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Address: Borgmästaregatan 18, 371 34 Karlskrona, Sweden Tel: +46 455 69 00 01 E-mail info@citynetwork.se, www.citynetwork.se

Business opportunity

During 2009 the concept of Cloud Computing gained traction and grew from being a promising business concept to one of the fastest growing segments of the IT industry. Early on, City Network saw an opportunity to simplify a market that was becoming increasingly complex by initiating an internal project. Everything, from the interface to pricing needed to be streamlined, also scalability and flexibility needs were thoroughly looked over to meet the demands of the customers. One year into the project, City Network felt comfortable enough to launch City Cloud. City Cloud has set an industry standard for being a simple, easy to understand, cost effective, scalable and flexible IaaS service. On top of this City Network has added monitoring on all of their servers to check performance and availability. So far more than 50 000 servers have been launched in City Cloud – all monitored by op5 Monitor.

The Solution

City Network needed a cost effective, stable and scalable solution to provide state of the art IaaS at competitive prices with a full range of operating systems.

Hypervisor testing:

- Xen
- VMWare
- Hyper-V
- KVM

Storage system testing:

- Dell EqualLogic
- Solaris+ZFS
- Gluster FS

Choice:

- KVM
- Solaris+ZFS

City Cloud Components:

- Dell M1000 blade chassis with blade servers running CentOS
- Between 48GB and 384GB RAM, Intel 4-12 core CPUs
- Supermicro and Dell storage systems running Solaris with ZFS
- Primarily Supermicro JBOD storage units with SAS disks
- Dell/Force10 Network equipment
- Dell hardware with a few supporting system
- Management provisioning
- MySQL databases
- Performance monitoring
- Enomaly ECP for management and provisioning.

Conclusion:

According to the tests conducted by City Network during the beta testing of City Cloud, KVM provided the best combination of cost efficiency, stability, performance and flexibility. The great industry support and fast pace of development played a major role in the decision process. op5 monitor provided the monitoring capabilities needed for the KVM virtualization infrastructure through the monitoring of resource usage of the virtual systems and the ability to display all data collected in a unified view.

The Benefits

The benefits of using KVM

- KVM technology provided a very cost efficient and stable solution
- Best Performance in CPU, Network and Disk I/O
- No vendor lock-in makes us adaptable to current best practice
- Extreme scalability with over 50K virtual servers created so far
- KVM Libvirt integration enabled development of tools needed to monitor, manage and troubleshoot the entire environment

The benefits for City Network

- Enabled City Network to cater for all types of hosting needs
- Being able to establish their position as one of the leading and innovative hosting providers in Europe
- Being able to move growing companies and organizations from one solution to another - within the City Network ecosystem.

Customer benefits

- Scalability
- Cost efficiency
- Flexibility
- Control

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How City Network created one of the leading IaaS in Europe using KVM and op5

City Network provide a full range of hosting services with a main focus on infrastructure through private and public clouds as well as dedicated server solutions. In 2009 City Network launched City Cloud, an IaaS based on KVM.

Background story

City Network managed and moved dedicated servers in and out of racks for many years. With a growing number of large customers in need of hundreds and sometimes thousands of individual servers, City Network needed to find a virtualization solution that provided stable, scalable and flexible environments for all their customer's computing needs where ease of use and cost efficiency were key.

In addition, City Network needed to find a suitable monitoring tool to overlook the entire virtualization infrastructure. Managing enterprise virtualization infrastructures require control and potential problems can have serious consequences on business processes.

City Network began researching the possibilities of launching an European IaaS in early 2009. At the time, the hypervisor from VMWare seemed to be the easiest and most efficient option. As the initial research went on, City Network realized that the prerequisites and license fees were potential showstoppers as the company aimed to create an affordable and open IaaS platform.

Other hypervisors that were researched and tested were Xen and KVM. With eager Beta testers and even some customers running actual production servers in City Cloud the system needed to reach an acceptable level of stability sooner rather than later. This is when the technicians at City Network turned to KVM. City Network conducted some initial performance tests where City Network technicians were convinced that KVM was capable of delivering the performance needed to meet their customer's needs.

KVM – the natural choice

KVM provided the best combination of cost efficiency, stability, performance and flexibility. Due to the fact that KVM technology is universal, City Network had no vendor lock-in, meaning that they were not limited to a single management and provisioning environment which makes it easier to adapt to current best practise and develop their service further. The great industry support, the ecosystem of third party solutions and the fast pace of development also made the choice easier.

"KVM provided the best combination when it comes to cost efficiency, stability, performance and flexibility. The great industry support and fast pace of development within the KVM ecosystem made the decision even easier." - Magnus Bergman, CTO City Network Hosting

City Cloud provides a stable, scalable and flexible cloud computing platform that is cost effective both for the customers and City Network. Large corporations could now go from one to one hundred servers in a matter of minutes and the dependencies of hardware delivery and installation would no longer be a factor.

During the research process City Network realized the enormous potential of being able to give access to their data centers through their customers web browsers and allow customers to create, scale and manage their own server infrastructure from one interface.

"Who would say no to instant hardware upgrades with minimal downtime and who really wants to deal with all the hardware that dedicated servers mean when the alternative is so much more efficient? Not to mention the fact that the customers can scale their servers to fit their exact needs and launch new servers in minutes instead of the days it took to order, receive and install dedicated hardware" - Johan Christenson, CEO of City Network.

Since 2009 City Cloud have added more and more servers and has become the leading IaaS in Europe. So far, more than 50 000 servers have been launched in City Cloud – all monitored by op5 Monitor.

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IT monitoring provided by op5 Monitor

To further support City Networks key components in their newly launched City Cloud they chose the IT monitoring software company op5. op5 is a developer of an open source server monitoring solution called op5 Monitor, that manage, reports, visualize information technology in large enterprise environments.

By using op5 Monitor to monitor City Clouds KVM virtualization infrastructures it allowed City Network to do better capacity planning, which enables the provisioning of usage of resources such as storage, CPU, and memory more proactively. These three components enable a dynamic way to proactively plan upgrades in an effective manner. Knowing what, where, and when are crucial parts of capacity planning, making it possible to add resources to a virtual environment in a timely fashion.

City Networks journey from being a local hosting company to one of the leading IaaS in Europe have also put pressure on the IT monitoring system to keep control and scale according to City Networks requirements. op5 Monitor is capable to constantly changing to fit the needs of City Network and is able to handle large volumes of monitored devices and services without sacrificing stability.

Performance and availability of the virtual environment are key components that op5 Monitor keeps track on. All data collected is displayed in a unified view, were reported data from KVM is presented in a easy to understand way and visualized in reports that can be shared with the rest of the organization. Fast event correlation, root cause analysis and problem identification for applications and services running on virtual or partially virtually run infrastructures is possible due to the open standards on both the KVM platform and op5 Monitor. This enables City Network to better understand how their virtual environment actually performs along side other services and applications running on the hypervisor.

"It's great to be a contributing part of the City Cloud success. Their success is in many ways a mirror of what we see happening across the market. New technology creating new business opportunities with a clear growth scenario. Challenge being to maintain or improve performance and quality in balance with growth. Knowing your monitoring statistics, identifying potential bottlenecks regardless of where they are in the tech-stack has great impact on both customers experience and what is a good IT investment"
- Jan Josephson, CTO op5 AB

Secure, scalable & redundant platform based on KVM

KVM has enabled City Network to provide a high-performance, scalable and cost-effective IaaS to their customer base and has greatly simplified the challenge of delivering the computing resources required. These days, more time can be spent on building great services and expanding the business, mainly with more data centers around the world. Other benefits relate to time and overall efficiency with scaling for large customers.

Today, City Cloud is a complete IaaS for virtual servers, storage services, backup and monitoring. Within a few weeks City Network will announce a new City Cloud node in London which marks the first step in the ongoing expansion. And within a few months City Cloud users will be able to use OpenStack as their preferred virtualization platform which in turn will allow for even more great features in City Cloud.

"So far we have only scratched the surface of what a well built and powerful IaaS can do. The release of the London node and OpenStack will further empower an already already successful cloud service, but the true power lies in connectivity and added value that we are yet to unleash", says Johan Christenson, CEO of City Network

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Start using City Cloud and discover the power of IaaS

City Cloud is a collection of infrastructure services to take control of your infrastructure once and for all. You can deploy, scale and manage your own servers, storage, backup and monitoring from one single interface within minutes. Read more and unleash the power today at www.citycloud.com

Monitor your KVM environment with op5 Monitor

Download your op5 Monitor Trial today and monitor up to 20 devices for free at www.op5.com. Monitor all services and applications running on KVM with all relevant data displayed in a unified view along side with other services.

ABOUT CITY NETWORK

With more than 25000 customers across Europe City Network is one of the leading hosting companies in Europe. Core services include public and private clouds, dedicated environments, shared hosting and domain services. City Cloud is the cloud computing-brand which you can read more about at www.Citycloud.com. You can find more information about City Network at www.Citynetworkhosting.com.

ABOUT OP5

op5 is a market leading developer of open source management solutions. op5 develops and delivers enterprise-class software called op5 Monitor for server monitoring and administration of the whole IT infrastructure, from hardware and software all the way to virtual or cloud based services. Our solution, op5 Monitor comes in a turn key package that is fully supported. Download your Trial today at www.op5.com

op5 is a member of the The Linux Foundation and the Open Virtualization Alliance that supports the adoption of open virtualization technologies especially KVM and the ecosystem of third party solutions.

More information about, The Linux Foundation or OVA please visit.

www.openvirtualizationallianze.org

www.linuxfoundation.org

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