

Hyperic Whitepaper: **Hyperic CloudStatus**



CloudStatus

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The Evolution of Cloud Computing

Cloud computing opens amazing new opportunities for how we build and use information technology. Even so, it is just the next logical step in an IT evolution that has spanned the past fifty years.

Throughout those years, as computers have gotten cheaper and more powerful, there has been an unremitting migration from big, centralized systems to smaller, more powerful, distributed systems. Simultaneously, computer users grew to expect continuous and instantaneous access – no matter where they are – to the data and services that they use. Leveraging distributed, highly available infrastructure to build applications that run in diverse locations scattered around the Internet, cloud computing is the culmination of both of these joint movements.

These distributed, always-on components vary enormously. Many businesses rely on a hosted application provider, like Salesforce.com, to outsource critical business applications that are too expensive to run internally. Many run their websites on a collection of servers managed by a company that hosts dedicated servers in their data center. Most organizations connect to data from the cloud, such as stock price feeds or news stories, for market intelligence. Hundreds of thousands of businesses are building and deploying applications on services like Amazon's Elastic Compute Cloud (EC2) or Simple Storage Service (S3). Individuals can use services like Apple's me.com to manage their personal data in the cloud.

Increasingly companies use a variety of these components in tandem, knitting them together to provide the critical services on which their businesses run.

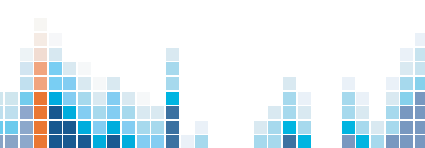
Importantly, cloud computing will not replace existing data centers. Businesses continue to run critical applications internally, and many choose to continue to run legacy applications in house, either because there is no need to move them out, or the cost and complexity of doing so are prohibitive. Cloud computing augments the data center, and gives IT and business professionals a new tool for managing infrastructure.

Cloud computing is part of the overall evolution of information technology systems. Increasingly, systems architects will see their own data centers as simply one more node in the cloud, and will plan and deploy applications that use the pieces of the cloud that make the most sense, for reliability, cost and manageability.



Equal Opportunity Benefits

Cloud computing has broad appeal. Its benefits are obvious for startups, which use the cloud to reduce upfront IT investment and to jumpstart product launches. For larger companies, the cloud offers quick access to scalable IT resources that can power temporary projects or new initiatives. The result is that companies and departments can launch new projects quickly and inexpensively.



Adoption isn't limited to small companies and projects, though. Cloud computing momentum is also driven by the number of larger, more mature companies that are building new, mission-critical services to run in the cloud and migrating pieces of their existing infrastructure into the cloud. Industry watchers report that, of the 60,000-plus different customers relying on Amazon Web Services (AWS), many are large enterprises. These include major financial institutions and pharmaceutical companies, which trust the cloud for high-volume processing of sensitive data.

But No Free Lunch

The current enthusiasm for cloud computing is based, at least in part, on the hope that it will simplify the management of critical IT infrastructure. After all, if you rent your applications and data storage from providers with cadres of specialists, you ought to be able to rely on them to install, monitor and manage things – right?

Wrong. In fact, the cloud makes things harder.

Ten years ago, an IT shop installed and deployed all its software on computers that it owned. Everything was under IT's control, and each of the pieces could be monitored and managed directly. With the advent of cloud computing, critical pieces of the system – possibly just the compute engines, but perhaps also the storage system, single applications, or even services like identity management – move off-site.

The geographical remoteness of these individual pieces does reduce their importance to the business. Owners must be able to install, launch and monitor all the IT components they rely on. Additionally, the increased number of components and the explosion of connections among them create vastly more opportunities for failure. The total system is more complicated than ever before.

The Old Rules Still Apply

Businesses that depend on the reliability of their IT systems must guarantee their availability – they owe it to their customers and to their bottom line. Close monitoring of these systems to ensure they are performing well is crucial, regardless of whether they are on-premise or in the cloud. When there are problems, administrators and operations teams must be able to isolate and repair them quickly. Put starkly, they need to answer the question: "What is wrong with my application?"

Organizations that rely completely on the cloud must ask a harder question. Rather than fixing a problem in the application, they need to determine: "Is it my application, or is it the cloud?"

IT infrastructure built from distributed, cooperating components can fail if any one of the components fails. It can fail if the connections between the components fail. Opportunities for failure abound. Identifying the cause of any outage requires visibility into the status of all of the cooperating pieces. Cloud users need a global view of their entire cloud-based system, not a piecemeal view of the individual parts.

The cloud also moves much faster than any single vendor could. New applications and services come on-line all the time. Old ones are silently upgraded or depreciated. So while monitoring and managing IT infrastructure in the cloud is difficult, it will only get more difficult. Any tool that proposes to manage cloud systems absolutely must permit incremental extension: new devices, applications and business processes must be added to the existing management infrastructure without disrupting it.

No single cloud service provider is in a position to deliver this management service. Any hosted application vendor, any data supplier, any storage or compute service can provide insight into its own service availability and performance, but none can answer the question authoritatively for its competitors and peers. Besides, any IT user must be able to independently assess uptime and throughput to make sure that total systems performance is satisfactory.



Introducing [CloudStatus.com](http://www.CloudStatus.com)

Hyperic now offers www.CloudStatus.com, the first service to provide a trusted, independent view into the health and performance of the most popular cloud services available on the Internet. It provides a comprehensive measure of service availability, latency and throughput for the complete pool of services. Users can drill down for detailed, service-specific metrics on any of the monitored offerings.

CloudStatus.com is itself a hosted service, built and operated by Hyperic. To keep up with the rapid pace of technology change, CloudStatus.com uses a service delivery model designed around the cloud: Updates, including service enhancements and support for new cloud offerings, are added to the site regularly.

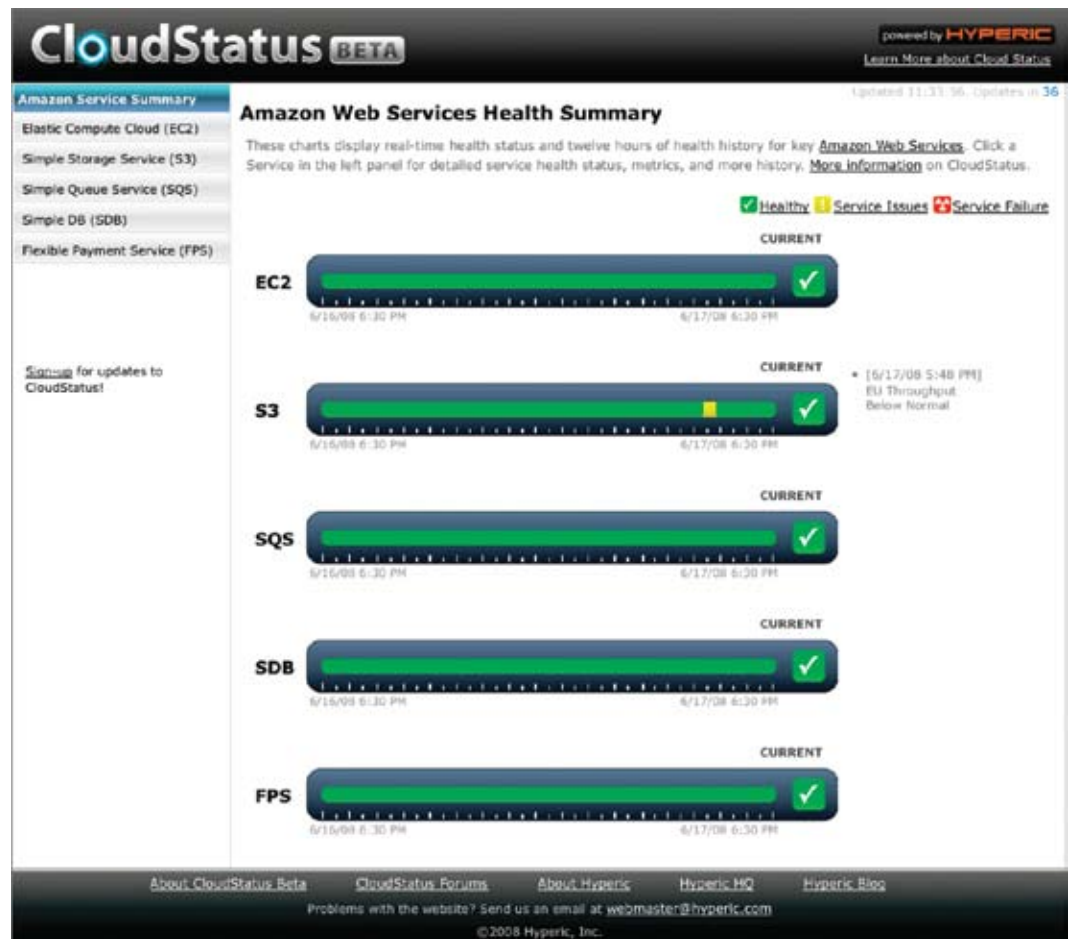
CloudStatus.com relies on agents – deployed both inside and outside the cloud – to collect the statistics that it measures. The agents are specialized for the services they monitor. For example, a storage agent may monitor latency, throughput and remaining capacity, while a compute engine agent would monitor load, availability and response times. By taking measurements from both sides of the wall – that is, from inside the cloud provider's operation, and from the outside looking in – CloudStatus.com is able to provide the clearest possible view into actual availability and performance.

The service delivers more than the simple red/yellow/green availability metrics offered in the report cards of most cloud service providers. Users can look at details for any service, measuring performance over time. After all, the performance of an application in the cloud depends not only on whether the storage service is up or down; it depends on what kind of throughput the storage service is delivering when companies need to deliver data to their customers.



CloudStatus

For views of the detailed screens see the appendix



The first release of Hyperic’s CloudStatus.com provides metrics for Amazon Web Services, including the Elastic Compute Cloud (EC2), Simple Storage Service (S3), SimpleDB (SDB), Simple Queue Service (SQS) and Flexible Payment Service (FPS). The metrics collected for each are specific to the individual service, but are designed to answer the questions that developers and administrators who rely on the services ask.

Just as cloud offerings frequently change and expand, CloudStatus.com will also benefit from continuous updates and additions. Planned enhancements include the addition of more detail on the measured Amazon services, personalization of CloudStatus feeds and their integration with existing Hyperic HQ monitoring installations, as well as monitoring of cloud services from providers other than Amazon.



How It Works

CloudStatus.com is built on Hyperic HQ, the popular open source systems management tool designed for managing web infrastructure.

Unlike older, proprietary frameworks, Hyperic HQ is an extensible, agent-based system that makes it easy to incorporate monitoring and management of new components. The HQ server communicates with a collection of agents, running on-premise or in the cloud, and collects a variety of statistics appropriate to the managed service. HQ serves as the integration point for all of that information, and presents IT professionals with a dashboard for monitoring and administering the complete collection of technologies that make up today's applications.

HQ supports popular management interfaces out-of-the-box. It is simple to integrate local services based on industry-standard interfaces like SNMP, Java Management Extensions (JMX), Windows Management Interface and many more. HQ can also manage custom-developed components or cutting-edge new products by adding technology-specific plug-ins that can integrate with HQ to deliver the deep monitoring and event management for those components.

As a result, HQ is uniquely able to monitor components running locally in the data center or outside, in the cloud. HQ easily handles hybrid deployments that combine some cloud-based services with in-house legacy and custom components. Its unique, user-extensible architecture allows it to collect and present a global picture of your systems, wherever the pieces are running.

Because IT infrastructure is increasingly diverse and distributed, this single integrated view is critical to making sure that systems are on-line and available.



Conclusion

The cloud is decidedly the next big thing for technology. It will dramatically increase the agility of all types of businesses and lower the barrier to entry for many others. As a result we will see an explosion of innovation, and an influx of interesting new technology applications.

The more things change, the more things remain the same, and what won't change is the basic responsibility of a business to own its own destiny. If the business depends on the technology, then it is imperative to ensure its overall health and availability of that technology. Outsourcing that responsibility to the cloud is not an option.

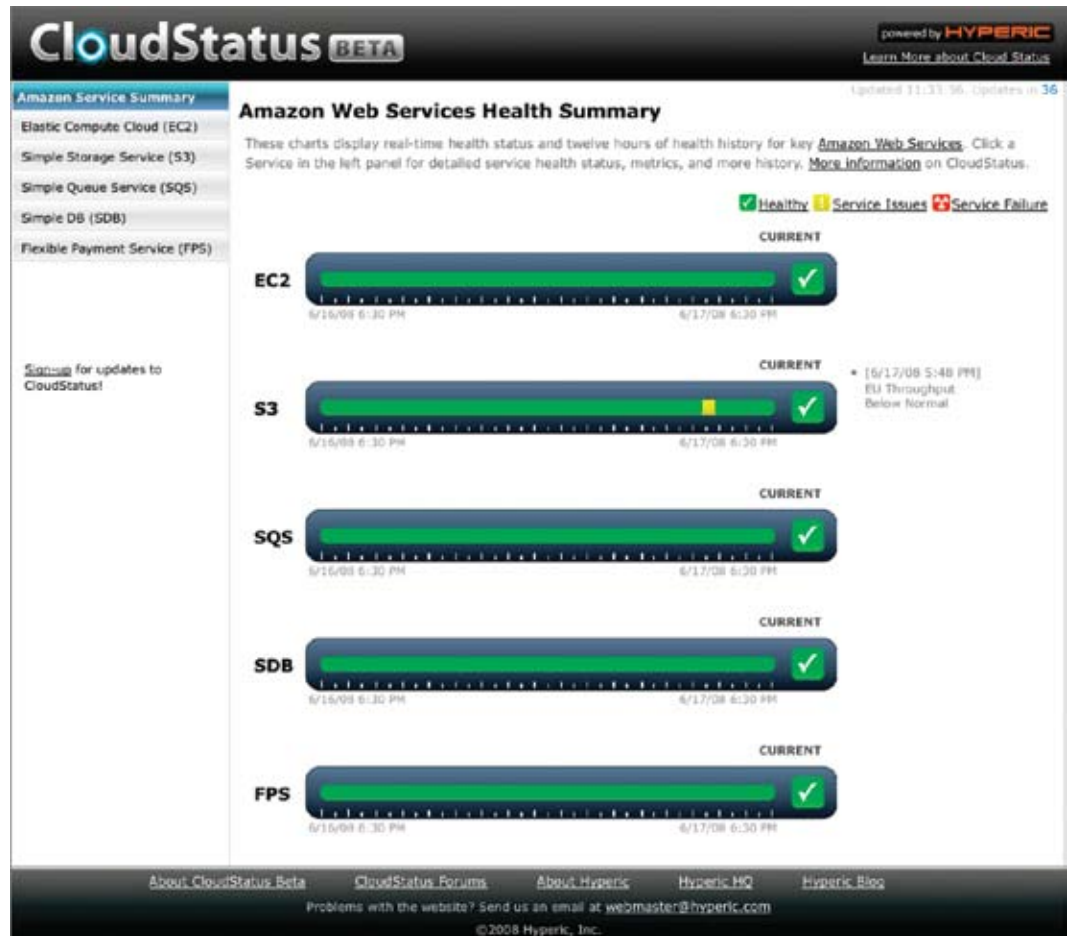
To successfully unleash the power of the cloud and the opportunity it holds, new tools will be needed, and Hyperic's CloudStatus.com is paving the way.





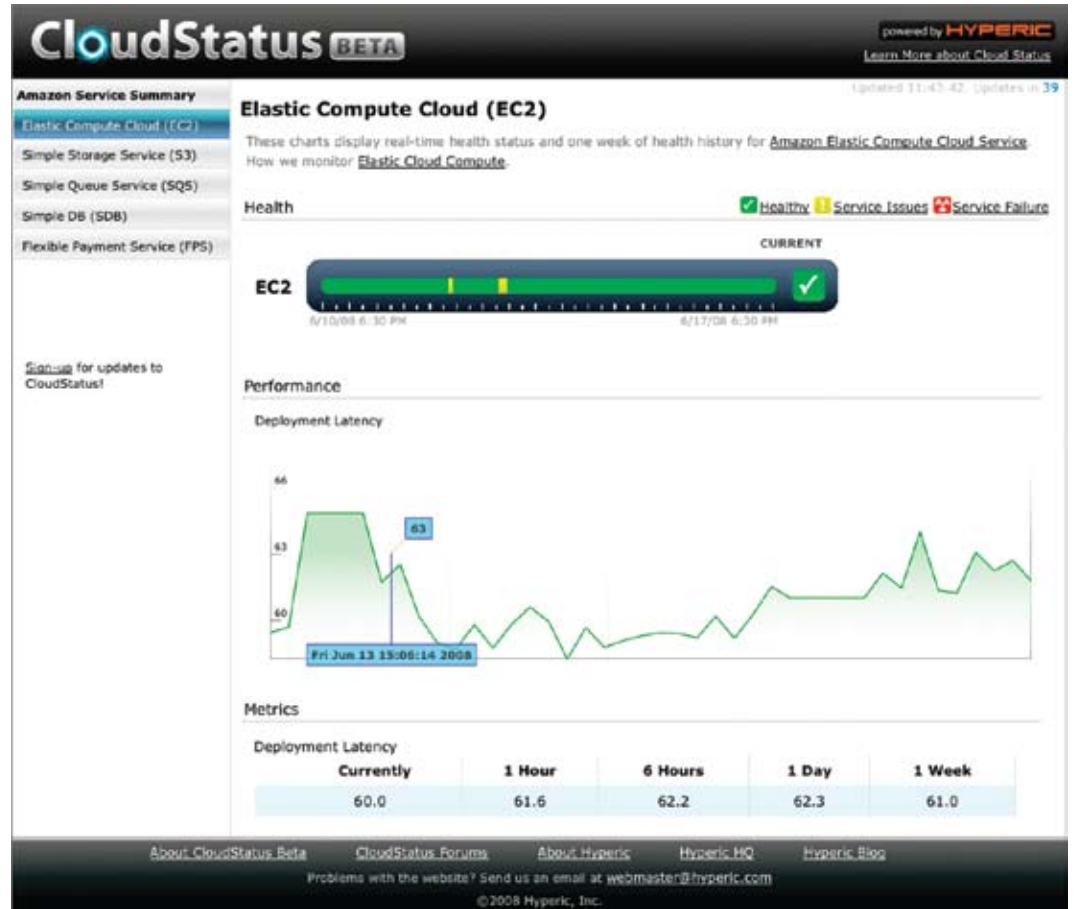
Appendix

Amazon Service Summary
 Are Amazon Web Services running optimally right now?



Appendix

Elastic Compute Cloud
How quickly can I
provision new servers to
ramp up in response to
a spike?





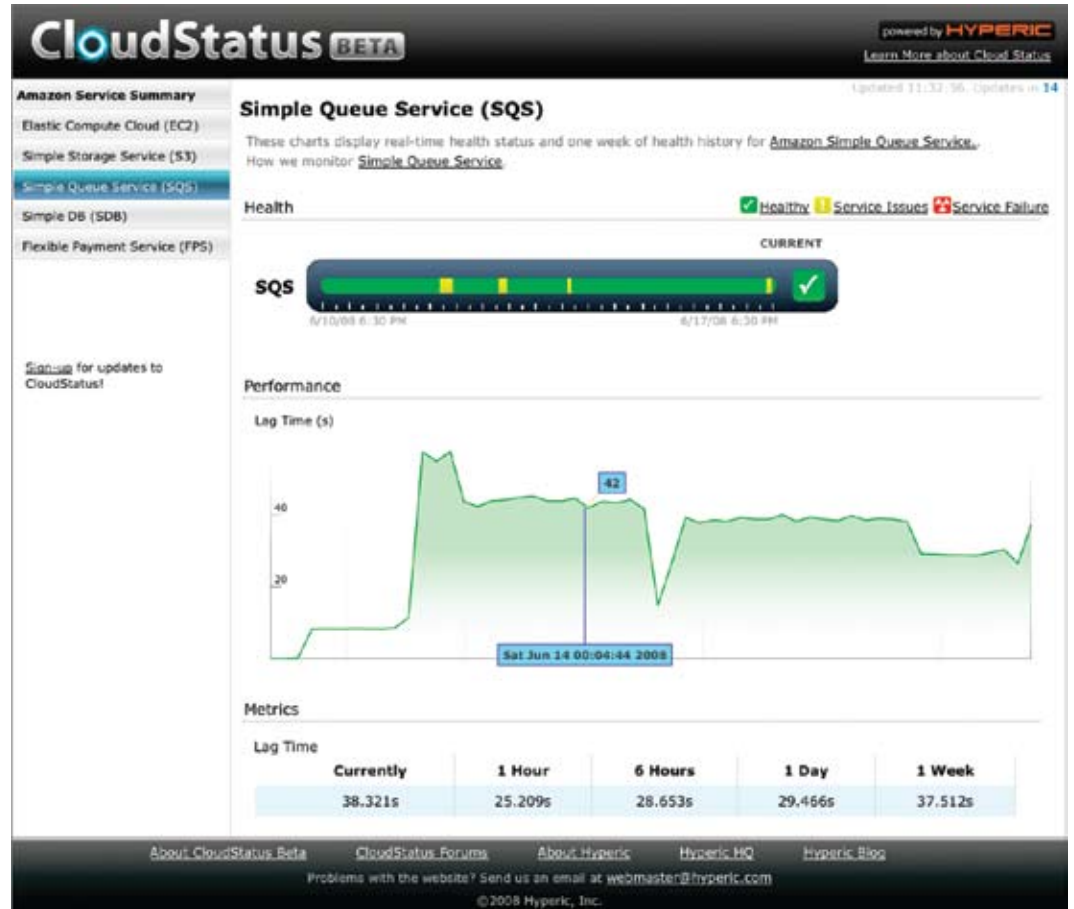
Appendix

Simple Storage Service
 What latency and throughput can I get to buckets in the regions I use?



Appendix

Simple Queue Service
What latency am I getting when message producers publish to consumers?

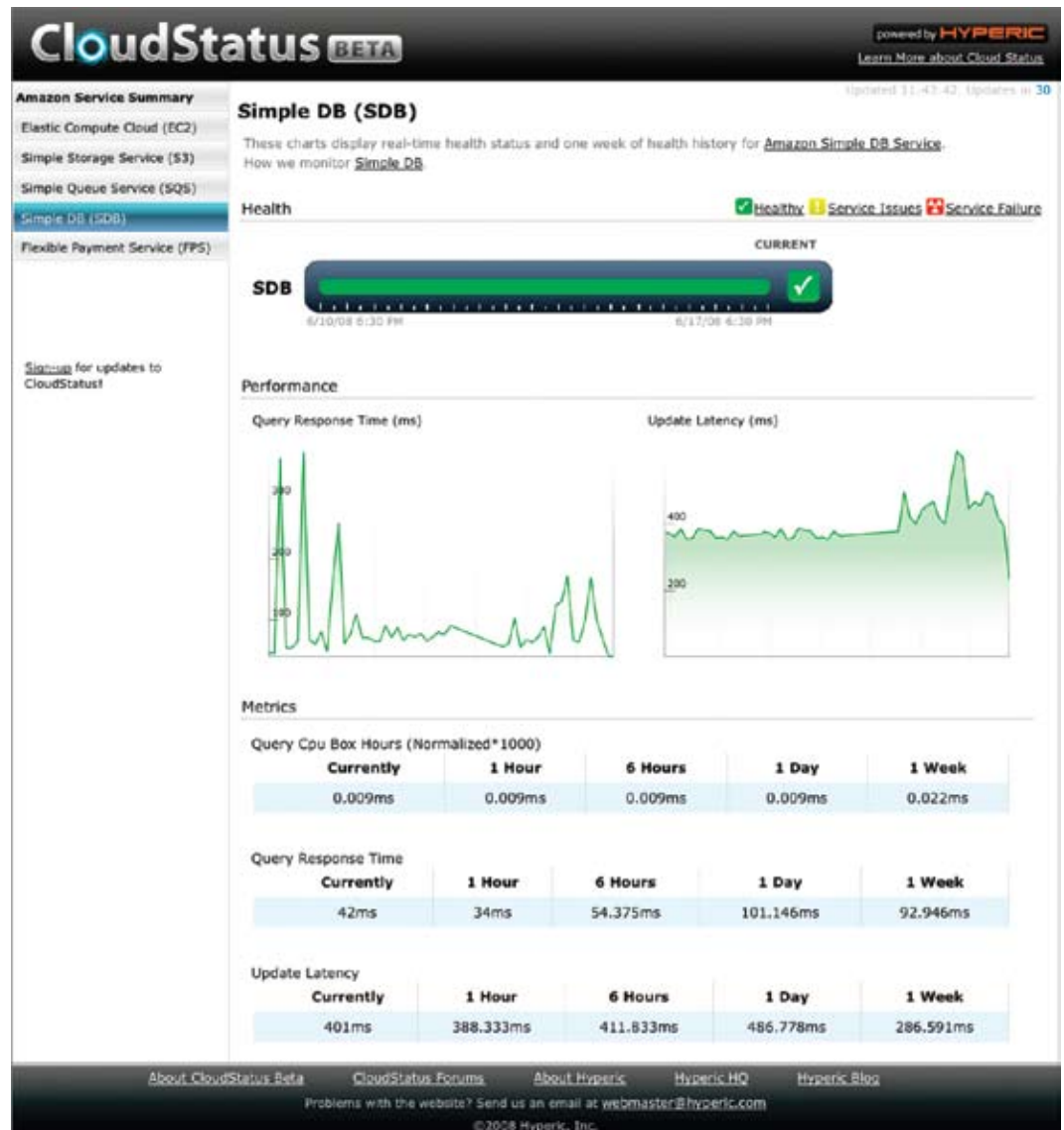




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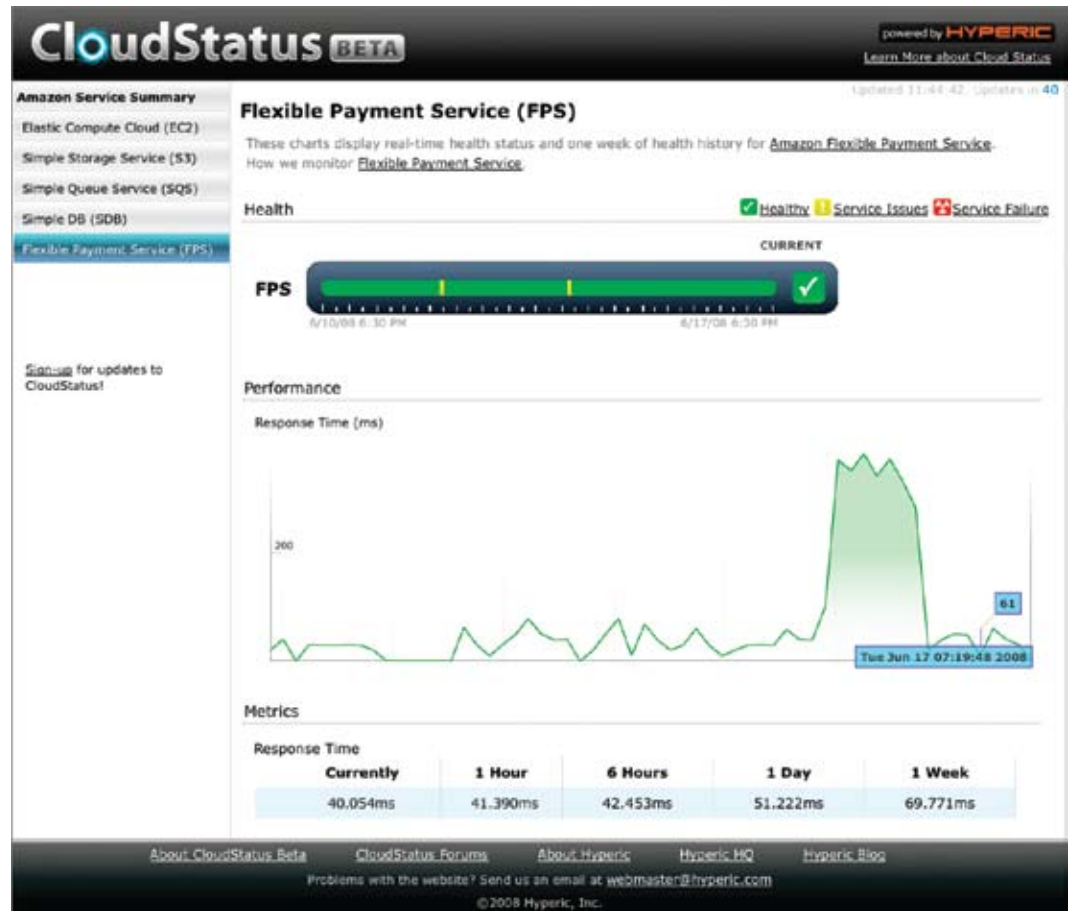
SimpleDB

What are the actual query response times for read and update operations?



Appendix

Flexible Payment Service
 How quickly can I post a payment from inside my application?



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About Hyperic Inc.

Hyperic provides open source monitoring and management software for all types of web applications, whether hosted in the cloud or on premise. Its software reduces the workload for operations teams at the world's biggest web companies, including CNET Networks, hi5 Networks, Contegix, Rackspace's Mosso, and more. Its award-winning Hyperic HQ software auto-discovers and updates asset inventory and allows operations teams to quickly pinpoint, correct, and prevent problems at every major layer—including hardware, networks, virtualization, cloud environments and applications.