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Toby Owen, Product Manager for Hybrid Hosting, Rackspace

Rackspace Hosting Links Dedicated Servers to Cloud for Maximum Scalability and Flexibility

Rackspace Hosting, the world’s leading specialist in hosting and cloud computing, wanted to offer its customers an easy way to link dedicated managed servers to cloud-based servers. The company used Application Delivery Networking devices from F5 to help build a hybrid service called RackConnect.

Now, Rackspace customers can mix and match dedicated managed and cloud hosting platforms for ultimate scalability, flexibility, efficiency, and lower costs. Customers can dynamically provision resources, manage web and application traffic, and load balance in real time between the two environments. F5® technology helped enable a rapid time-to-market for RackConnect, and it also helps simplify Rackspace customers’ migration.

Business Challenges

Rackspace, based in San Antonio, Texas, provides hosting solutions to businesses of all sizes, across a portfolio of IT services, including managed and cloud hosting. The company operates nine data centers worldwide, and it offers fully managed hosting and cloud computing options on dedicated and virtualized servers in Rackspace data centers. The company’s 3,000 employees serve more than 100,000 hosting customers, many of whom rely on the cloud for some segment of their hosting needs.

Rackspace wanted to offer its customers a hybrid hosting solution so that they could take advantage of both dedicated and cloud hosting and connect the two environments over the Rackspace network. But the company wanted to provide more than just a physical connection, explains Toby Owen, Product Manager for Hybrid Hosting at Rackspace. “Our goal is to offer customers the performance and security of dedicated network servers, and also allow the customer to automatically jump to the cloud to scale an application up and down, in minutes.”

Overview

Industry

Hosting and cloud computing

Challenges

- Link dedicated managed servers to cloud-based servers
- Give customers a cost-efficient way to scale services rapidly

Solution

BIG-IP® Local Traffic Manager™

Benefits

- Meets Rackspace customers’ needs
- Facilitates adoption of cloud services
- Accommodates security requirements
- Enhances scalability, lowers costs
- Speeds time to market

Security was an especially important factor for Rackspace to consider because it wanted to offer its customers robust protection of their information. “Security was a key consideration, and we knew that F5 BIG-IP Local Traffic Manager was rock solid,” notes Owen. “We also knew that F5’s application programming interface would make it simple to build the processes to merge the two different networks.”

Cloud hosting resources can prove economical for companies with erratic or unpredictable traffic loads because the service is based on a pay-as-you-go model, unlike managed physical servers, which require manual setup and have a fixed monthly cost regardless of utilization.

“A customer may invest in more dedicated resources than they normally need, just to cover occasional traffic peaks. These servers may sit idle for much of the year,” says Owen. “The cloud gives these customers a cost-efficient way to scale rapidly. They can burst through to the cloud when traffic loads go above the average load that their dedicated servers can handle.”

Rackspace believed that many customers, including those who experience predictable fluctuations in traffic, could benefit from this cloud-bursting model—from a cost-efficiency and performance perspective. For instance, an e-commerce company could manage its transactional payment card information on dedicated servers but also take advantage of cloud resources during peak traffic times such as holidays or sale events. Online gaming companies could take advantage of the cloud during competitive gaming events, and companies re-broadcasting sports events—such as World Cup Soccer—could handle extreme traffic spikes with ease.

Previously, Rackspace offered a virtual private network (VPN) connection between the two environments. However, the VPN was software-based, had performance challenges, and because it connected over the public Internet, customers were charged

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**Andrew Schroeffer, VP of Strategy,
Rackspace**

for bandwidth consumption. “We needed to create a solution that is fast, seamless, has built-in automation, and eliminates bandwidth costs,” says Owen.

Solution

Rackspace evaluated several options for connecting the two environments, including an open source software solution. “The open source option couldn’t provide the scalability we needed,” says Owen. The company also wanted to use equipment that already existed in its data centers, rather than require customers to invest in a new, specialized device.

After a careful evaluation, Rackspace concluded that it could use BIG-IP Local Traffic Manager (LTM) Application Delivery Networking (ADN) devices from F5, which it already used in its data centers, to deliver the ideal solution. “We found that we could use BIG-IP LTM to connect the dedicated managed and cloud hosting environments for a seamless compute solution,” says Owen. “The BIG-IP devices had the intelligence we needed to direct traffic, already built-in.”

Rackspace uses BIG-IP devices to accomplish a number of tasks. BIG-IP LTM automatically directs customers’ traffic among web and application servers. It offloads CPU-intensive content caching and TCP connections from the servers to the BIG-IP devices to boost server performance. It also monitors application health and seamlessly redirects traffic away from potentially problematic servers or network components.

Rackspace worked with F5 engineers during the initial proof of concept testing on ways to automate the connections between the dedicated and cloud environments. Rackspace did this using the F5 open application programming interface (API) called F5 iControl®. “iControl made the development effort fast and straightforward,” says Owen.

The Rackspace hybrid computing solution is called RackConnect, a leading solution in the market to integrate dedicated and cloud hosting. When a customer selects the RackConnect service, Rackspace performs an initial setup process to connect the customer’s dedicated servers to its cloud account. This enables the BIG-IP device to act as a router between the environments, directing traffic to the appropriate application and web pools. As customers spin cloud servers up and down at will, BIG-IP LTM automatically adds and removes these resources to and from the available resource pool.

The BIG-IP devices add packet filters to allow access to a customer’s dedicated servers from only that customer’s cloud environment. “This way, we can protect their dedicated environment and also automate which application pools those devices are put into,” says Owen.

In addition, Rackspace can perform wild card pattern matching based on server name or metadata assigned to the cloud servers, and then add the cloud resource appropriately to the BIG-IP device configuration. For instance, if a customer’s cloud server has “app” in the name, it is directed to the “Application Pool” of dedicated server resources, or if it has “web” in the name, it is sent to the “Web Pool” of resources. Owen says, “The BIG-IP devices give us the flexibility to build routines for identifying the server and putting it in the right use case to meet each customer’s specific needs.”

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dedicated and cloud servers talk to each other at wire speed, with the added security of never leaving the Rackspace network.”

BIG-IP LTM manages connections between dedicated managed and cloud environments in RackConnect.

In Spring 2010, Rackspace conducted a private beta of its RackConnect service. “We ran the beta for two months, with great success,” says Owen. The company removed the beta, and launched RackConnect globally in November 2010.

Benefits

Rackspace built its connected hybrid offering using infrastructure from F5. Now, the company can offer its customers the ability to easily mix and match dedicated and cloud hosting options. The flexible solution helps customers speed their adoption of cloud services to reap the benefits sooner.

Rackspace took advantage of F5 technology to bring RackConnect to market rapidly. The company is hopeful that the service, which provides customers with greater flexibility and higher cost-efficiency, will further extend the benefits of hybrid hosting and the company’s award-winning customer service, called Fanatical Support. The solution has also proven a good investment for Rackspace itself, yielding an estimated 3,000 percent return on investment (ROI).

Meets Rackspace customers’ needs

Rackspace wanted to develop a hosting solution that was a mix of its dedicated and cloud hosting offerings to better meet its customers’ needs. Because its primary focus is providing the best service and support for its customers, Rackspace wanted to work with a company that would help meet its customers’ expectations.

F5 was able to deliver a high-quality solution to help Rackspace develop its RackConnect product. Now, Rackspace has a robust, enterprise-quality hosting solution that combines the security of dedicated hosting with the flexibility of cloud computing.

Facilitates adoption of cloud services

With many applications designed, built, and optimized for physical servers, rewriting and migrating an application to the cloud can be time intensive and costly. With RackConnect, Rackspace customers can move to the cloud in increments, rather than in one big, expensive step, says Owen.

“With RackConnect and the F5 solution, we can help customers move just a piece of their infrastructure at a time because BIG-IP LTM enables the different parts to continue to talk to each other,” Owen explains.

A customer can also elect to move only certain parts of its application to the cloud. For instance, without extensive recoding, an e-commerce customer can burst segments of its operations (such as its web catalog traffic) through to the cloud while keeping other parts of its application infrastructure (such as payment card data) isolated on highly secure, dedicated servers in Rackspace data centers.

Owen adds, “Hybrid platforms will be the norm for some time, while the cloud model matures and more applications are developed with cloud-based architectures in mind.”

Accommodates security requirements

RackConnect is also designed to serve customers whose security requirements are more advanced, such as an e-commerce company that handles payment card data.

The F5 iControl API enables RackConnect to automate the creation of packet filters to secure the communication from the customer’s cloud to the managed environment, while preventing unauthorized access from the cloud. All user connections, data packets, and application data are routed through the BIG-IP device to the cloud environment, according to each customer’s specific traffic management and security policies. This ensures that confidential data is isolated on dedicated managed database servers. These packet filters are customizable based on customer preference, and are automatically applied as a policy when a customer adds or removes servers in the cloud, ensuring that security

stays in place even within a rapidly changing infrastructure.

Further, cloud resources are provisioned on demand, and they are de-provisioned and inaccessible when the customer no longer needs them. “Many companies aren’t comfortable moving everything to the public cloud today,” says Owen. “With the F5 devices, we can give them the ability to move parts of their site to the cloud, and that is a great advantage.”

Enhances scalability, lowers costs

Customers also reduce administration and manage their costs more easily with RackConnect. “The pay-as-you-go model is important,” says Owen. “With RackConnect, companies only pay for the cloud resources they use.”

Server administration and management is also reduced because the BIG-IP devices automate traffic management between dedicated managed and cloud hosting environments. “We chose F5 products because we can use them to continue to automate more and more of our customers’ deployment and ongoing maintenance. This really helps reduce customers’ administrative costs because they no longer need to actively manage their connections between platforms. The BIG-IP devices do it for them.”

For some customers, however, cost is a secondary concern. For instance, for an online gaming company or a media provider, performance is the top priority. “These companies need to be able to scale rapidly to avoid application crashes and accommodate their customers’ needs. RackConnect, with BIG-IP LTM, gives them access to the resources they need, instantly,” says Owen.

Speeds time to market

With the help of F5, Rackspace was able to use its existing equipment to deploy a new offering to customers in a very short time. Andrew Schroepfer, VP of Strategy at Rackspace Hosting, says, “Our time to market for RackConnect was less than three months, and this was largely due to iControl.”

Schroepfer explains, "The solution allows us to take advantage of existing capabilities. We built this technology on a platform that was designed to perform traffic management. We just took it a step further and used it to bridge the gap between dedicated and cloud servers."

Schroepfer continues, "We used the F5 solution to give customers a head start on moving to the cloud. RackConnect is the perfect path for them to begin leveraging the cloud today."

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