



What's inside:

- 2 Improving performance and user experience
- 3 Enhancing database and application security
- 3 Providing unified security enforcement and access control
- 4 Enabling seamless business continuity and disaster recovery
- 6 F5 and Oracle global configuration diagram
- 7 More Information

F5 creates a secure, agile, intelligent platform for Oracle Database

Oracle Database solutions, including technologies such as Oracle RAC, Streams, Data Guard and Recovery Manager, provide the foundation for IT departments to successfully deliver more information with a higher quality of service, reduce the risk of change within IT, and make more efficient use of IT budgets.

The F5 Application Ready Solution for Oracle Database offers improved operations and agility at the database tier and faster data replication over the WAN. With F5, IT can deliver an application and database architecture that optimizes user experience and data integrity on a global scale, while also providing end-to-end protection to secure data and the business. IT agility, your way.

Key benefits

Improved operation and agility

Use the network to monitor and service the database with ease and without disruption.

Faster replication

Accelerate data replication over the WAN by up to 9x by compressing, deduplicating, and optimizing traffic.

Global scalability

Architect applications and the database to simultaneously optimize the user experience and data integrity worldwide.

End-to-end Security

Provide comprehensive protection—from client, to application, to database—to secure data and the business.



Benefits and F5 value

F5's Application Ready Solution for Oracle Database ensures a secure, fast and available deployment, providing the following benefits to organizations, and their end users.

Improving performance and user experience

IT departments all over the world are struggling to keep up with user demand for nearly instantaneous access to information. Globally dispersed databases and data centers, WAN latency, adverse network conditions and a host of other difficult-to-control factors are challenging even the largest organizations. F5 devices enable a globally distributed Oracle database and application architecture with high performance and scalability which eases the burden on IT departments and satisfies end users.

F5 devices appropriately direct Oracle Database traffic by determining whether the transaction is a read request (which can be handled at the local data center) or a write request (which must be directed to the data center hosting the master database). Because the majority of transactions are read requests, users get a fast response, no matter where they are located.

When an organization outgrows one Oracle Database instance in one data center and adds another (or multiple) data centers with multiple Oracle Database instances, administrators are faced with the difficult task of how to determine which location to send users. F5 devices easily solve this issue by sending users to the closest data center for the best performance, no matter where users are located. If the closest data center is offline for any reason (planned or unplanned), our devices direct the user to the next best alternative.

F5 devices optimize the Oracle data replication necessary to ensure database read consistency for a global architecture. F5 accelerates TCP traffic between data centers, compresses data to consume less bandwidth for replication, and provides encryption of data for security.

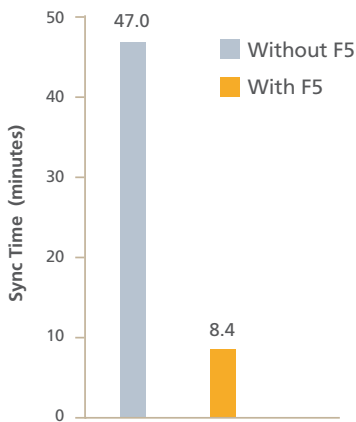
Intelligent health monitoring for Oracle Database and applications

At the database tier, F5 intermediates between the application server and Oracle database to provide a layer of abstraction and health monitoring. In the event of a node failure (including standalone or Oracle Real Application Clusters [RAC] configurations), traffic can quickly be redirected away from unresponsive database servers. With health monitoring centralized on BIG-IP LTM, application servers are offloaded, freeing valuable resources. Moreover, even though application servers might have different software, versions, and behavior in terms of timeouts and connectivity, BIG-IP LTM provides a reliable connection to the database to help ensure consistent performance across all applications.

For operations and maintenance tasks, BIG-IP LTM gives administrators the ability to bleed connections off a server or pool of servers onto other servers without losing connectivity between the users and the applications. Once removed, a server can be updated, repaired, or replaced, and new connections can be directed to that server once it becomes available. This gives the database administrator additional flexibility and control over routine management tasks, while providing users with more uptime and availability.

And not only does F5 help improve the experience for the end user of your Oracle Database deployment, but we ease the burden for the F5 administrator as well. We help simplify system management by consolidating security, acceleration, and availability in one easy to manage platform. And our step-by-step Deployment Guides for Oracle Database, Applications, Fusion Middleware, and Sun Storage ensure you experience carefully tested and error-free implementations.

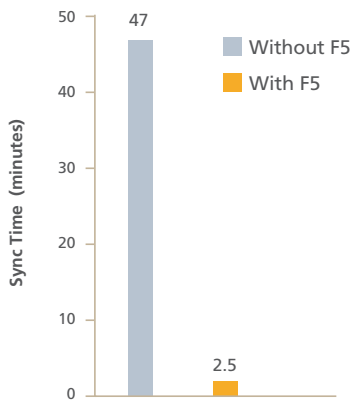
Oracle GAP test with F5 TCP optimizations only (no compression)



T3 Link - 40 msec latency - .5% packet loss

Figure 1: In Gap tests, F5's WAN optimization technology improves database synchronization time by more than 5 times.

Oracle GAP test with F5 TCP optimizations and compression



T3 Link - 40 msec latency - .5% packet loss

Figure 2: In this Gap test, we use compression in addition to the TCP optimizations in F5's WAN optimization technology. This further reduces database synchronization time; total improvement is nearly 19 times in this case.

Enhancing database and application security

Most organizations have a solid security infrastructure in place for their network. Firewalls and other devices do an adequate job of protecting the network from attack. But these devices were not designed to protect against attacks directly targeting databases and applications. Protecting databases and applications becomes even more important in today's global, partnership-driven economy, where partners and consultants are often given at least partial access to databases and applications on the internal network.

Unlike other solutions that just provide auditing and reporting, F5 has partnered with Secerno (a recent Oracle acquisition) to provide enterprises with an end-to-end, layer 7 application and database security solution for Oracle databases and others. The combination of the Oracle Database Firewall and F5 gives customers much stronger protection against SQL injection attacks and provides a protective perimeter around the web application and database.

To protect Oracle databases and applications, malicious or compromised users can be isolated, forced to re-authenticate, or prevented from accessing the application, in real time. Furthermore, subsequent attacks from the same user can be prevented, diverted, or rendered inert before the attacker can reach the application.

This offering gives application business owners and security professionals alike the peace-of-mind that their application is benefiting from comprehensive threat prevention that includes protection of their core Oracle database assets, no matter from where they are accessed. This enables an almost instantaneous remediation channel for either application code or database transactions which makes this a compelling offering for regulated environments with multiple technically diverse applications to protect.

And now, all data can be symmetrically encrypted between local and remote F5 devices, providing a new way to ensure site-to-site data security. This secure connection, or tunnel, not only secures data between devices, but improves transfer rates, reduces bandwidth utilization, and offloads database servers for more efficient WAN communication.

F5's comprehensive Endpoint Security for remote access gives your Oracle deployment the best possible protection for (and from) remote users. F5 technology prevents infected PCs, hosts, or users from connecting to your network, database and applications, and delivers a Secure Virtual Workspace, pre-login endpoint integrity checks, and endpoint trust management.

F5 products allow organizations to implement comprehensive security, providing a centralized point of enforcement, and a coordinated and unified line of defense that lowers TCO and improves ROI.

Providing unified security enforcement and access control

In today's global economy, as organizations expand into new markets and grow through mergers and acquisitions, more and more organizations are trying to cope with the need to extend the reach of their internal applications and databases to partners, contractors and suppliers. This means that companies are faced with more users and devices attempting to access Oracle Databases and applications and other protected resources. Trying to determine who gets Oracle Database access, and how much, has been a big challenge.

By integrating F5's solutions and the access features in Oracle Access Manager, organizations can realize the value of offloading authentication control and simplifying architecture. With the combination of Oracle Access Manager (OAM) and F5's access and security

Oracle Streams Replication Duration

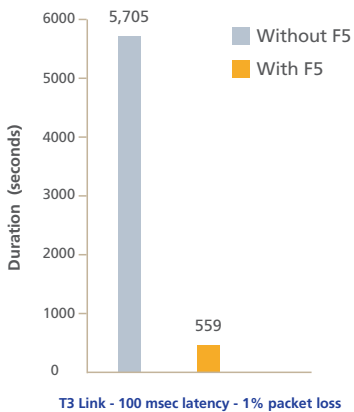


Figure 3: F5's WAN optimization technology significantly speeds Oracle Streams Replication time across the WAN.

solutions, CapEx and OpEx savings are increased by consolidating infrastructure and easing management. Organizations can employ F5 to manage policy-based access from one location and to dramatically improve the scalability of access control.

F5 and Oracle deliver a unified access and authorization solution, simplifying access to Oracle applications and databases. By consolidating authentication, authorization, and accounting (AAA) and policy control on F5 devices, IT managers can reduce deployment complexity. A centralized, granular access control point on F5 devices and a simplified method for repeatable access policies improves network identity and security. F5 removes the need for OAM agents on proxy web servers, streamlining the application authentication process. Lastly, F5 devices provide a consistent methodology to create a highly available web tier.

F5 provides organizational efficiency and an easy way to scale management by allowing our devices themselves to be partitioned into administrative domains. This enables organizations to assign varying degrees of administrative rights and views to each device. For example, the owner for Oracle Database or applications can be given permission to only view or modify objects that reside in the Oracle domain.

One important aspect of F5's universal access approach is the ability to divide the network itself into various segments to protect and monitor access from one segment to the other. At the network level, you can use IP addresses, VLANs, MAC addresses, and packet filtering mechanisms to define practically any combination of network security policy based on any network parameter, such as originating or destination VLAN, IP address, and protocol. You can refine this security with strict access rules based on authentication results or application responses.

Enabling seamless business continuity and disaster recovery

Because every second an Oracle database or application is down or not responding properly can cost an organization hundreds or even thousands of dollars, deploying F5 devices with Oracle is essential for providing organizations with business-critical availability. Whether planning for a natural disaster, a pandemic like swine flu, trying to achieve regulatory compliance, or just carefully planning a new database or application deployment, F5 can help. F5 enables virtualized data centers, VPN access, optimization and traffic management in an integrated fashion.

F5 technology offers secure and compressed site-to-site communication for data traveling over the WAN. Any two F5 devices can be deployed symmetrically to create a site-to-site secure connection to improve transfer rates, reduce bandwidth, and offload database servers for more efficient WAN communication. F5 overcomes latency and congested network issues to provide secure, rapid data transfers for Oracle data replication while providing faster performance for end users.

F5 enables our devices to communicate across the WAN to optimize traffic during Oracle data replication and backup including technologies such as Oracle Streams, Data Guard and Recovery Manager. F5 makes use of compression, deduplication, and advanced TCP technologies to effectively utilize bandwidth and maximize throughput. Our secure symmetric adaptive compression ensures the fastest data reduction for any TCP traffic between BIG-IP systems. This offloads the Oracle CPU cycles required to do compression and encryption on the host, while lowering Recovery Objectives (RPO/RTO).

F5 has the industry's most comprehensive solution for site failover and business continuity. In addition to performing comprehensive site application availability checks, you can define the conditions for dynamically and transparently shifting all traffic to a backup data center, failing over an entire site, or controlling only the affected applications.

Intelligent Database monitoring

F5 becomes a strategic point of control between the application and database tiers, centralizing database monitoring on the F5 device, and not on each Oracle Application server.

F5 ensures applications are always available with monitoring capabilities like inband monitoring. Inband monitoring helps reduce the volume of traffic on the network and the burden on database and application servers imposed by using valuable resources to respond to health checks.

F5 devices also include a built-in, custom monitor for Oracle Database. This monitor actively monitors the database, and can use a specific SQL query to determine the health of each database node, and can even be configured to search specific rows or columns in the Oracle Database. This ensures that your database servers are not only available, but serving the appropriate content. F5 becomes a strategic point of control between the application and database tiers, centralizing database monitoring on the F5 device, and not on each Oracle Application server.

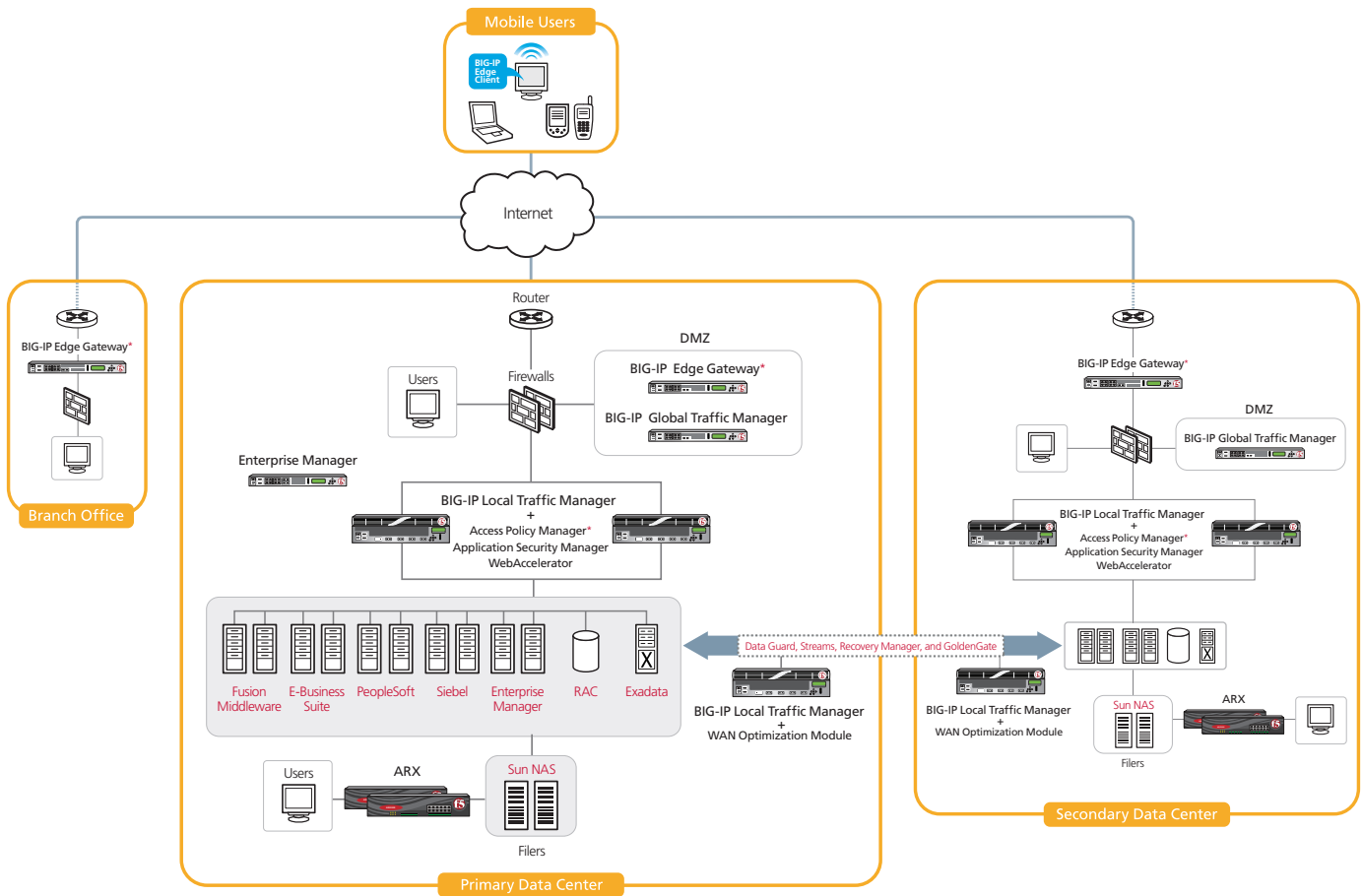
F5 technology enables extremely fast failover from an active to a standby RAC. If all of the RAC Primary nodes are unavailable for any reason, F5 directs the traffic to the RAC Standby nodes - the client side connections are properly reset and reconnected in the case of a RAC Primary to Standby transition event. This ensures the application servers re-connect as quickly as possible.

For organizations with multiple ISP links, F5 simplifies multi-homed deployments so you no longer need ISP cooperation, large bandwidth connections, designated IP address blocks, ASNs, or high-end routers to protect your network from ISP failures. Using DNS-based technology that removes the dependency on BGP to provide failover capabilities, the F5 eliminates multi-homed problems such as latency, high update overhead, and inferior traffic management, ensuring that users can always get to the Oracle applications and database. Organizations can benefit from guaranteed availability without delays or costly misrouting. It also gives you the ability to aggregate inexpensive links, with more granular control over which link to use based on performance, costs, and business policies.

F5's Application Ready Solution for Oracle Database: Explore it. Deploy it. And run your business with it.

F5 and Oracle global configuration diagram

The following diagram shows a logical configuration example of the F5 solution for Oracle Database, Applications, Middleware, Servers and Storage. For more information on these products, see <http://www.f5.com/products/>.



* Supports Oracle Access Manager

More Information

To learn more about F5 and Oracle Database, use the search function on F5.com to find these and other resources.

Application Page

[Oracle Database](#)

Deployment Guides

[Deploying the BIG-IP LTM for Oracle Database and RAC](#)

[Deploying the BIG-IP WAN Optimization Module with Oracle Database Data Guard, Streams, and Recovery Manager](#)

Oracle Solutions Page on DevCentral

<http://devcentral.f5.com/Community/GroupDetails/tabid/1082223/asg/63/Default.aspx>

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