Unlocking the Full Potential of DataPower Appliances with Solace

IBM DataPower packages enterprise service bus (ESB) and B2B gateway functionality in easy to use, high-performance appliances that let users more quickly and easily build and deploy modern applications. In order to send and receive information, these applications typically rely on WebSphere MQ queue managers built to a different set of assumptions, i.e. without the scale, data volumes or real-time requirements associated with trends like external APIs, big data, ubiquitous mobility or the Internet of Things.

Scaling MQ through clustering, channels and remote queue definitions can lead to a complex, expensive and fragile infrastructure that hampers innovation and limits deployment options. So how can companies unlock the potential of DataPower without the complexity and cost of more and more MQ queue managers?

Solace message routers bring to the messaging layer the same benefits DataPower offers at the ESB/gateway layer. Solace message routers will be familiar to DataPower users because they both offer the inherent simplicity and hardware-accelerated performance that only appliances can offer.

Solace offers 50-100x higher throughput than a software-based MQ infrastructure, complete with multi-tenant virtualization, built in high availability, WAN optimization, rich management visibility and more. Solace gives you everything you need to use DataPower to tackle the big challenges of today like big data, global e-commerce, mobile outreach and the Internet of Things.

In addition to DataPower, Solace is interoperable with IBM Integration Bus, WebSphere Application Server, WebSphere MQ and mainframe technologies such as CICS and IMS so it's easy to add Solace to your application infrastructure where it makes sense and leave existing assets intact where they continue to meet your needs.

Solace Systems®

http://www.solacesystems.com

Advantages

There are several reasons to use Solace as the messaging foundation for applications running on DataPower appliances:

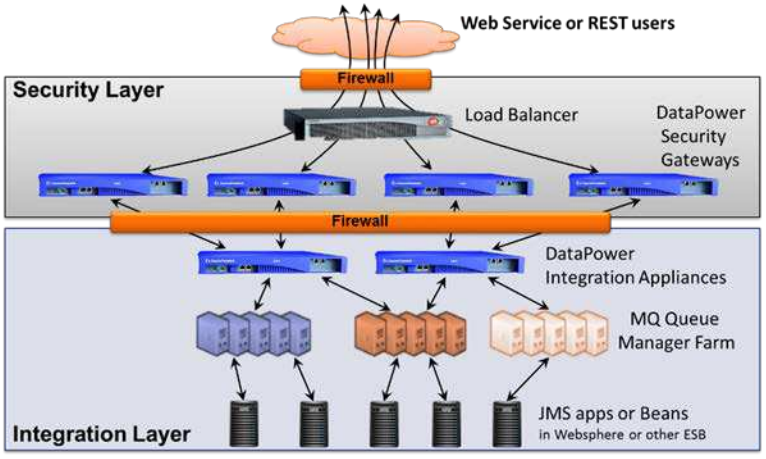
- With built-in support for virtualization and the power to route millions of messages a second, Solace's platform reduces the cost and footprint of your messaging infrastructure by letting you consolidate dozens of queue managers into a single device. Solace virtualization is a perfect match for DataPower domains so integration is easy, and makes Solace ideal for implementing on-premise and hybrid cloud strategies.
- The scale and performance of Solace appliances means you don't have to deal with the complexity of planning and administering queue manager clusters or channels, managing remote queue definitions or finding lost messages. Applications just send to the queue (or topic) they like without all the plumbing in the middle.
- Solace-based systems feature fewer moving pieces and offer unified administration including highly granular real-time stats and high water marks, all collected continuously without affecting performance.
- Built-in fault tolerance with fast failover ensures high availability, and fully-integrated replication to remote sites lets you quickly switch services to disaster recovery systems for business continuity without the cost, complexity and delays of storage replication.
- Solace provides the ideal platform to support your next generation application architecture, integrating with new technologies as well as your existing WebSphere deployment. Whether it is new JEE infrastructure such as JBOSS, open source ESBs such as Mule, Camel or JBOSS Fuse or the latest Hadoop release for big data, Solace provides a unified data movement fabric so you can integrate best of breed products into your existing application architecture.

Solace is the ideal messaging foundation for legacy applications that need to scale, and demanding new applications in areas such as big data, cloud computing, mobility and the Internet of Things.

All of that capacity, performance, simplicity and robustness makes Solace the ideal foundation for next-generation applications in areas such as big data, cloud computing, mobility and the Internet of Things. It also makes Solace an excellent upgrade for legacy applications whose messaging needs are no longer being met by WebSphere MQ.

Typical Architecture

Consider an e-commerce site that uses a DataPower-based REST service gateway to offer customers access to accounts or transactions via a mobile app.



HTTP requests are sent to a DataPower service gateway in the DMZ which authenticates them and forwards acceptable/authorized requests to a DataPower integration appliance which inspects the service requests and transforms them as necessary before they're sent to the WebSphere MQ queue managers for queuing and routing to appropriate back-end systems. After back-end systems have done their thing, replies flow back through the queue managers to the integration appliance which formats responses as necessary and sends them off through the security layer and back to the client.

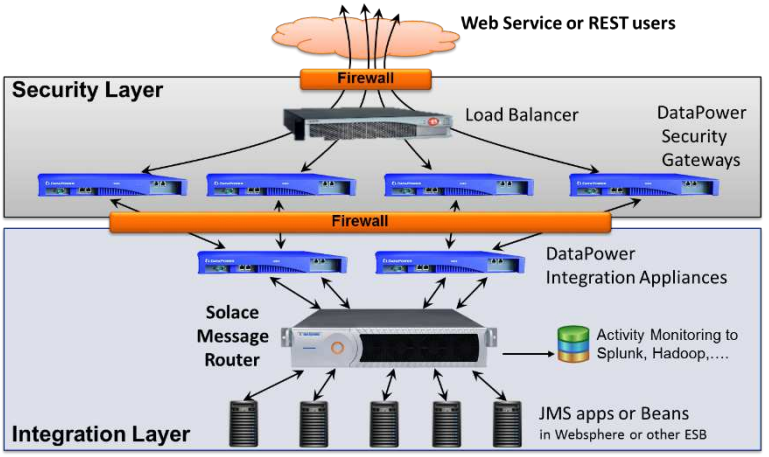
Such systems usually experience volatile and unpredictable peak demand, so companies need to load balance incoming traffic, and horizontally scale the security and integration layer across many appliances to accommodate peak volumes and provide fault tolerance.

Due to their limited performance, MQ queue managers are scaled horizontally using clustering. This means you need to deploy lots of them to handle the distribution and sometimes persistence of all those messages being received and sent by those back-end applications, too. Making this an event driven architecture or adding big data analytics or the ability to data warehouse these interactions multiplies the load on this strained infrastructure even more.

That's how a theoretically simple architecture gets seriously complicated by the need to horizontally scale at every layer.

Integrating DataPower and Solace

With massive capacity, support for many kinds of messaging and built-in virtualization, Solace message routers can replace dozens of queue managers and meet the diverse messaging requirements of many applications, including new demands like the need to be event-driven or support big data analytics. This reduces the TCO of your infrastructure by eliminating significant datacenter and hardware costs, simplifies your architecture and makes it more agile to take on new demands.

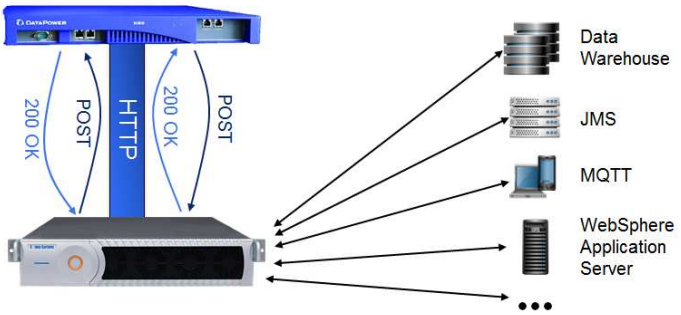


Linking DataPower appliances with Solace via Solace's RESTful HTTP interface gives them access to the full power and capacity of Solace message routers.

Solace's REST Interface

Solace's REST interface uses bi-directional HTTP POST requests to exchange messages, so DataPower can send and receive messages to and from Solace clients in a way very familiar to DataPower users.

In both directions, message contents are carried in the body of an HTTP POST requests. In request/reply scenarios, the response contents are carried in the body of the HTTP POST 200 OK responses.



When sending messages to Solace, the destination of the message is encoded in the POST request URL giving DataPower full and easy access to Solace routing capacity. Optional properties to further customize message handling can be included as HTTP headers in the POST request.

To enable high message rate between DataPower and Solace, multiple parallel HTTP connections are used in both directions. This avoids the round trip performance limitation of blocking HTTP requests, which unlocks the full capacity of the Solace message router. The use of bidirectional HTTP POST requests removes the possibility of message loss which can exist when using HTTP GET requests to poll for messages.

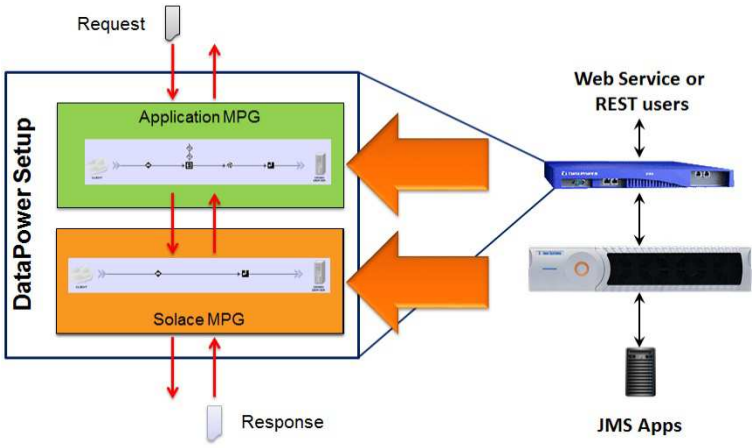
In scenarios where Solace is sending messages to DataPower, no load balancer is required – the Solace message router can distribute messages across many DataPower appliances enabling fault tolerance and higher overall performance by scaling DataPower appliances. The Solace message

router dynamically balances message delivery across DataPower appliances and available connections to best utilize available message processing capacity.

If you want to learn more about how this works, check out the Solace REST Integration Concepts Guide at http://solacesystems.com/resources/rest-integration-concepts-paper.

Switch in Just Minutes

There are several ways to set up Solace as the messaging handler for DataPower, but the easiest way (and a highly effective one) is to set up a new multi-protocol gateway (MPG) to handle Solace connectivity.



Then all you need to do is reconfigure existing application MPGs to switch them from using an MQ queue manager as the back-end handler to the new Solace MPG. The DataPower appliance processing rules don't need to change, so this is a quick and easy process.

For DataPower services which receive messages from MQ (i.e. have MQ as their front side handlers), it is best to integrate with Solace by following the patterns used in other DataPower services. For large deployments, using the External Gateway Framework service pattern[1] provides many benefits in terms of simplicity of maintenance and scalability.

Alternatively, Solace message routers can send messages directly to a DataPower service by simply switching to an HTTP front side handler. Then when messages arrive on the Solace message router they will be sent directly to the DataPower service that is interested in these messages.

Learn more about REST-based integration of DataPower appliances and Solace message routers at http://solacesystems.com/resources/datapower-integration-paper.

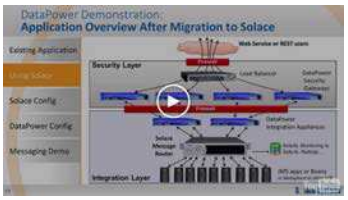
Summary

Solace message routers are the ideal data movement foundation for applications built on IBM's DataPower appliances – both legacy systems that need to keep up with new requirements or a growing user base, and new applications that aim to capitalize on emerging technologies.

- They offer the elastic capacity it takes to support an ever-increasing number of users, and to tie together more back-end services and information sources so you can offer increasingly valuable interfaces and services to your customers and partners.
- They feature high availability with reliably fast performance in all conditions so services are always available and responsive, thus ensuring excellent user experience.
- They have the capacity and flexibility to meet the needs of demanding new applications focused on initiatives such as big data, mobility and the Internet of Things.

Learn More

The 14-minute video at http://www.solacesystems.com/solace-datapower-demo explains the integration between Solace and DataPower in more depth. The video also demonstrates how easy it is to reconfigure applications running on DataPower appliances to use Solace to send and receive messages.



[1] To learn more about External Gateway Framework service pattern go to http://www.ibm.com/developerworks/websphere/library/techarticles/1211_saddal/1211_saddal.html