SMEStorage Appliance High Availability , Fail-Over and Multi-Site deployment White Paper

Introduction

SMEStorage provides a Data Access Platform (DAP) to Organisations as an enabler to quickly provide Web, Desktop and mobile access clients for data stored on a local Files system, NAS/SAn, or public cloud provider such as Amazon.

The SMEStorage appliance uses Apache HTTP server to serve HTTP requests and uses the MySQL Database to store meta data.

Both these technologies are widely used and provide failover, backup capabilities and a path to scale out the application As SMEStorage platform is built using industry best practices any of the High availability architectures can be deployed depending on the customer requirements.

In this document we will provide some different supported High Availability options. Note that depending on your requirements different combinations of the below topologies can also be configured.

Note that in all of the below topologies Apache HTTP server and MySQL DB don't need to run on the same hardware node and can be installed separately as an n-tier architecture.

Single Appliance

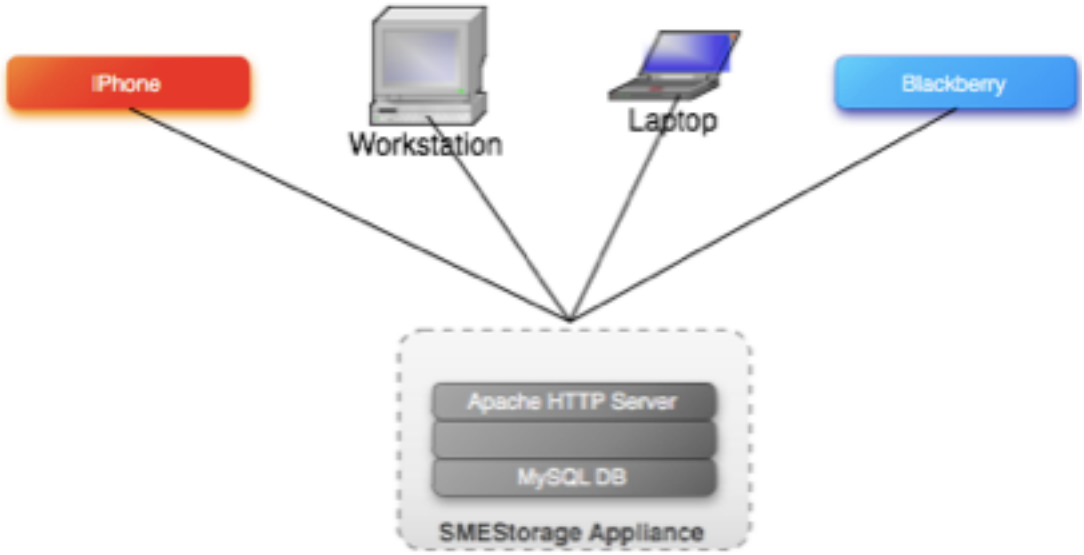
In a normal configuration the SMEStorage platform run as a single appliance on single hardware machine. This is the simplest scenario and we recommend performing regular scheduled backups of the database using the provided scripts.

Pros

- Simplest configuration, plug and play

Cons

- In case of disk failure the data needs to be restored using the last backup
- 15 minutes or more service unavailability depending on the restore time from backup



Two Replicated Appliances

This deployment topology relies on the MySQL DB master slave replication functionality .To Provide simple failover During normal operation the data will be replicated to slave database instance. The active server will have a Virtual IP address assigned to it.

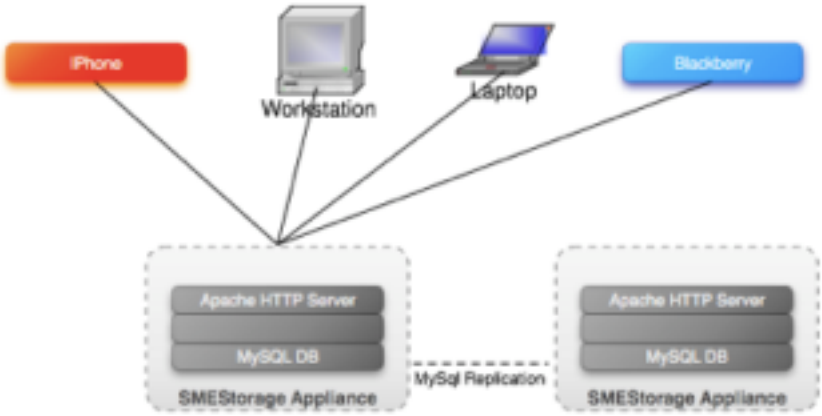
In case of failover a failover you will need to manually run a script on the passive slave to make it active and also assign it the Virtual IP address.

Pros

- ☒ Simple configuration
- ☒ Less hardware required

Cons

- ☒ Manual intervention required
- ☒ Virtual IP address



Two Appliances with HTTP Load Balancer

Depending on your requirements we also support more robust deployments with HTTP Load balancing. In this scenario

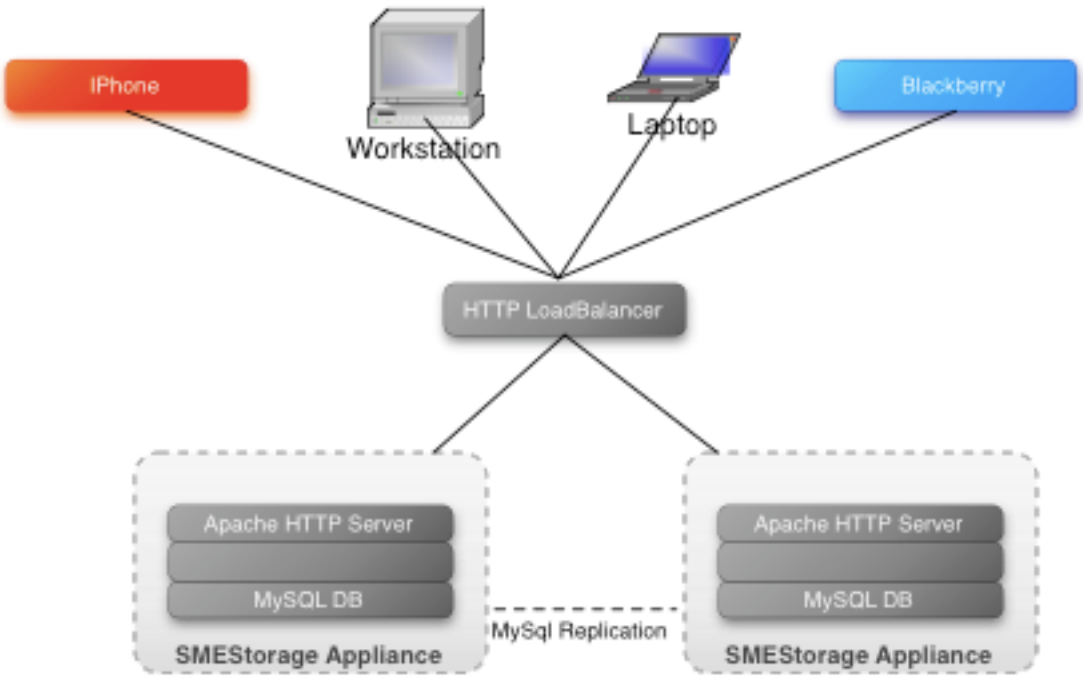
We put a HTTP load balancer (this can also be made Highly available) in front of the two SME storage appliances and there is no single point of failure.

Pros

- No single point of failure
- Minimal downtime

Cons

Complex setup



Dual location Deployment

The load balancer topology can also be used to deploy the SMEStorage platform across two different data centres. The deployments in the data centre can be active-active or active-passive. In case of site failover the requests are switched to the other site automatically.

In case of active-passive deployment My SQL replication will replicate the data to the passive instance.

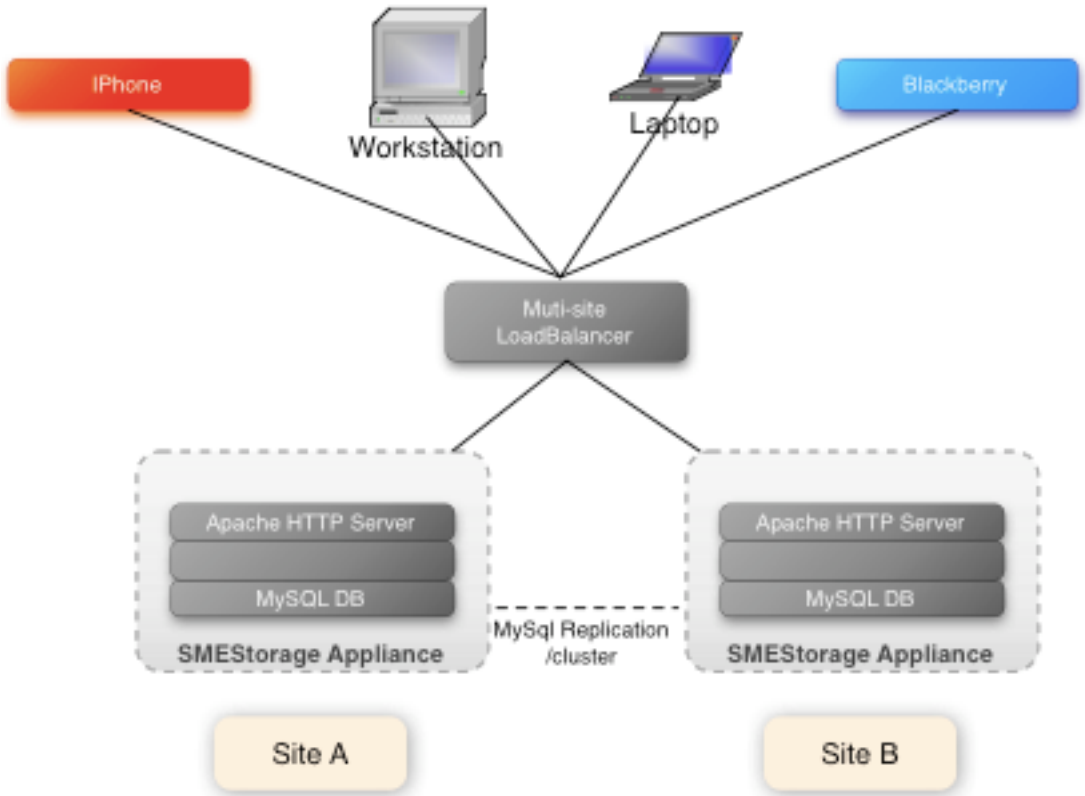
For active-active deployment mysql clustering can be used.

Pros

- No single point of failure
- Site failover support
- Minimal downtime

Cons

Complex setup



Multi-site Geographic deployments

For multisite geographic deployment, SMEStorage in combination with the infrastructure needs to have 3 abilities

- Routing the user to the nearest SMEStorage service based on user location
- SMEStorage accessing local provider
- Users SMEStorage meta-data available on users connected site

Routing the user to the nearest SMEStorage service based on user location

A user can be directed to the nearest SMEStorage service using a global load balancing solution. For example:

http://www.f5.com/products/big-ip/product-modules/global-traffic-manager.html

http://www.zeus.com/products/global-load-balancer/index.html

In the event a global load balancer is not available the SMEStorage service already integrates with an IP geo-location service to track the file upload location to comply with different jurisdiction laws. The same facility can be used by SMEStorage to redirect the user on first access to the appropriate SMEStorage service nearest to him.

SMEStorage accessing local provider

Storage cloud systems such as EMC Atmos and Nirvanix provide a single namespace for multiple nodes in multiple locations. They automatically route the request to the most appropriate node.

As SMEStorage only stores the meta information and the data is 'served' from the underlying providers, SMEStorage only needs to sync the meta-data for the user to multiple SMEStorage sites to ensure they user has a 'view' of the data available to them. When a file or content is accessed from the Cloud Storage providers (ie. EMC Atmos/Nivrvanix) using the Cloud Providers REST API it will automatically be routed to the most appropriate location using the storage providers Geo location technology.

Users SMEStorage meta-data available on users connected site

MySQL database provides clustering solutions for multiple nodes across WAN. This is obviously dependent on the network performance and is a complex setup. MySQL clustering capabilities can be utilised to keep the meta-data synchronised on multiple locations.

Another approach is to enhance the SMEStorage platform to encompass the sync logic. In this event, minimal user information would be synced between multiple SMEStorage platforms regularly(either using mesh or ring topology).

A user would also have a default SMEStorage location associated with him. When he logs in for the first time into a new SMEStorage location his meta-data is pulled from his default SMEStorage location and kept refreshed for a configurable period of time. With this approach we can avoid the complex setup of MySQL database with the drawback that the first initial access will be slower.