



ArcGIS for Server Deployment Scenarios

An ArcGIS Server's architecture tour

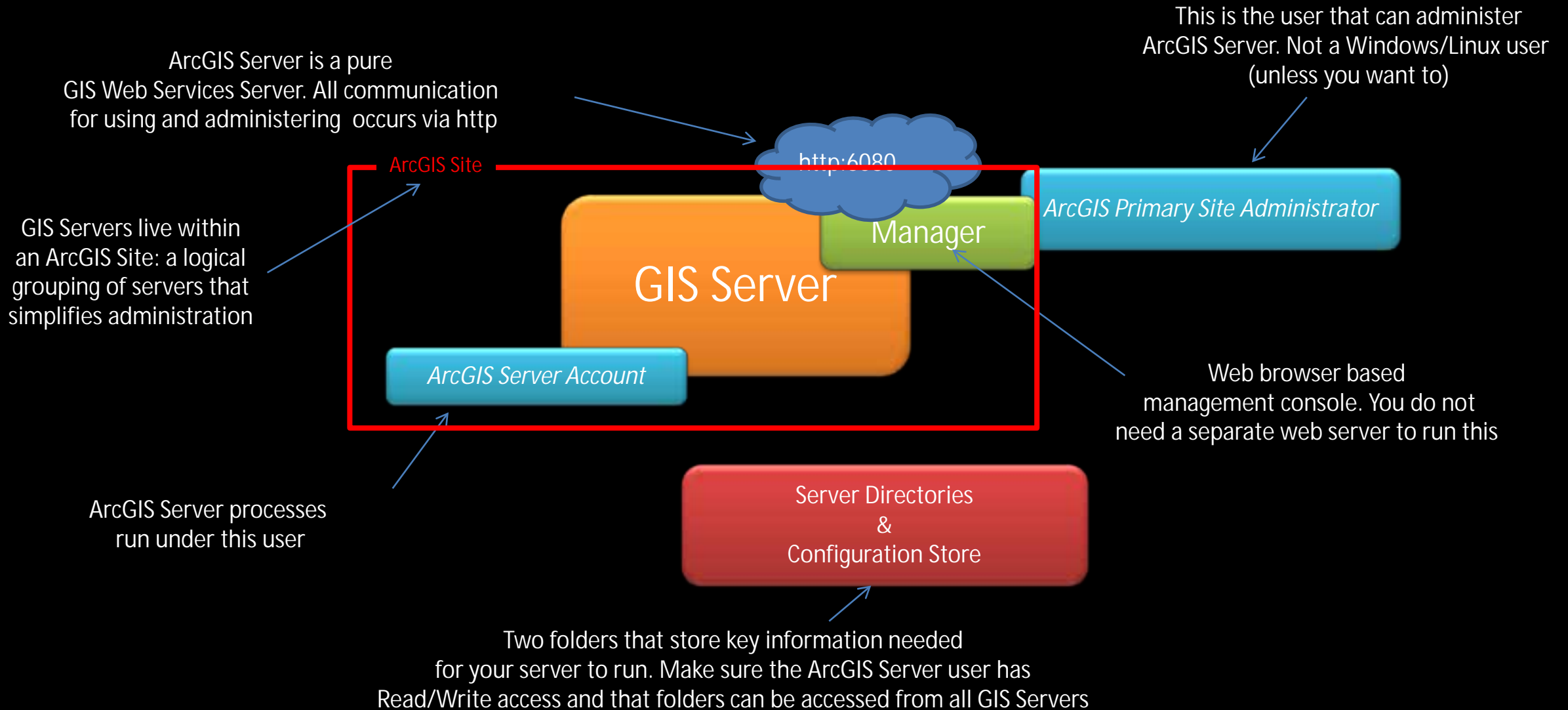
Ismael Chivite

Product Manager at Esri

- GIS Server Concepts
- Single Machine Configurations
 - Basic
 - Basic with Proxy
 - With Web Adaptor
 - Fail-Over
 - Load Balanced or Siloed
- Multi Machine Configurations
 - Concepts
 - Basic (without a load balancer)
 - With Load Balancer
 - With Web Adaptor
 - With redundant Web Adaptors
 - Cluster Concepts

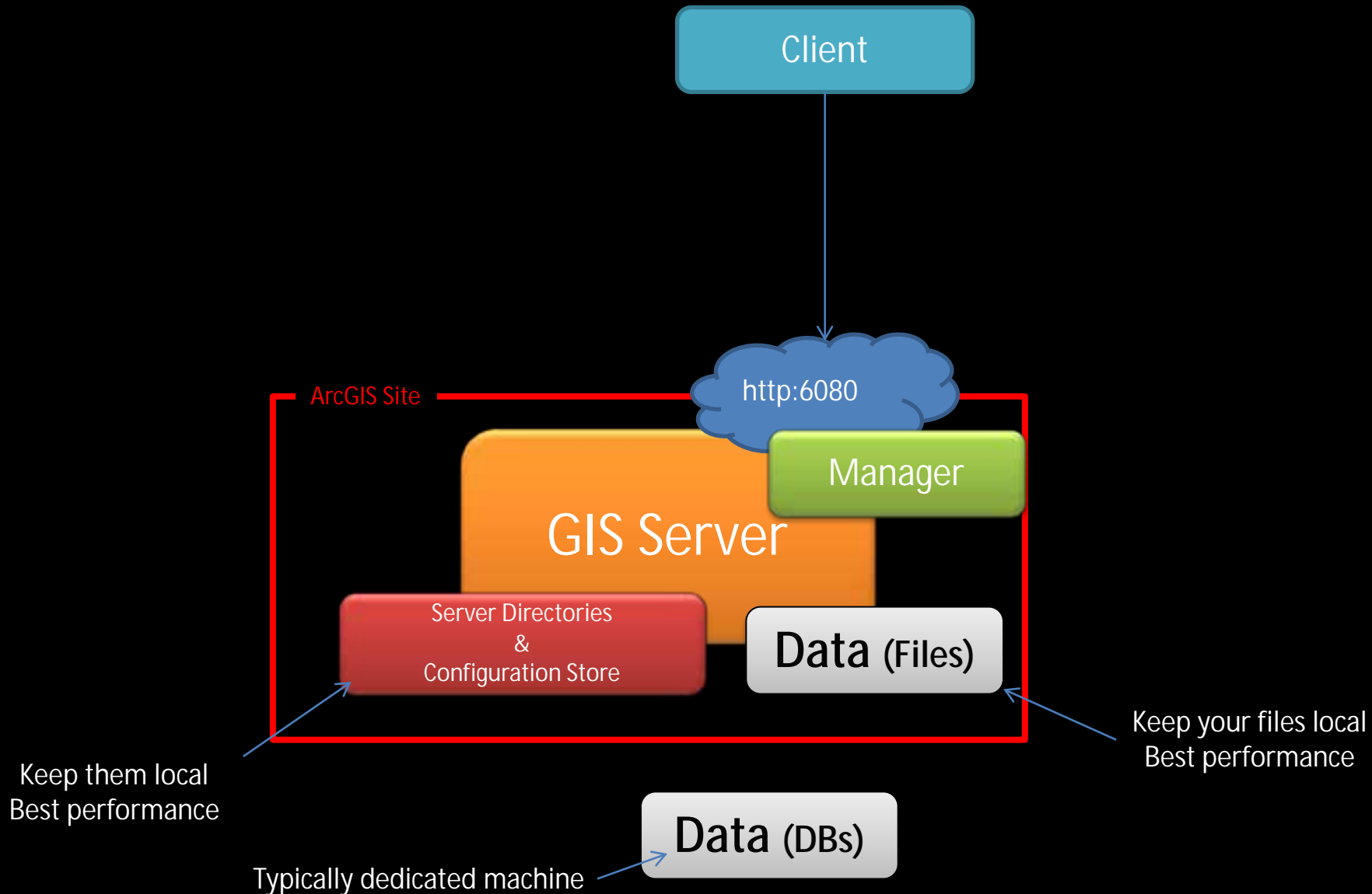
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Core GIS Server Concepts

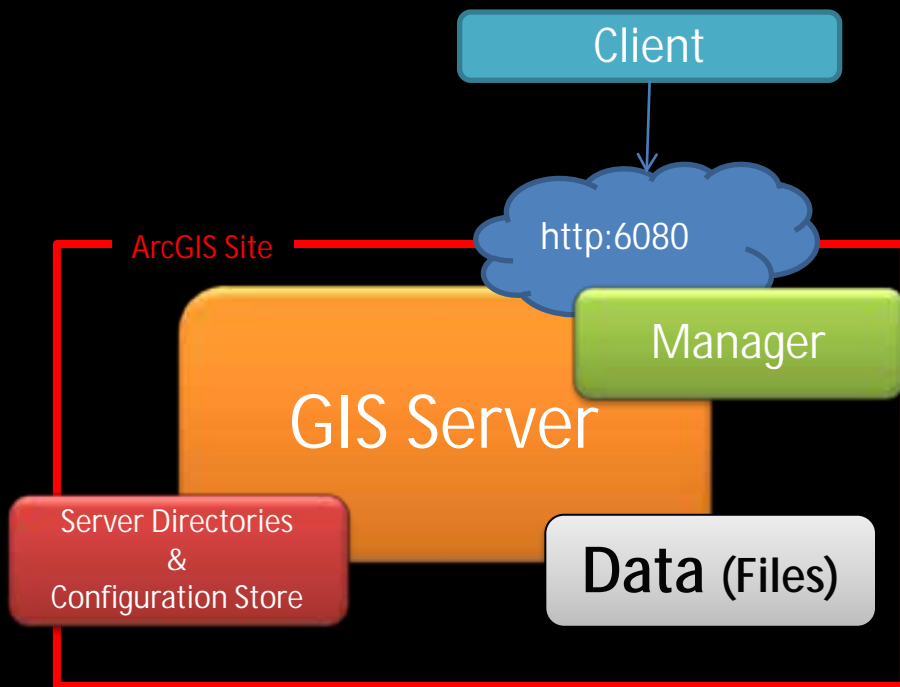


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Basic Single Machine Configuration



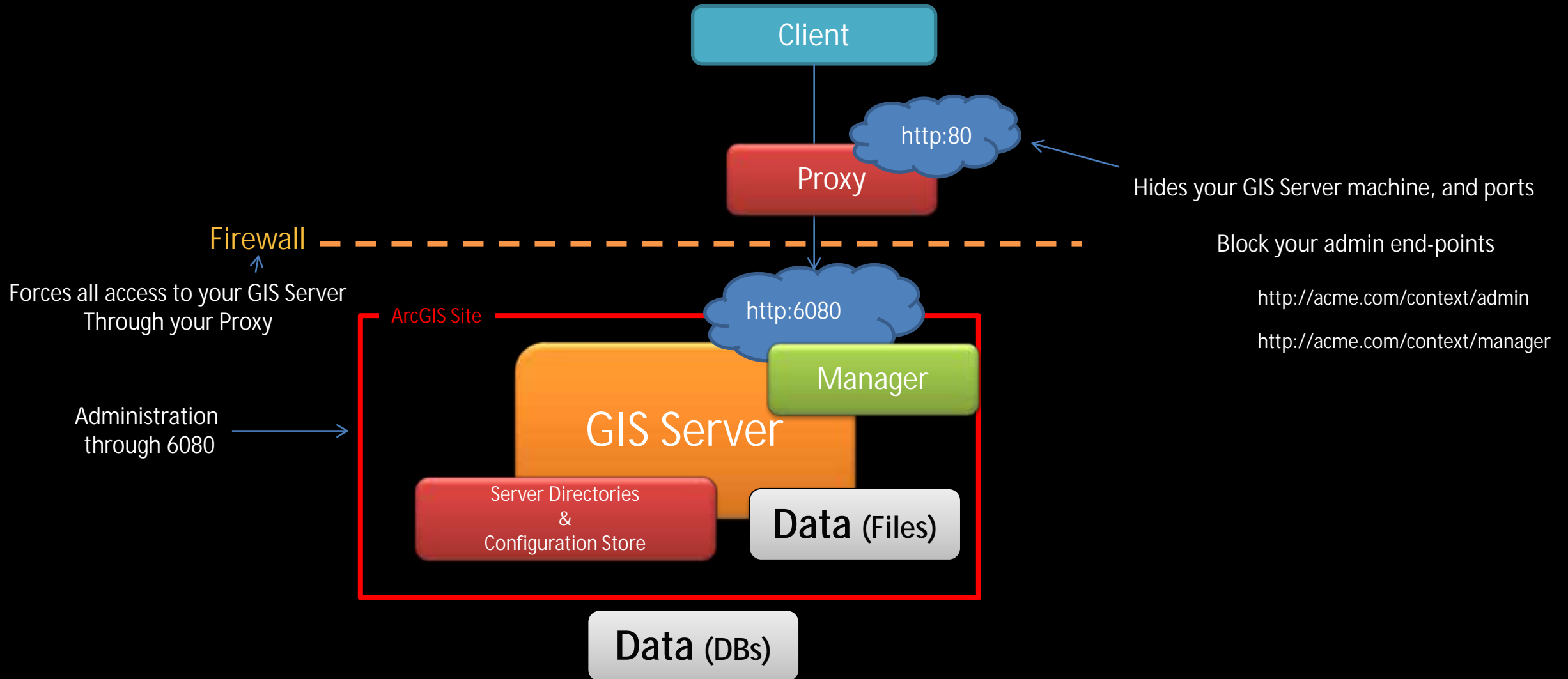
Basic Single Machine Configuration



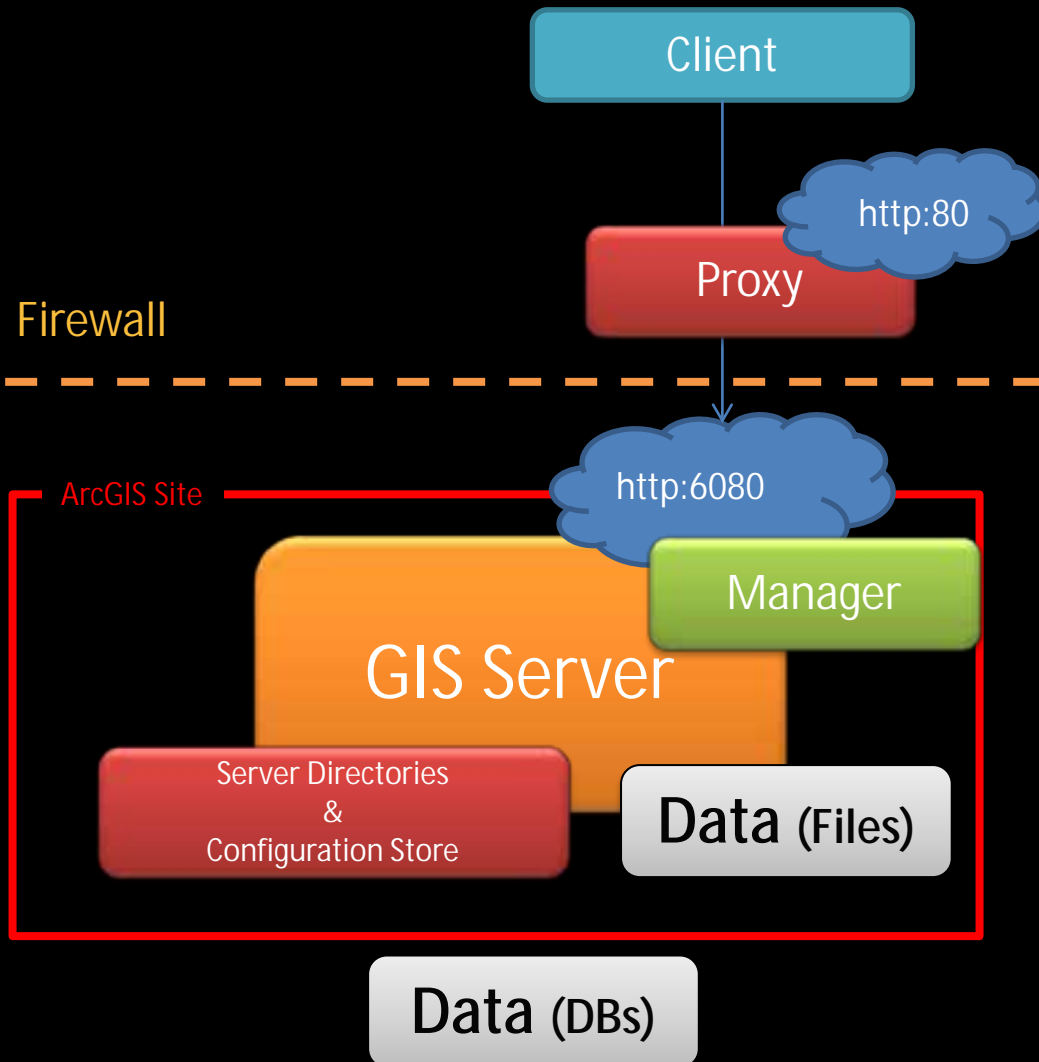
- Uses:
 - Development
 - Intranets
- Advantages
 - Easy to setup
 - Fast performance (keep file resources local)
- To keep in mind
 - No HA
 - No http standard ports used
 - Security
 - Admin end-points exposed to clients ([Consider restricting IPs](#))
 - Only Esri's token based authentication

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Single Machine Configuration **with Proxy**



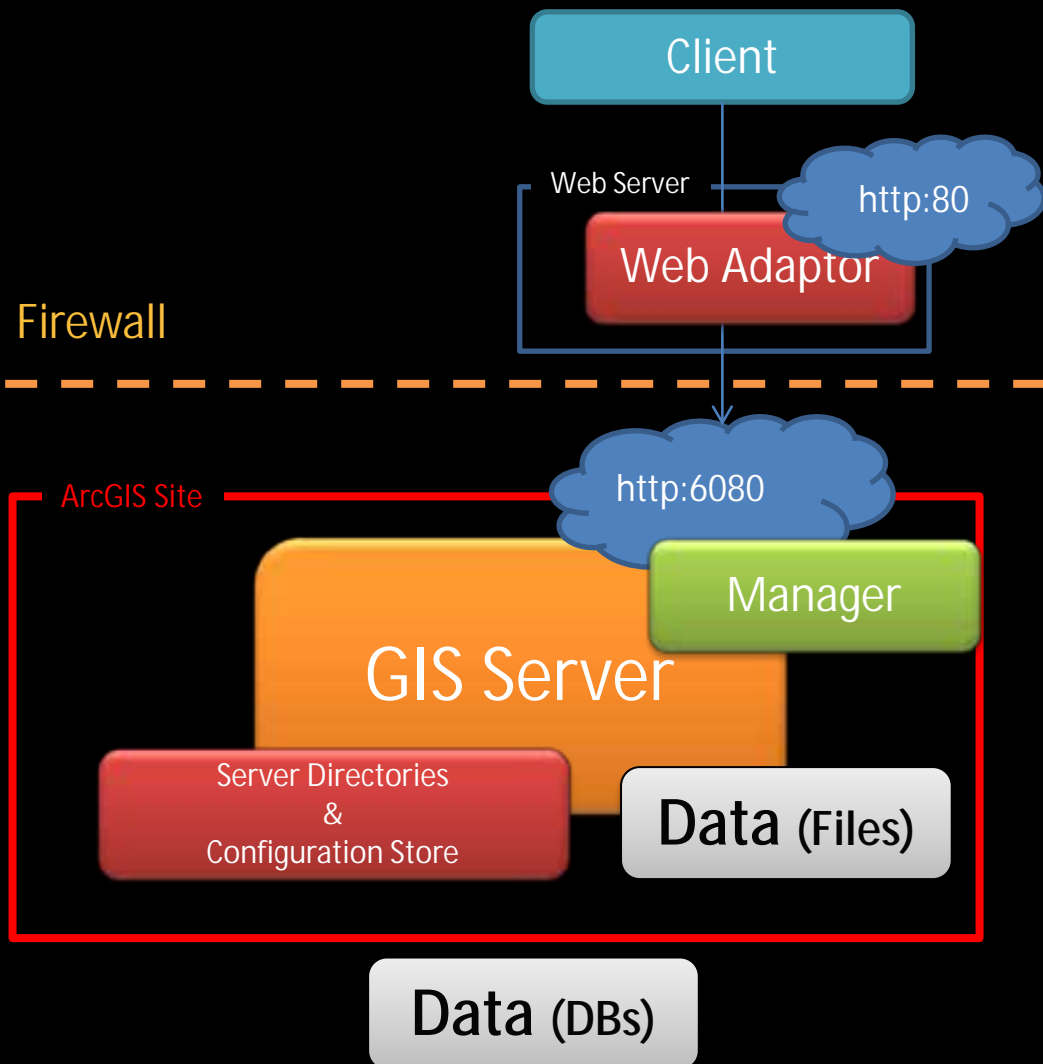
Single Machine Configuration **with Proxy**



- Uses:
 - Intranets / Public access
- Advantages
 - Fast performance (keep file resources local)
 - Enhanced security
- To keep in mind
 - No HA
 - Token authentication only unless a Web Adaptor is used

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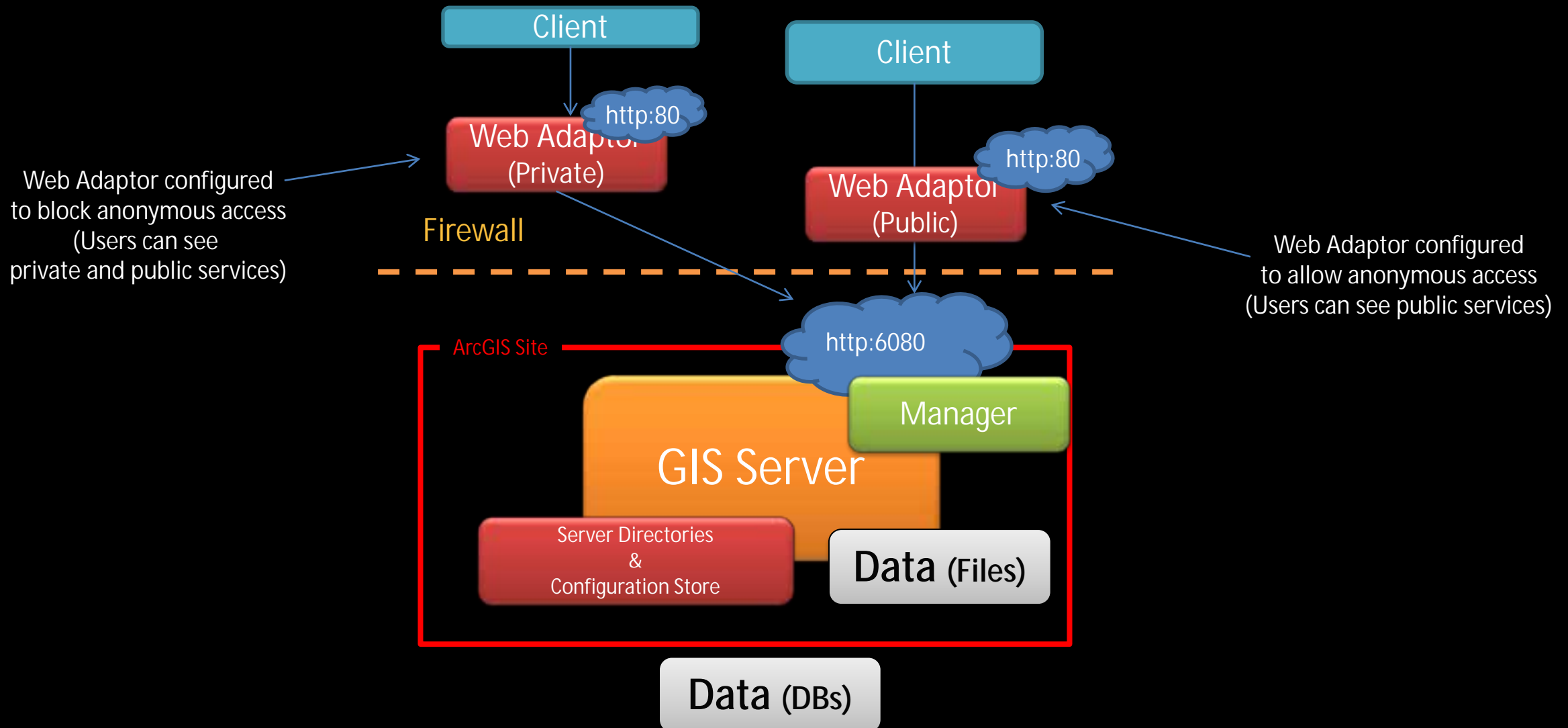
The ArcGIS Web Adaptor



- An Esri proxy implementation for ArcGIS Server
- Runs on your web server
 - IIS, Java
- Helps you leverage your third party web server security features
 - Including Web Tier Authentication
- Automatically handles GIS Servers in your site*

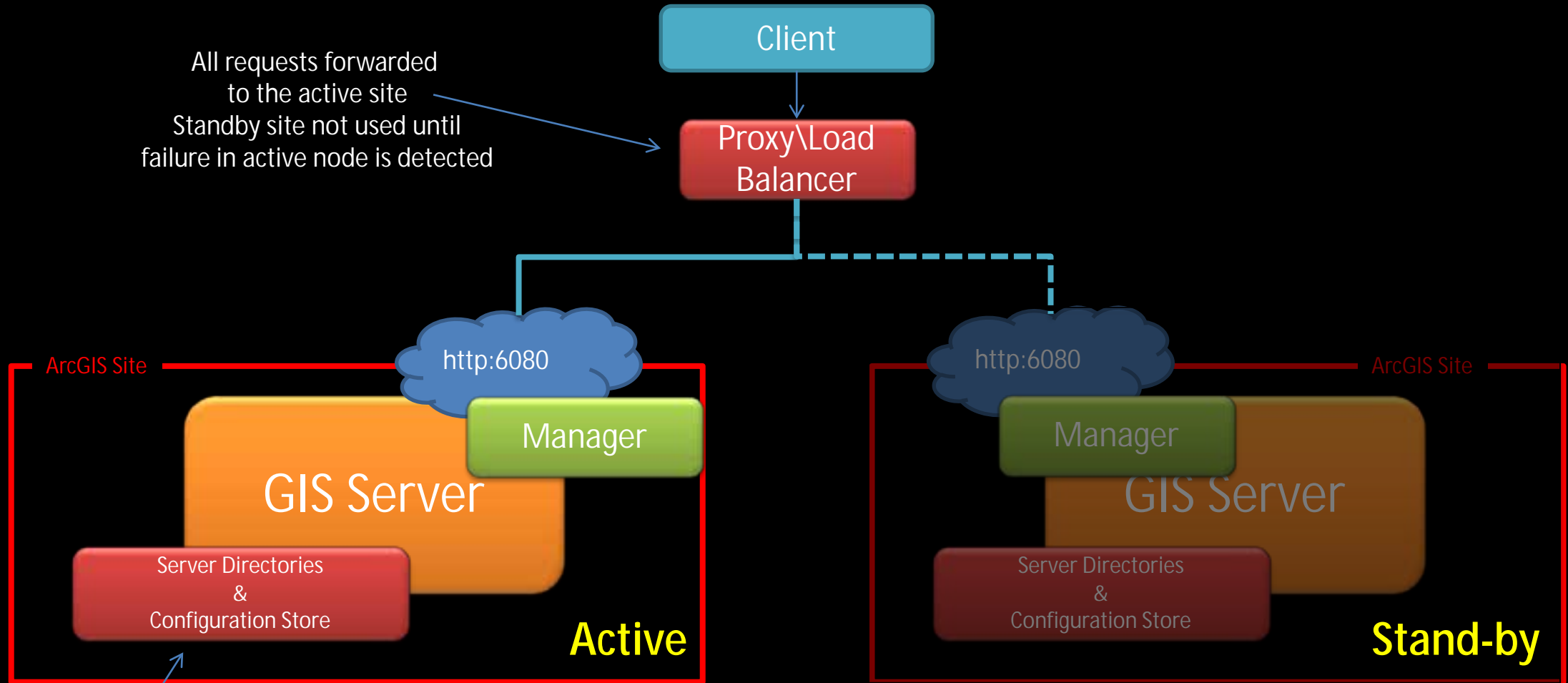
* Will see later

Single Machine Configuration with Web Adaptor's



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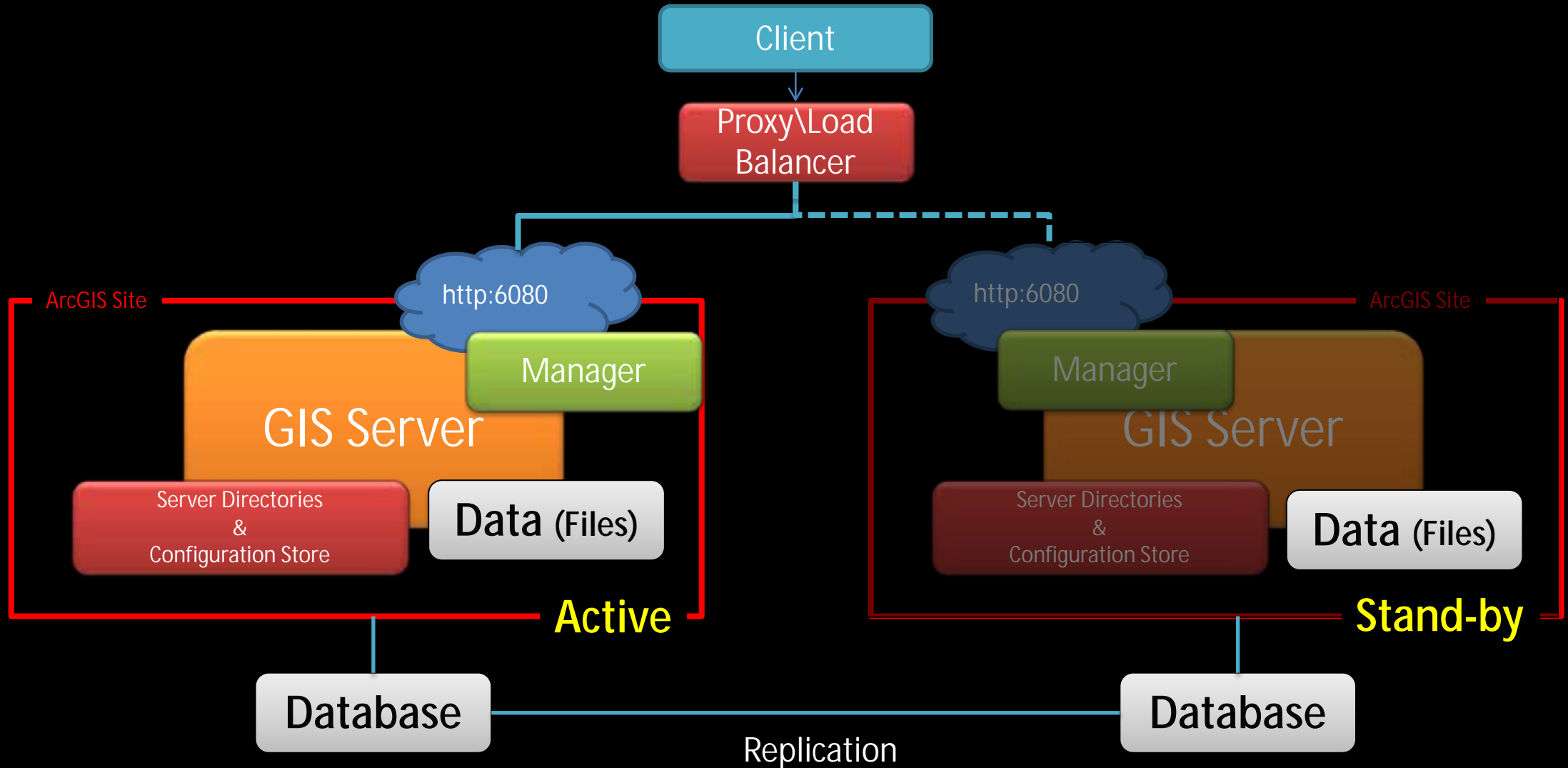
Single Machine Configuration (Fail-over)



Each GIS Server has its own Config-store and Server directories

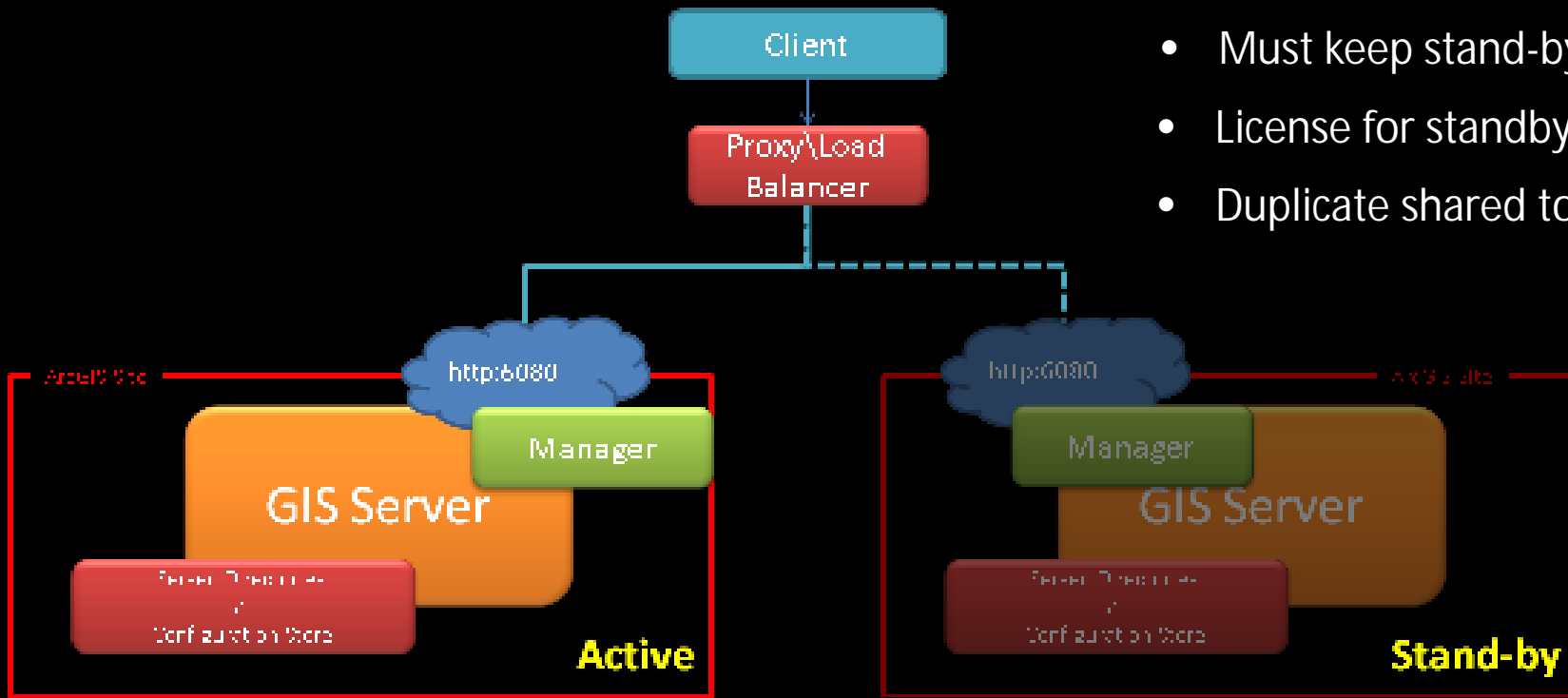
Single Machine Configuration (Fail-over)

With Replicated Data Tier



Single Machine Configuration (Fail-over)

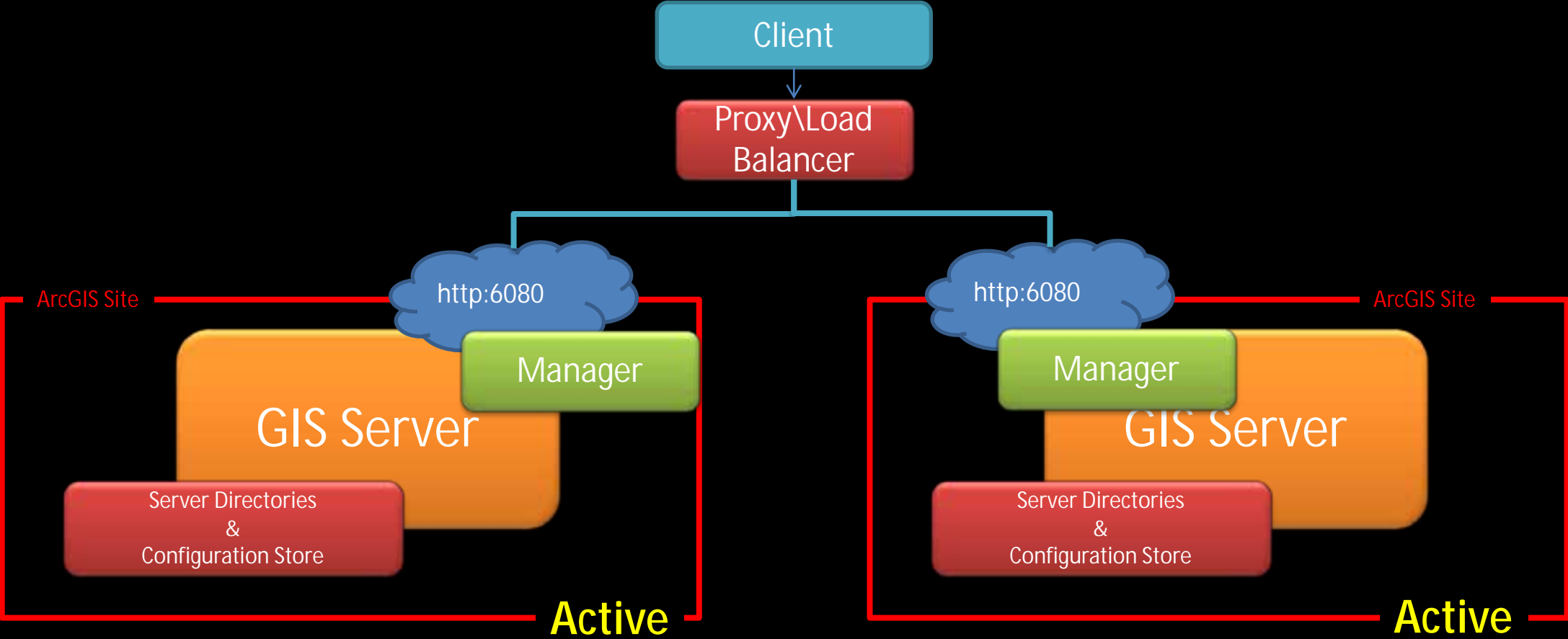
- HA variation of a single machine deployment
- Relies on an external load balancer
- Must pay attention to data tier HA strategy
- Must keep stand-by Server in sync
- License for standby server provided at no additional cost
- Duplicate shared token key across sites if using tokens



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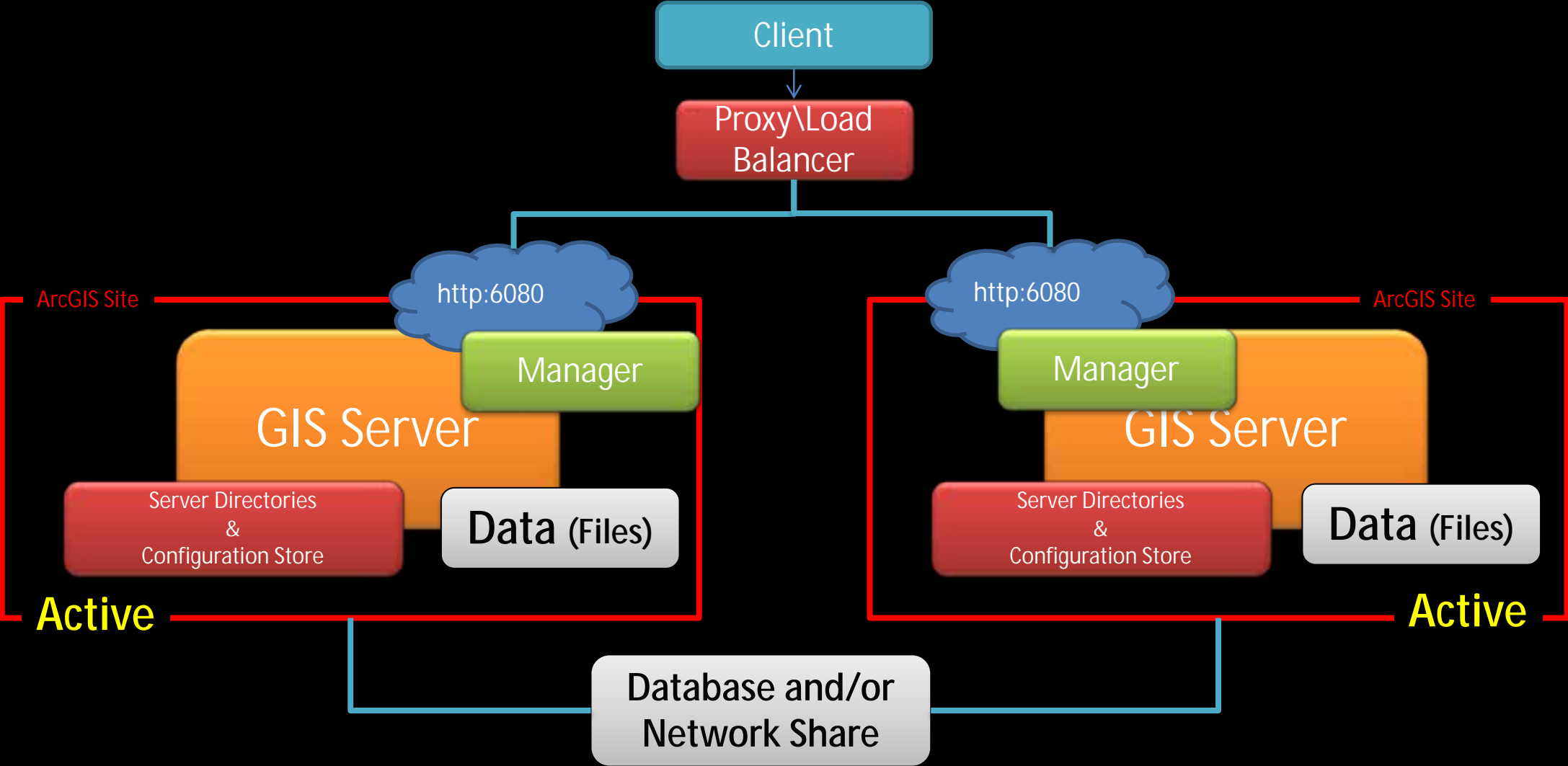
Load balanced Single Machine Configuration (Active-Active)

aka Siloed Architecture



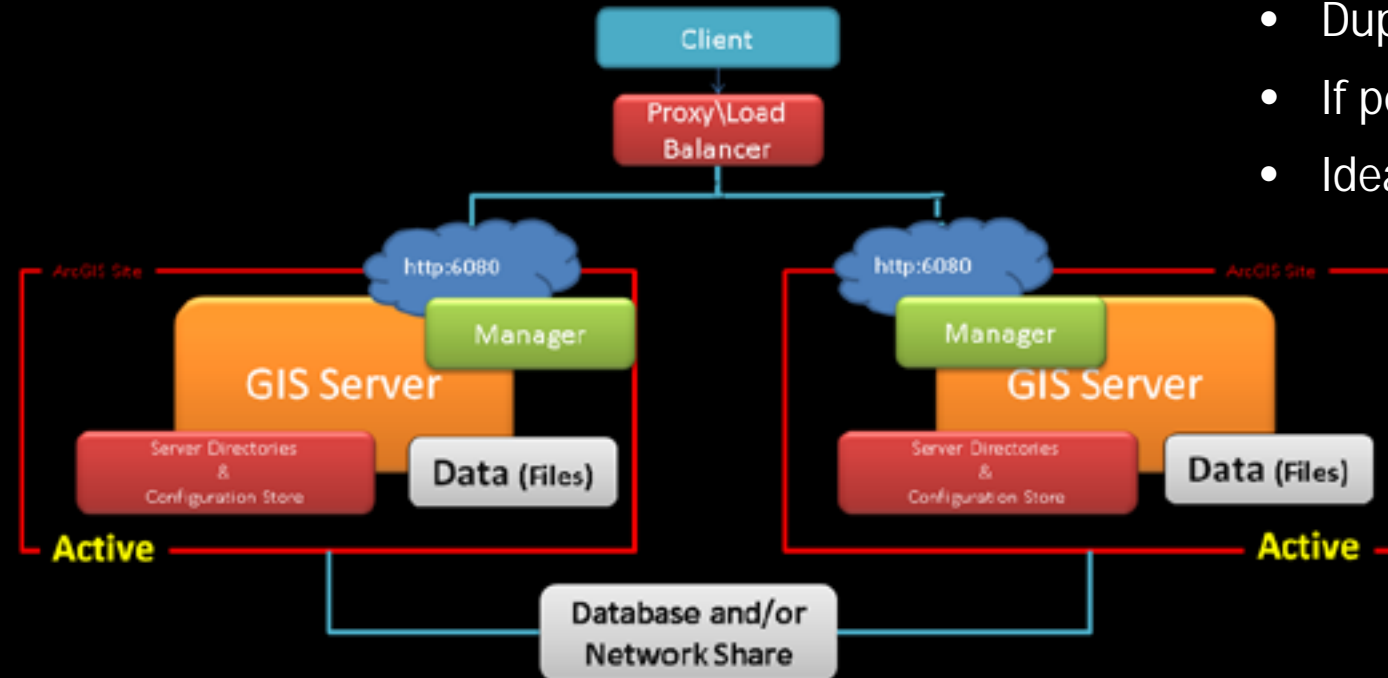
Load balanced Single Machine Configuration (Active-Active)

With Data Tier



Load balanced Single Machine Configuration (Active-Active)

- High Capacity variation of a single machine deployment
- Relies on an external load balancer
- Must keep all GIS Servers in sync!
 - Manually
 - Scripting
 - Virtualization
- Duplicate shared token key across sites if using tokens
- If performance is key: keep file-based data and caches locally
- Ideal for serving map tiles (High capacity/HA)

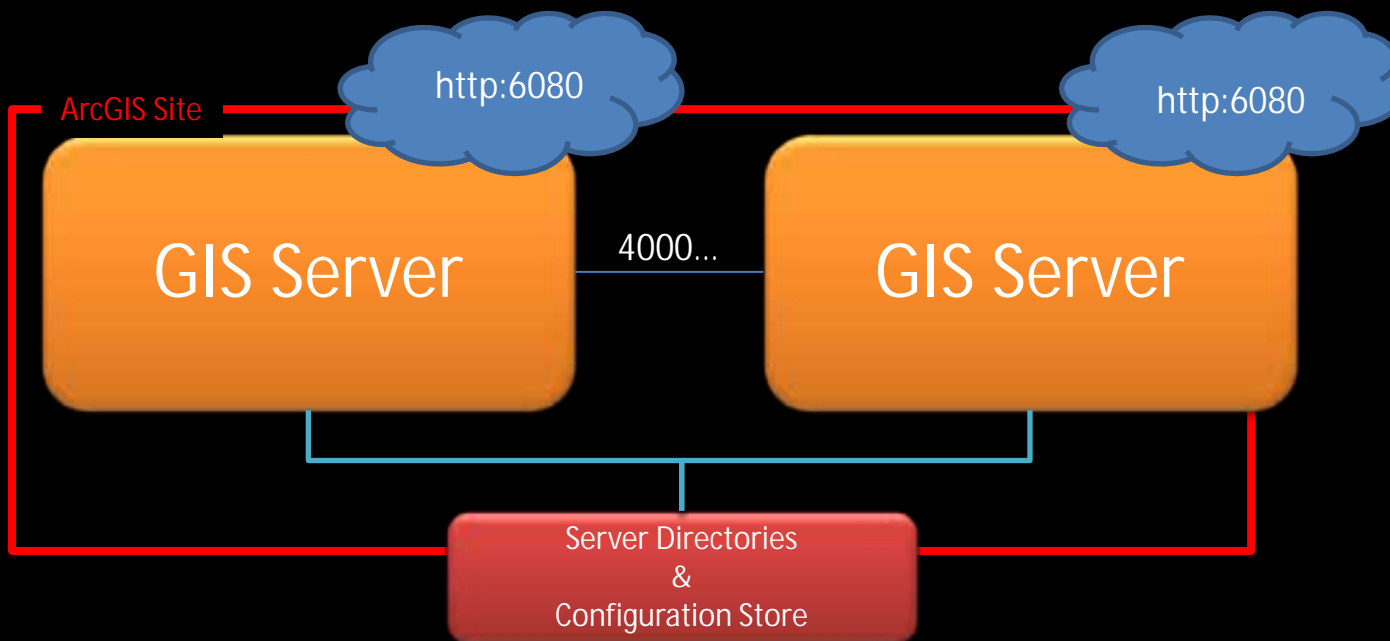


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Multi-Machine Configurations

Basic Concepts



- Two or more machines sharing single config-store & server directories
- Pool of machines using ports 4000-4005+ Internall use only. Clients cannot use
- All GIS Servers kept in sync for you update one GIS Server... all other nodes in the pool updated*
- Data strategies: As usual. Keep local if you can Note: Map caches can't be local If you share, share for all

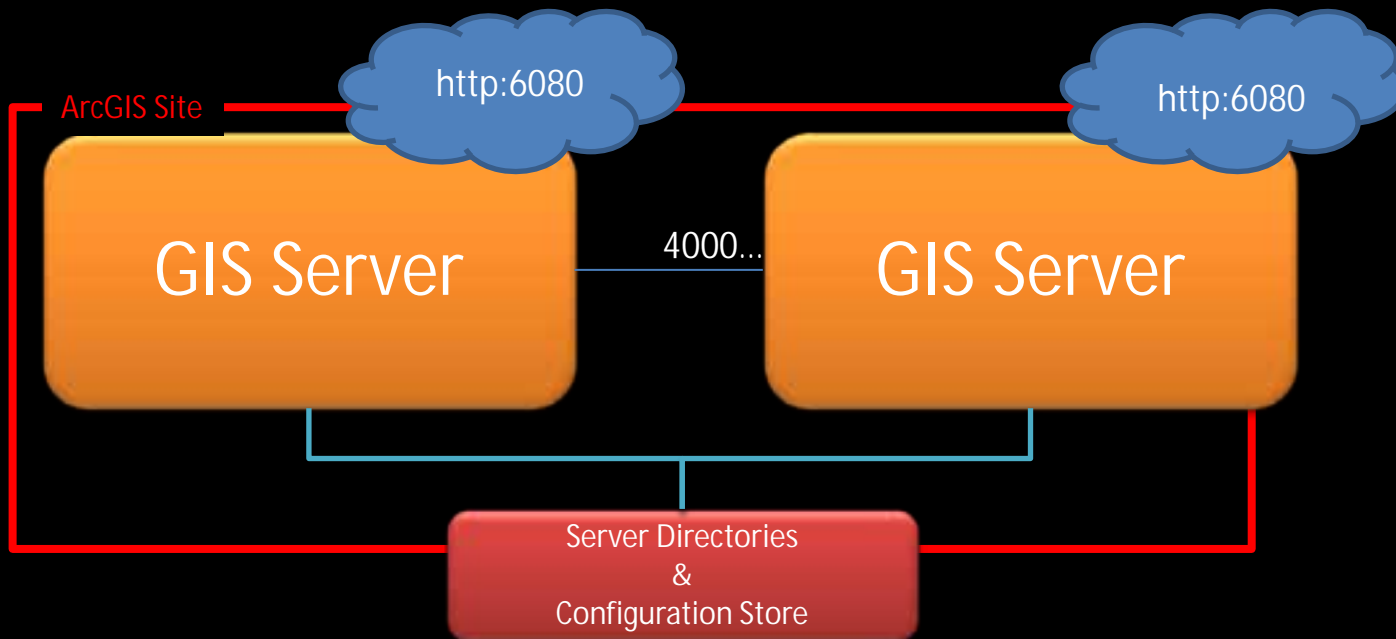
* Unless using 'Clusters'. We will see later

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Basic Multi-Machine Configuration

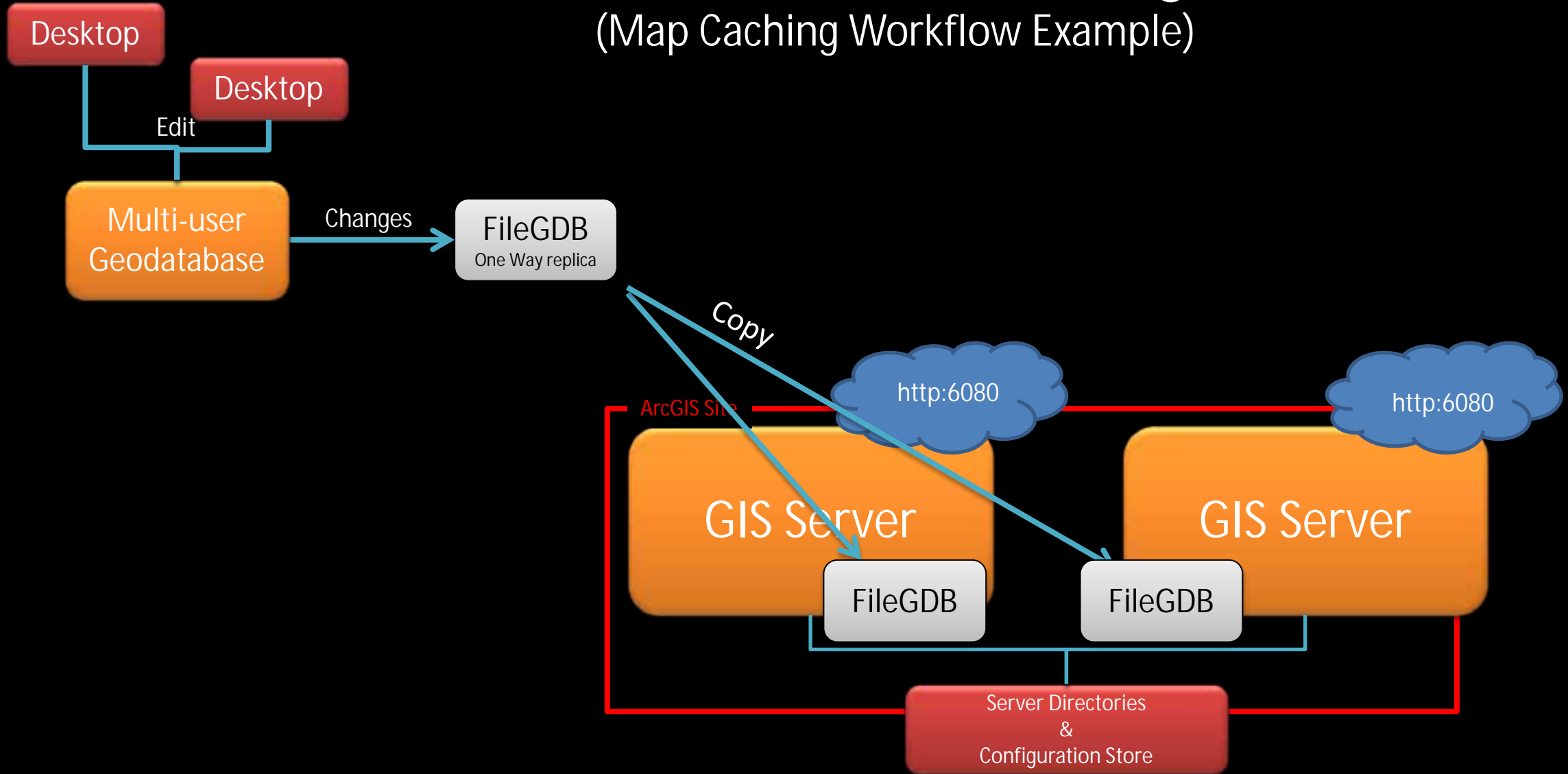
(without a load balancer)

- Adds capacity to a single machine deployment
- Without a load balancer, single point of failure for applications
- Only practical for batch processing (Map caching)



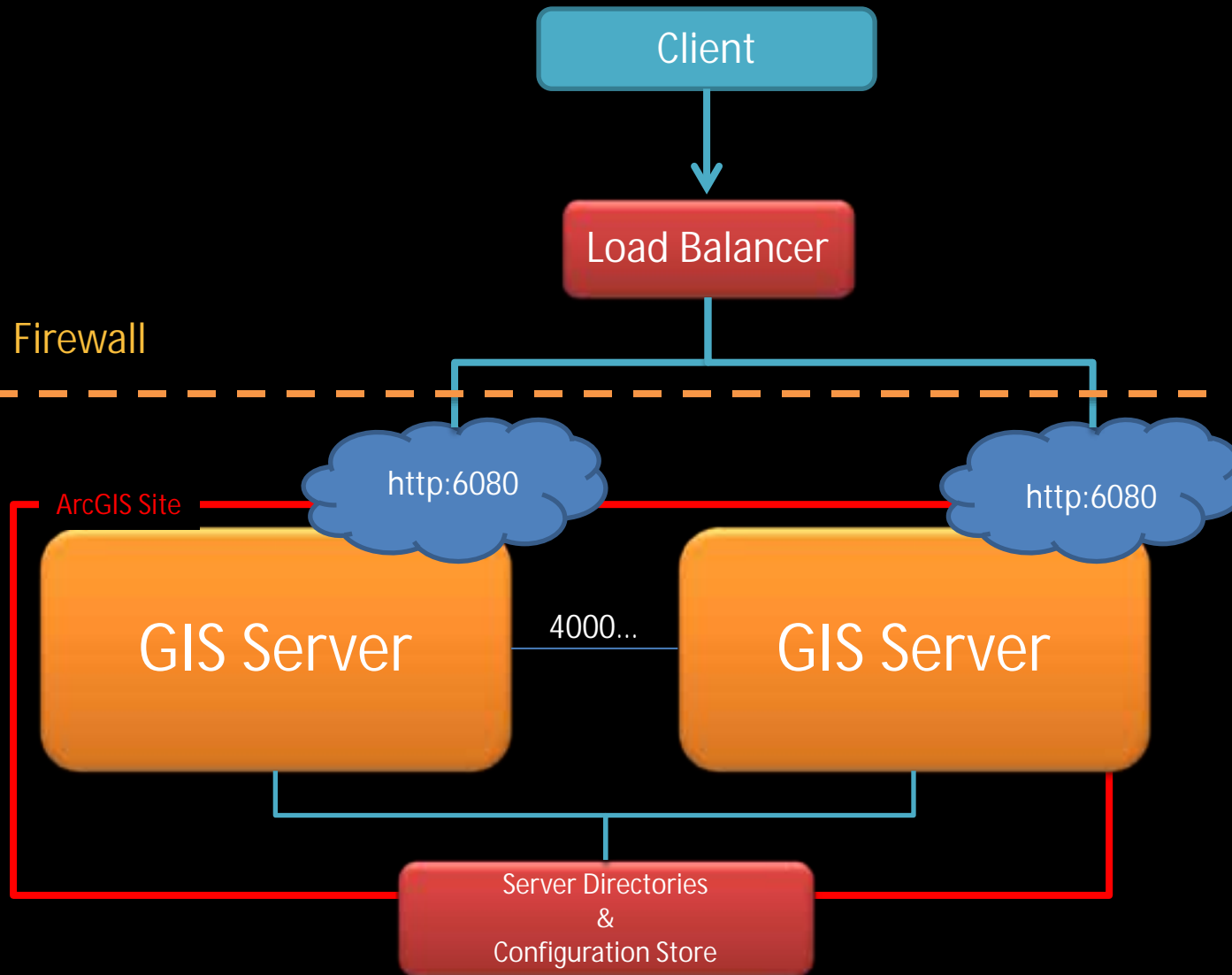
Basic Multi-Machine Configuration

(Map Caching Workflow Example)



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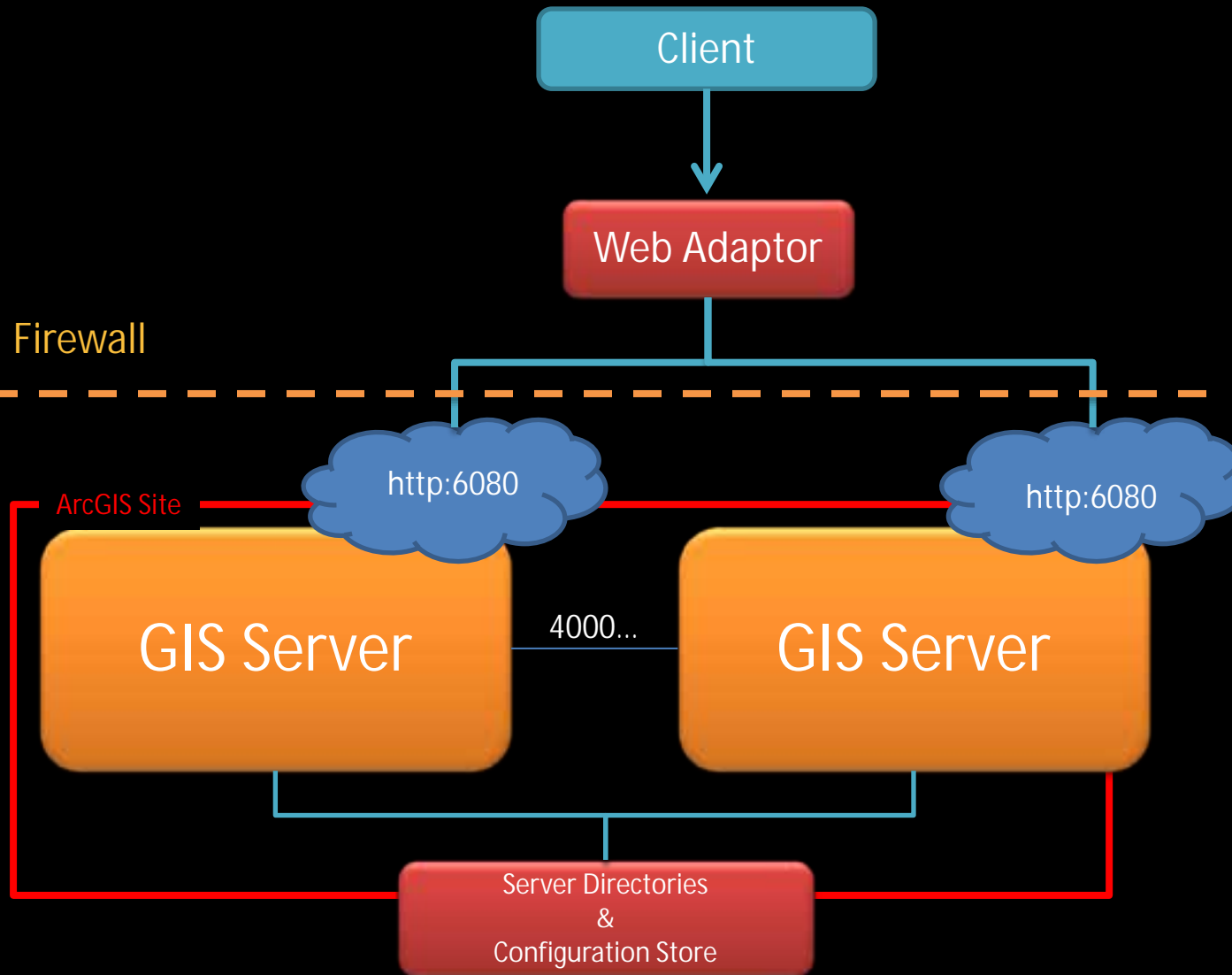
Multi-Machine Configuration With Load Balancer



- Typical configuration to support applications
- Load balancer fronts a pool of GIS Servers
Note: How load balancing works?
- For High Capacity or HA with simplified administration
- Typically Load Balancer acts as or is complemented by a proxy + firewall
- If not using Web Adaptor, can't use Web Tier authentication

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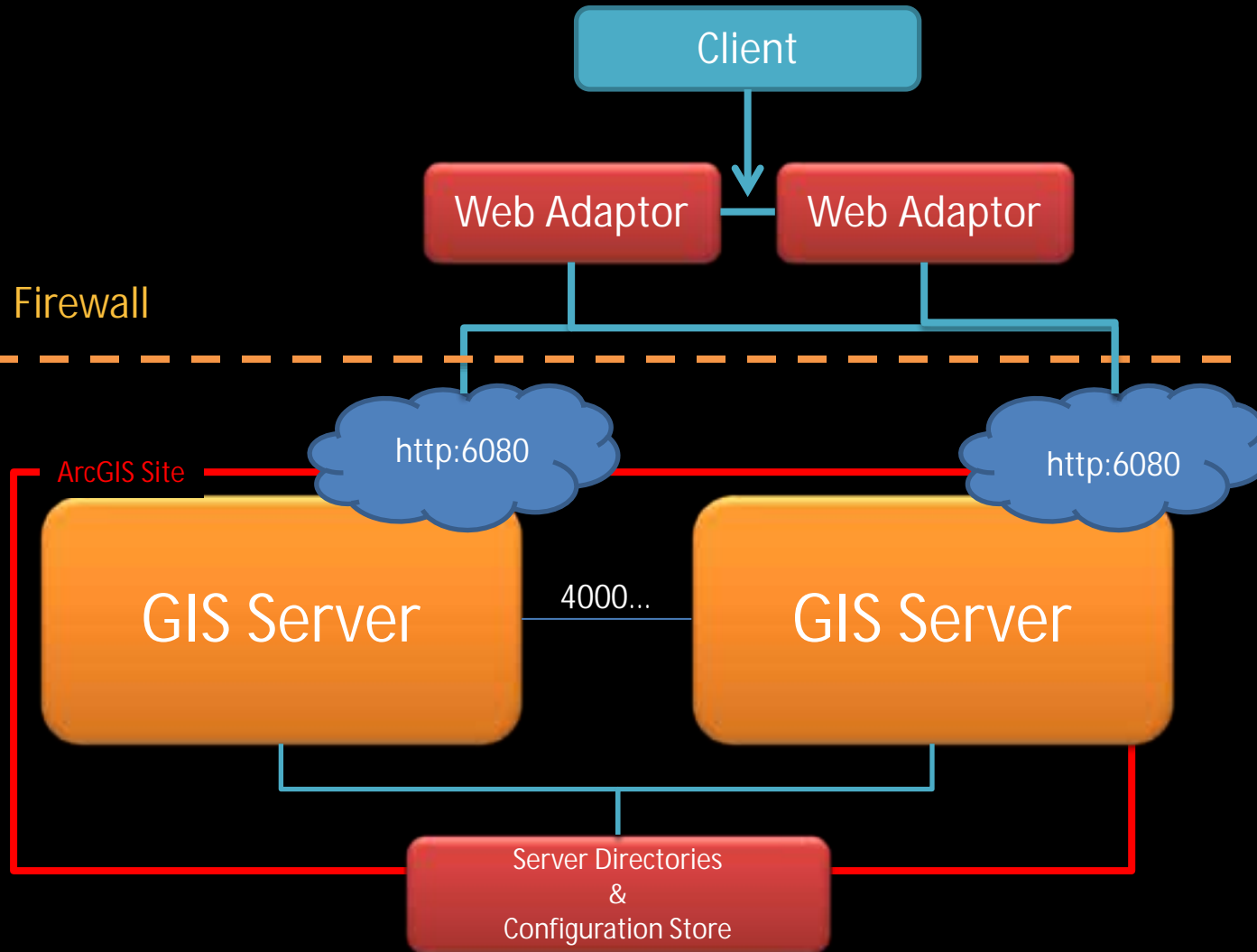
Multi-Machine Configuration With Web Adaptor



- A variation of the previous configuration
- Supports Web Tier Authentication
- Does not require overhead of managing a third party load balancer
- Use redundant Web Adaptors for HA (see next)

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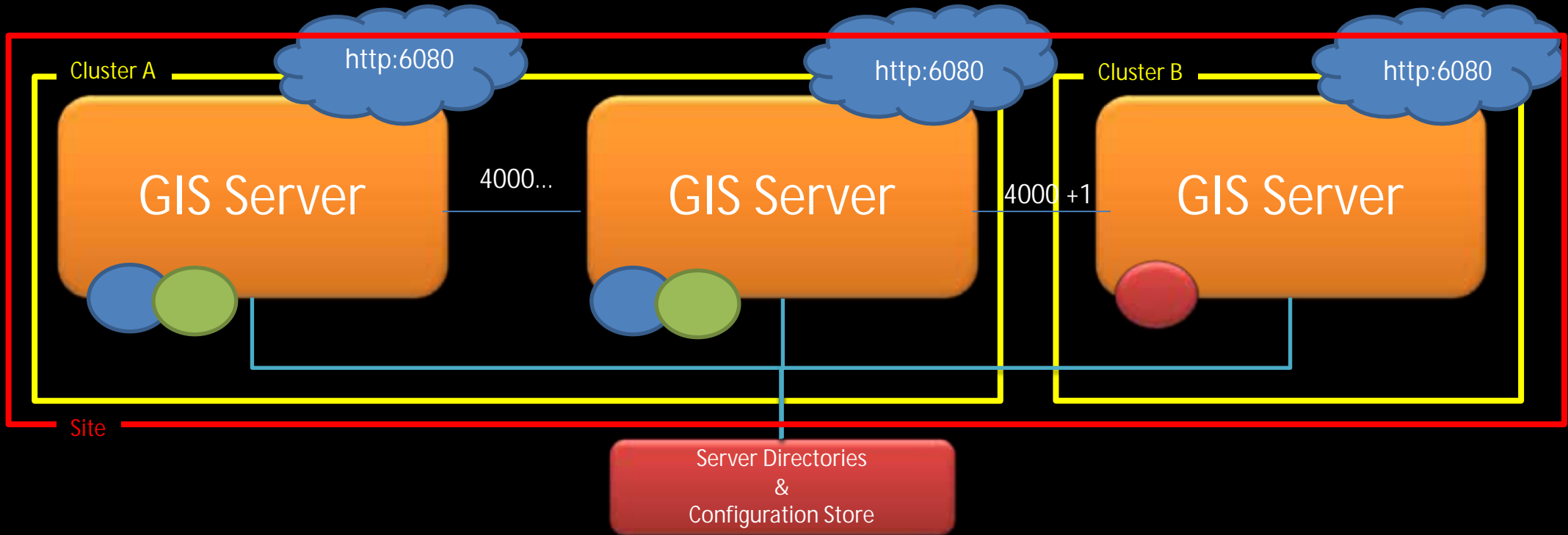
Multi-Machine Configuration With Redundant Web Adaptors



- A HA variation of the previous configuration
- Requires third party load balancer or web farm clustering
- As in all HA configurations: Must consider HA implications for Server Directories, Config-Store and Data tier

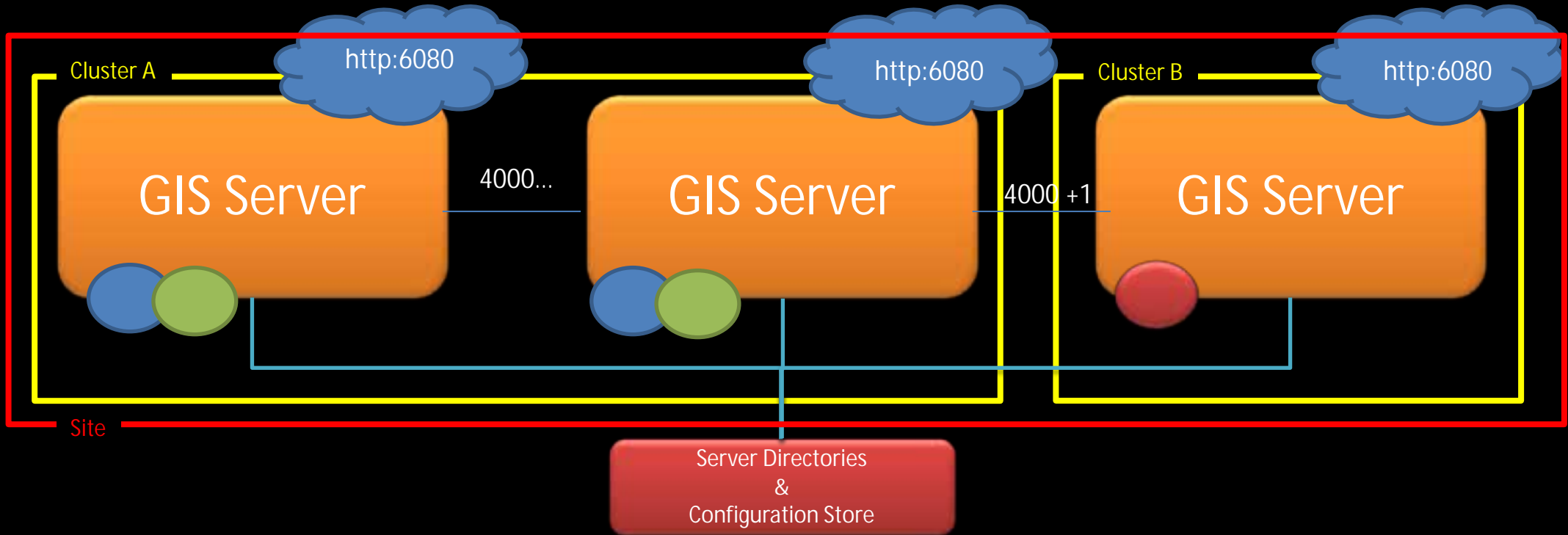
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Concept: 'Clusters'



In ArcGIS Server, a 'cluster' is a logical group of machines within a site that run the same services

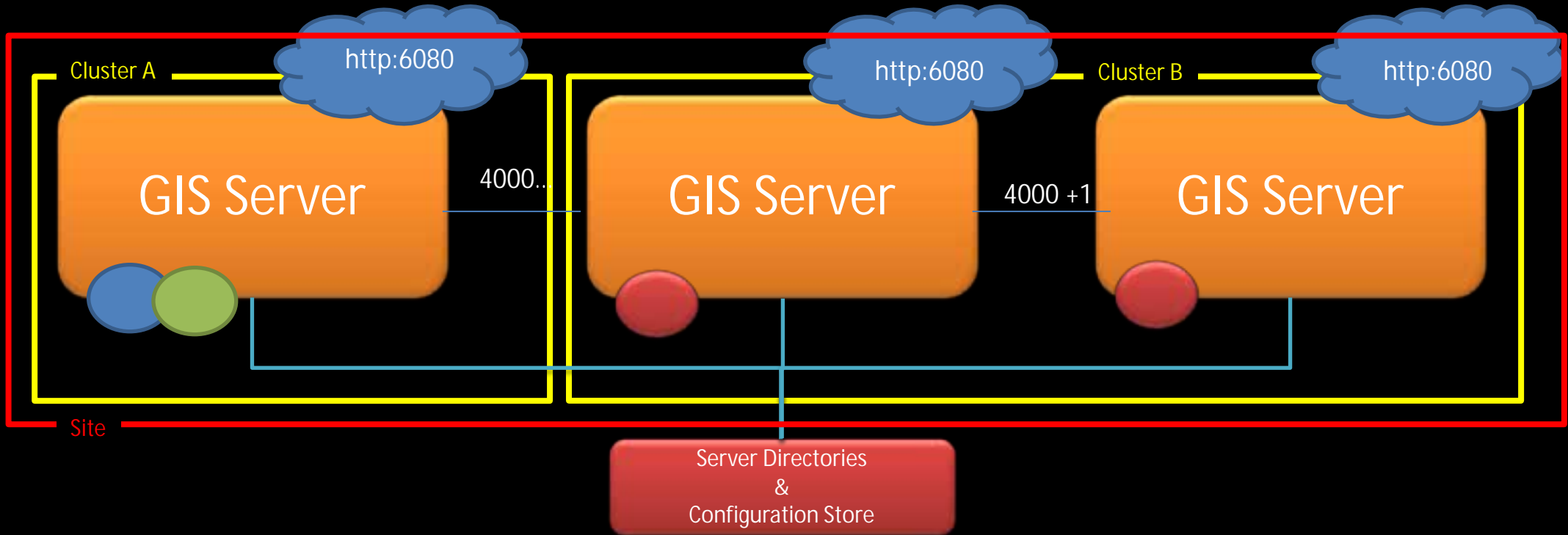
Concept: 'Clusters'



Total instances (assuming 2 per GIS server)



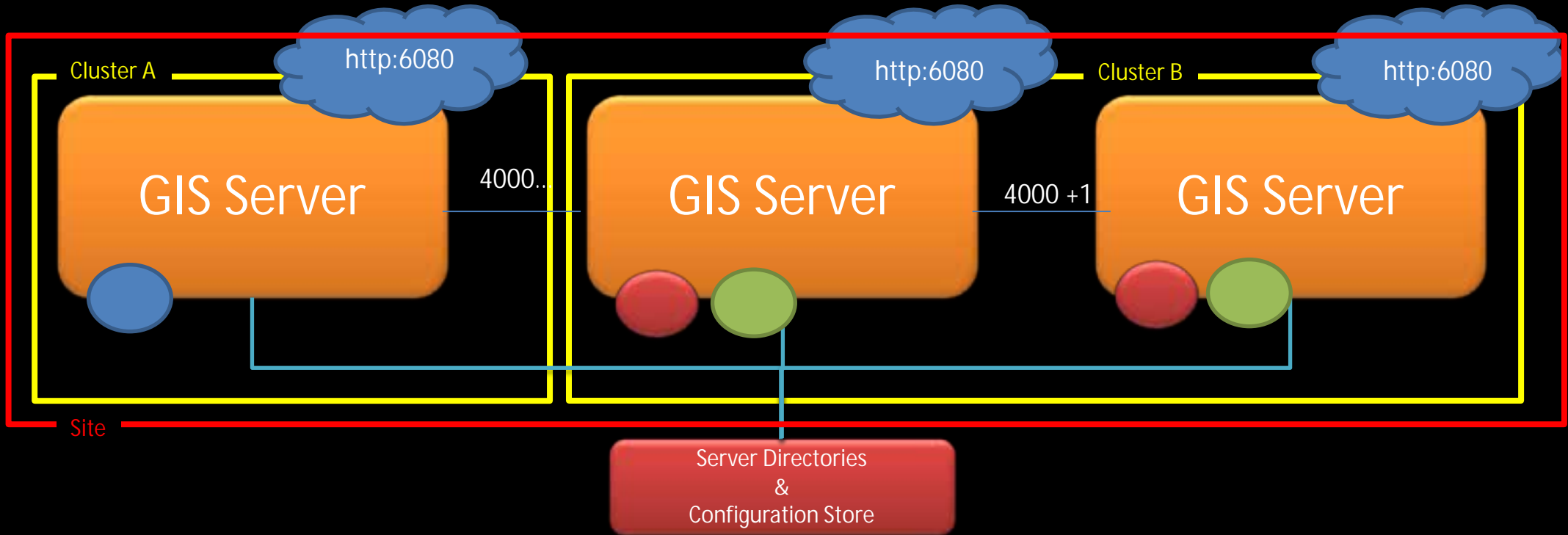
Moving machines from cluster to cluster



Total instances (assuming 2 per GIS server)



Moving services from cluster to cluster



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Questions