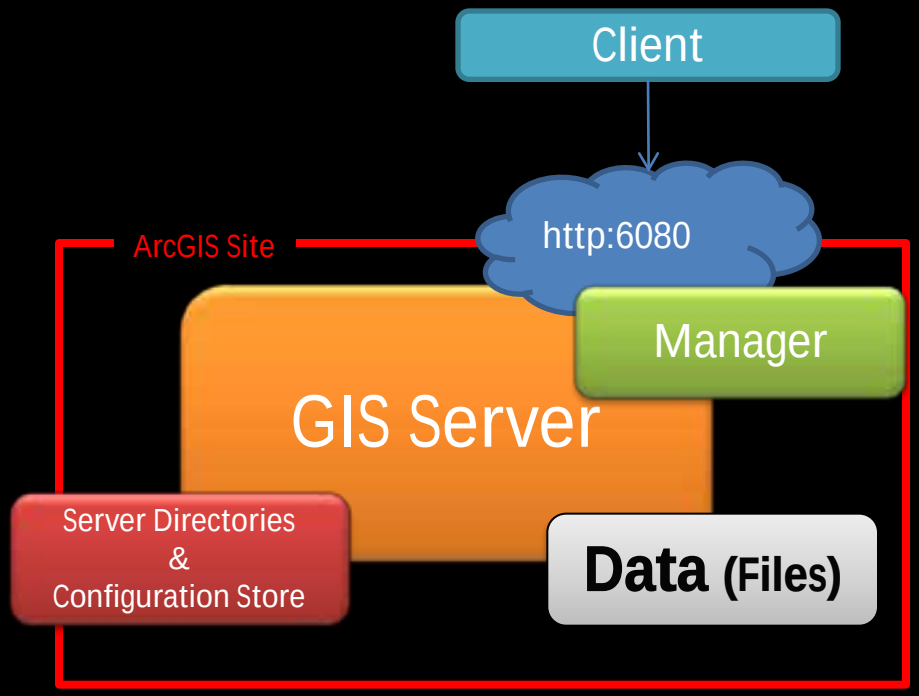
ArcGIS for Server Reference Implementations

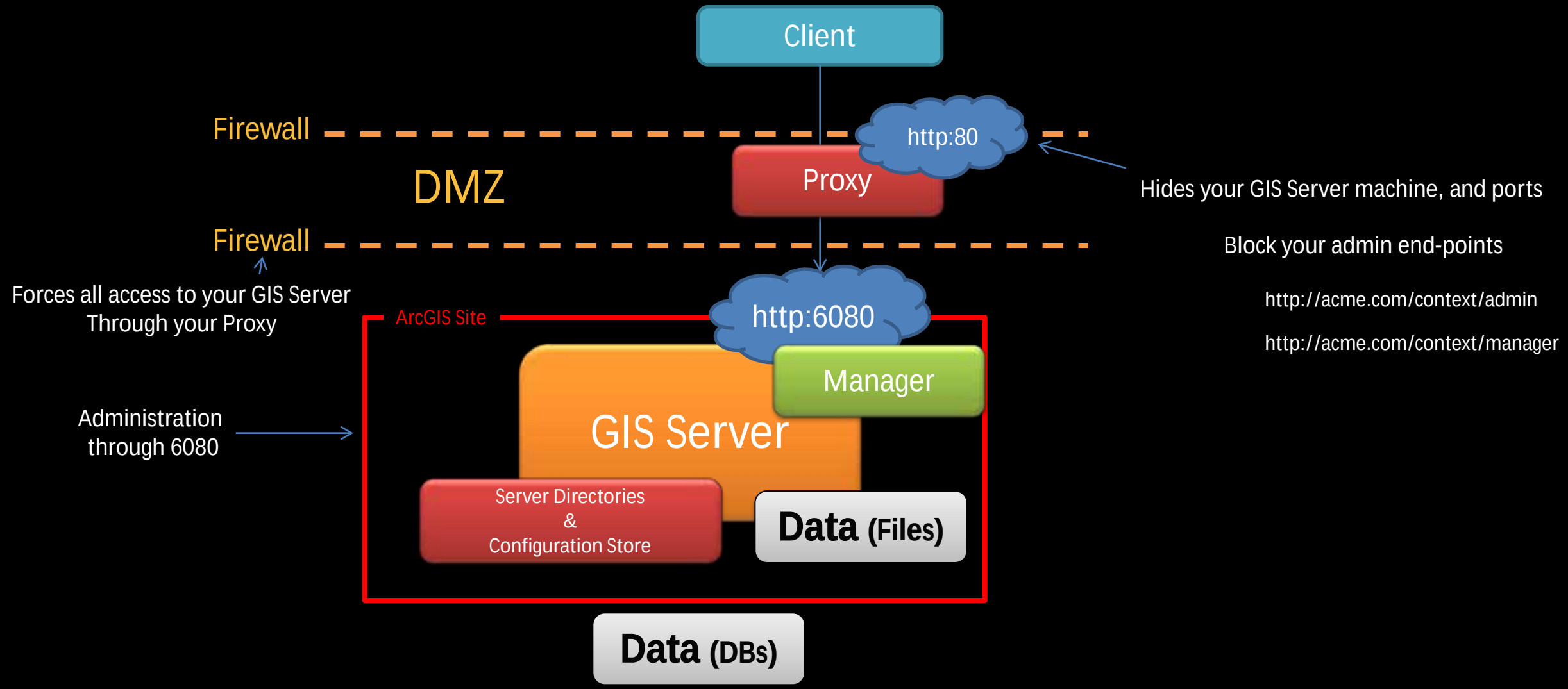
An ArcGIS Server's architecture tour

Basic Single Machine Site



- Advantages
  - Easy to setup
  - Fast performance (keep file resources local)
- Uses:
  - Development
  - Intranets
- 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

Single Machine Site with Proxy



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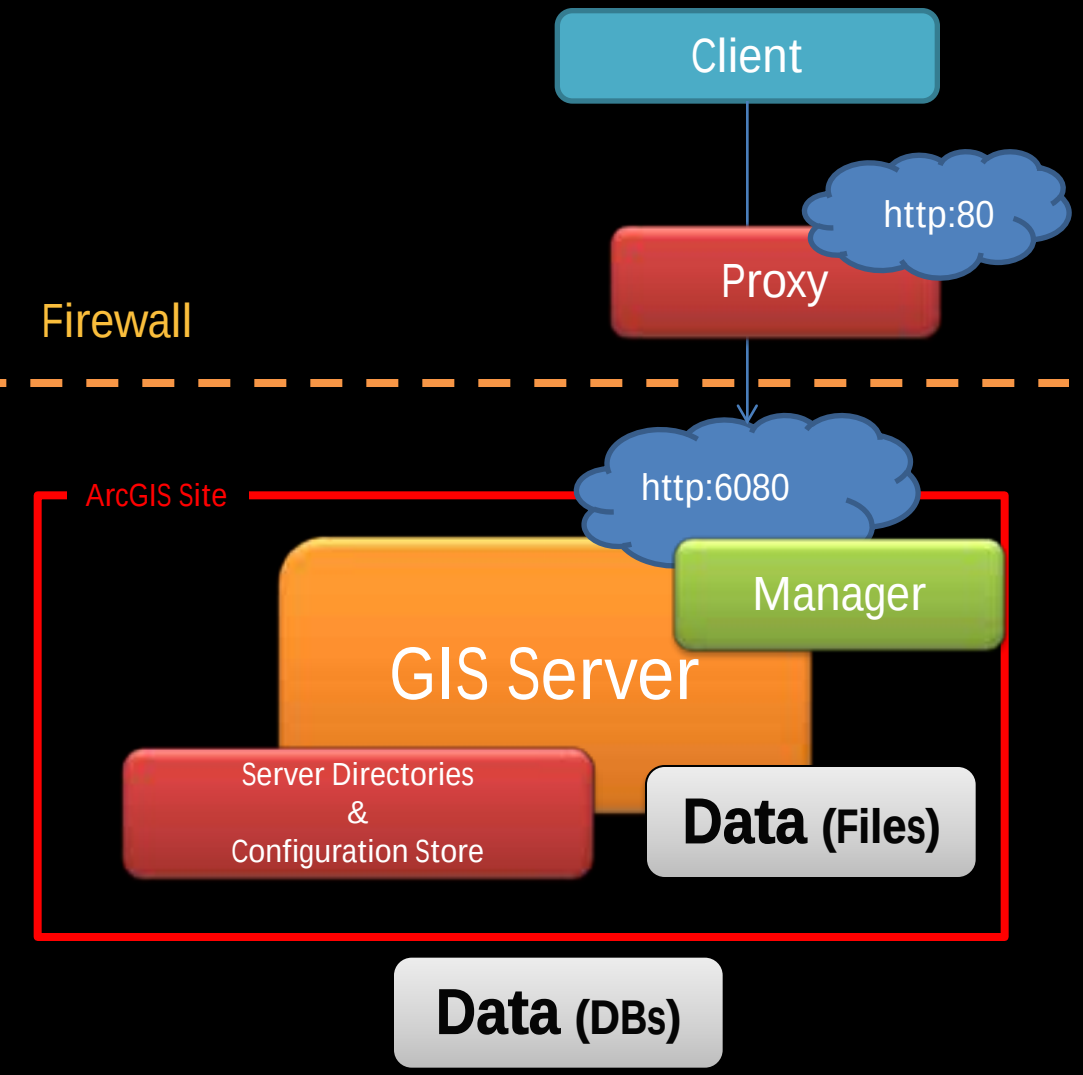
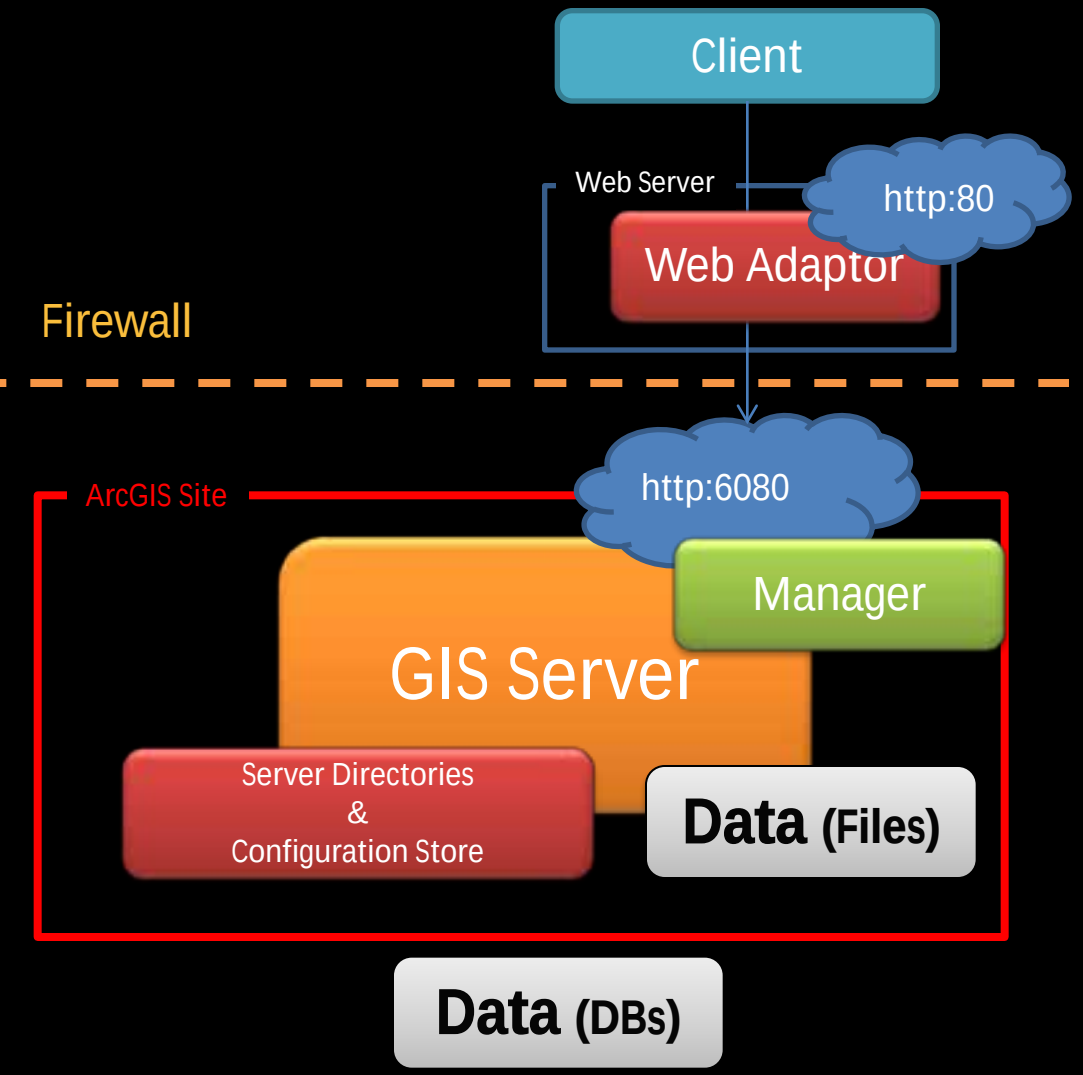


- Uses:
  - Intranets / Internet access
- Advantages
  - Fast performance (keep file resources local)
  - Enhanced security
- To keep in mind
  - No HA
  - Token authentication only

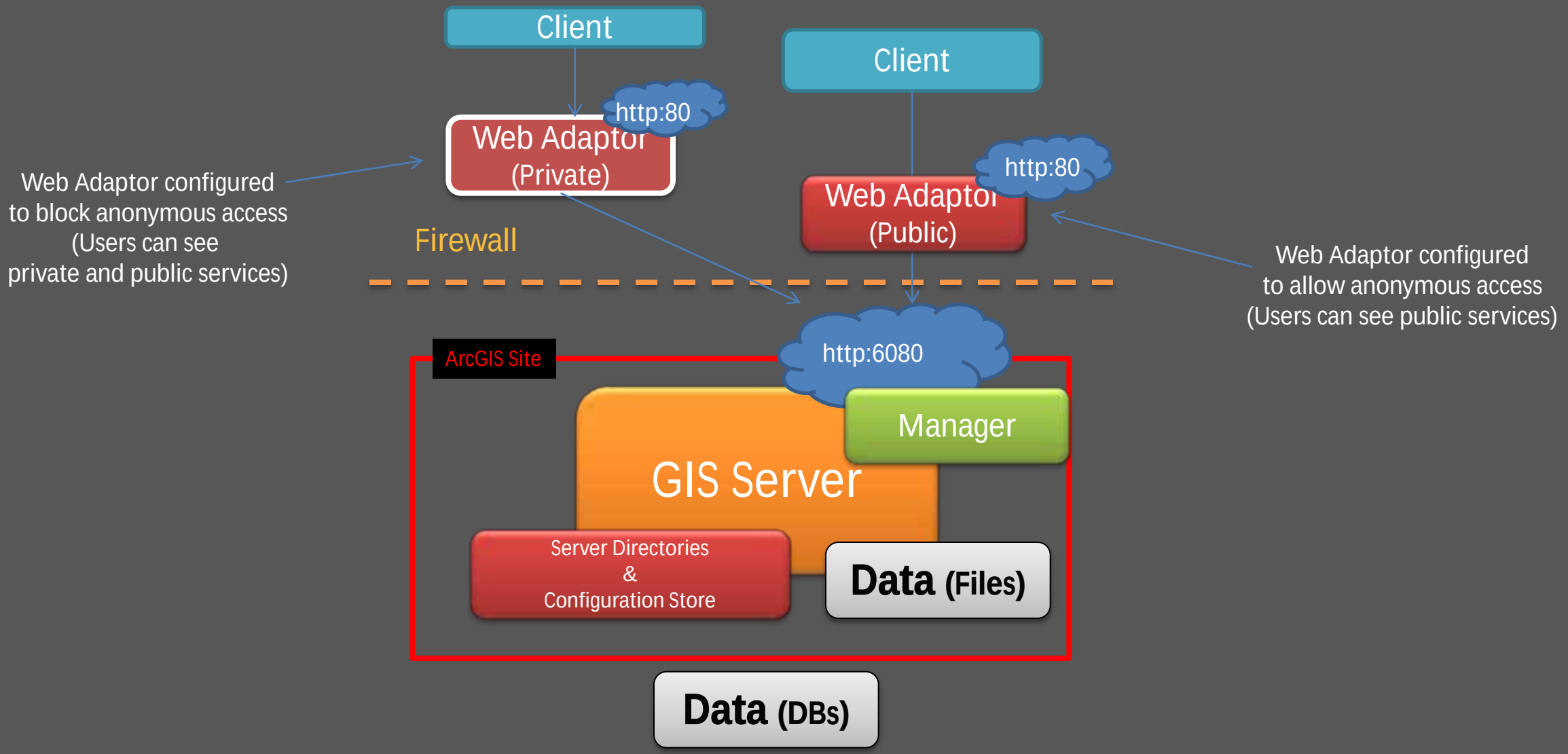
The ArcGIS Web Adaptor



- 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*

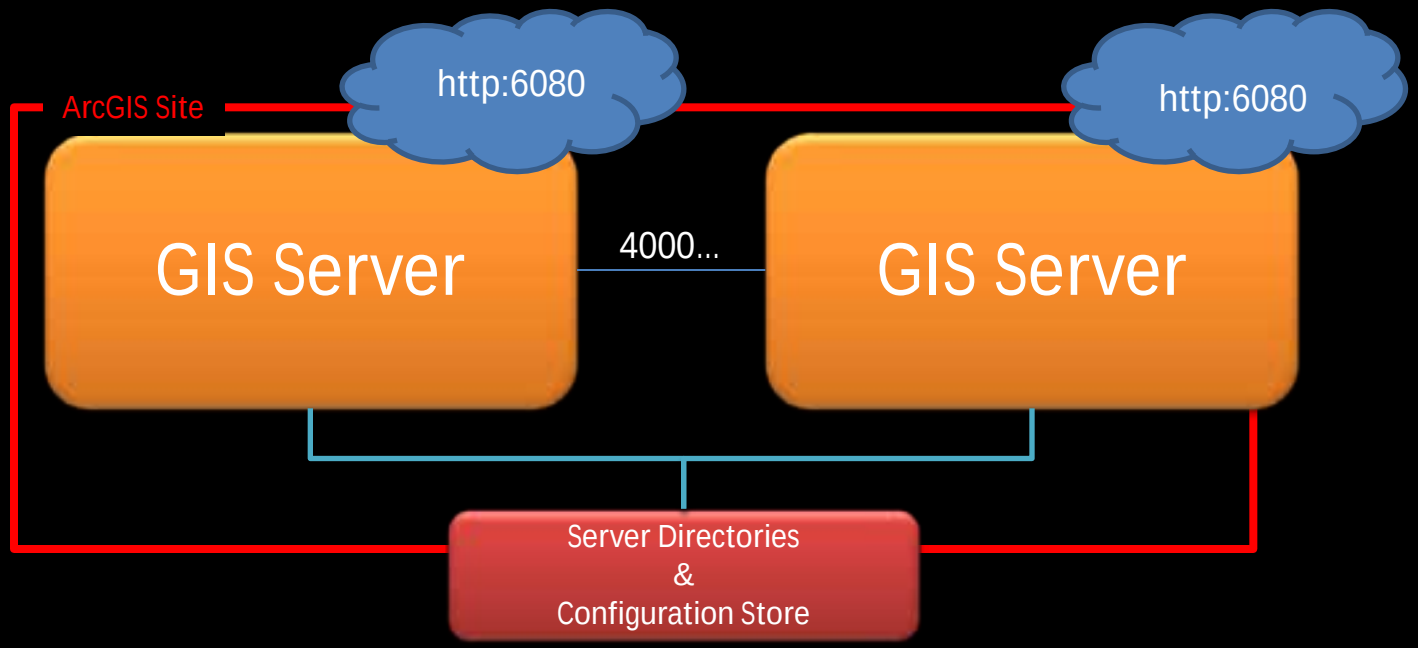
* Will see later

ArcGIS site with Multiple Web Adaptors



Multi-Machine Sites

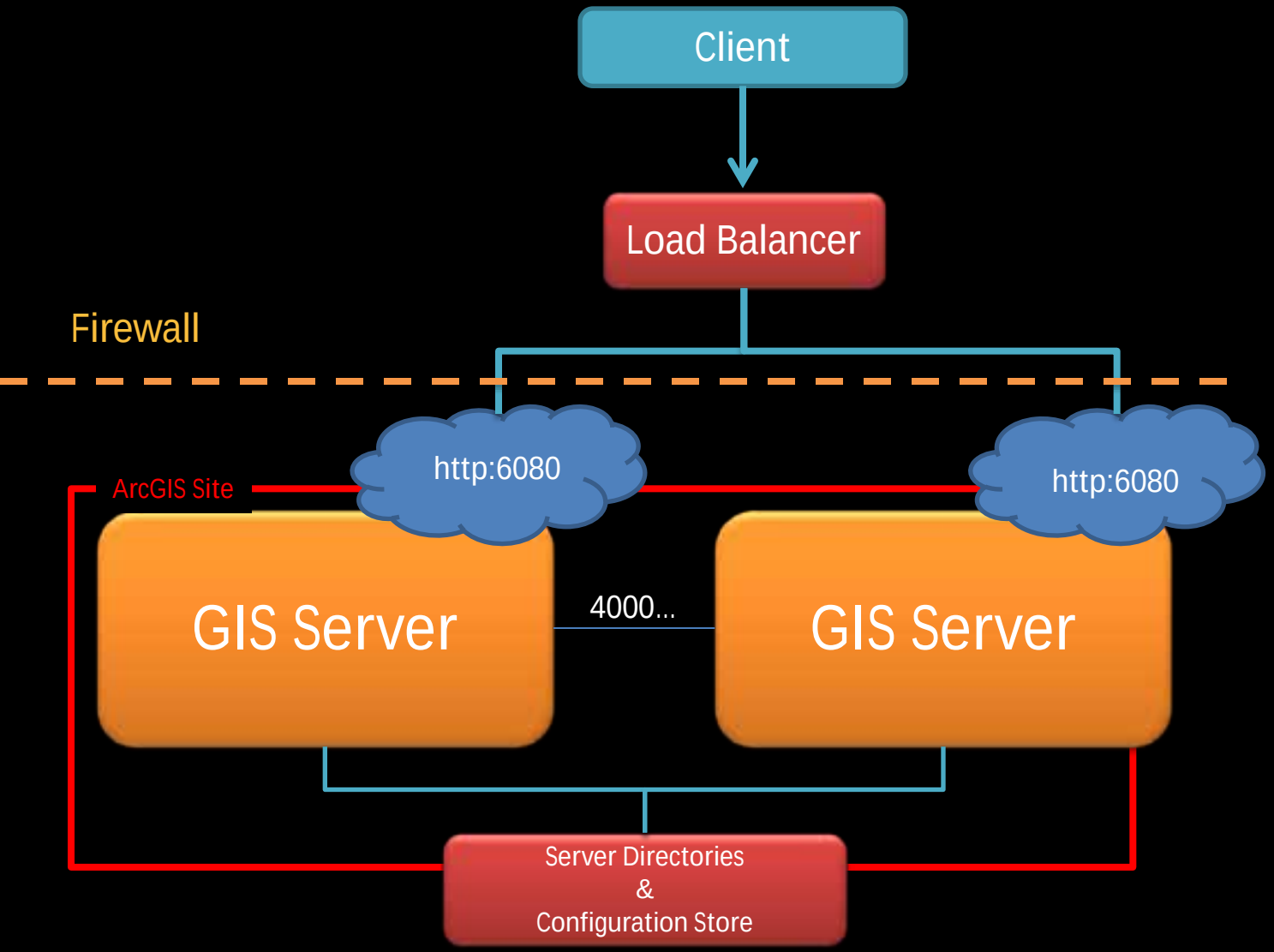
Basic Concepts



- 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

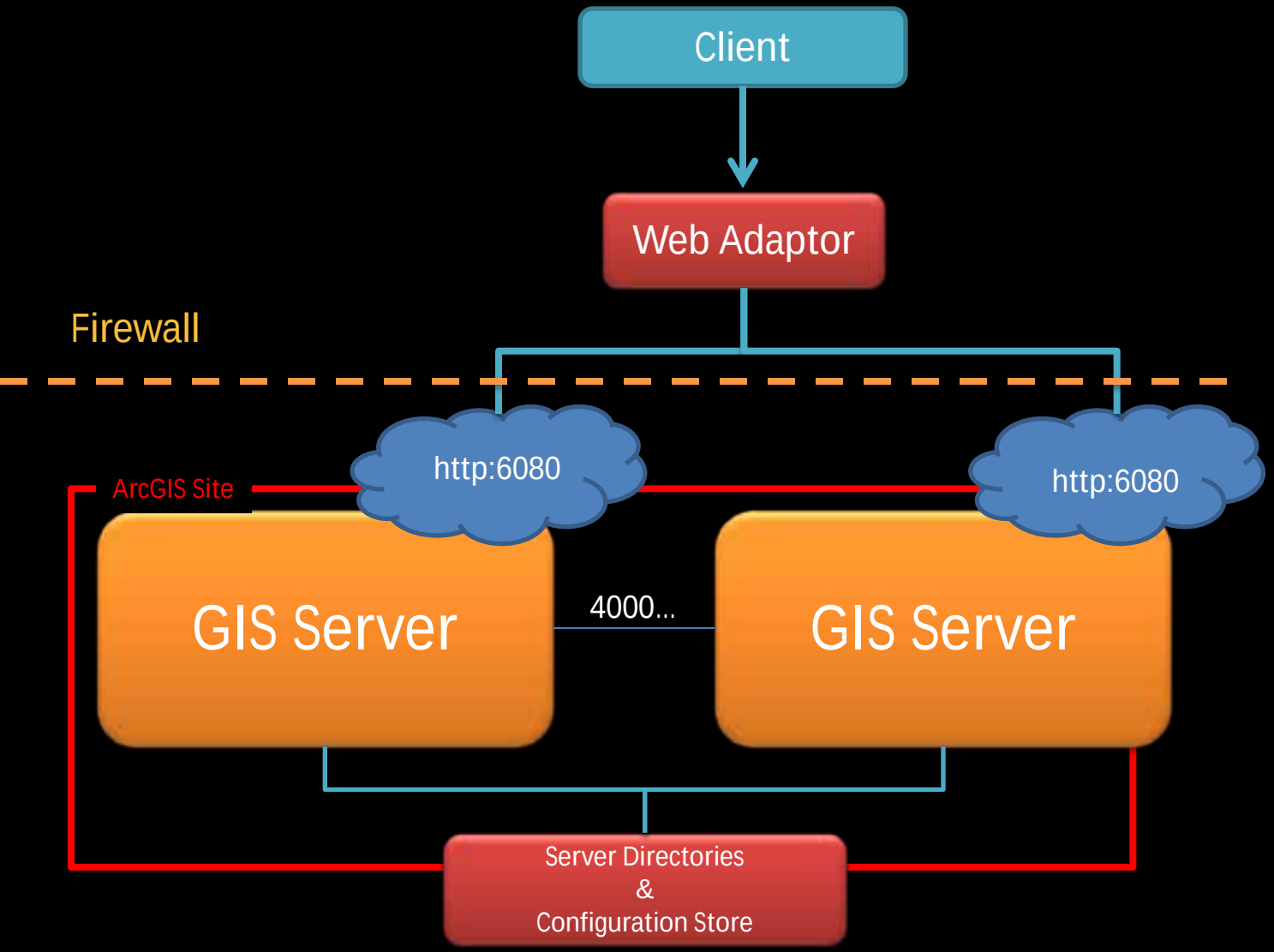
* Unless using 'Clusters'. We will see later

Multi-Machine Site With Load Balancer



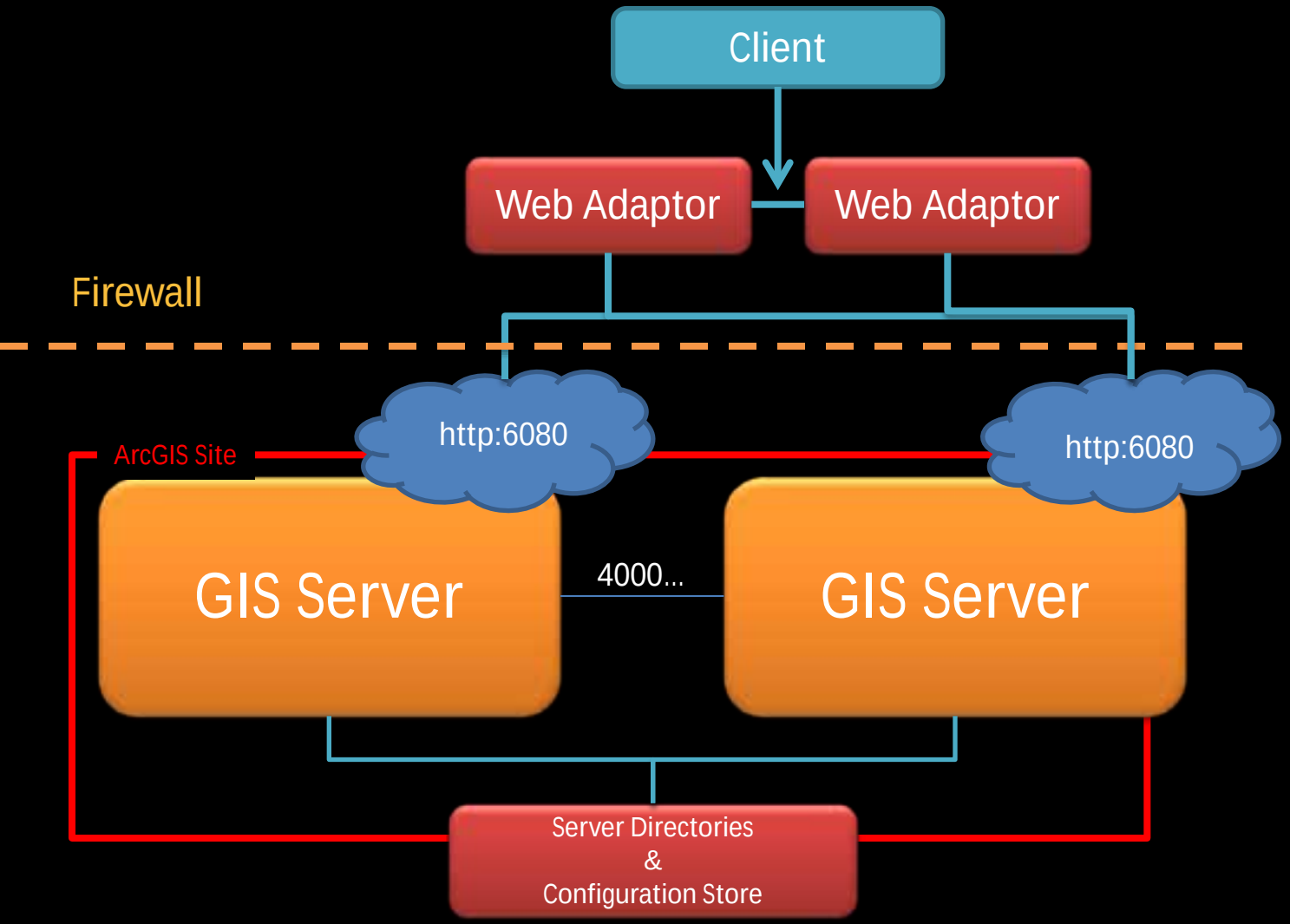
- Typical configuration to support applications
- Load balancer fronts a pool of GIS Servers
- For High Capacity or HA
  with simplified administration
- Typically Load Balancer acts as or
  is complemented by a proxy + firewall
- If not using Web Adaptor, can't use Web Tier authentication

Multi-Machine Site With Web Adaptor



- A variation of the previous configuration
- Supports Web Tier Authentication

Multi-Machine Site With Redundant Web Adaptors

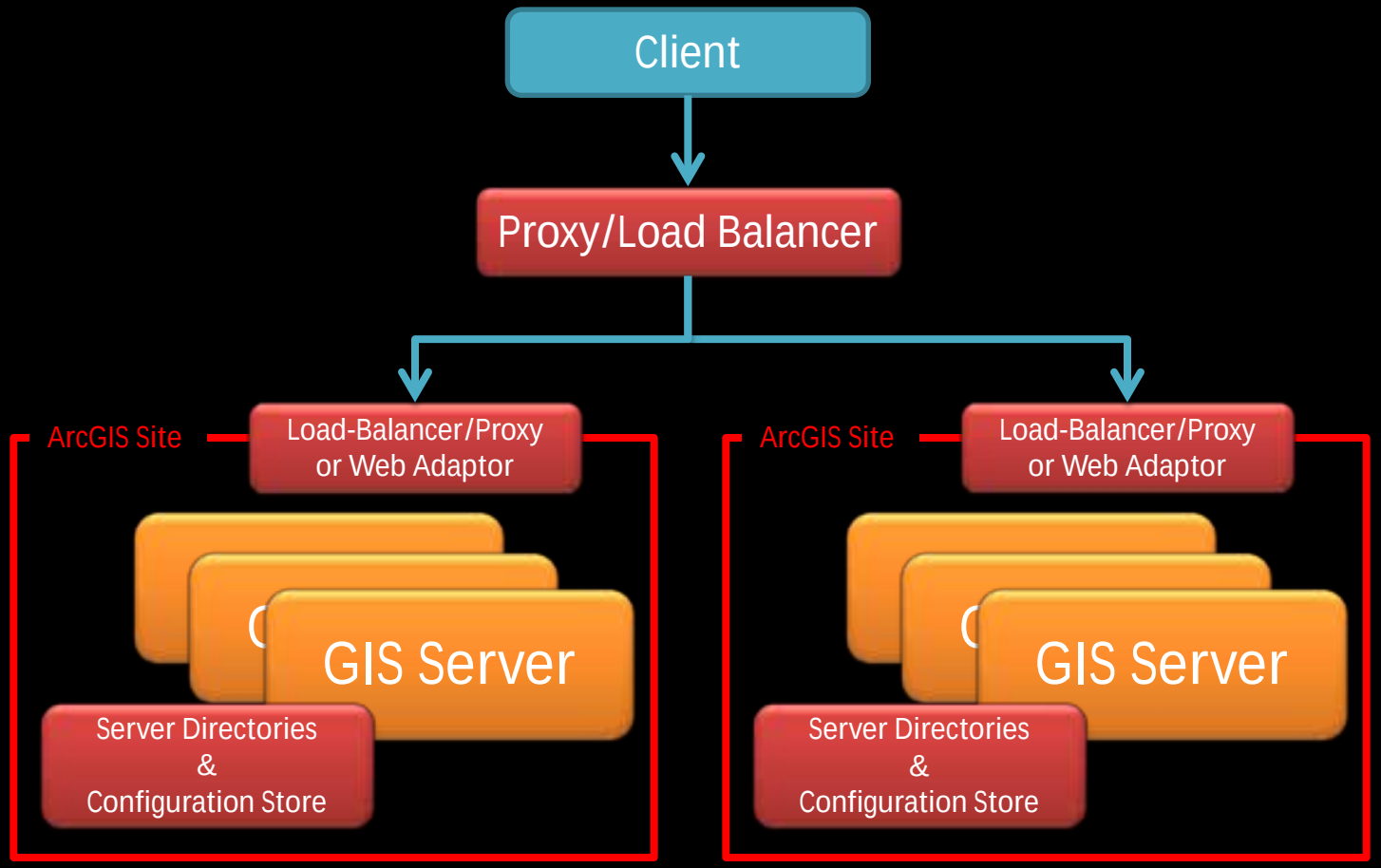


- A HA variation of the previous configuration
- Requires third party load balancer or web farm clustering
- As in all HA configurations: Must consider HA implications for Server Directories, Config-Store and Data tier

- ArcGIS Server components
- Single Machine Sites
  - Basic
  - With Proxy
  - With Web Adaptor
- Multi Machine Sites
  - Concepts
  - Basic (without a load balancer)
  - With Load Balancer
  - With Web Adaptor
  - With redundant Web Adaptors
- Load Balanced Sites
  - Concepts
  - Active-Passive Fail Over
  - Active-Active

Load balanced ArcGIS Site Concepts

aka Siloed Architecture



Use Cases:

- High Availability
- High Capacity

Keep in mind:

- Sites are not aware of each other
- You must keep Data, Security and Services in sync
- Must leverage third party load balancers

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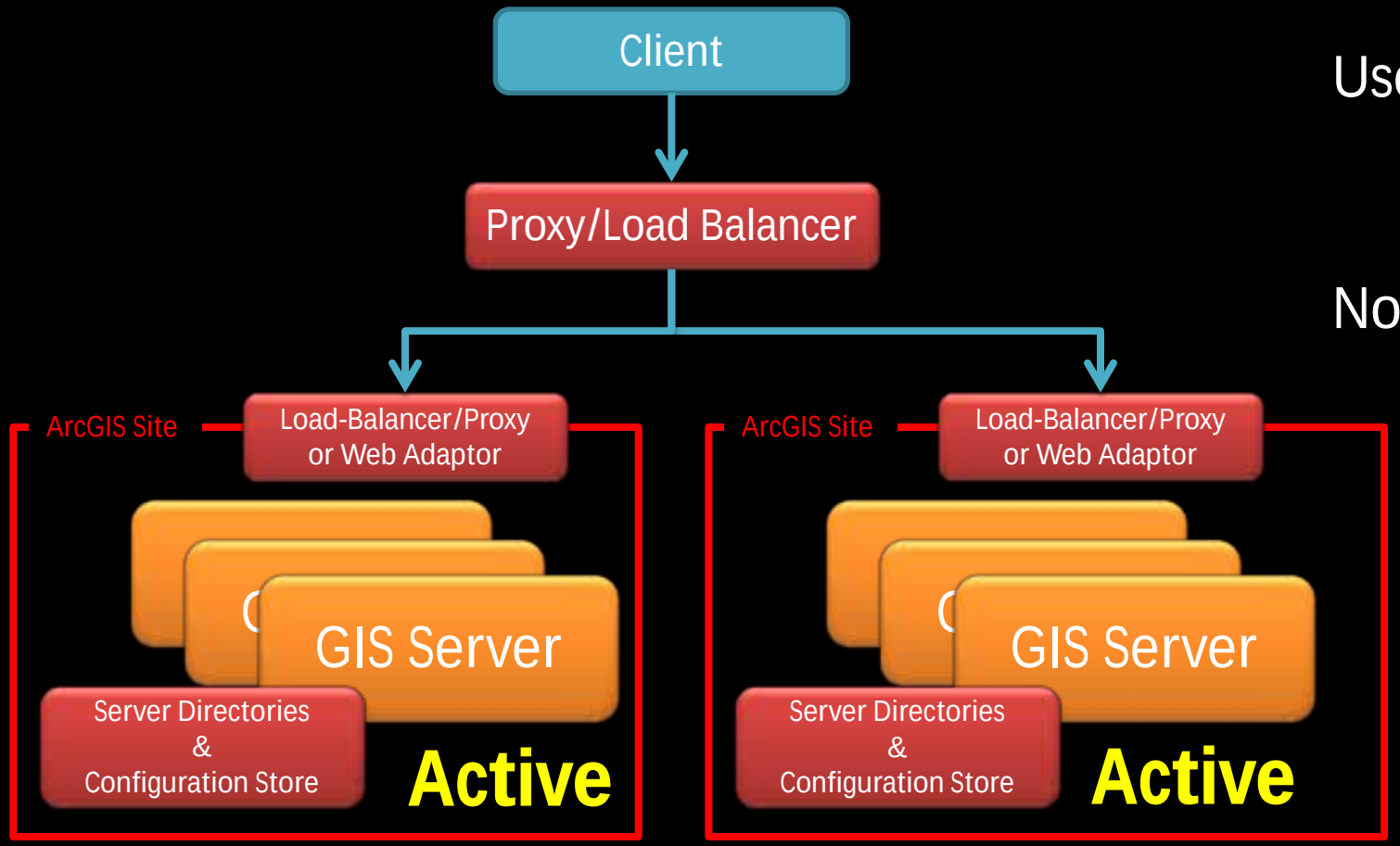
Load Balanced ArcGIS Sites Active-Active



Use Cases:

- High Availability
- High Capacity

Notes:

- Supports distribution of sites across separate data centers
- Must keep Sites in sync!

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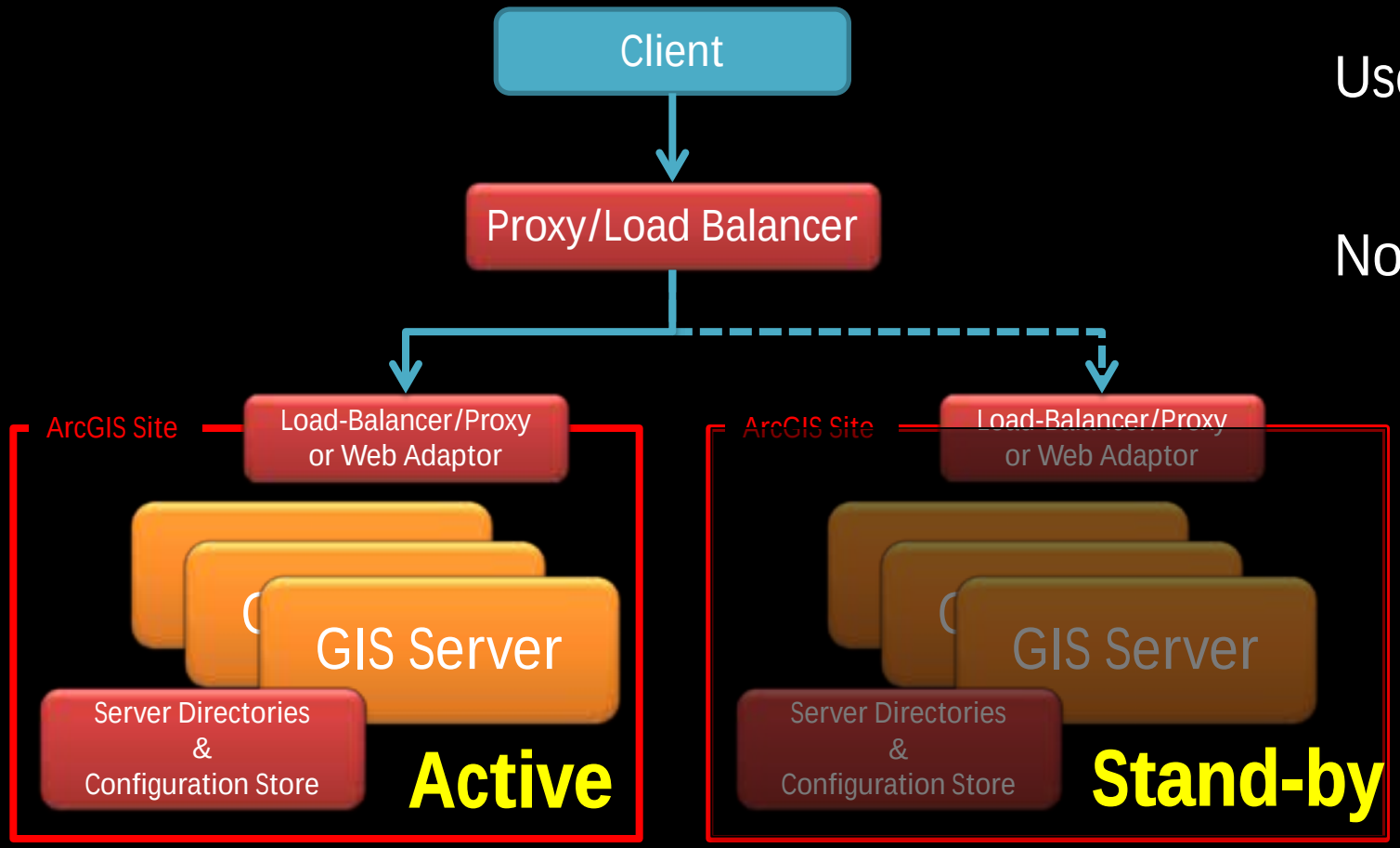
Load Balanced ArcGIS Sites Active-Passive Fail-Over



Use Cases:

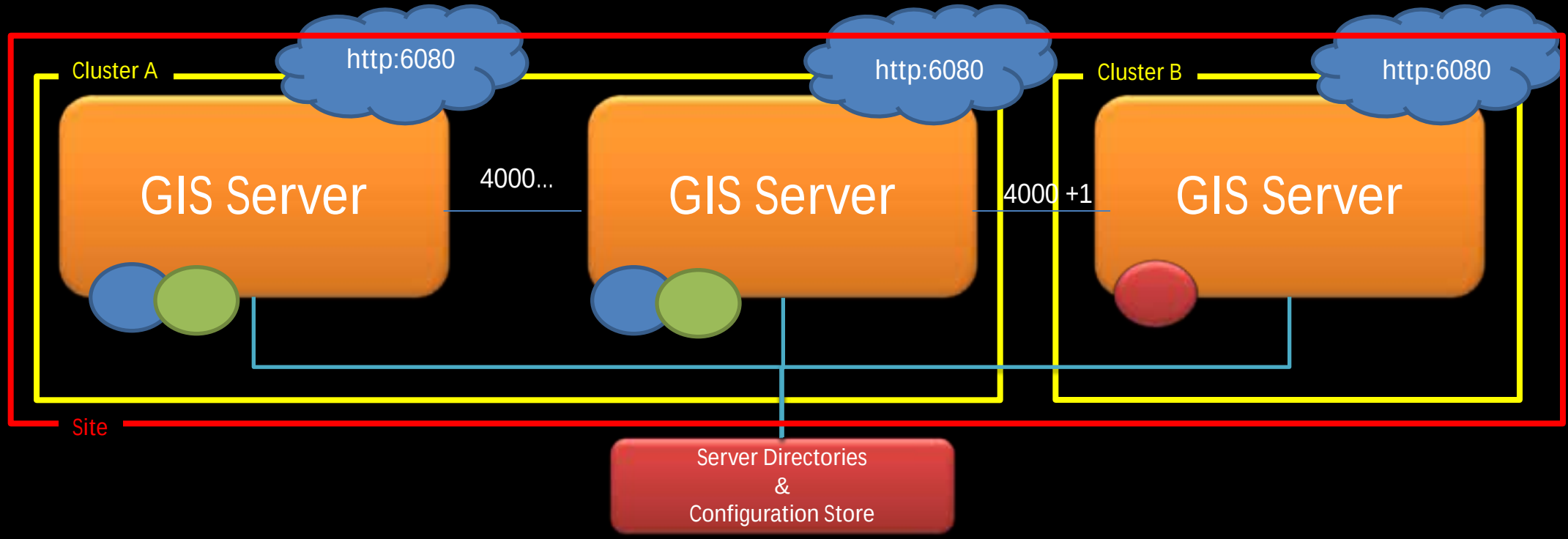
- High Availability with Fail-Over Licensing

Notes:

- No additional licensing cost for Fail-Over sites
- Supports distribution of sites across separate data centers
- Must keep Sites in sync!

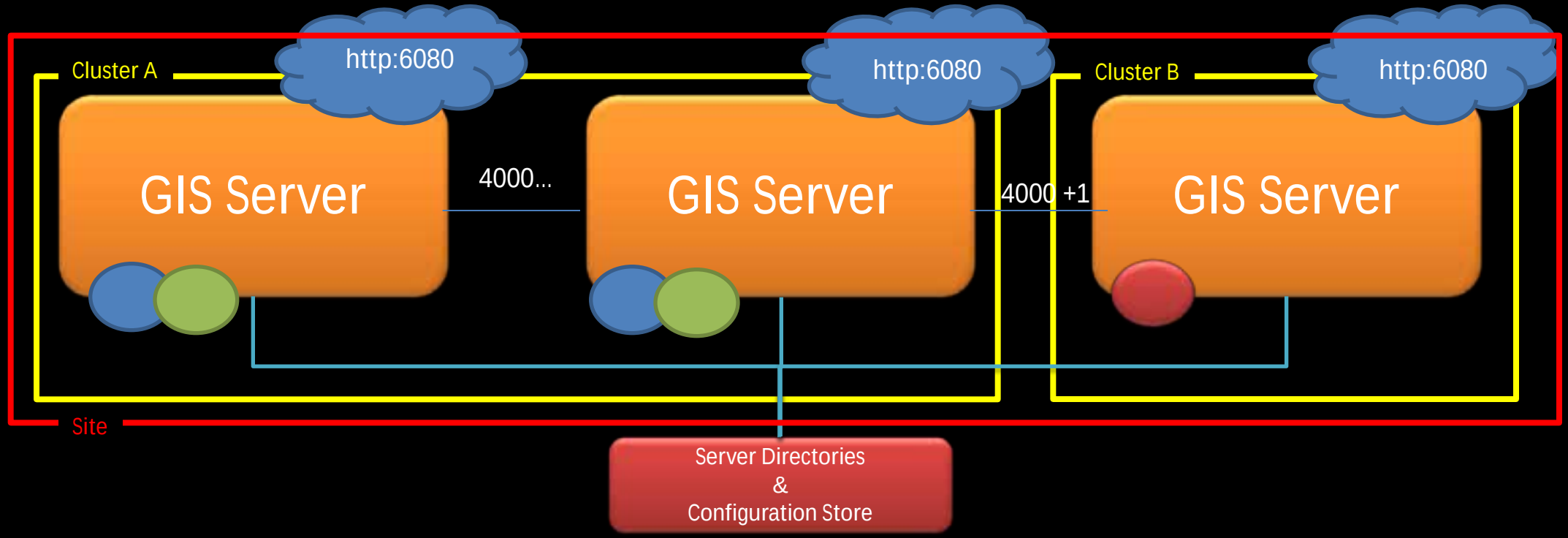
Questions

Concept: ‘Clusters’



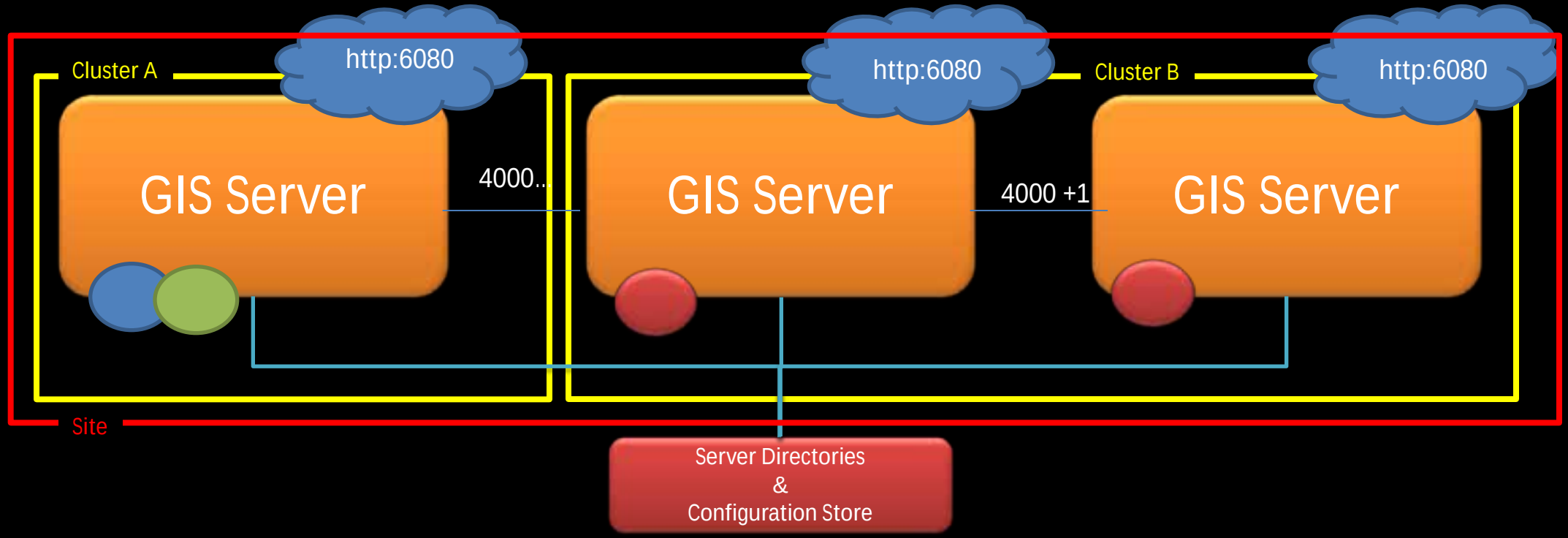
In ArcGIS Server, a ‘cluster’ is a logical group of machines within a site that run the same services

Concept: ‘Clusters’



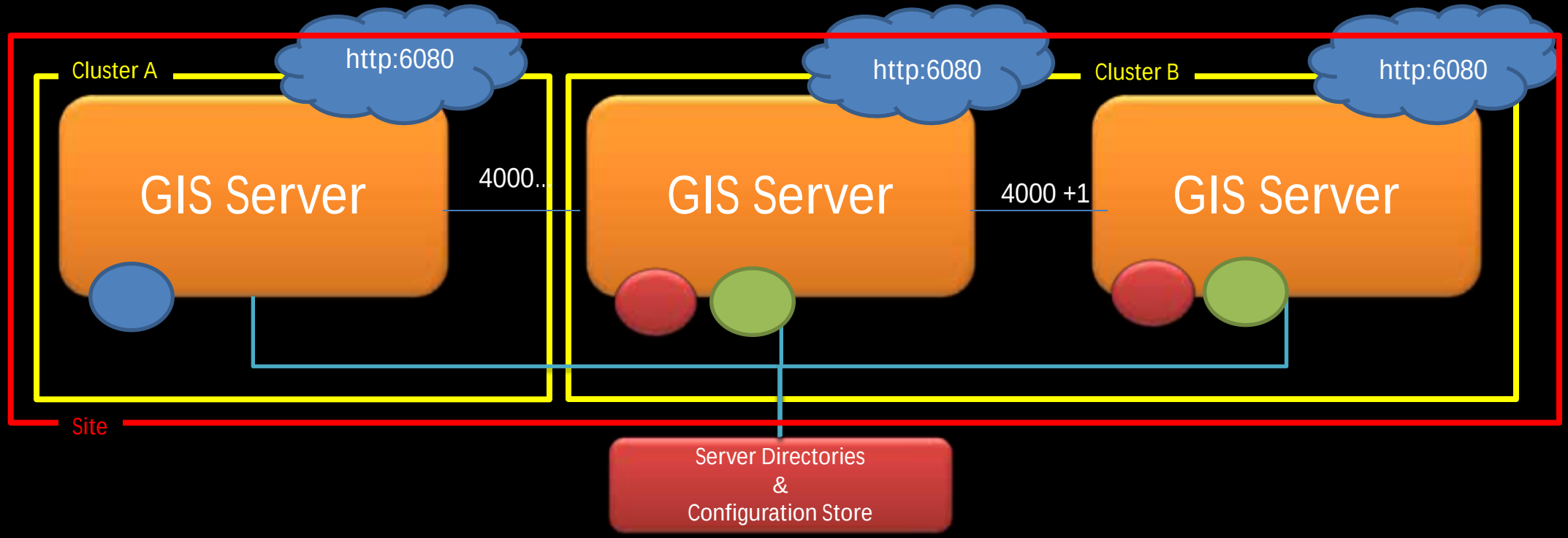
Total instances (assuming 2 per GIS server) 4 4 2

Moving machines from cluster to cluster



Total instances (assuming 2 per GIS server) 2 2 4

Moving services from cluster to cluster



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  - Active-Passive Fail Over
  - Load Balanced Sites (aka Siloed architecture)