ArcGIS for Server: Administration and Security

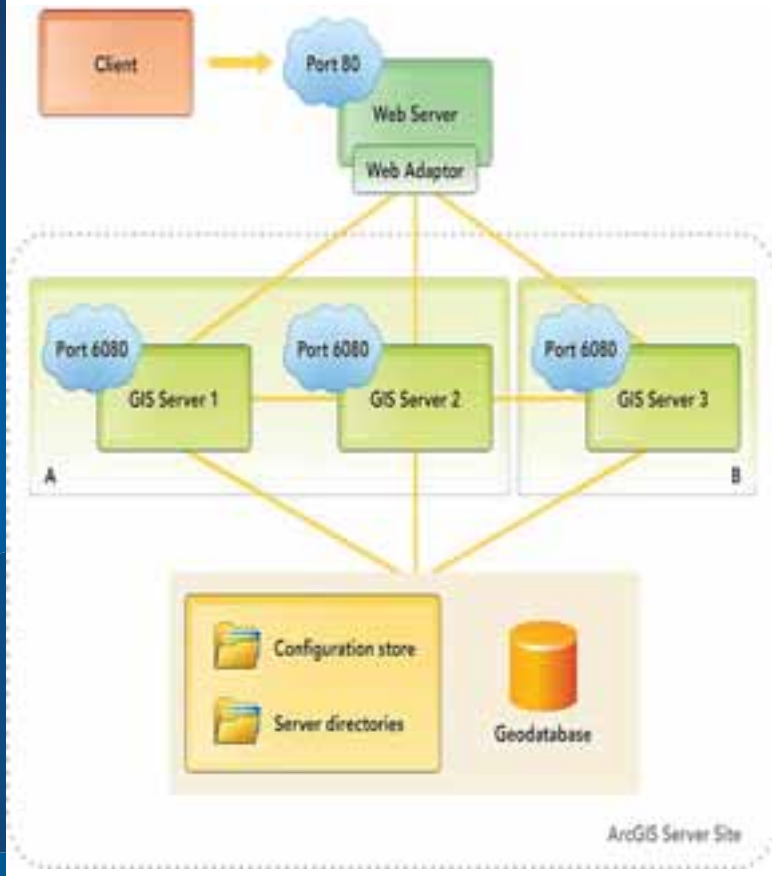
Amr Wahba

awahba@esri.com

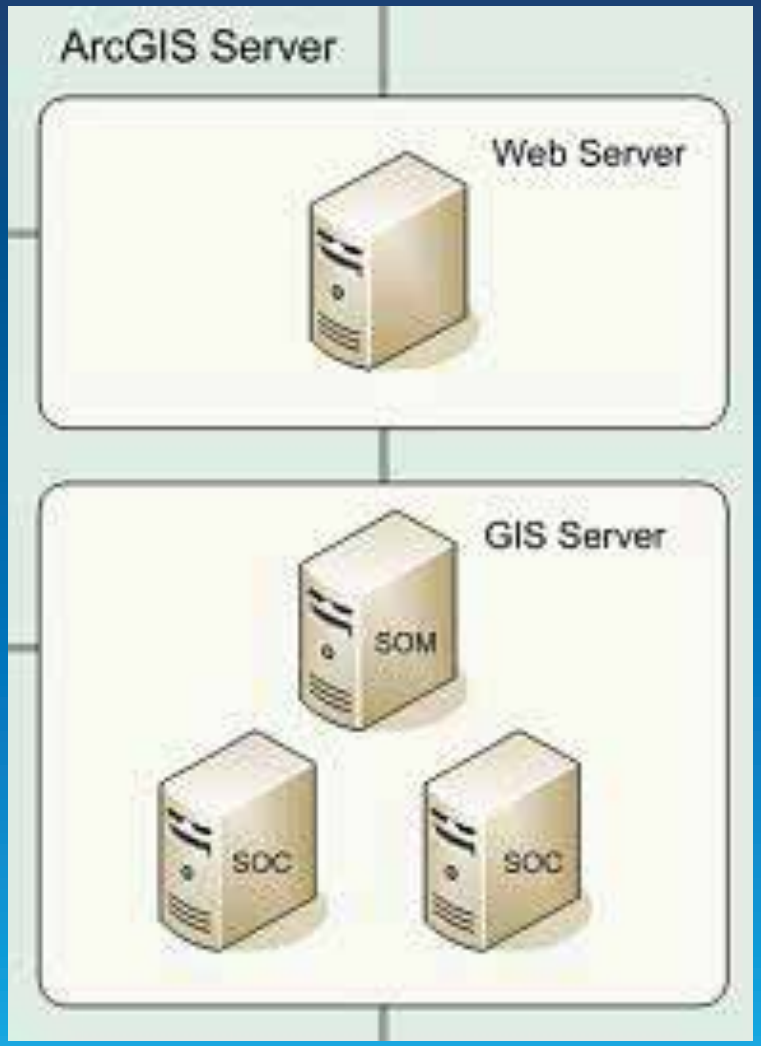
Agenda

- ArcGIS Server architecture
- Distributing and scaling components
- Implementing security
- Monitoring server logs
- Automating server administration
- What’s new in 10.2?
- Backup and restore
- Q&A

ArcGIS Server architecture



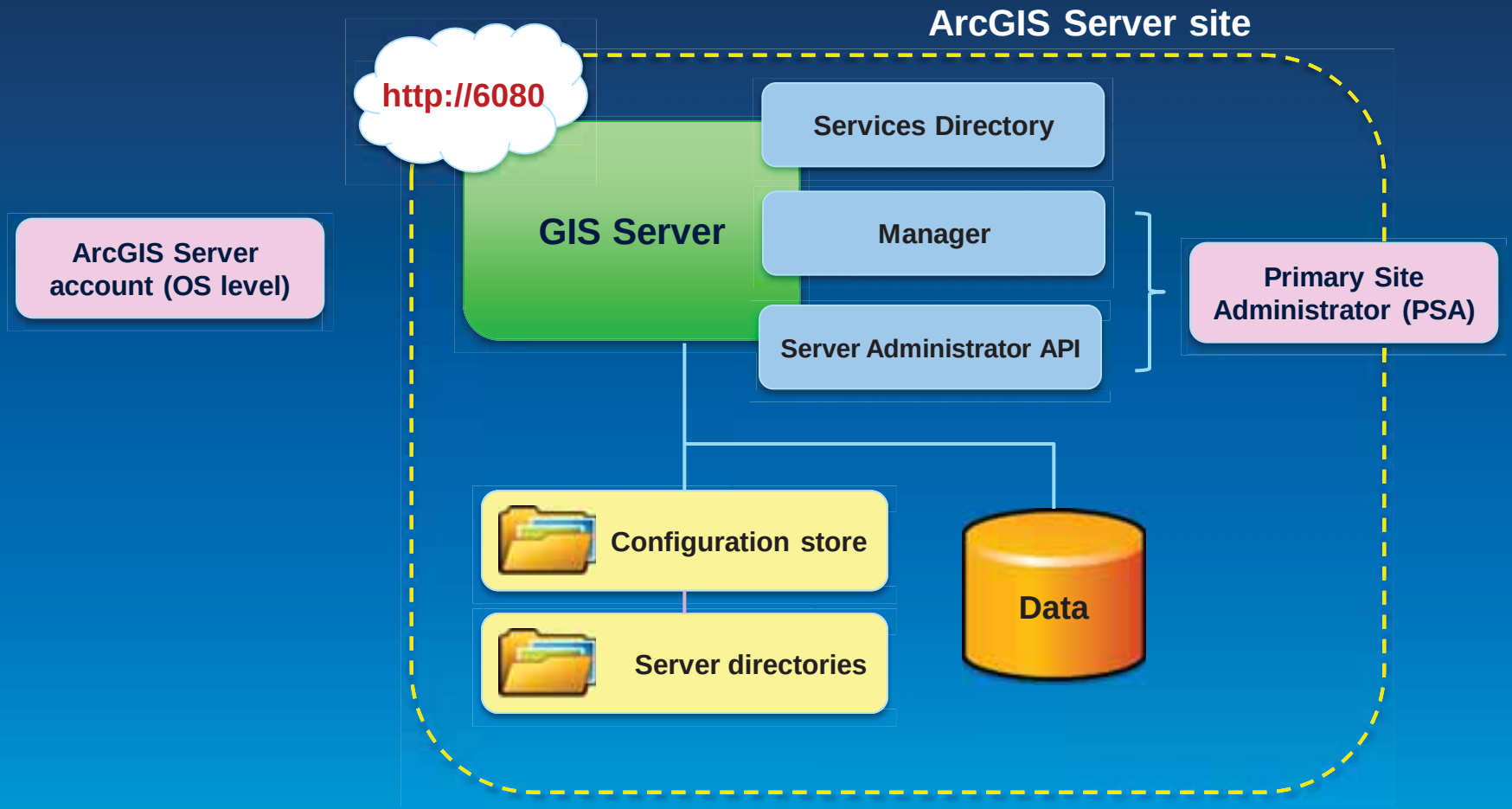
Pre-10.1 architecture

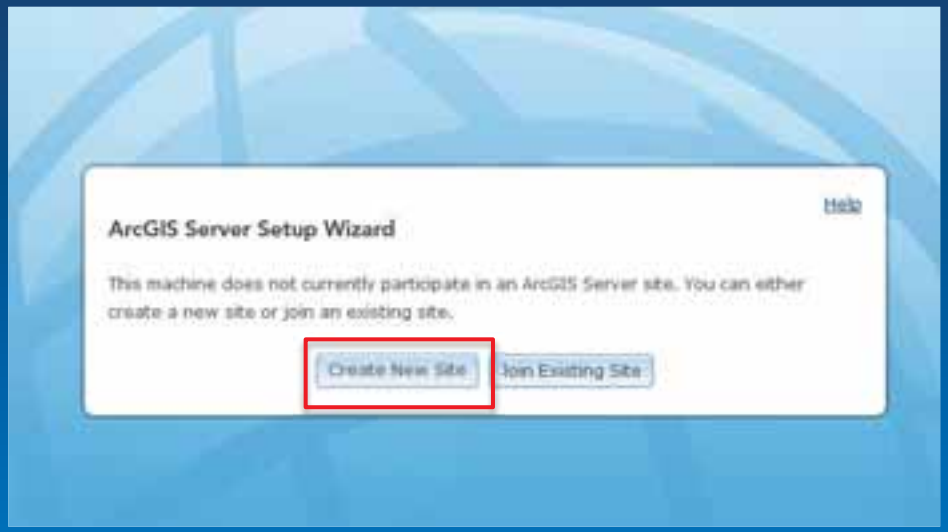


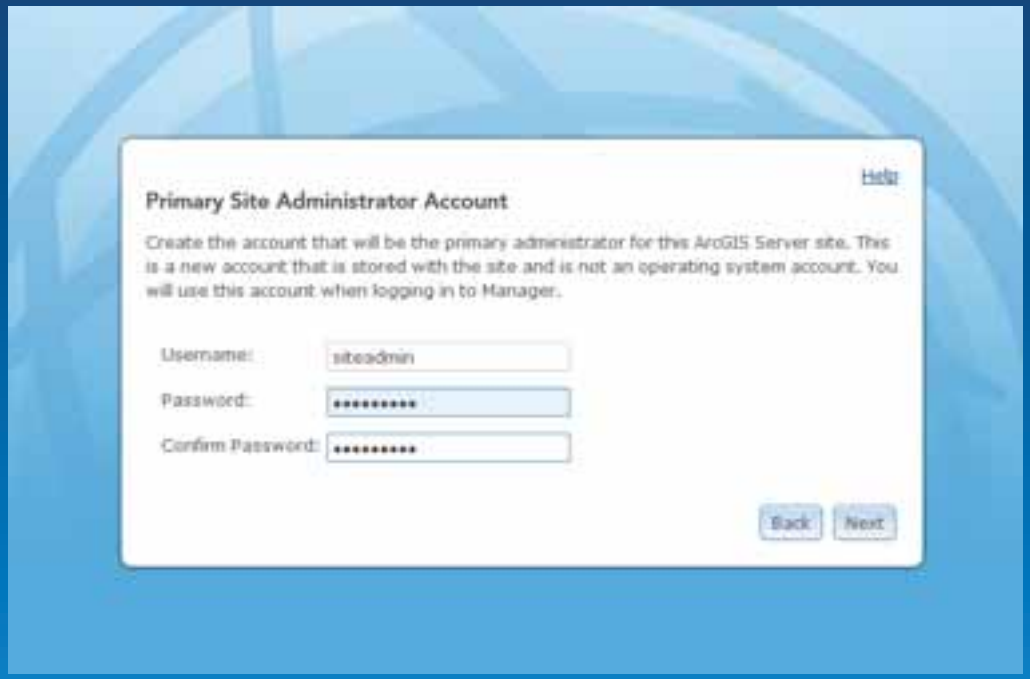
Motivation for architecture change

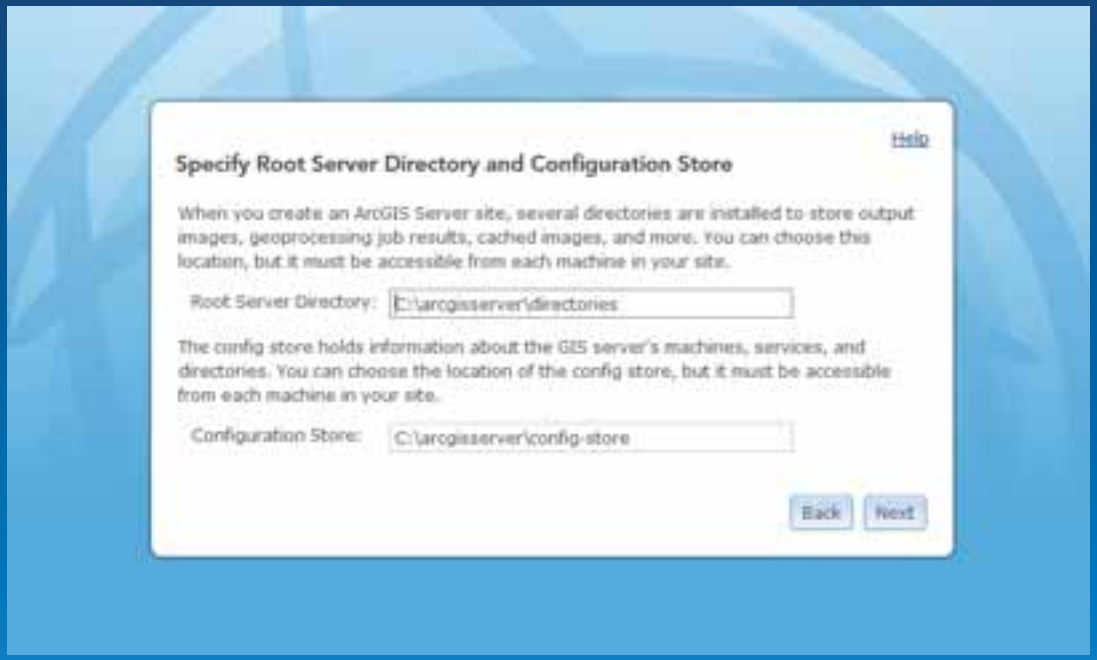
- Performance (64 bit)
- HTTP only
- Faster installation
- Scalability and elasticity
- High availability
- Cloud deployments
- Linux improvements

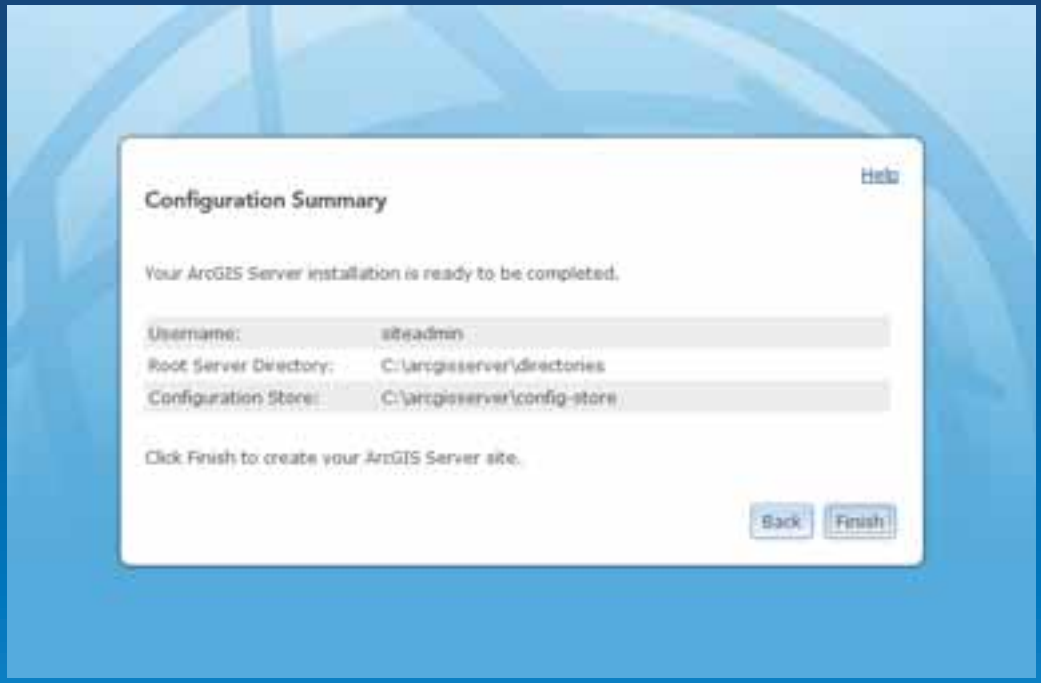
ArcGIS for Server 10.1 Architecture




Help
ArcGIS Server Setup Wizard
This machine does not currently participate in an ArcGIS Server site. You can either create a new site or join an existing site.
Create New Site
Join Existing Site


Help
Primary Site Administrator Account
Create the account that will be the primary administrator for this ArcGIS Server site. This is a new account that is stored with the site and is not an operating system account. You will use this account when logging in to Manager.
Username:
siteadmin
Password:
Confirm Password:
Back
Next

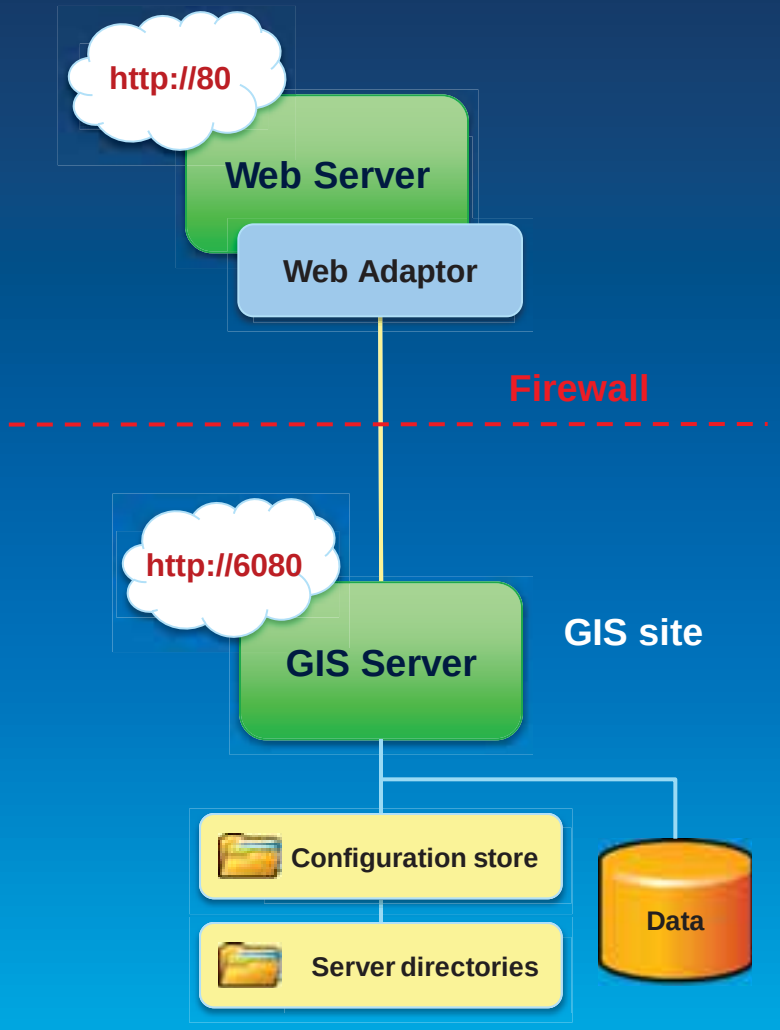

Help
Specify Root Server Directory and Configuration Store
When you create an ArcGIS Server site, several directories are installed to store output images, geoprocessing job results, cached images, and more. You can choose this location, but it must be accessible from each machine in your site.
Root Server Directory:
C:\arcgisserver\directories
The config store holds information about the GIS server's machines, services, and directories. You can choose the location of the config store, but it must be accessible from each machine in your site.
Configuration Store:
C:\arcgisserver\config-store
Back
Next


Help
Configuration Summary
Your ArcGIS Server installation is ready to be completed.
Username: siteadmin
Root Server Directory: C:\arcgisserver\directories
Configuration Store: C:\arcgisserver\config-store
Click Finish to create your ArcGIS Server site.
Back
Finish

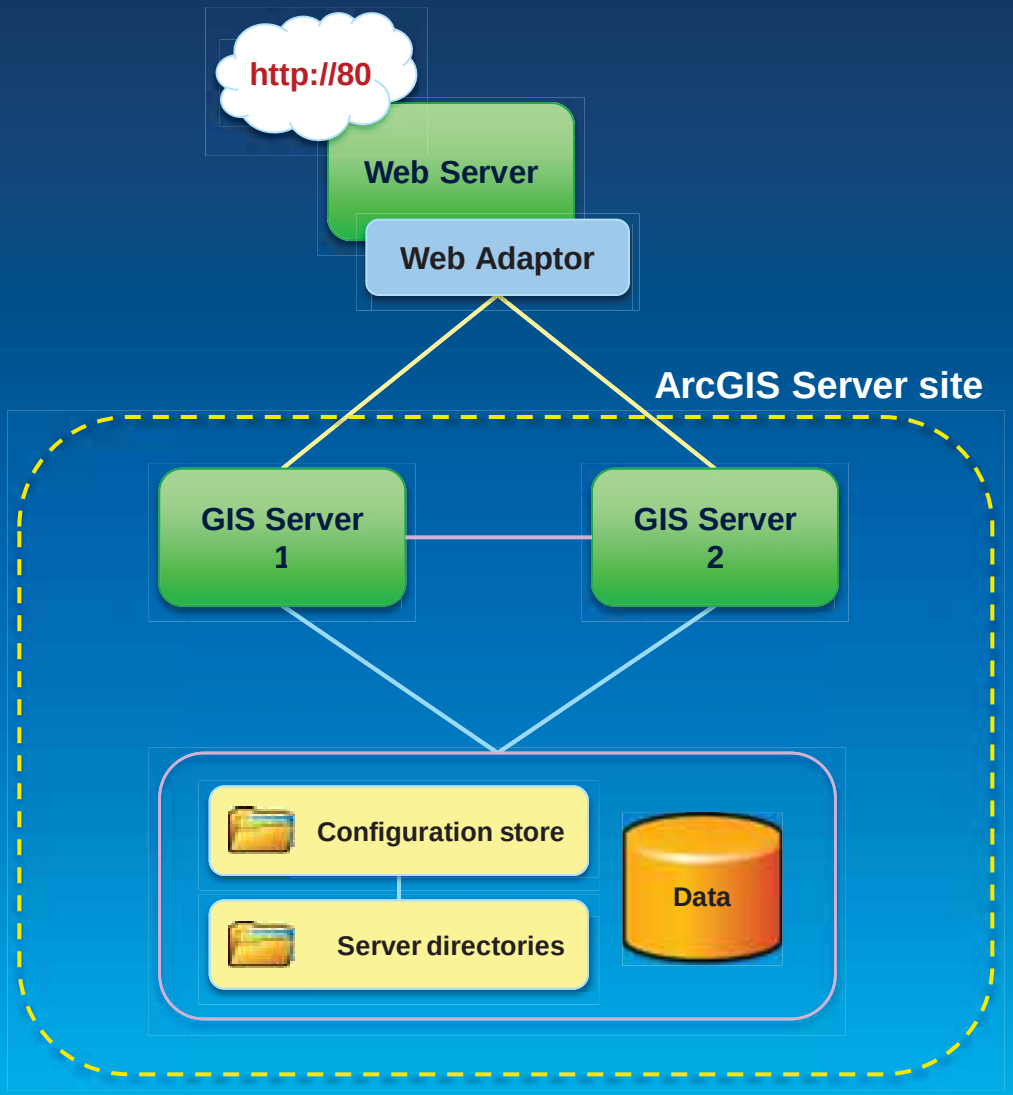
Single machine deployment with Web Adaptor

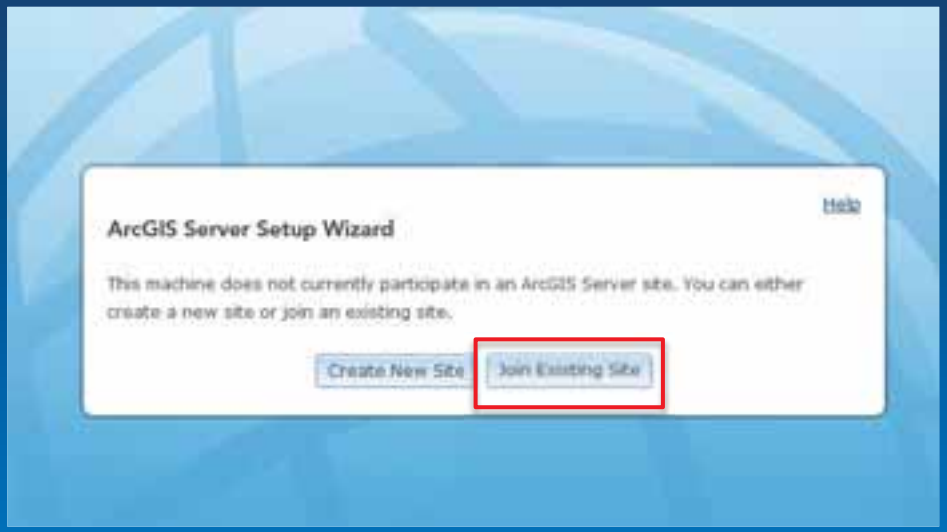
- Easily block admin end points
- Forward compatibility
  - Connect via port 80
  - GIS site name
- Leverage Web tier features
  - Security
  - Logging

- OOTB reverse proxy



Multiple machine site



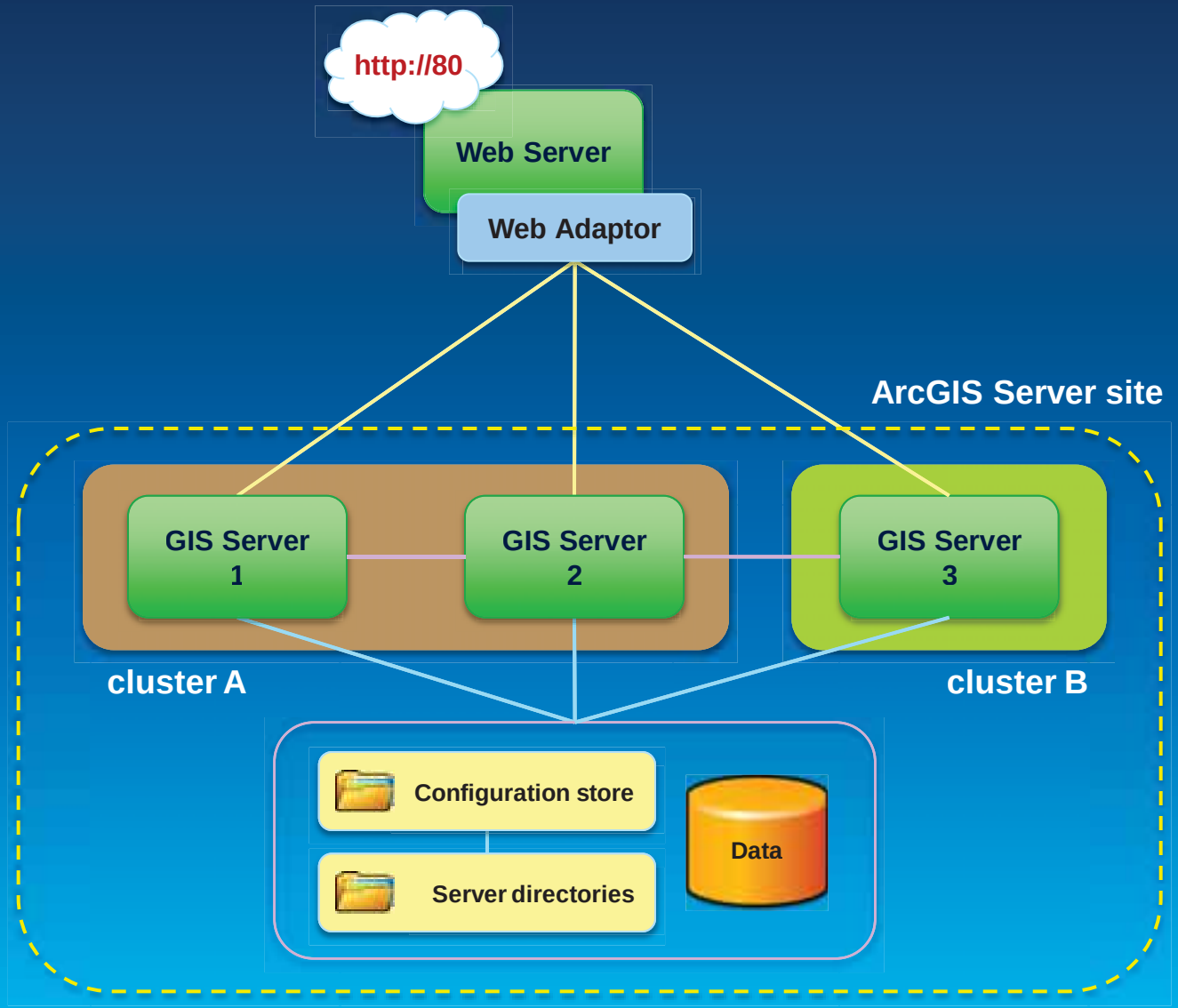

Help
ArcGIS Server Setup Wizard
This machine does not currently participate in an ArcGIS Server site. You can either create a new site or join an existing site.
Create New Site
Join Existing Site

Help
Specify Site URL
ArcGIS Server site URL:
Example: http://machine:6080
Supply the administrator username and password for the ArcGIS Server site you specified above.
Username:
Password:
Back
Next

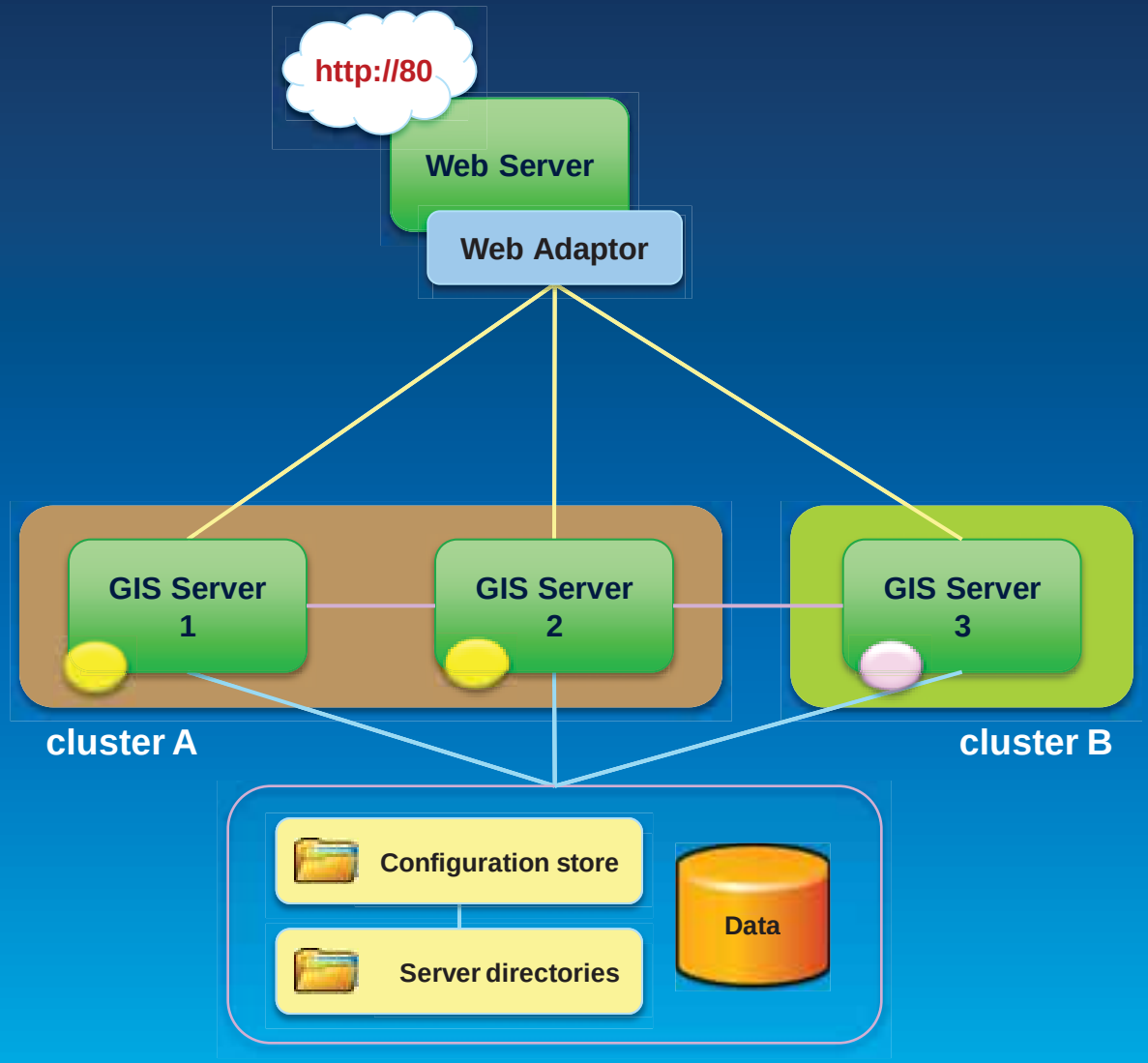
Join site checklist

- Same ArcGIS Server account across all machines
- All machines can see config-store & server directories and have read/write/create permissions to these via ArcGIS Server account
- No mix of Windows and Linux among machines
- Necessary ports open on each machine:
  - 6080
  - 6443 (for HTTPs)
  - 4000 – 4005+ (communication between GIS Servers)
- Each machine has valid log location

Multiple machine site with clusters



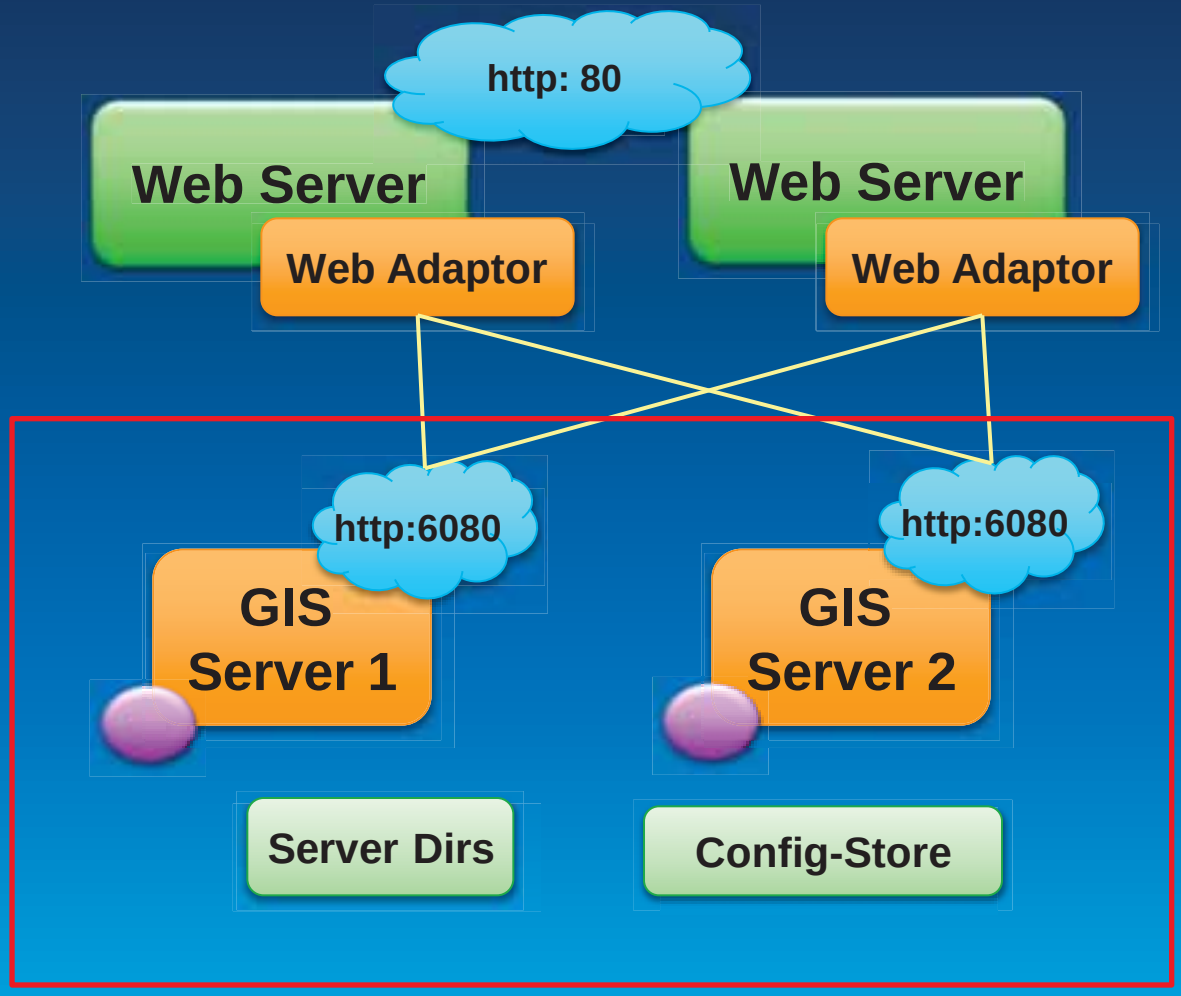
Multiple machine site with clusters



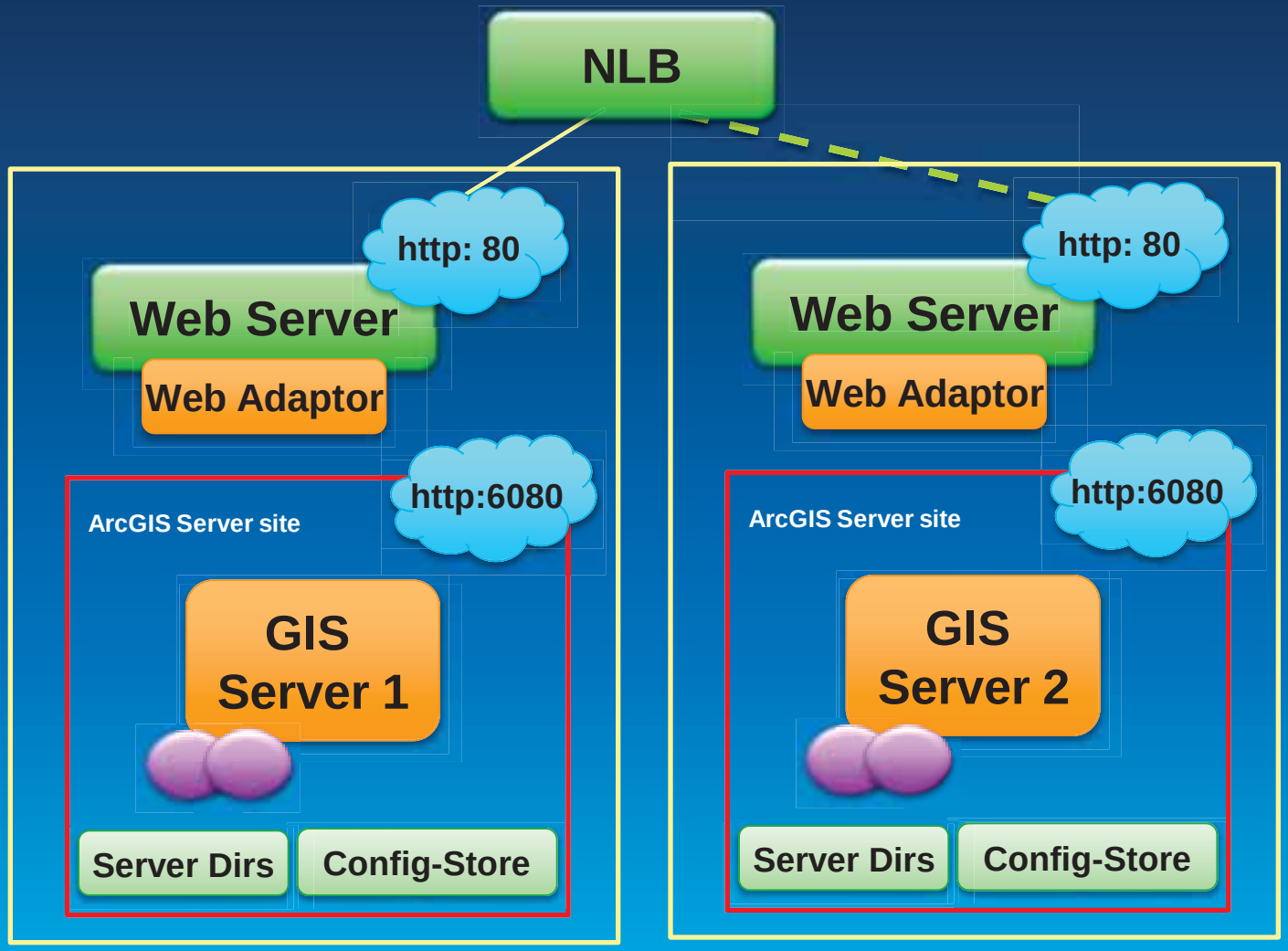
Benefits of clusters

- **Hardware isolation**
  - Cluster contains machine with the same hardware specs
- **Dynamic allocation of resources**
  - You set thread instances per machine, NOT per service like previously
  - You can re-assign machines to different clusters at different times
- **Isolate intensive processes** in their own cluster

High Availability Configuration



Active-Passive Failover Configuration



Implementing Security

Security is tiered

- Installation security
  - ArcGIS Server account (OS account)
  - OS permissions on install directory, server directories and configuration store
  - Database account
- Security for published geo content
  - Administrators, Publishers, Consumers

Identity stores

- Built-in
  - Out of the box
- Windows domain
- LDAP
- Custom identity providers
  - You write the identity provider adaptors and deploy it to Server

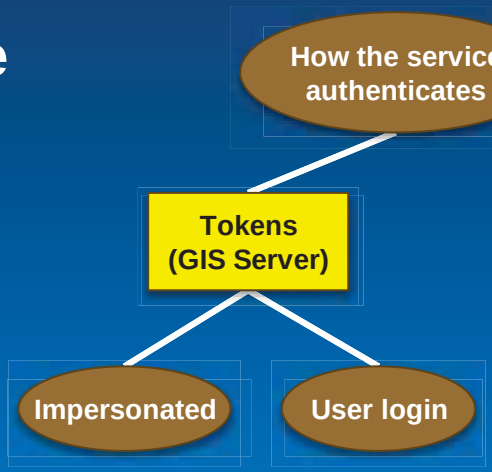
Demo: Setting up identity store

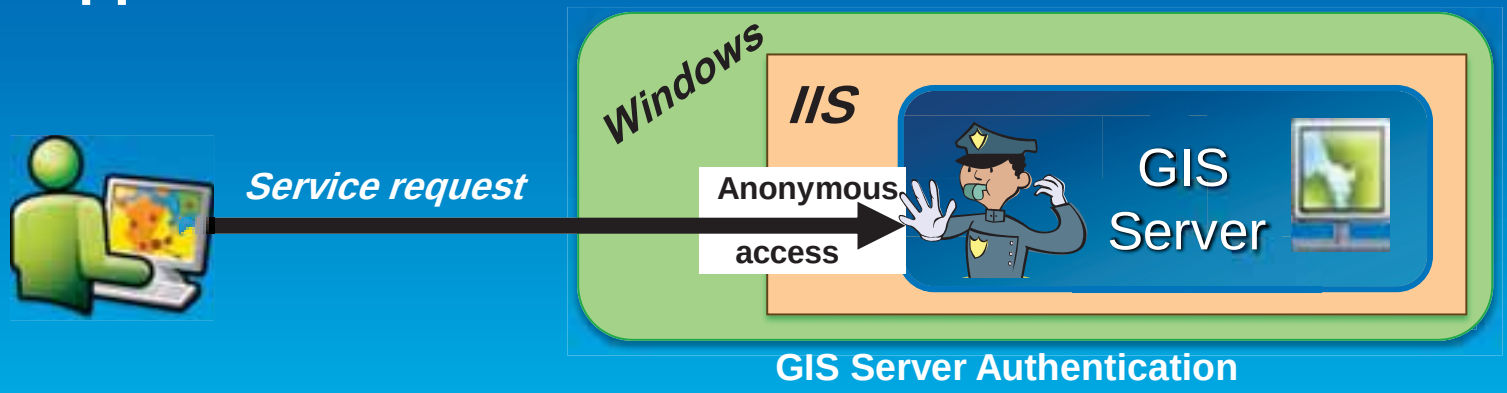
Understanding authentication

- Key security decision
  - Configured by the GIS admin
  - Specific to a given ArcGIS server site
- Verifies credentials
  - User store can be built-in or enterprise
  - Built-in roles/groups can be used with enterprise users
- Can occur at different levels
  - GIS server (e.g., ArcGIS tokens)
  - Web server (e.g., IIS)

GIS Server level authentication

- Implementation
  - Web server requires anonymous access (10.2 now supported using web server authentication)
  - Token-based – requires a token service
  - ArcGIS Server: GIS Server tier authentication
- Login using ArcGIS Identity manager
  - Handles all login and token processing
  - Supported in all Web APIs

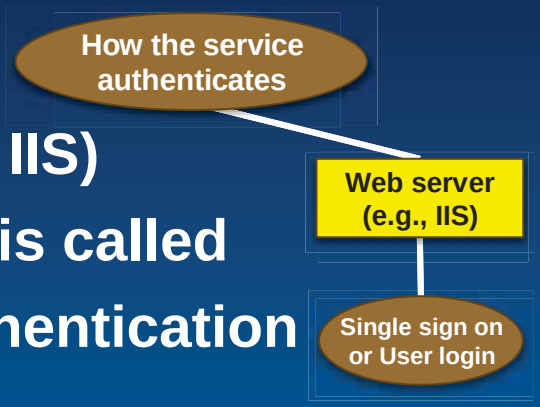


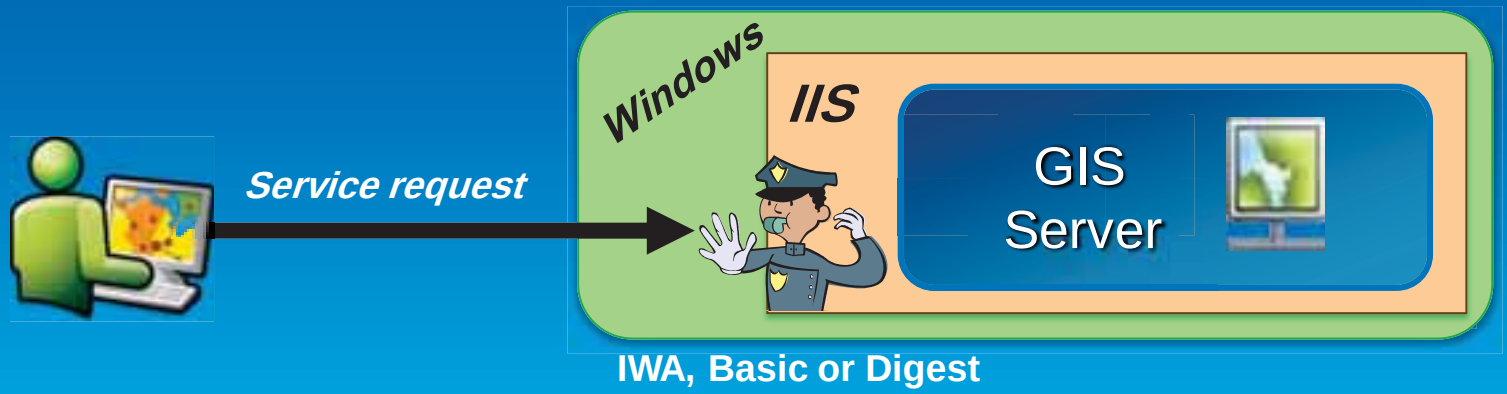


GIS Server Authentication

Web Server level authentication

- Implementation
  - Configured in the web server (e.g., IIS)
  - Runs in browser before the server is called
  - ArcGIS Server: Web server tier authentication
- Login models
  - Pass through: Integrate Windows Authentication (IWA)
  - Login required: Basic or Digest





Demo : Configuring authentication

Authorization

- Role based access control
- Fundamental privileges
  - Publishers
  - Administrators
- For consumers:
  - Set permissions on roles
  - Assign roles to user accounts

Demo: Configuring authorization

Server logs and monitoring

Logs available in Manager

- Each GIS server writes logs locally
- Manager synthesizes logs from all machines
  - Don’t open or edit manually
- Verbose levels for troubleshooting
  - Map draw extents
  - Layer draw times

Demo: Using logs for troubleshooting

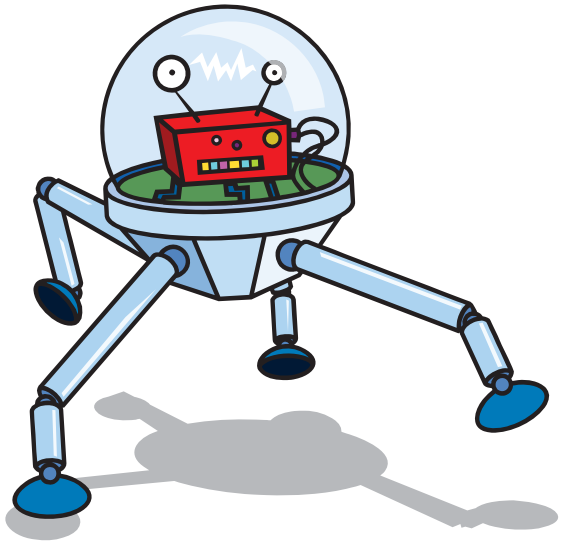
Going further

- **ArcGIS Server Administrator API lets you query logs and stats through REST**

Statistics available in the Administrator Directory

- Administrator Directory gives a window into stats
- Shows number of requests per machine
- Not available currently in Manager

Automating Server Administration



Why automate?

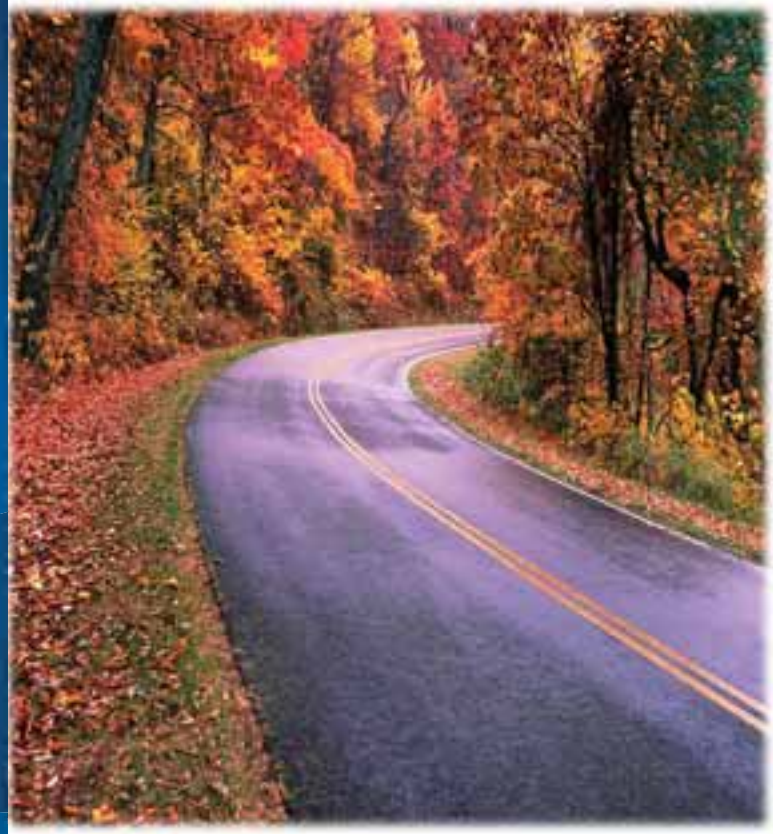
- Repetitive workflows
  - Add more machines during business hours
  - Start caching during non-peak hours
  - Understand usage
- Very easy
  - Full administration through HTTP API
  - Can program in most languages like Java, Python, C#, Ruby…

Demo

Administering ArcGIS for Server
Inside an ArcGIS Server site
Getting started after install
Planning and maintaining an ArcGIS Server site
Common administrative tasks
Securing your ArcGIS Server site
Scripting ArcGIS Server administration
Scripting ArcGIS Server administration
Scripting with the ArcGIS REST API
Scripting with the ArcGIS REST API
Scripting languages and the ArcGIS REST API
Example: Create a site
Example: Join a machine to a site
Example: Start the geometry service
Example: Stop or start all services in a folder
Example: Check a folder for stopped services
Example: Write properties of all services to a CSV file
Example: Edit service properties
Example: Publish a service with detailed parameters
Example: Query the ArcGIS Server logs
Example: Derive map service statistics from the ArcGIS Server logs
Example: Write requested map extents to a feature class
Example: Create users and roles from a CSV file
Example: Create users and roles from two text files
Example: Apply permissions to a service

ArcGIS Server Administrator Directory
Home
You should use ArcGIS Server Manager for managing services and GIS servers.
The Administrator Directory is intended for advanced, programmatic access to the server, likely through the use of scripts.
Site Root - /
Current Version: 10.2
Resources: machines clusters services security system data uploads logs kml info publicKey
Supported Operations: generateToken exportSite importSite deleteSite
Supported Interfaces: REST

What’s new in 10.2



A taste of what's new in 10.2

- Integration with Portal for ArcGIS
- Backup and restore
- Disable automatic data copying when publishing

Backup and restore

Backup

- You want to:
  - Take regular snapshots of your server for archival
  - Move from staging to production
- Through Python tools or through Admin API
- Produces a self contained .agssite (ZIP) file

Restore

- Requires a valid Site
- Import exported .agssite (ZIP) file
- Deletes all current configuration of site and restores site to the configuration in the .agssite file

Demo: Creating a backup

Questions?

Understanding our world.