



ArcGIS for Server: An Introduction

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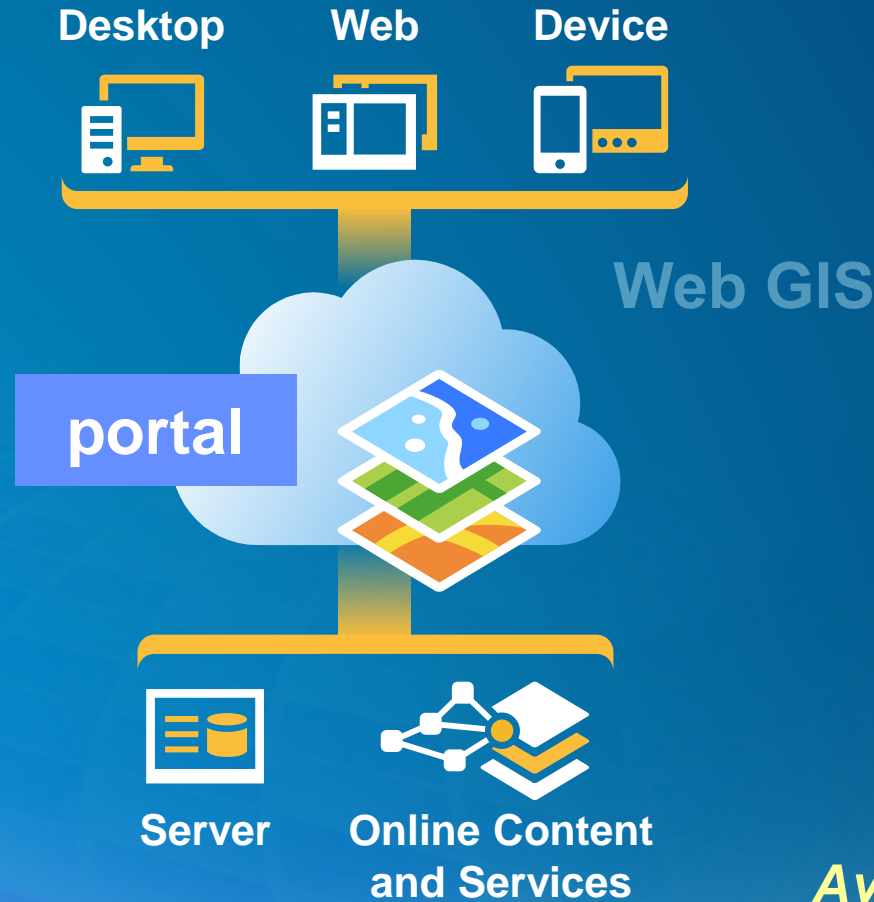
Agenda

- **Product overview**
- **What is ArcGIS for Server**
- **Publishing GIS resources onto the web**
- **Working with ArcGIS Online/Portal for ArcGIS**
- **ArcGIS client applications**
- **ArcGIS for Server extensions**
- **Editions and licensing levels**
- **Summary**

ArcGIS Is a Platform

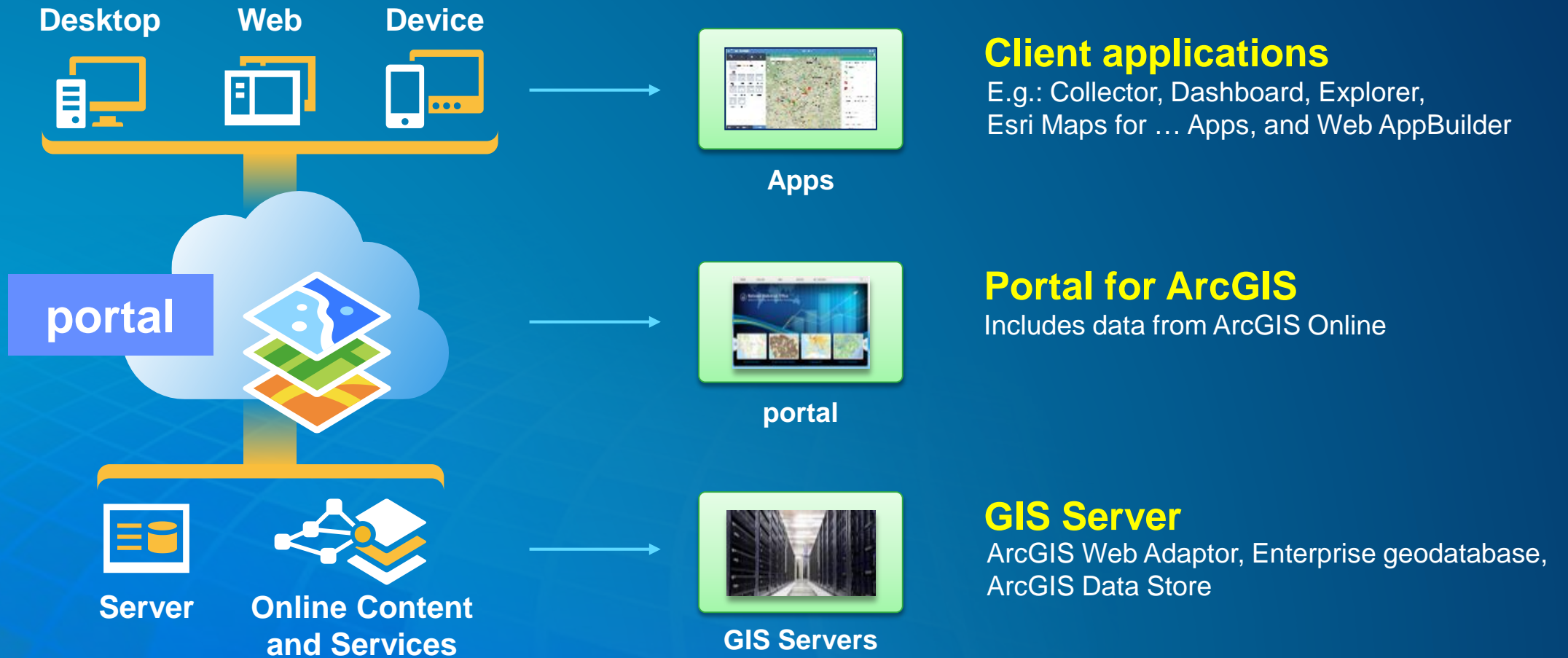
Enabling GIS Everywhere

Simple
Integrated
Open



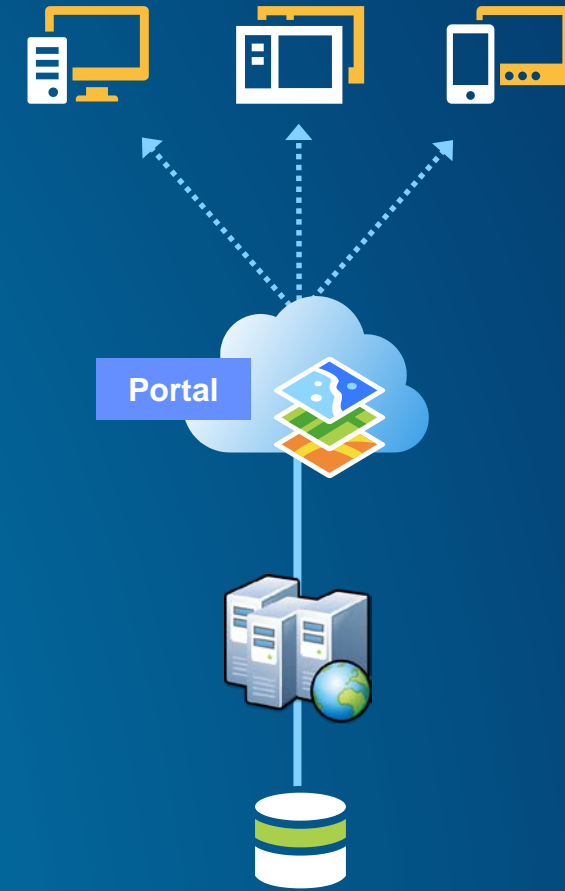
*Available in the Cloud . . .
. . . and On-Premises*

ArcGIS for Server enables Web GIS in Your Infrastructure



What is ArcGIS for Server?

- Enables “Web GIS” in your infrastructure
- Ready to use applications and GIS services
 - Spatial data management
 - Visualization
 - Analysis
- Share your GIS work and resources
- Spatially enable your organization
 - Promote “maps everywhere”



ArcGIS for Server Customers

www.esri.com/software/arcgis/arcgisserver/success-stories







The screenshot shows the ArcGIS for Server Success Stories page. At the top is the Esri logo and a navigation menu with links for Industries, Products, Support & Services, About, and Community. A search bar is located on the right. Below the navigation is a banner for ArcGIS for Server with a sub-menu containing Main, Features, Extensions, Success Stories (highlighted), Deployment, What's New, and Pricing. The main content area is titled "Success Stories" and features six case studies arranged in a 3x2 grid. Each case study includes a representative image, a title, and a brief description.

Products

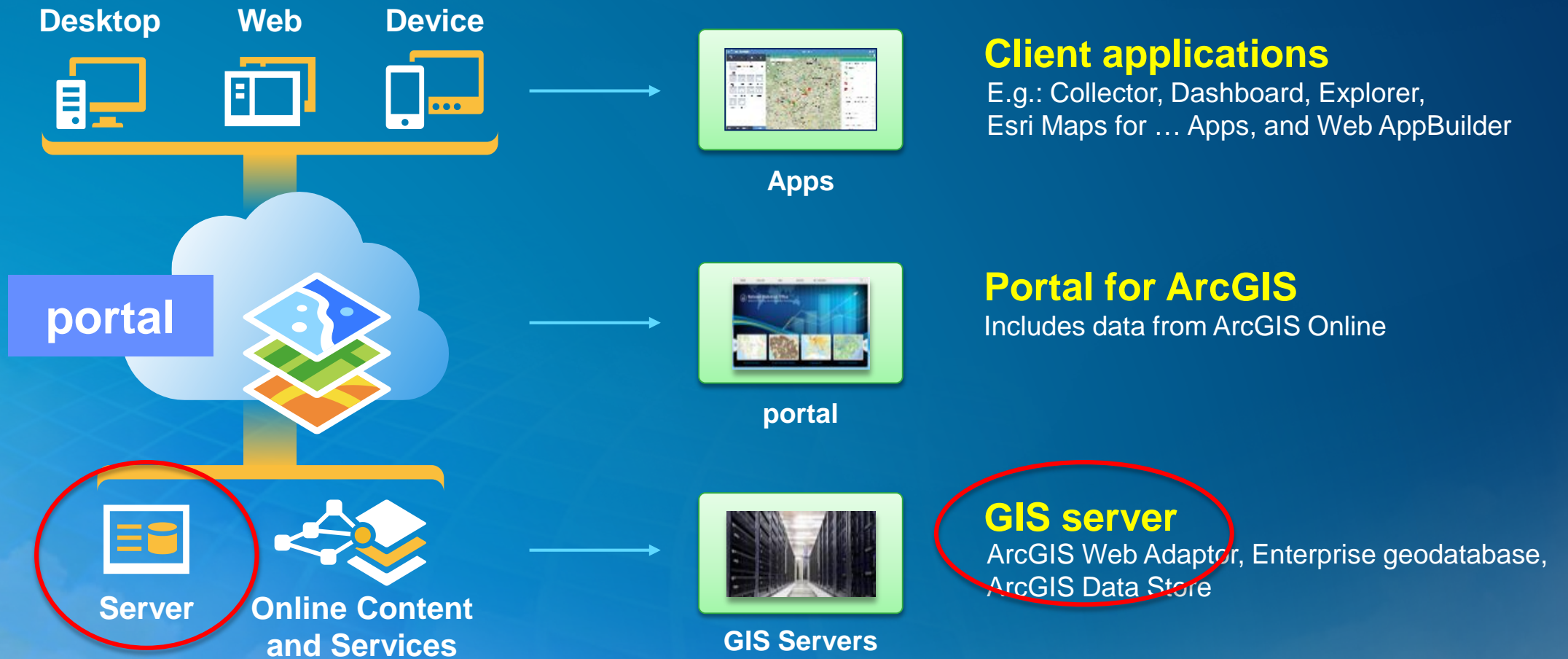
ArcGIS for Server

Main Features Extensions **Success Stories** Deployment What's New Pricing

Success Stories

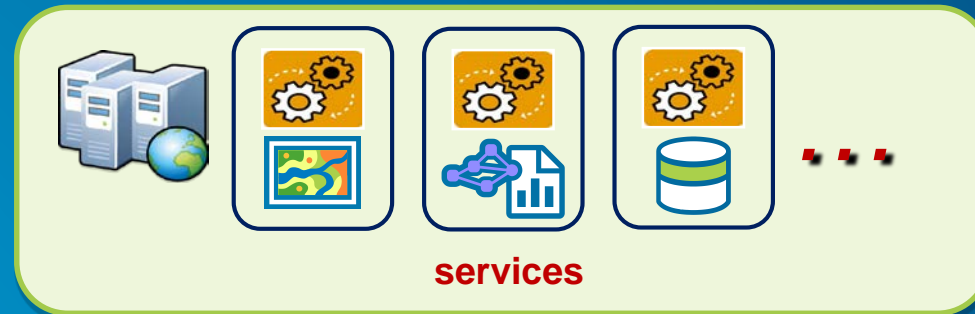
-  Starbucks—Data-Driven Location Choices Drive Latest Surge
-  McCarran International Airport (LAS)—Not Just Plane Art
-  IBM—GIS Accelerates BIG Data Discovery
-  TK Telekom—Facilitating and Improving Telecom Network Management
-  Community Care of North Carolina (CCNC)—GIS Tracks Emerging Statewide Patient Care Patterns [\[PDF\]](#)
-  Saginaw County, Michigan—Snowplow Management Made Easier [\[PDF\]](#)

ArcGIS for Server enables Web GIS in your infrastructure



What are GIS services?

- **GIS service** → GIS resource running on a server
 - vs. GIS application on your local computer



- Share GIS resource to the web



Map



Feature



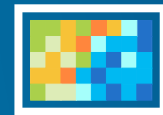
Network



Geodata



Geoprocessing



Image



Locator



Schematics

ArcGIS Server – GIS Server

- Pure web services GIS server
 - Easy install and configuration
 - Self contained
 - No external dependencies
- Built for resilience
- Designed for enterprise systems
- Works on-premises or in the cloud
 - Amazon or Microsoft Azure
- Works with other server-side components
 - **ArcGIS Web Adaptor**
 - **Enterprise geodatabase (aka. Multi-user geodatabase)**
 - **ArcGIS Data Store**



ArcGIS Server – System Requirements

<http://server.arcgis.com/en/server/>

Windows

Supported operating systems

The Portal for ArcGIS setup will only proceed if the operating system is 64-bit; 32-bit operating systems are not supported. The operating system must be one of the following:

- Windows Server 2012 R2 Standard and Datacenter
- Windows Server 2012 Standard and Datacenter
- Windows Server 2008 R2 Standard, Enterprise, and Datacenter (maximum version supported is SP1)
- Windows Server 2008 Standard, Enterprise, and Datacenter (maximum version supported is SP2)
- Windows 8.1 Professional and Enterprise
- Windows 8 Professional and Enterprise
- Windows 7 Ultimate, Enterprise, Professional, Home Premium
- Windows Vista Service Pack 2 Ultimate, Enterprise, Business, and Home

Linux

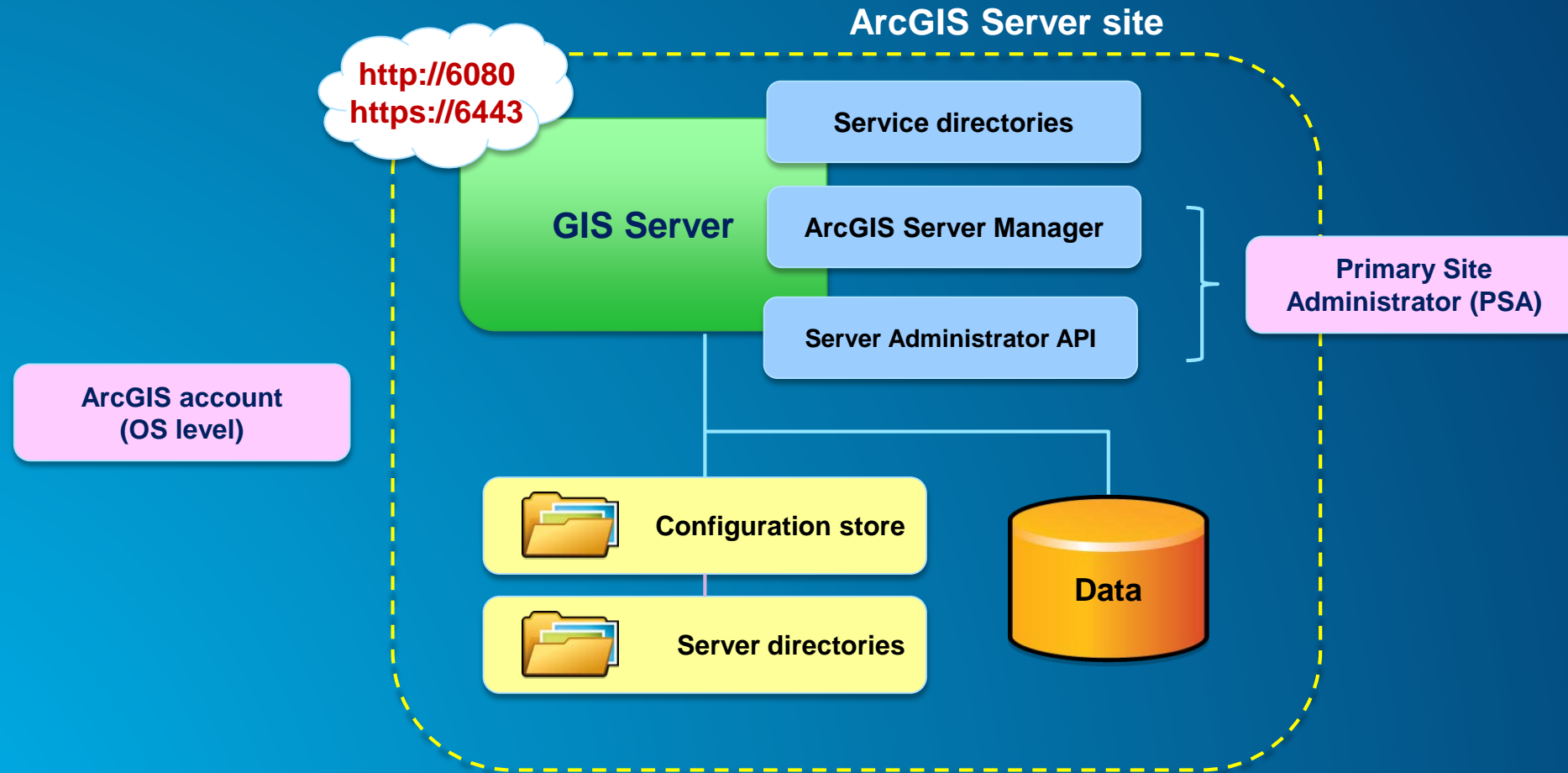
Supported Linux operating systems

The Portal for ArcGIS setup will only proceed if the operating system is 64-bit; 32-bit operating systems are not supported. The operating system must be one of the following:

- Red Hat Enterprise Linux Server 6
- Red Hat Enterprise Linux Server 5 Update 7 with [libX11 patch](#)
- SUSE Linux Enterprise Server 11 Service Pack 1

ArcGIS for Server Architecture

10.1 and later releases



Service Administrator Directory

- Enables **scripting of Server administration tasks**
 - E.g., Join machine to a site, start/stop services, security, etc.
- Can be invoked from:
 - Python, Java, JavaScript, C#, PowerShell, Ruby, Scala, Perl, etc.

ArcGIS Server Administrator Directory Logged in: admin [Administrator] | [Signout](#)

[Home](#) [API Reference](#)

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: 10.3.1

Resources: [machines](#) [clusters](#) [services](#) [security](#) [system](#) [data](#) [uploads](#) [logs](#) [kml](#) [info](#) [usagereports](#) [publicKey](#)

Supported Operations: [generateToken](#) [exportSite](#) [importSite](#) [deleteSite](#)

Supported Interfaces: [REST](#)

Services Directory

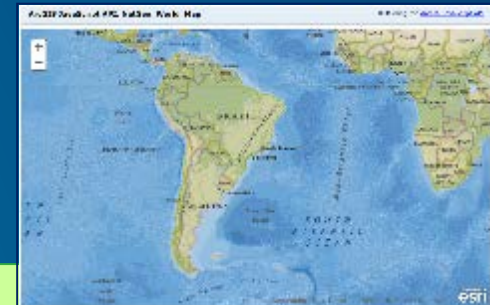
- ArcGIS Services Directory **exposes GIS services**
 - <http://localhost/ArcGIS/rest>



REST



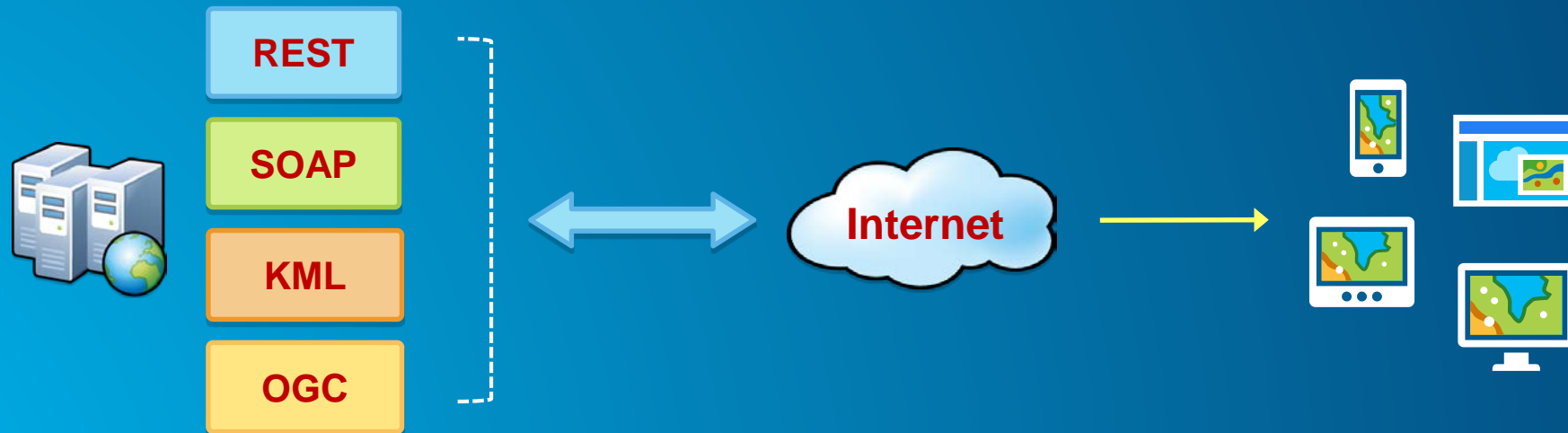
A screenshot of the ArcGIS REST Services Directory homepage. The page title is "ArcGIS REST Services Directory" and it includes a breadcrumb "Home > services" and links for "Help" and "API Reference". It shows the current version as 10.3.1 and a list of folders: Canvas, Demographics, Elevation, Ocean, Reference, Specialty, and Utilities. Under the "Services:" section, several services are listed, with "NatGeo_World_Map (MapServer)" circled in red. Other services include ESRI Imagery World 2D, ESRI StreetMap World 2D, 13 Imagery Prime World, NASA CloudCover World, NOAA Topo US 3D, Ocean Basemap, and USA Topo Maps.



A detailed view of the "NatGeo_World_Map (MapServer)" service. It shows the service name, view URL, and footprint. A "Service Description" explains that the map is a general reference map for informational and educational purposes, developed by National Geographic and Esri. It lists various data providers like DeLorme, HERE, and NASA. A "Map Name: Layers" section is visible, along with a "Legend" link and a "41 Layers and Tables" indicator. A gear icon is present at the bottom right of the service details.

ArcGIS Server – Web protocols

- Its GIS services can be accessed via:
 - Representational State Transfer (**REST**)
 - Simple Object Access Protocol (**SOAP**)
 - Keyhole Markup Language (**KML**)
 - Open Geospatial Consortium (**OGC**)

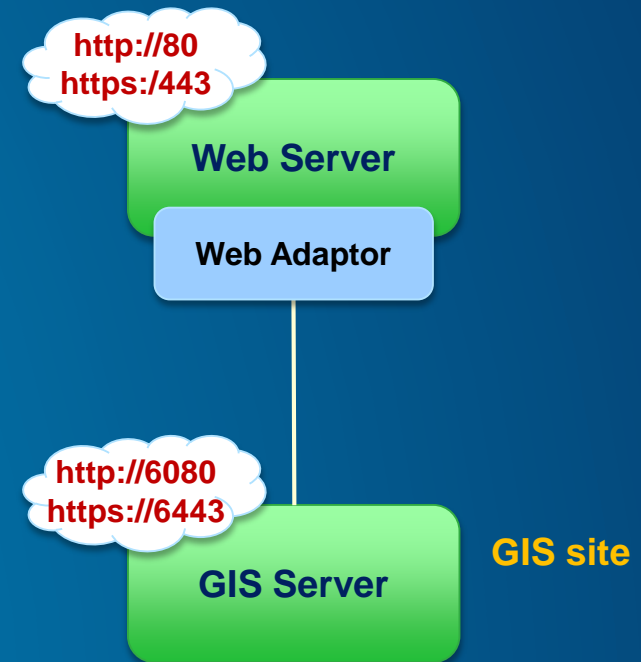


Demo

ArcGIS Server Manager Administrator Directory Services Directory

ArcGIS Web Adaptor

- **Enables ArcGIS Server to work with 3rd party web server**
 - E.g., Microsoft IIS, IBM Web Sphere, etc.
- Leverage web server features
- Enables web-tier authentication
- Provides more flexibility to control site access
- Conceptually like a reverse proxy
- Optional component of ArcGIS for Server
 - Separate software install



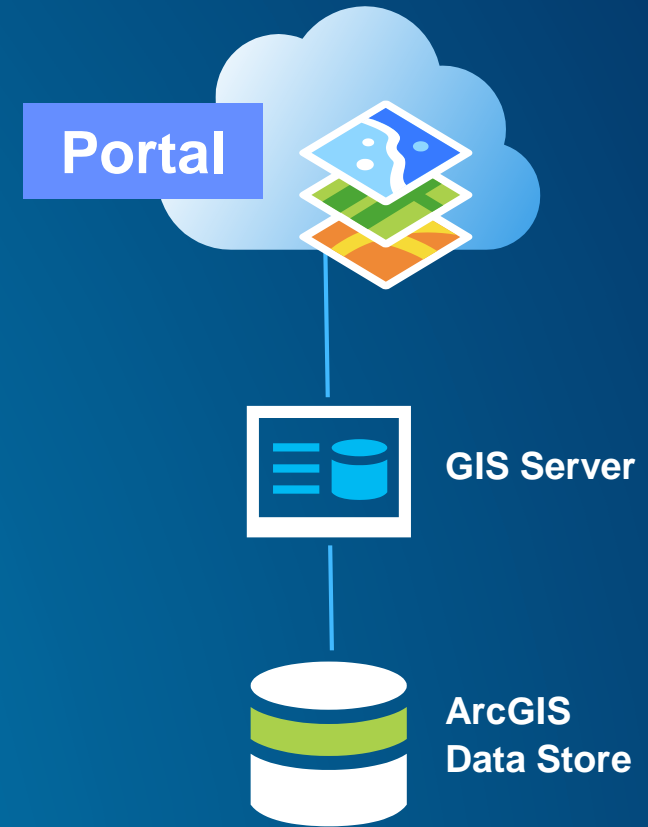
ArcGIS for Server – Enterprise Geodatabase

- Central data repository for your spatial data and storage management
- Enables geospatial data modeling
 - Topology, Geometric network, Network dataset, Mosaic dataset
- Functionality includes: versioned editing, geodatabase replication, and archiving
- Supported DBMS platforms: DB2, Informix, Oracle, PostgreSQL, and SQL Server
- Create with geoprocessing tool



ArcGIS Data Store – Introduced at 10.3

- Deployed with Portal for ArcGIS to enable publishing directly to Portal
- Enables scalable hosted feature services and 3D scene services
- Highly Available
- Automatic Backup and Recovery
- Component of ArcGIS for Server
 - Separate software install



ArcGIS Server tech sessions

- **ArcGIS Server and Portal for ArcGIS: An Introduction to Security**
 - Tues 3:15 pm Room 4
 - Thurs 1:30 pm Room 4
- **ArcGIS Server: What's New**
 - Tues 1:30 pm Room 8
 - Wed 1:30 pm Room 7 A/B
- **Road Ahead: ArcGIS for Server**
 - Wed 10:15 am Room 7 A/B

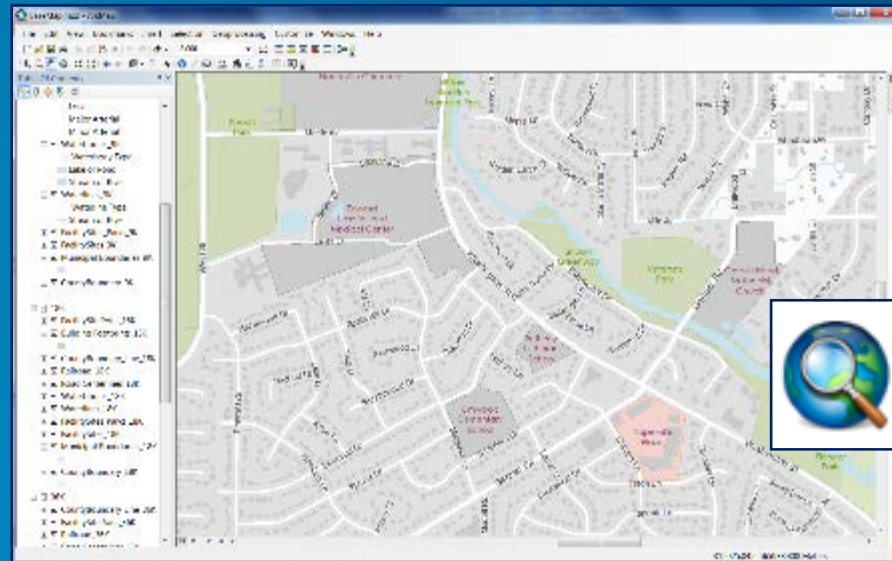
Publishing workflow for GIS Services



1 Authoring Maps for ArcGIS Server

Create professional looking maps for the web

- Leverage ArcMap's powerful cartographic capabilities
- **WYSIWYG** map authoring user experience
- Follow best practices for optimal maps



2 Publishing GIS resources

Author



Analyze

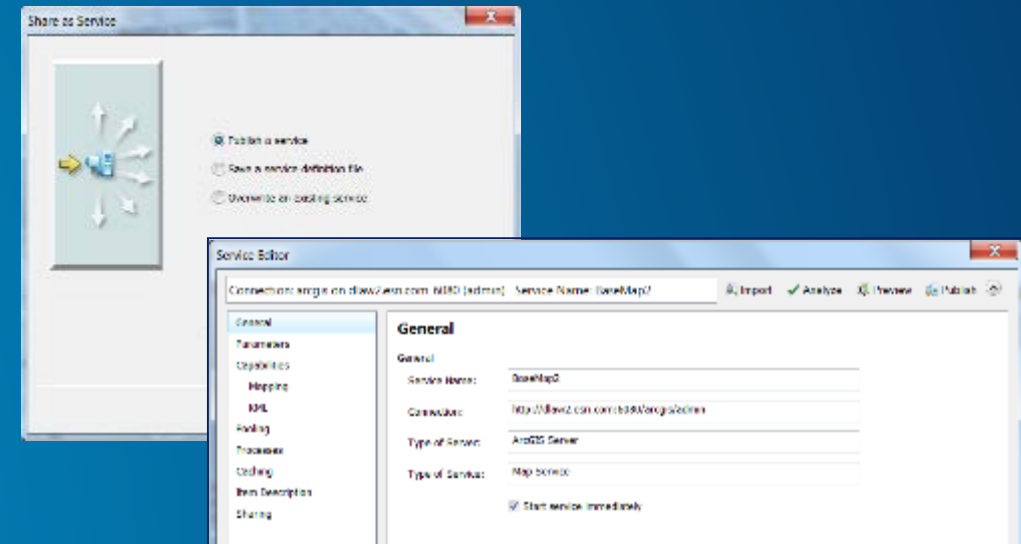


GIS service



Service definition file

- **Share As Service** wizard
 - Publish GIS service
 - Create service definition file
 - Overwrite an existing GIS service
- **Service Editor**
 - Defines GIS service properties
- **Analyze map for optimization**
 - Fix errors and address warnings



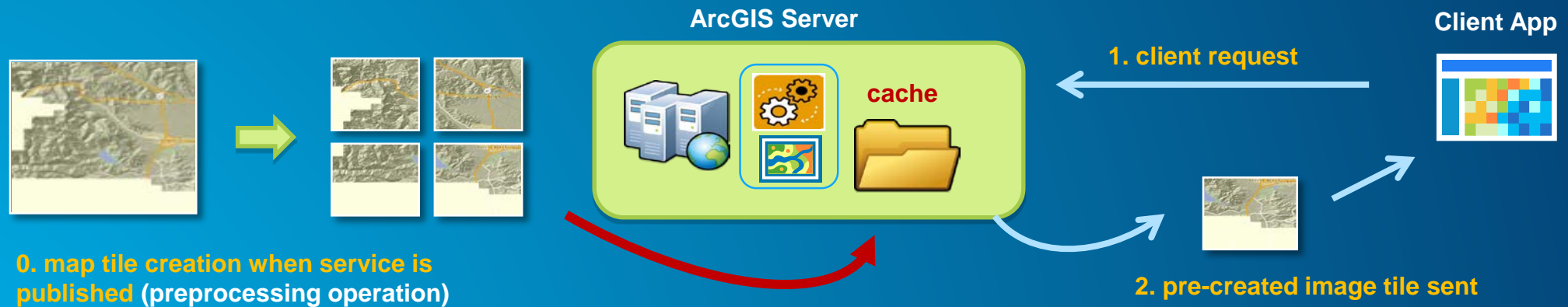
Web Mapping - Terminology

Common ArcGIS for Server concepts

- Map service → probably the most common web service published
- 2 types
 - **Cached** vs. **Dynamic**
 - Choice on how you publish data depends on business requirements

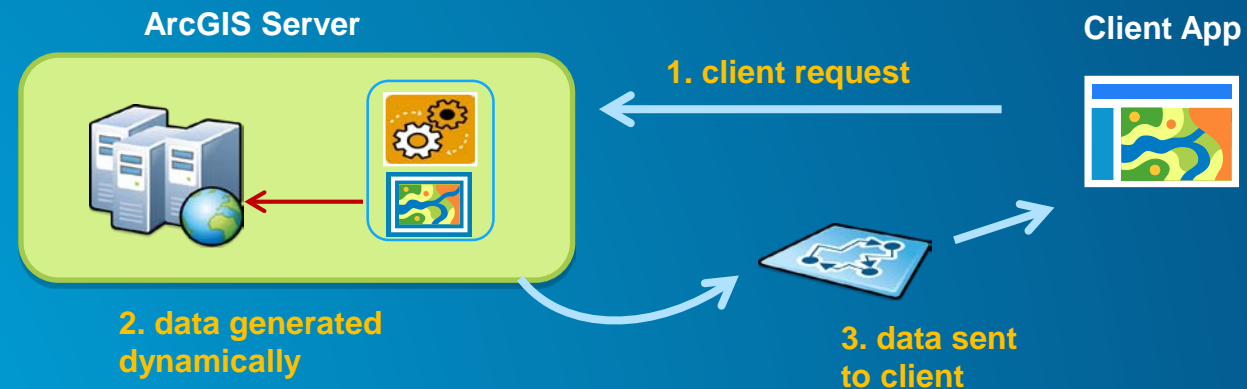
Cached Map Service

- Pre-render data as a collection of images stored on the server
- Used for data that does not change frequently
- Typically raster data



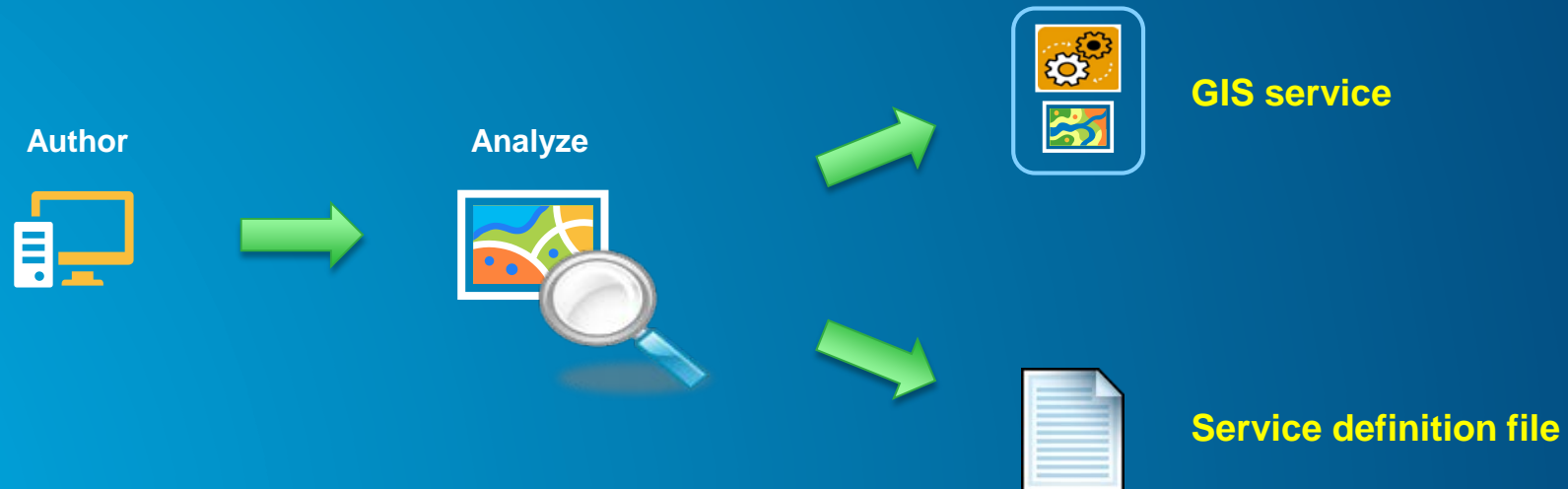
Dynamic Map Service

- Map service data content is generated on-the-fly as needed
- Used for data that changes/updated frequently
- Typically vector data



2 Publishing GIS resources

- You can publish
 1. **GIS Service** or
 2. **Service Definition file**
 - Defines service schema and can be used to publish GIS service later
- **All GIS resources are published with the same workflow**





Demo

Publish a map service workflow

Other Types of Web Services

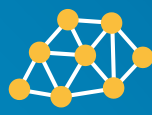
- Many GIS resources can be shared as GIS web services



Map
service



Feature
service



Network
service



Geodata
service



Geoprocessing
service
(printing)

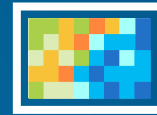


Image
service



Locator
service



Schematics
service

- **Common web workflows**

- **Feature services** → web editing
- **Geoprocessing services** → share spatial analysis tools and models; custom layouts
- **Locator services** → geocoding

Publishing tech sessions

- **Publishing GIS Services to ArcGIS for Server**
 - Tues 10:15 am Room 5 A
 - Thurs 8:30 am Room 3
- **Designing and Using Cached Map Services**
 - Tues 1:30 pm Room 5 A
 - Thurs 10:15 am Room 3
- **Working with Feature Services**
 - Wed 8:30 am Room 5 A
 - Thurs 10:15 am Room 31 B
- **Creating Geoprocessing Services**
 - Thurs 10:15 am Room 33 A

Portal for ArcGIS

Included with ArcGIS for Server Standard and Advanced editions at 10.3.x

- **Central hub for your GIS assets**
- Provides a user friendly “front end” to your GIS services
 - Search and discovery
 - Simple mapping
 - Collaboration
- Solution instead of ArcGIS Online when
 - Additional security requirements
 - No public cloud option



What is a Web Map?

- Foundation for your maps and apps
- Enables “intelligent maps” → Web Map stores references to web services and data, display and behavior settings
- Supports: smart mapping, pop-ups, editing, analysis, time, etc.
- Create in ArcGIS Online/Portal for ArcGIS map viewer
- **Can be leveraged by all other Esri Apps**



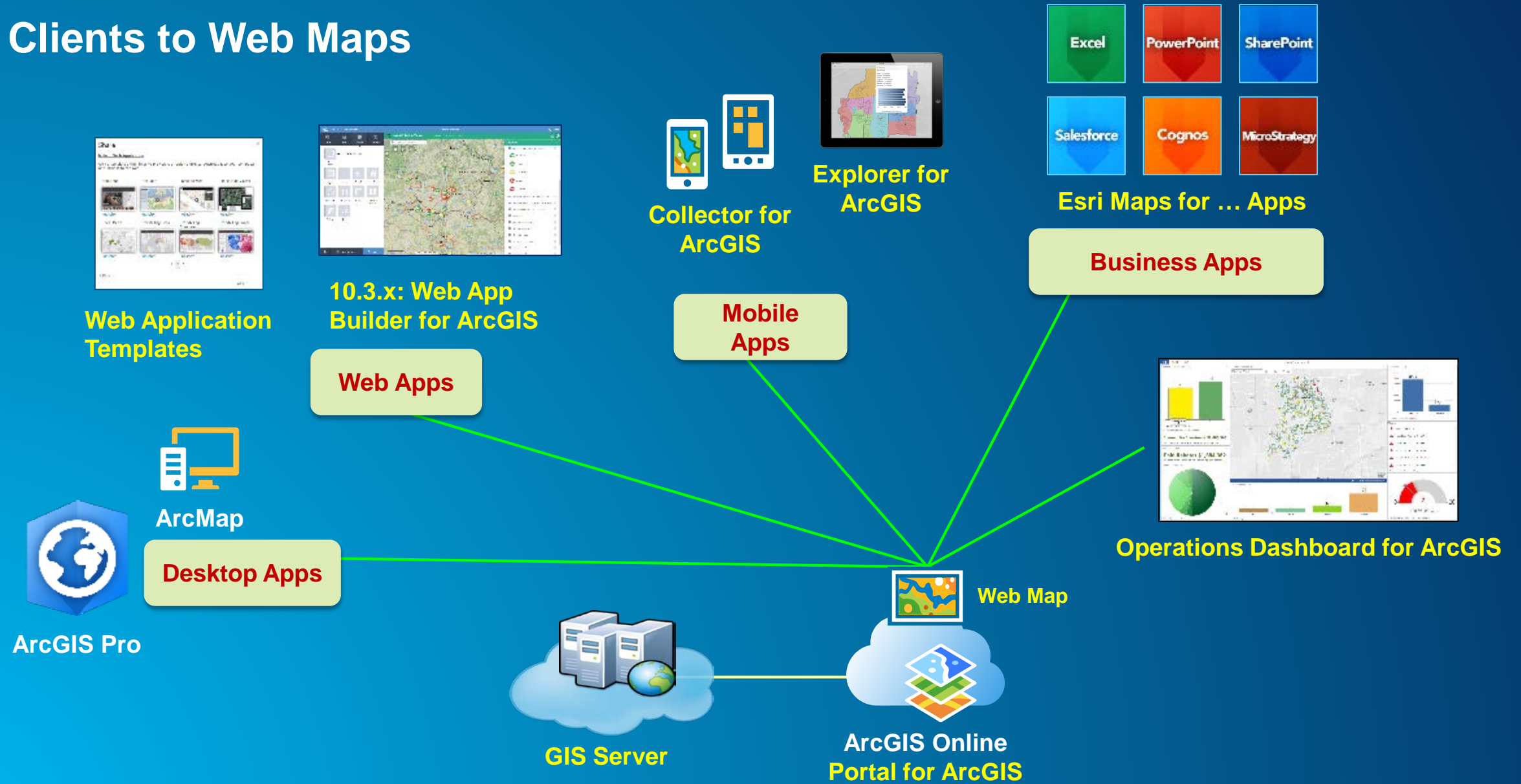
Data content in a Web Map

Conceptual terms

- **Basemaps**
 - Geographic frame of reference
 - Typically contain static data
- **Operational Layers**
 - Information overlays that end users interact with
 - Contain dynamic data
- Operational layers display on top of basemaps



Clients to Web Maps





Demo

Explore Portal for ArcGIS and Client Apps

Portal for ArcGIS tech sessions

- **Portal for ArcGIS: An Introduction**

- Tues 10:15 am Room 2
- Wed 10:15 am Room 4

- **Portal for ArcGIS: Administration**

- Wed 1:30 pm Room 4
- Thurs 8:30 am Room 2

Web GIS in Large Organizations

- GIS Server for different Depts.
- Organization accesses all of its GIS assets through a portal
 - User friendly UX
 - Search and discovery
 - Collaboration



ArcGIS for Server – Editions & Levels

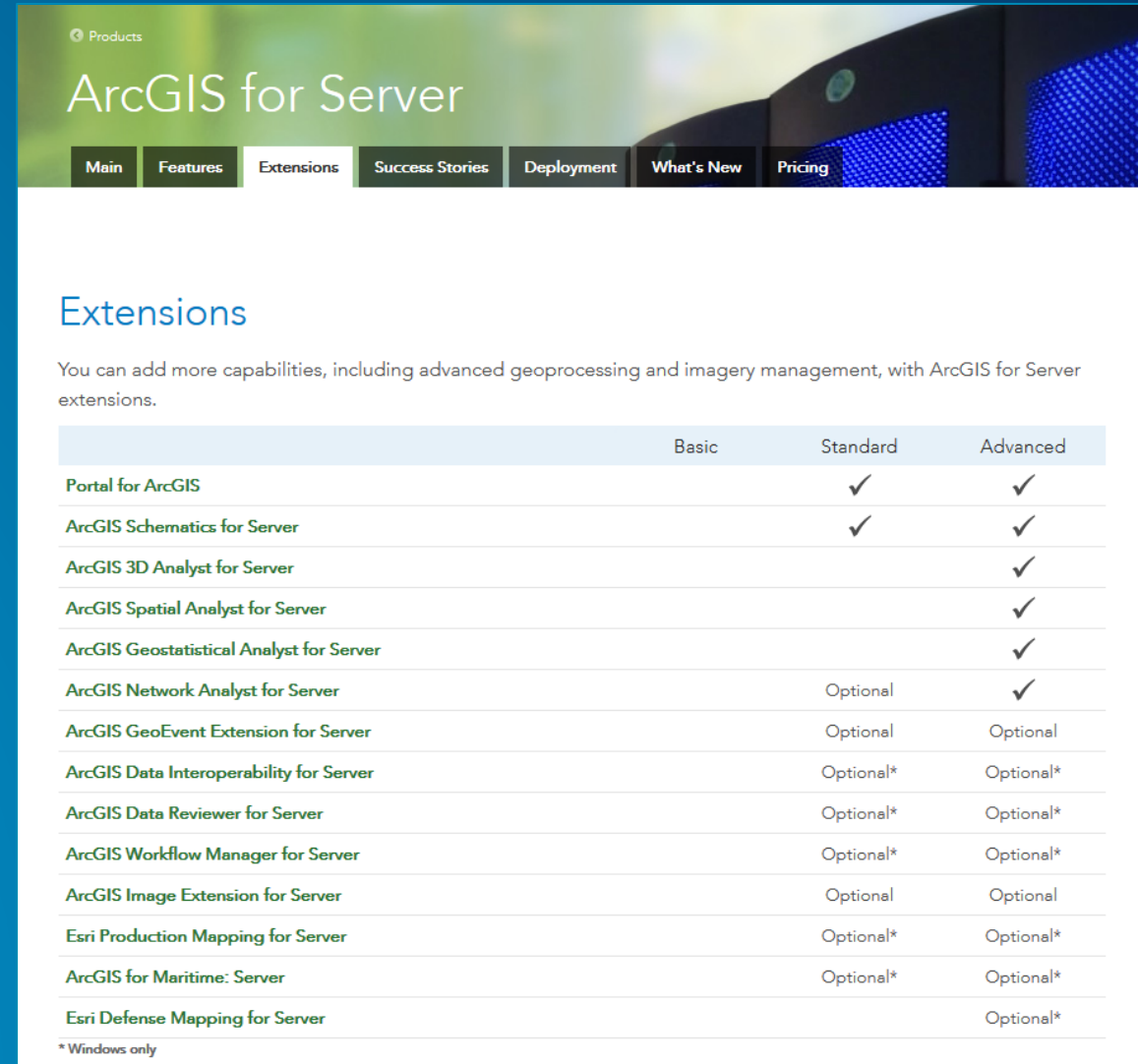
Capacity 

Functionality 

Edition	Includes	Level	
		Workgroup	Enterprise
Basic	<ul style="list-style-type: none"> Enterprise geodatabase Geodata services for replication Read only feature services 	<ul style="list-style-type: none"> SQL Server Express 10 users 	<ul style="list-style-type: none"> Any supported database Unlimited users
Standard	<p>Basic features plus</p> <ul style="list-style-type: none"> Map, globe, geocoding, geoprocessing (ArcView tools), Web editing, Portal for ArcGIS 	“	“
Advanced	<p>Standard features plus</p> <ul style="list-style-type: none"> Advanced geoprocessing ArcGIS Mobile Portal for ArcGIS 	“	“

ArcGIS for Server Extensions

- Support specific workflows
- Examples:
 - Real-time data feeds
 - Imagery
 - Network analysis
 - QA/QC workflows



Products

ArcGIS for Server

Main Features **Extensions** Success Stories Deployment What's New Pricing

Extensions

You can add more capabilities, including advanced geoprocessing and imagery management, with ArcGIS for Server extensions.

	Basic	Standard	Advanced
Portal for ArcGIS		✓	✓
ArcGIS Schematics for Server		✓	✓
ArcGIS 3D Analyst for Server			✓
ArcGIS Spatial Analyst for Server			✓
ArcGIS Geostatistical Analyst for Server			✓
ArcGIS Network Analyst for Server		Optional	✓
ArcGIS GeoEvent Extension for Server		Optional	Optional
ArcGIS Data Interoperability for Server		Optional*	Optional*
ArcGIS Data Reviewer for Server		Optional*	Optional*
ArcGIS Workflow Manager for Server		Optional*	Optional*
ArcGIS Image Extension for Server		Optional	Optional
Esri Production Mapping for Server		Optional*	Optional*
ArcGIS for Maritime: Server		Optional*	Optional*
Esri Defense Mapping for Server			Optional*

* Windows only

ArcGIS for Server Resources

- ArcGIS 10.3.1 for Server Functionality Matrix whitepaper
- ArcGIS for Server 101 – ArcUser technical article
- <http://server.arcgis.com/en/server/>

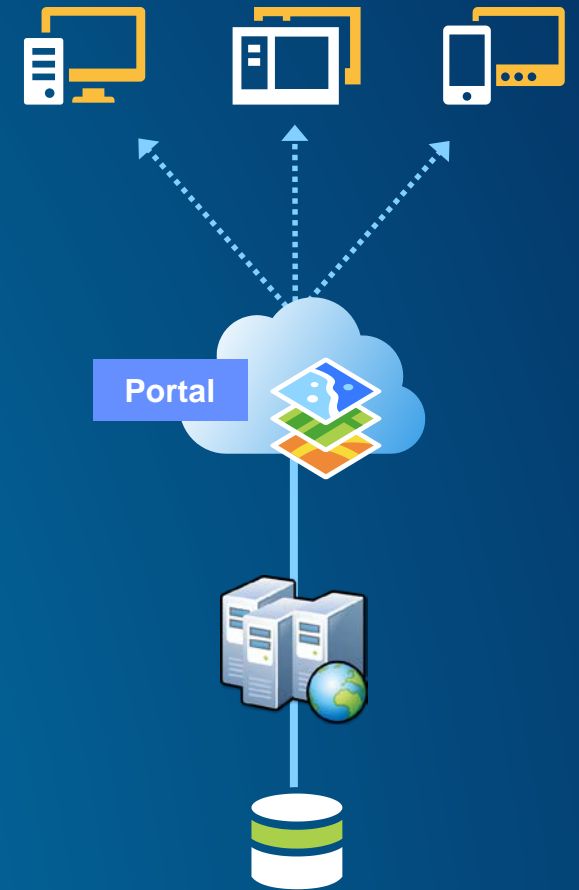
The screenshot shows the ArcGIS for Server documentation website. The navigation bar includes 'ArcGIS for Server', 'Documentation', 'Pricing', and 'Support'. A search bar and 'Sign In' button are also present. The main content area is titled 'Documentation' and is divided into two columns: 'ArcGIS for Server' and 'Portal for ArcGIS'. The 'ArcGIS for Server' column lists various topics such as 'Overview', 'What's new?', 'System requirements', 'Installation guide', 'Upgrade your server', 'Plan your server deployment', 'Use your server with Portal for ArcGIS', 'Configure ArcGIS Web Adaptor with your server', 'Secure your server', 'Types of services', 'Tutorials', 'Publish services', 'Print in web apps', and 'Script administration of your server'. The 'Portal for ArcGIS' column lists 'Overview', 'What's new?', 'System requirements', 'Installation guide', 'Upgrade your portal', 'Use your portal with ArcGIS for Server', 'Use ArcGIS Data Store with your portal', 'Configure ArcGIS Web Adaptor with your portal', 'Secure your portal', 'Common clients', 'Manage users, groups, and content', 'Configure the portal website', 'Add items to your portal', and 'Make a map'. A 'Learn ArcGIS' section with a 'GET STARTED' button is also visible.

The image shows the cover of the 'ArcGIS for Server 101' article. The title is 'ArcGIS for Server 101' with the subtitle 'Understanding architecture, deployment, and workflows'. The article text discusses the benefits of sharing ArcGIS for Server web services with ArcGIS Online, allowing other users to discover and use them, thereby expanding the number of end users who can consume and leverage your GIS resources. It mentions that using ArcGIS for Server to share GIS resources over the web empowers an organization and its members, enabling them to make better decisions because everyone can access, collaborate, and work with the same geographic knowledge. ArcGIS for Server includes a GIS Server, Web Adaptor, and ArcSDE technology. A diagram labeled 'Figure 1: ArcGIS for Server architecture' shows an 'ArcGIS Server (server) install' connected to a 'GIS Server' and an 'ArcGIS Server site'. The text concludes that an installation of ArcGIS for Server is called an ArcGIS Server site, which can consist of a single machine or be composed of several machines in a multi-machine deployment. ArcGIS for Server is available for Windows or Linux operating systems and can be either an on-premises solution or part of a cloud solution. Regardless of how it is physically deployed, its capabilities are the same.

The image shows the cover of the 'ARC GIS 10.3.1 FOR SERVER FUNCTIONALITY MATRIX' whitepaper. The title is 'ARC GIS 10.3.1 FOR SERVER' with the subtitle 'FUNCTIONALITY MATRIX'. The Esri logo is prominently displayed on the right side.

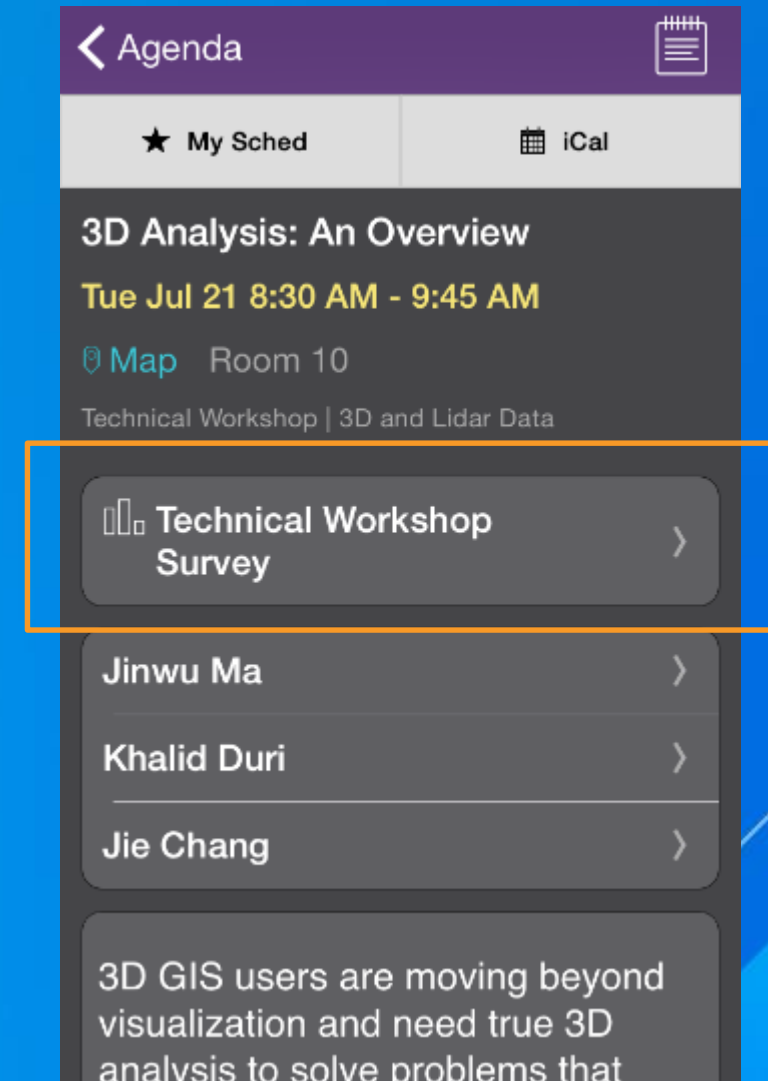
Summary

- ArcGIS for Server enables Web GIS in your infrastructure
- Architecture
- Publishing GIS resources
 - Author > Publish > Share/Use
 - Design patterns and terminology
- Working with ArcGIS Online/Portal for ArcGIS and client applications
- Extensions
- Editions and Levels



Thank you...

- Please fill out the session survey in your mobile app
- Select **ArcGIS Server: An Introduction** in the Mobile App
 - Use the Search Feature to quickly find this title
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments



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Understanding our world.