ArcGIS for Server – An Introduction

In this session, you learn how to make the maps, globes, and other GIS resources that you create in ArcGIS for Desktop available to anyone via the web by using ArcGIS for Server. You learn how to create web mapping services and applications and you are introduced ArcGIS Online, caching maps for performance, as well as adding tasks to your applications, securing your GIS server, and finding the best help resources.

http://video.esri.com/watch/64/arcgis-for-server-an-introduction

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Video Transcription

00:01 Who is smarter—latitude or longitude?

00:08 This is a tricky one; it's an advanced, advanced joke.

00:12 So longitude, those are those radians that goes north-south, right?

00:17 Latitude, the ones that go east-west.

00:21 I'm forgetting the joke...oh.

00:23 Longitude is more smarter than latitude because it has more degrees.

00:30 Oh...okay.

00:33 All right, so for those of you who are just entering...

00:35 ...thank you for coming to the Introduction to ArcGIS Server session.

00:39 My name is Derek Law...

00:40 ...and I'll be one of your copresenters, and I believe my other copresenter, will...Dan, will be here shortly.

00:46 I think he probably stepped out.

00:48 I said to folks earlier in the room...

00:50 ...to facilitate making this session more user-friendly for you guys, a couple of key things.

00:56 You may want to have your UC planner handy, so immediately next to you.

01:01 Throughout this session we will refer to other technical sessions...

01:04 ...for you guys to learn more information on a specific topic.

01:07 So you may want to have that guide handy so you can circle the relevant time or offering of that session.

01:15 The other thing is, for those of you taking...who plan on...who's going to take copious notes

like in college, right?

01:21 Don't sweat it.

01:22 You are...I want you guys to enjoy your user conference experience.

01:25 If you want to have a copy of this PowerPoint presentation, okay...

01:30 ...give me your business card and write down the name of the technical session...

01:34 ...and leave it with Dan or myself at the end of the session, and I'll mail you a copy on Friday.

01:39 Is that fair?

01:41 There may be a couple of slides where I say hey, here's a key idea, you may want to write this down.

01:46 But I...I don't want you guys to stress about taking notes.

01:48 Whenever I do the versioning session, people get all overwhelmed.

01:52 So we want you to guys to have a good time and really just enjoy the content.

01:58 So you...Dan was not here when I told my geography jokes.

02:02 It was a tough crowd today, they didn't like them at all.

02:06 Should I tell one more?

02:07 I've got to stall for five more minutes here.

02:10 Let's see...

02:12 Do you have any more?

02:13 I...I do have a few more, yes.

02:15 But I want to use them all up today, so...

02:18 Okay, here's one more.

02:19 How many of you are going to come tomorrow?

02:22 Probably not.

02:23 After my jokes I don't know if they're going to come back.

02:25 All right, here's one more.

02:27 What does a map...okay, we all know what a map is, and the famous movie star John Len...

02:35 I'm blanking on his name now...

02:37 John Wayne...

02:38 What does a map and the famous movie star John Wayne...

02:41 ...played a cowboy in lots of movies...have in common?

02:45 This is also an advanced one.

02:47 John Wayne, movie star, played a lot of cowboys and...and soldiers, I believe, and then a map.

02:54 I'm thinking more specifically of a property or an attribute of a map.

03:02 [Inaudible question from audience]

03:03 That's right, they are both legends, or a map has a legend and John Wayne is a legend.

03:09 Oh, okay...

03:10 I'm not a... Dude, I don't know, it's a tough crowd.

03:14 That was worse than I thought.

03:17 The ice cap one was good, I thought.

03:19 We'll have to go over it later.

03:22 So for again, for those of you who are coming in...

03:25 ...please have your user conference planner next to you in case you want to circle some relevant sessions. Okay?

03:30 We have a big topic, Introduction to ArcGIS Server.

03:33 Who's u... who's using ArcGIS Server right now?

03:36 I just want to learn more.

03:37 Okay, so for those of you guys who have...have you guys installed it and running, right...?

03:43 Who's like the ArcGIS Server installer in their organization, and they know everything's that going on?

03:48 Good, okay.

03:49 And for those of you who are user...are you guys end users?

03:51 Who are end users? So you're working with it but you want to learn more...

03:53 ...about how it's working behind the scenes, under the hood?

03:56 Okay. This is the session for you. All right?

04:00 As the title said, this is ArcGIS Server, An Introduction...

04:02 ...and this is targeted towards beginner and intermediate users.

04:07 So if you came here to learn more about what ArcGIS Server is...

04:11 ...and how it works under the hood, this is the session for you.

04:14 If you're an advanced ArcGIS Server user, you've stripped it out, you've done a distributed install...

04:20 ...you've gone to the geodatabase and messed around with the repository tables...

04:23 ...this may not be the session for you.

04:25 I want to set appropriate expectations.

04:27 As the name implies, this is an introductory session. Okay.

04:31 We are going to cover a whole bunch of different topics.

04:35 And the goal of Dan and I is to ensure that you guys leave here with at least a fundamental understanding...

04:41 ...of some of the basics of what ArcGIS Server is, what are some of the key terms...

04:46 ...and give you a working vocabulary of all the different concepts related to ArcGIS Server...

04:52 ...so when you go to the other sessions you'll have an idea and you'll be able to follow along. Okay.

04:56 Save all your hard, very challenging questions for Dan.

05:01 He will...he will be available...

05:02 Thanks Derek.

05:03 Yeah, no, I'm always looking out for you, Dan.

05:22 All right, we have a couple more minutes, so...

05:24 I just want to make sure everyone's comfy.

05:26 Do any of you have a joke...for Derek?

05:30 The jokes are good, man, they're clean.

05:31 They're politically correct, you know?

05:36 For those of you who just came in, I was...who's attending the user conference for the first time?

05:41 Right, several of you...there's more of you now.

05:43 I mentioned to this...to people earlier in the audience, I strongly recommend...

05:48 ...for those of you who are attending for the first time...

05:50 ...and even those who are returning, find a regional group meeting tonight.

05:55 Go there and enjoy some free beverages and food.

06:00 You might want to...and also meet new users, of course, right?

06:03 So you can go to the...oh, I don't know...South Central User Group even if...

06:06 ...you're from Alaska or something like that.

06:08 Doesn't matter; you should just go in, there's a...ESRI Canada is holding one, I believe ESRI Germany has one.

06:14 So check it out.

06:15 All right, why don't we get started here.

06:19 So again, thank you guys for showing up to the ArcGIS Server, An Introduction, technical session.

06:25 My name is Derek Law, my colleague is Dan Haag, and thank you guys for showing up.

06:30 We appreciate it, and we know it's early for this very light topic, right, ArcGIS Server.

06:35 But it's important that you understand some key concepts.

06:39 So we have a very full session.

06:41 We are going to cover a lot of different topics.

06:44 And as I mentioned earlier, the objective of this session is to give you guys an understanding...

06:49 ...of some of the key, fundamental pieces of ArcGIS Server.

06:53 We want you to walk away so that you understand some of the key, you know, properties, some of the key ideas.

06:59 We want to give you guys a working vocabulary...

07:01 ...of some of the terms that you'll hear as you go to other ArcGIS Server sessions.

07:06 So it's a very good starting point.

07:08 So we'll talk about what it is...

07:10 ...we'll go over some of the different types of Web services that it can create for you.

07:14 We'll talk about the process, and Dan will demonstrate this for you...

07:17 ...the process of publishing a resource or a map document onto the Web.

07:21 You'll learn about the different clients to ArcGIS Server...

07:24 ...and then we'll conclude with the different editions and licensing levels of ArcGIS Server, okay?

07:30 So Dan has some awesome demonstrations.

07:33 And, as I mentioned to some people earlier, please have your user conference agenda out and, and next to you.

07:39 Because throughout the presentation we will refer to other technical sessions.

07:44 And you may want to quickly circle that on your conference calendar, okay.

07:47 That's the participatory part.

07:49 Dan and I will make ourselves available to you at the end of the session.

07:52 I will be at the Server Island all afternoon, and Dan will give you his cell phone number for 24-hour, 24/7 tech support.

08:00 I'll be at the Server Island, too.

08:01 He's going to hate me at the end of this week.

08:03 I'll be at the...I'll be at the Server Island as well.

08:05 Okay, cool.

08:06 ...for the rest of the week.

08:08 So, ArcGIS.

08:10 I'm sure you've seen this slide or some form of it already, right?

08:13 The Complete GIS System, integrated system.

08:17 John Calkins, during the plenary, used the analogy of music.

08:20 How Scott Morehouse, our lead director of research software development, said...

08:25 ...yeah, we want to have GIS like music.

08:27 You can listen to music through several different mediums, right?

08:30 The radio, the Internet, on TV.

08:33 Same thing with GIS, right.

08:34 ArcGIS, we have these...we've identified three general patterns.

08:38 You can access GIS through the Web, right, through Web clients with mapping applications.

08:43 You can access GIS through mobile clients...

08:45 ...ArcGIS Mobile and now the iPhone, soon to be Android, and also the classic desktop, okay?

08:51 All of this information is accessed over the Internet, through the Web, published by different services.

08:58 Published through ArcGIS Server.

09:00 And on the right-hand side of the slide, we have three different levels, if you will, of implementation.

09:05 So, local, enterprise, or the cloud now.

09:07 You can now take ArcGIS Server, run it on the cloud through ArcGIS Server for Amazon.

09:14 So ArcGIS Server, then, is a complete, out-of-the-box...

09:17 ...Web-based GIS. It's a, it's a very generic term, but yeah, we give you...

09:22 By getting this product, we give you the ability to set up an ArcSDE geodatabase.

09:27 So, spatial data management.

09:30 We also give you the ability to take analysis tools or GIS data...

09:36 ...and publish them over the Internet, on the Web, as a resource. Okay?

09:41 Pretty powerful stuff.

09:43 And we're going to talk about that in more detail.

09:45 Because you're like yeah, Derek, I've heard this before.

09:47 I want to...I want to get under the hood.

09:48 I want to learn more meat.

09:50 I promise you we'll do that.

09:52 The other thing to be aware of is ArcGIS Server is available on two platforms, .NET and Java.

09:57 Totally up to you, depends on really what platform you want to use.

10:03 We also know that ArcGIS Server, that allows you serve out your GIS resources...

10:07 ...on this slide here we have a...a vague concept diagram.

10:10 At the bottom are the different services that you can serve, all right?

10:14 And we'll talk about each different type of service later on.

10:17 The point is, ArcGIS Server takes the different resources, makes them available over the Web...

10:22 ...so that you can have many different clients accessing and interacting with these GIS resources.

10:27 And as you'll see at the top, we will also go over some of these clients, okay?

10:32 This is the key conceptual idea of ArcGIS Server.

10:36 You can take your GIS data, your information, your analysis tools in the form of models...

10:42 ...and share them over the Internet for other people to use.

10:46 Could be within your organization, could be outside your organization.

10:49 Depends on how you configure ArcGIS Server.

10:54 But let's look at it in terms of what are the key things?

10:57 And for those of you taking notes...

10:58 ...this is probably one of those slides where you may want to write down those...those...that yellow text.

11:03 When you have ArcGIS Server, there are four pieces to be aware of.

11:08 The first is called the Web Server.

11:10 This is that piece of software that allows you to take your resource and share it over the Internet, right?

11:16 Could be Microsoft Internet Information Server, IIS; could be Apache; could be some other product.

11:24 Piece number two is the Server Object Manager, also called the SOM.

11:29 And as the name would imply, this is the resource manager.

11:32 This is the process that runs on your machine and listens for any requests for information from clients.

11:40 It takes that request and it assigns that piece of work to a workhorse.

11:46 That workhorse process is called the SOC, Server Object Container.

11:51 So this is another process that will be running on your machine that does the number crunching...

11:55 ...that physically retrieves the data from the database.

11:58 That does that query, whatever the case may be.

12:01 So typically in an ArcGIS Server installation...

12:04 ...you would have one SOM process, one boss, many SOC processes; many workers, right?

12:14 Finally, the last piece is known as the geodatabase.

12:17 All right? This really refers back to ArcSDE technology...

12:21 ...that software that we've built at Esri to install in a database platform...

12:27 ...to have...to enable you to have a geodatabase.

12:30 All right? Sets up those repository tables, enables versioning, geodatabase replication, archiving, etc.

12:36 That's it; that's these four pieces, Web Server, SOM, SOC, geodatabase.

12:43 Those are the key pieces.

12:46 The other thing to be aware of is...

12:47 ...I could theoretically install all of these pieces on one machine for a medium to small solution.

12:57 Or, I could install these different pieces across four different machines or three different machines...

13:02 ...whatever configuration works for you depending on your business workflow.

13:06 So you can have a single installation or a distributed installation, totally flexible, totally scalable.

13:13 And I have more information...

13:15 ...Dan and I have more information to address those questions if you have them.

13:20 All right; yeah, Derek I have the theory, I'm a simple guy...

13:24 ...I work with Development all the time and I always tell them...

13:27 ...talk to me like I'm a two-year old, I really want to understand this. All right?

13:30 So I always like to draw a picture.

13:32 And here's the conceptual diagram that Dan and I have prepared for you guys...

13:35 ...so you can visualize all the different pieces.

13:38 As I mentioned, the first piece is the geodatabase, right.

13:42 Our spatial data storage model.

13:45 It is also known as the database server...

13:48 ...the geodatabase for workgroup and enterprise solutions uses ArcSDE technology.

13:55 We also have the SOM and the SOC.

13:58 We now know the SOM and the SOC, they're both processes that run on our machine.

14:04 The SOM is the manager, the SOC is the workhorse.

14:07 It does the number crunching, it performs the query, it retrieves the map.

14:11 Collectively, this piece could be called the GIS server.

14:14 Again, this is more vocabulary for you...

14:16 ...as you go through our Help documentation or our white papers.

14:19 And that last piece was the Web server.

14:21 That piece of software that allows us to take our resource and share it over the Internet.

14:27 All right? So our Web server is really the piece that talks to the Internet...

14:31 ...and we have many different clients that can access information from ArcGIS Server.

14:35 And if you think about this concept diagram...

14:38 ...it's very similar to that generic ArcGIS Server system diagram I showed you guys earlier, right?

14:45 Again, we have those three main patterns, Web clients, mobile clients, and desktop clients.

14:54 So what are GIS services?

14:56 Okay Derek, you've mentioned that I can take my resource...

15:00 ...my data, my model, what have you, and make a GIS service.

15:03 What does that mean, really, behind the scenes?

15:06 A GIS service is simply a process that runs on your server machine.

15:12 This process running on your server machine...

15:15 ...is shared through the Internet via our Web server software.

15:20 So here you have a concept diagram where you have that box on the left-hand side.

15:24 That represents my ArcGIS Server instance with my little geodatabase...

15:29 ...and I have four processes; four services running behind the scenes.

15:34 That's why I have those little gear icons; it's not something you can open and look at...

15:37 ...but it's a service running on your machine.

15:40 And in this case, I'm sharing out two map documents...

15:44 ...a model, and information from a geodatabase.

15:49 That's all it is.

15:50 You can get more technical, but at the end of the day...

15:52 ...a GIS service is a process running on your machine; you're sharing that resource out.

16:00 So we have many different types of services available to you.

16:03 This is not a comprehensive list; this is probably 90 percent of that list.

16:09 Again, this is an entry-level course.

16:10 But basically you can share information in a map...

16:14 ...you can share information in a globe document, you can create a geocoding or locator service...

16:20 ...if you want to enable that Find Address functionality.

16:24 You can also share, or create a geodata service.

16:28 In other words, you could share the contents of a geodatabase through geodatabase replication.

16:35 You could create a model in ModelBuilder...

16:37 ...and share that ModelBuilder...sorry. Share that model over the Internet through a geoprocessing service.

16:42 So if you designed a model that does some kind of analysis...

16:46 ...you could theoretically build a Web client with a button.

16:48 They click that button, it will execute that model to do your analysis.

16:53 And also you can share images.

16:55 Now, there are other types of services, such as a feature service for editing or OGC...

17:00 ...or WMS service for some standard, but we'll get to that later on, okay?

17:07 All right, so we know what ArcGIS Server is now.

17:11 We know the four main pieces of ArcGIS Server.

17:14 We also know what a service is and the types of services that are available.

17:18 This is another one of those key slides to be aware of.

17:22 You can talk to ArcGIS Server through several different Web protocols.

17:27 Think of this loosely as communication methods.

17:31 And as you can see by the slide...

17:32 ...we have four different types of communication methods that we support.

17:37 REST...representational state transfer.

17:41 SOAP...simple object access protocol.

17:44 KML...those of you have...who's used Google Maps?

17:47 I don't want to see anyone's hand raised.

17:48 I'm just kidding, I'm just kidding.

17:50 And then OGC. All right?

17:53 So these are other terms that you will hear if you go to an ArcGIS Server session.

17:59 It boils down to this; if people are talking about REST they might say, for example...

18:03 ...Yes, this JavaScript application talks to ArcGIS Server through REST.

18:08 All that means is, it's a, it's a communication method; that's all it is. Okay?

18:13 Something to be aware of is that REST is probably the most popular...

18:17 ...and it's probably where a lot of our development resources are now being directed towards...

18:21 ...because it's the most common and most popular communication method, or Web protocol.

18:27 SOAP is an industry standard; KML, as I said before, is pretty much an industry standard...

18:33 ...because Google uses it and therefore uses KML.

18:35 And OGC refers to the Open Geospatial Consortium.

18:40 This is an organization, they meet, I think, every year.

18:44 They're all across the globe and they define international standards.

18:48 We support many of these international standards. Okay?

18:52 So if you want to build a custom Web client in some other development language...

18:57 ...and you conform to these open standards...

18:59 ...you can then communicate with ArcGIS Server and get that information. Okay?

19:04 I see some of you taking copious notes; that's great, I'm not criticizing, but I want you guys to relax.

19:10 I mentioned this earlier; if you want to get a copy of the PowerPoint deck, leave me your business card...

19:15 ...with the name of the session at the end of the session, and I will e-mail it to you on Friday.

19:20 You will also get it...a copy of the PowerPoint at the proceedings...

19:24 ...in the proceedings CD, but I think that's probably like a month away.

19:28 So...so don't stress. Okay?

19:30 We doing good so far?

19:33 Do you want to hear another joke? Probably not.

19:37 All right, we just talked about different Web protocols, communication methods to ArcGIS Server.

19:42 This is key. I mentioned this on the previous slide...

19:46 ...REST is probably the most popular Web protocol that we use...

19:49 ...both internally at Esri and that we're promoting.

19:52 There is something called the ArcGIS Services directory.

19:56 And as you can see by the slide, this really refers to the REST endpoint, or the REST Web protocol.

20:04 You'll probably see this in any kind of programming or customization session.

20:09 So what Esri has done is, we've provided for you a way to visually look at all the different Web services...

20:17 ...that are available for a specific ArcGIS Server installation through the REST endpoint.

20:24 This is known as the services directory.

20:27 So this is a screen capture of a Web browser...

20:30 ...and, in fact, it's a screen capture of the ArcGIS.com REST services directory.

20:36 And every hyperlink in that screen capture...

20:39 ...links to more information about a specific service being published off of that server instance.

20:46 Dan will demonstrate this for you later on.

20:49 But this is another key idea that you may hear.

20:52 ArcGIS Services Directory is a visual view, or window if you will...

20:58 ...into an ArcGIS Server installation through REST.

21:04 All right, last slide for the session.

21:07 Okay Derek, you've talked about what ArcGIS Server is in theory, we've touched on some concepts...

21:12 ...we know what type of services that it can generate...

21:15 ...we also know the different ways to talk to an ArcGIS Server instance.

21:19 But what do I get out of the box? All right?

21:23 When you get ArcGIS Server, and after you've done all the installation...

21:27 ...this would be the end-user user interface.

21:31 It's called the ArcGIS Server Manager, a Web-based application. All right?

21:36 You type in the URL for your local machine, and this is the user interface...

21:40 ...that you can use to manage your ArcGIS Server installation...

21:44 ...make services, set up security, delete a service, stop a service, et cetera, et cetera.

21:50 And I'm going to actually...Dan will show it to you, demonstrate it for you in the next demo.

21:54 Okay, here's that participatory part of the, of the session.

21:59 If you want to learn more about these topics, grab your UC planner and circle the time and location, right?

22:04 If you want to install ArcGIS Server, this is where you go on Thursday.

22:08 If you want to learn about OGC and working with ArcGIS Server...

22:12 ...you want to go to the Wednesday or Thursday session. Okay?

22:15 Now I'm going to advance the slide because we do have a lot to talk about.

22:19 I'm going to pass it to Dan.

22:21 All right, thanks Derek.

22:23 So the first thing we want to show you is this kind of complete management application...

22:27 ...for ArcGIS Server called the ArcGIS Server Manager.

22:31 I'm going to go into my programs group, ArcGIS...

22:34 ...then there's an ArcGIS Server for the Microsoft .NET framework.

22:38 And here you can see the link to launch the ArcGIS Server Manager.

22:42 So when that comes up I'm going to go ahead and log in...

22:44 ...using an account that has been added to what's called the AGS Admin User Group.

22:51 So there are actually a couple of accounts that are created for your user groups...

22:55 ...that are created for you when you install ArcGIS Server.

22:59 There's an AGS Admin, an AGS Users Group.

23:02 So this account, or this login that you use, has to be a member of that AGS admin group.

23:10 So one of the first things that you'll see is you have some quick links...

23:13 ...to the functional areas inside of ArcGIS Server Manager.

23:17 But you also notice that there is a help link.

23:19 So this is a great resource to use to get more information right off the bat in working with ArcGIS Server.

23:27 Or maybe you need a, you know, quick access to...well, how do I configure ArcGIS Server...

23:32 ...for a one-machine deployment?

23:34 That's the same kind of configuration that I'm working with here on my, on my laptop.

23:39 You'll also notice that there's even a link to the ArcGIS Server Resource Center...

23:42 ...and the ability to link to a...contact Esri.

23:47 So let's go ahead and take a look at some of these different functional areas inside of Server Manager.

23:52 One of the things that you'll notice is you can access the services that you have running on your Server instance.

23:58 This is going to take a few seconds to browse and refresh the content that's running on my server...

24:12 Derek, did you have another joke for this part?

24:15 Oh, now you want another joke!

24:19 I need to...I need to think, you could throw me off my game here...

24:24 I guess it's still loading...

24:27 It's still refreshing.

24:29 Okay. Does anyone have a quick question?

24:30 [Inaudible audience question]

24:38 Okay, do you want to flip while it's loading?

24:42 Okay, which slide specifically, sir?

24:44 [Inaudible audience question]

24:45 Okay.

24:51 We have probably three or...at least two or three more of these type of slides, so...

24:56 Okay, we're good now.

24:57 Okay.

24:58 All right, so here are the services that are running on my local instance.

25:02 One of the things you'll notice...

25:03 I have a...I've created some groups to manage the services that I have running...

25:08 ...so I have services that do geoprocessing.

25:10 I have locators, I have maps, I have a folder for services based around water utilities applications.

25:17 And I have also created an Intro to AGS folder...

25:21 ...to organize the services that I want to use in this session.

25:25 There's also access to applications.

25:27 So you can use a...here's a wizard-driven utility...

25:30 ...that you can use to create more or less an out-of-the-box...

25:34 ...Web application developer framework app, using Server Manager.

25:39 We're not really going to focus on that today.

25:41 We're going to focus primarily on the Web application programming interfaces during this session.

25:47 You also have a link to your GIS server configuration.

25:51 So you can view the log files, you can look at the host machines.

25:55 Maybe you need to add a host machine.

25:57 Derek talked about having a distributed install of ArcGIS Server.

26:02 Or maybe you have the ArcGIS Image Server extension.

26:05 So this is where you can go to register that Image Server to your ArcGIS Server instance.

26:11 You can look at your server directories...

26:14 ...and you can even establish security for your ArcGIS Server instance...

26:18 ...using the default security model.

26:21 Now, what I want to do is actually go back to the services, and I want to publish a new GIS resource.

26:28 So I'm going to go ahead and click on that...

26:31 ...and before I actually go through the utility to publish I'm going to bring up a map document.

26:35 So this is a map document that I've authored.

26:37 It has some incidents from...some historic crime incidents from Lincoln, Nebraska.

26:43 So we're going to probably make Lincoln, Nebraska, look a little bad today...

26:47 ...and that's no knock on Lincoln, but it's data I had.

26:53 What I've done is, I've actually exported this as a, as an MSD file or a map service definition file.

26:59 And we'll go through that in the next demonstration...

27:01 ...but I want to point out that I've enabled time for this layer inside of ArcMap.

27:05 So that's one of the new capabilities of ArcGIS 10, is this ability to enable time for a layer.

27:12 So go ahead and close that map document.

27:16 And the other thing I want to do, real quick, is bring up my Windows Task Manager.

27:20 So I want to point out, though, the Arc SOC processes that are running.

27:25 You see right now we have five Arc SOC processes running.

27:28 As Derek mentioned, these are the workhorse processes for ArcGIS Server.

27:32 These processes actually manage or support the functionality of the resource...

27:39 ...that I'm going to publish as a service. Okay?

27:43 So I'm going to go through this...

27:44 ...I'm going to browse to share on my machine, and here is the map service definition file...

27:51 ...I have for my link in crime incidents.

27:53 I'm going to publish that into this Intro to AGS folder, click Next...

27:59 ...and then I have the ability to choose what capabilities I want to enable on this service.

28:06 So mapping is always going to be enabled for a map document or a map service definition resource.

28:14 I also want to enable feature access.

28:15 So this is a new capability at ArcGIS Server 10.

28:19 So feature...feature access allows the server to deliver not just features but also symbology to the client.

28:27 WMS, Web map service, is one of the OGC capabilities that Derek mentioned earlier, as is WFS.

28:35 You'll see that Keyhole Markup Language, or KML, is checked on or enabled by default.

28:40 And I could also enable geodata access.

28:42 So this...the...the data repository for this incidents layer is actually SQL Express.

28:49 So I'm using the Workgroup edition of ArcGIS Server to manage my spatial data.

28:55 So I could also enable geodata access if I wanted to.

28:59 It's not really needed for this service, so I'm just going to go ahead and click Next and finish.

29:06 And meanwhile, I'll bring back the task manager.

29:08 And you'll notice, now we have a total of seven Arc SOC processes running.

29:14 So by default, it's going to create two new SOC processes to manage this resource on my server instance.

29:25 That's still publishing.

29:28 You guys can put on the comment form, Dan needs a new laptop with more memory.

29:37 It's the network.

29:38 It's...it's the network, yeah.

29:44 Okay, with that, I think I'm just going to ahead and turn it back over to Derek.

29:47 It's publishing; I'm not too worried about it, so we'll go ahead and continue on.

29:51 But that's just a quick tour of ArcGIS Server Manager.

29:54 Again, I recommended any of you...once you go through the install...

29:58 ...go ahead and browse, start working with Manager and begin to explore its capabilities.

30:04 And here, if we go ahead and refresh that...

30:07 ...so you see the service has published...

30:08 ...and we're actually getting back a very small thumbnail so we know we have...

30:12 ...we have, indeed, published that successfully.

30:15 All right, Derek?

30:16 Awesome. Thanks Dan.

30:22 All right, so Dan quickly demonstrated for you ArcGIS Server Manager...

30:29 ...and showed you how easy it was to publish a map document.

30:33 To publish that map document and make it available as a resource on the Web.

30:37 So we have this slide here that talks about the workflow for using ArcGIS Server.

30:40 What's the process that I need to do to make a resource available through ArcGIS Server?

30:45 Three easy steps, all right? Author, publish, use. It's that simple.

30:51 I author a map document; I can go into ArcMap...

30:54 ...create a map document, add the data that I want, set the symbology that I want.

30:57 I could create an address locator if I want to do geocoding...

31:01 ...I could create and edit data in a geodatabase if I want to publish a geodatabase.

31:05 All that stuff is done in ArcGIS Desktop.

31:08 That last bullet there...

31:09 ...I have to make sure that if I'm going to share data in a geodatabase through ArcGIS Server...

31:15 ...I have to make sure that the ArcGIS SOM and ArcGIS SOC accounts...

31:21 ...which manage those processes, can access the data inside that geodatabase.

31:26 I then publish it.

31:27 And you'll see a few slides from now...

31:29 ...I have three different ways to make that resource available through ArcGIS Server.

31:34 I can publish through ArcCatalog, ArcMap...

31:36 ...or as you saw Dan demonstrate, inside ArcGIS Server Manager...

31:40 ...wizard driven, right, very user-friendly.

31:42 And then the last step, of course, is using it.

31:44 I take my resource, I share it, then I can contact other people within or outside my organization...

31:51 ...and then they can access that information through several different clients...

31:54 ...which we'll, we will review in the third section of this lecture.

31:58 All right, so again, step one, author that map.

32:03 You use ArcMap in ArcGIS Desktop. It's a very powerful cartographic application...

32:08 ...to create your map document, right?

32:09 We have that WYSIWYG, I'm sure you've all heard of that.

32:13 What you see is what you get when you publish that service.

32:18 And we want you to follow best practices for creating optimal maps...

32:22 ...such as setting scale-dependent renderers, using simple symbols.

32:27 You're not going to have a map at the continental scale showing every single road of every single city.

32:34 It does not make sense.

32:35 These are simple cartographic principles you want to follow.

32:38 The other thing to be aware of, and I know you saw this yesterday...

32:41 ...through Bernie's demo, is ArcGIS.com, right?

32:45 Great resource, hosted by Esri.

32:47 We offer many different maps to use as basemaps, published as map services.

32:54 We also have map templates.

32:56 So if you want, we give you a starting point for a map as well.

33:03 All right, so this is a placeholder slide.

33:05 I'm now going to talk about several different key terms...

33:08 ...that you will hear when discussing ArcGIS Server concepts.

33:13 And everything in yellow you may want to quickly right down.

33:16 These are key ideas that you want to walk away from this session understanding and knowing...

33:21 ...and we're going to cover each one of these ideas in more detail. All right?

33:25 So a map service, you can have two different types, a cached map service or a dynamic map service.

33:32 A map service can be based on one of two formats, classic and optimized.

33:38 And I kind of cheated with classic, because you won't really see that in the documentation.

33:42 It's...it's more like internal Esri or Esri slang, and I'll talk about what that means in a minute.

33:47 And then finally, when you make your Web map or your Web application...

33:51 ...you want to understand the difference between basemaps and operational layers. Okay?

33:58 All right, so what is a cached map service?

34:01 This is the first type of map service; probably the most common that you will see.

34:06 A cached map service basically means I've taken my data and I've pregenerated that data...

34:13 ...or that information as a collection of images that are stored on the server.

34:18 It's usually raster data, but we could also use it for vector data.

34:23 We use it for data that typically does not change.

34:27 And the...the last bullet on the slide is at ArcGIS 10 we have the compact cache.

34:32 This is the default setting now at the 10 release.

34:35 We highly recommend you use the compact cache, it's faster.

34:40 Okay Derek, what does that mean?

34:42 Let's look at our concept diagram at the bottom of the slide.

34:45 I have my ArcGIS Server instance, and I have my raster image.

34:50 I want to make this raster image available as a resource, so what do I do?

34:56 I can right-click on it and publish it as an image service or as a map service, I'm sorry, a map service, all right?

35:03 As Dan showed you.

35:04 When I do that, when I publish that map service...

35:07 ...what the software does is it takes the data, chops it up into a series of smaller tiles or smaller images.

35:16 Each one of those smaller squares are called a map tile.

35:19 I will have a collection of these map tiles.

35:23 So I've taken my data, chopped it up into a small collection of images.

35:27 Then I take this collection of images, and I store it in what's called a cache folder or cache directory.

35:34 So right now, I have ArcGIS Server running...

35:38 ...I have my map service running illustrated by that gears icon...

35:43 ...and I have a folder on my ArcGIS Server machine...

35:47 ...that stores this collection of imagery, my cache if you will.

35:51 So it's already pregenerated.

35:53 The beauty of doing this is that now if I have my Web client and it says hey, I want to look at this data...

36:00 ...all ArcGIS Server has to do is quickly retrieve that one image that the viewer...

36:06 ...that the client is looking at and push it back out to the client.

36:09 It's really, really fast.

36:11 Because I've already preprocessed and pregenerated my data.

36:15 Precreated my cache. Okay?

36:19 The other option is called a dynamic map service...

36:22 ...and I'm sure you guys can probably guess what's going to happen here now, right?

36:25 A dynamic map service, data content is generated as needed. Right?

36:31 Typically used for data that changes a lot, because it's going to query the information from

that database.

36:38 Typically vector data, but not always.

36:40 So in this workflow I've already published my map service, it's already running.

36:45 My client makes a request to ArcGIS Server.

36:50 ArcGIS Server...now here's the tri...now here's the key part here...it then...the service queries information from the database.

36:58 What is querying the database? Any guesses?

37:02 We're all wearing them on our feet?

37:05 SOCs...Well, except for those who are wearing sandals. SOCs, right?

37:07 The SOC process is the thing that's...is the process that's querying the database.

37:11 That's grabbing that information. It might take some time.

37:14 Once it's grabbed that information, it then sends it back to the client.

37:18 So in general, which...which type of service is faster?

37:22 In general?

37:23 Dyna...who says dynamic?

37:26 Who says cache?

37:27 Yeah, cache.

37:28 Okay, that's pretty intuitive.

37:29 We have white papers that talk about this, that go over different case scenarios.

37:33 Come see Dan or me for more information.

37:35 But that's a key concept you want to be aware of.

37:37 Depends on the data.

37:39 If I have some detailed geometric network I want to share, probably want to use a dynamic map service.

37:45 But it only activates when I zoom in.

37:48 If I want to share information for a basemap of the entire world...

37:51 ...probably want to use a dynamic service, right?

37:56 Just making sure you're all listening. Yeah! Want to use a cache service, okay? All right.

38:01 Map service formats.

38:04 What the...this slide, what it boils down to is...

38:07 ...you can publish your map service based on one of two file types.

38:10 An MXD, which is a map document, or an MSD, an optimized map document.

38:17 And that's what the diagram is simply showing.

38:19 They're basically the same thing; depends on the file format you're going to publish.

38:23 And we, at Esri...or Esri, strongly recommend you use the optimized map service...

38:29 ...because as the same would imply it is faster. All right?

38:33 When you work inside ArcMap, you create a map document.

38:36 By default, it is an MXD.

38:39 At the 9.3.1 release, inside ArcMap we added this new toolbar...

38:44 ...called the Map Service Publishing Toolbar.

38:47 Dan's going to show this to you I think, right?

38:50 Yes.

38:51 Yes.

38:52 And it has tools that looks at your map document, does an analysis, and says...

38:57 ...Hey, have you done everything you could to make that map document optimal, good for the Web.

39:04 It does the analysis, it gives you options to modify your map document...

39:08 ...and then it allows you to save that map document as an MSD file or an optimized map document.

39:17 All right, we finished step number one, now we're on step number two.

39:21 We've authored our information, now we can publish that resource through ArcGIS Server.

39:26 Three different options, right?

39:28 Inside ArcCatalog I have a screen capture of the catalog tree.

39:32 Like 90 percent of all the other functionality inside Desktop, right-click.

39:37 And I can publish that to ArcGIS Server.

39:40 Notice in the screen capture I have two file types, MXD or MSD.

39:46 And pretty much unofficially we are telling people, go with the MSD, ignore the MXD when you want to publish it.

39:53 Inside ArcMap at the 9.3.1 release we introduced this Map Publishing toolbar.

40:00 This is the toolbar that we can use to create that MSD file.

40:05 And finally, inside ArcGIS Server Manager...

40:08 ...you saw Dan demonstrate this to you in the earlier demo, you can quickly publish a map service.

40:15 So here are the sessions related to the topics.

40:17 Again, take your UC planner.

40:18 If you want to learn about caching, go to the Designing and Using Cached Map Services.

40:24 If you want to learn about authoring inside ArcMap to take those map documents and publish them over...

40:30 ...through Server, you want to go one, to one of the best practices sessions. Okay?

40:35 We're going to have a slide at the end of the session with all the topics listed.

40:39 So if you don't...if you don't have time to write this down, it's okay.

40:43 All right, Dan?

40:46 Okay, thanks Derek.

40:48 So here we are, we're back in ArcMap...

40:49 ...and now we want to go through the author and publishing workflow from inside of ArcMap.

40:54 So you notice I have a few very simple layers added to this MXD.

41:00 I don't have a basemap.

41:02 I'm not going to be publishing a basemap.

41:03 I don't need to publish a basemap.

41:06 I mean, we could go through that, that would...if we were going to build a basemap and...

41:10 ...build a cached map service, that's really for the, the other sessions that a...the session that Derek referenced.

41:17 I don't need a basemap, because I can pull a basemap off of ArcGIS Online.

41:22 Now, let's say I did have a...I do have a lot of local authoritative data...

41:27 ...that I want to leverage in a basemap.

41:30 What I would encourage any of you to do is use the Resource Center.

41:35 There's actually a Map Templates section that you can get to.

41:39 And there's a Map Templates Gallery that you can access.

41:43 So if you're like me and you don't really have strong cartographic skills...

41:47 ...and you maybe don't have a really good cartographer on staff...

41:50 ...you can take advantage of these templates that are out there.

41:53 These are the same templates that we use to support the cached basemaps...

41:58 ...that are available on ArcGIS Online.

42:02 So you can find the template that you're interested in, browse to it, you can download it...

42:07 ...and essentially pour your data into the template, build a service, and create a cached basemap.

42:12 So let's go back to ArcMap.

42:14 So again, we have just a few very simple feature layers.

42:17 Again, these are crime...gang crime-related incidents in Lincoln, Nebraska.

42:23 So we have some graffiti tags...

42:25 ...incidents that we've designated as gang activities and in schools and police divisions.

42:31 You'll notice that I've added the Map Service Publishing toolbar into my ArcMap session.

42:37 So the first thing I want to do is run a validation check on these layers that are in my map document.

42:44 And you'll notice that I have one high severity error.

42:49 What's nice about this table of results is I can do...I can just right-click and...

42:54 ...I can get some information about...back about that error and ideally how to repair it.

42:59 So in this case, I need to set the data source for this Graffiti Tags layer.

43:03 So I'll go ahead and browse to my local database instance...

43:09 ...go ahead and fix that...fix that data source error, and then rerun the validation.

43:17 And now you notice I have some warnings.

43:19 Now, an error will prevent me from publishing the map service definition file.

43:25 Warnings simply give you an indication that if you were to repair these...

43:30 ...you will get better performance from your map service.

43:34 In this case, it's telling me that my Layers data source has a different projection.

43:38 So I'm using a local coordinate system for Lincoln, Nebraska...

43:42 ...but I'm going to be overlaying this on top of a Web Mercator basemap coming from ArcGIS Online.

43:49 So I don't want to mess around with that right now.

43:51 I'll go ahead and accept the fact that my performance might be degraded a little bit, and we'll continue on.

43:57 So the next button allows me to preview this map.

44:00 So this gives me a rough idea of what this will look like as a published service.

44:05 So I can zoom in, you can see some of the scale dependency on the map document.

44:11 And I'm pretty happy with that performance...

44:13 ...so I'm going to go ahead and save out this map service definition file.

44:18 So I'll call it Lincoln Gang Crime, and we'll save it.

44:20 I'm going to save it in the same folder as my MXD.

44:23 There's no stand-alone editing tool for a map service definition file.

44:27 So if you edit the map document that was used to derive that MSD...

44:32 ...you'll have to make those changes in ArcMap...

44:35 ...and resave the MSD if you want to reflect those changes in your service.

44:41 And now I can go ahead and publish this to ArcGIS Server.

44:44 So I'm going to publish this service into my Intro to AGS folder, click Next.

44:49 Again, I'm going to add the feature access capability, and we'll go ahead and finish the publication.

44:56 All right, so I can minimize ArcMap.

44:58 I'm going to go into ArcCatalog now.

45:00 And one thing that I usually always like to do after I publish a service...

45:04 ...is go ahead and check to make sure that that service published successfully.

45:07 So I'm going to refresh my ser...my connection to ArcGIS Server.

45:12 This is actually a Web-based connection this time.

45:15 Here's my Lincoln gang crime service, and I'll preview that in ArcCatalog.

45:20 And there we can see that the service did, indeed, publish successfully.

45:24 So just a very simple publishing workflow from inside of ArcMap.

45:29 I do a validation check using the Map Service Publishing toolbar, save out my MSD...

45:34 ...and publish that to ArcGIS Server, and now we can go ahead and start working on some clients.

45:40 Derek?

45:45 All right, thanks Dan.

45:47 Wasn't that awesome?

45:48 You guys should be like, Ooooh...or...

45:50 No? No excitement? Still too early.

45:53 All right. We'll dazzle you...Dan will dazzle you with the next one, I promise.

45:58 All right, so Dan touched on a couple of topics...key terms that we want to highlight for you.

46:04 When you're preparing your map to be served over the Web...

46:08 ...you want to take into consideration...

46:10 ...when you're building your Web mapping application or your Web map...

46:13 ...the types of layers that you will use and what those layers are going to be used for.

46:19 So these are two of the terms to be aware of, basemaps and operational layers.

46:23 Operational layers are layers of data that you will probably do some analysis with or interact with. All right?

46:31 Basemaps are data layers that are static.

46:34 Typically, they are there for window dressing.

46:36 They help give a background to the Web mapping application.

46:40 So in this concept diagram, what we're basically saying is basemaps go on the bottom...

46:45 ...operational layers go on top...

46:47 ...collectively they create or form your Web map or your Web mapping application.

46:52 You may have heard the term "map sandwich" in some of the mapping or cartography sessions as well. Okay?

46:57 So these are the other terms to be aware of.

47:01 So here we've hit section number three now.

47:03 We've done step one, we've authored our data, we've done step two...

47:07 ...we know how to publish our resource, now step three...we use it.

47:11 All right. Here are our clients to ArcGIS Server.

47:14 Everything in yellow can interact with services from ArcGIS Server.

47:18 The first bullet, of course, is our collection or suite of products from the ArcGIS family...

47:23 ...so Desktop, Explorer, ArcReader, custom applications built with ArcGIS Engine.

47:30 We also have Web applications, right? Two different types.

47:34 Some are server-based, some are browser-based...

47:37 ...and we'll talk about Web applications in more detail in the next section.

47:41 We can also have mobile clients.

47:43 You can use ArcGIS Mobile to access services.

47:46 And ArcGIS for iOS, that new Apple name for ArcGIS for the iPhone or iPad or iTouch. Right?

47:53 Very, very cool.

47:55 And then, of course, OGC clients, that Open Geospatial Consortium clients.

48:00 Remember, you can...you can communicate to services published from ArcGIS Server...

48:06 ...through several different methods.

48:08 One of them was OGC Standards.

48:10 Dan mentioned this to you, WMS, WFS, WPS.

48:15 And other applications such as open layers, G_____, Google Earth, et cetera...

48:20 ...can access information from ArcGIS Server through these communication methods.

48:26 So we're going to talk a bit about browser-based Web applications. All right?

48:31 I can create a mashup with other Web services.

48:35 And mashup is just basically a fancy word for combine.

48:39 I can take different GIS services from different resources and combine them...

48:45 ...mash them up and display them into one client Web mapping application.

48:50 So I could grab a service from ArcGIS.com...

48:54 ...I could integrate my own GIS service from my ArcGIS Server instance...

48:58 ...I could go to Bing Maps and grab Bing Map services, mash them up or combine them...

49:04 ...and then integrate that into one Web mapping or Web client application.

49:07 I can certainly do that.

49:09 We can also add tasks, right?

49:10 The beauty of ArcGIS Server is not only are we pushing out map data, we can push out functionality.

49:16 So querying functionality, geoprocessing...

49:19 ...the find address capability, routing if you're using Network Analyst.

49:22 All this is possible.

49:24 The end result is to build a rich Internet application or RIA.

49:30 You'll probably hear this term in server sessions as well.

49:33 And something we want to highlight as a design practice is your end result...

49:39 ...is not to re-create ArcMap on the Web.

49:43 That is bad.

49:45 Your end result is to build an RIA; a focused application for a specific task.

49:52 It's better performancewise, it's cleaner from a user interface perspective, and it's really, really quick. Okay?

50:00 I mean, your end user might only use two percent of the functionality if you re-create ArcMap on the Web. Okay?

50:08 And it's going to be slow.

50:10 Let me rephrase that.

50:11 It's going to likely be slower than a rich, Internet application.

50:15 I don't want to use absolutes here.

50:19 All right. So ArcGIS.com.

50:21 I'm sure you guys saw this demo yesterday, new Web site hosted by Esri...

50:26 ...offers many different resources, the map templates, the base layer data.

50:32 We empower the GIS expert, because who's a programmer here?

50:36 My arm should not be up, but who's a programmer here?

50:39 Yeah. So for those of you who are not programmers, life is good at the 10 release.

50:43 Why? I can go to ArcGIS.com, I can create a profile, log in, quickly create a mashup...

50:52 ...publish it as a resource...or share that map document with others, that Web map document.

50:57 We have two out-of-the-box viewers that are built into ArcGIS.com, the ArcGIS.com Viewer and ArcGIS Explorer Online. Okay?

51:07 Dan's going to show this to you.

51:08 Very easy, very, very user-friendly.

51:12 The other option is the ArcGIS Viewer for Flex.

51:16 So if you have questions about that, come see me.

51:18 I work with the dev team on this.

51:20 We are currently in beta, I love it.

51:23 That way, if something doesn't work, I'm going to say yeah, we're in beta.

51:26 This is different than the other two options because this...this is an application.

51:32 You go to the Resource Center, you download it, you install it on your local machine.

51:37 And out of the box you can start working with this application to query and work with your data.

51:43 The beauty of this product is that you can also customize it.

51:47 If you don't like the logo, you can change it.

51:49 If you don't like the...the color, you can change it.

51:51 If you want to only use your data, you can do that.

51:54 If you're a developer, you can write code to extend this application.

51:59 If you're not a developer, like myself, editing XML tags, it's like editing HTML.

52:04 Very easy, very user-friendly.

52:06 And trust me when I say this, I talk to the developers all the time, guys, I don't know what's going on here.

52:11 Make it easier for me.

52:13 I want your feedback, I'm being very serious here on this product. Okay?

52:17 But very useful, no programming required, out of the box as Dan will show you.

52:23 Okay, related sessions.

52:25 I am actually copresenting the session on top.

52:28 Creating Web Applications...Web mapping, or...Creating Web Applications with ArcGIS.

52:32 This is the session...

52:33 ...that will talk about those three different ready-to-deploy viewers I just mentioned...

52:38 ...the ArcGIS.com Viewer, ArcGIS Explorer Online, and the ArcGIS Viewer for Flex.

52:45 We also have three sessions on Arc...on working with ArcGIS Online.

52:48 If you want to learn about the base layer data that is available to you...

52:52 ...most cases for free, sometimes for a fee, depends on the data.

52:55 And then we have a demo theater that talks about building mashups.

52:59 How to take resources from many different sources...

53:02 ...combine them together to create one final Web client application.

53:08 Dan?

53:09 All right, thanks Derek.

53:12 So hopefully many of you saw the demo that Bernie did yesterday...

53:15 ...in the plenary for ArcGIS Online, which you'll, which you'll find at ArcGIS.com.

53:20 So this is a, a resource, it's a, it's a Web site where users can share maps, can share Web maps...

53:26 ...applications, mobile apps, and even desktop applications and documents to both public and private groups.

53:36 One of the new capabilities is a, is an ArcGIS.com map that you hopefully saw yesterday in the plenary.

53:44 And you saw Bernie actually add a, add a Web map to...add a, add a local service to this...to this map application.

53:54 What I'm going to do this in a slightly different way.

53:57 Derek mentioned, or already brought up what's called the services directory to ArcGIS Server.

54:02 And the services directory is really a simple interface to the REST endpoint on an ArcGIS Server instance.

54:10 So I'm going to browse to my services directory.

54:12 It's a very simple client that you as a developer or ArcGIS Server administrator can use...

54:18 ...to find out or discover information about your services.

54:23 So here's one of the services that I created earlier, this Lincoln gang crime map service.

54:27 And you'll notice there is an ArcGIS.com map link...

54:32 ...that you can click on when you browse through that service.

54:37 And when you click on that link, what it does is it's going to add your service to the ArcGIS.com map.

54:43 This is a JavaScript Web application.

54:45 Very simple and easy to work with.

54:48 I'm going to go ahead and click on the Details link so I can get some more information...

54:53 ...about the...the layers that comprise this map service.

54:58 If we zoom in, you'll notice the services that I added start to draw, the scale dependencies...

55:05 ...work just like they did when we were working inside of an ArcGIS client.

55:10 It starts out, or the ArcGIS.com map always starts out with the topographic basemap.

55:15 So this is a very good, very rich basemap that all of you have access to.

55:22 So let me go ahead and, and show you a couple of the other capabilities.

55:24 I can find an address.

55:28 So maybe I want to see what's going on around the high school...Lincoln High School.

55:34 I'll go ahead and find that, and there we can see that that geocoded to Lincoln High School.

55:39 So here we're using or integrating another Web service.

55:43 This is a locator service.

55:44 So we're mashing up my local service...

55:46 ...we're accessing an online basemap, we're pulling in a locator service.

55:52 So we have quite a bit of functionality here.

55:55 I can expand the, the node for my Lincoln gang crime service, I can turn on my graffiti tags...

56:00 ...layer so that will draw, and I can identify any of these features as well.

56:06 So some very nice functionality, very easy to access.

56:11 But what if I want to share this with other users?

56:16 That's very easy to do.

56:17 So you notice that I have the ability to save this map.

56:21 So I can go ahead and click Save...

56:25 ...and I'll go ahead and enter this in, we'll call it Lincoln Crime Map, give it a couple tags...

56:38 ...related crime and Lincoln....and we'll save that map.

56:48 Now, it's saving to my local content on ArcGIS.com.

56:55 So now, if I click on ArcGIS.com/home...

56:59 ...I go to My Content, you'll notice that this Lincoln crime map shows up.

57:04 And currently it says that it's not shared.

57:07 So I can go ahead and I can share this content.

57:10 I could share it with everyone, or maybe I just want to share it with those...

57:13 ...that are members of a group that I belong to.

57:16 So this Introduction to ArcGIS Server group.

57:19 So I click OK, and now if I do a search, let's say I search for Lincoln crime...

57:29 The Web map that I just published shows up, I can get some more information about that.

57:38 And whoops, let's go back here...

57:40 And I can open this again, I can open it inside that ArcGIS.com map...

57:44 ...I can open it in ArcGIS Explorer Online, or even in ArcGIS Desktop.

57:50 Let's go ahead and click ArcGIS Explorer Online.

57:52 So this is a new online version of ArcGIS Explorer.

57:56 Actually it's using Silverlight running within the browser.

58:00 And this has some additional functionality available to it.

58:03 It's not the full-blown desktop version of ArcGIS Explorer...

58:07 ...but it has some very, very rich functionality.

58:10 And you want to go ahead, for example, and switch out the basemap.

58:14 So I could switch the basemap out and use Bing Maps Roads.

58:18 And you'll notice if I...if I go ahead and get the details on my service, I can expand the node...

58:28 ...and I can even instantiate queries against the layers that are part of the service that I published because this is a dynamic service.

58:36 So I have the ability to run queries on it.

58:39 I can even edit or create a presentation much in way that Bernie showed yesterday, you know.

58:44 We don't have enough time to go through all of that, I just wanted to get a...

58:47 ...give you a feeling for some of the very easy ways you can create these mashups...

58:52 ...share them with a large number of users very quickly and very easily through the...through the ArcGIS.com Web site.

59:01 So now let's go ahead and switch gears a little bit.

59:04 Many of you are familiar with the Flex Viewer for ArcGIS.

59:09 So the Flex Viewer is now a fully supported, out-of-the-box client for ArcGIS Server.

59:17 This is...we're actually looking at the beta 2 for the new ArcGIS Viewer for Flex.

59:22 So here's the a...here's the default viewer.

59:25 I downloaded this from the Resource Center.

59:28 I've unzipped it, it's running on my local server machine here.

59:33 What I'm going to do is open up...I'll just take a quick look at how that...how that appears.

59:38 And now I'm going to browse to a version that I've taken.

59:41 I've slightly modified this.

59:42 So I simply copied the folder for the out-of-the-box Flex Viewer...

59:48 ...and I've made some modifications to what's called the config.xml file.

59:52 So here's a slightly different looking version of this.

59:55 You'll notice that I modified or added my own icon for the city of Lincoln, Nebraska...

1:00:00 ...changed the name, and we've also changed the default style sheet for...for the Flex Viewer.

1:00:09 So let's go into Visual Studio.

1:00:10 So you could use any XML editor to modify the config.xml file.

1:00:16 Now I'm opening this inside of Visual Studio...

1:00:18 ...and we'll just browse through some of the changes that I've made.

1:00:21 You notice here's where I changed the title.

1:00:24 I've changed the logo right here.

1:00:26 So all we're doing is editing XML tags.

1:00:30 There's no coding required whatsoever...

1:00:32 ...to make any of the changes that we're going to show in a little tour of that viewer.

1:00:37 Another change I made was modifying the initial map extents.

1:00:41 So right here, I changed that, those values to match the initial extent of my map service.

1:00:48 So where do I get those values?

1:00:49 Well, I get those values...I get those values from my Services directory.

1:00:56 So again, if I go into my Lincoln Gang Crime map service...

1:01:00 ...I can go ahead and grab these extent values...

1:01:03 ...simply copy and paste them into the config.xml file to make those changes.

1:01:11 So other changes that I made.

1:01:13 Well, I left all the basemaps alone.

1:01:15 Again, I don't have a basemap.

1:01:17 I'm not a good cartographer, I didn't feel like putting the basemap together, these rich basemaps already exist...

1:01:22 ...so I'm just going to leverage what's already out there.

1:01:25 But what I did do is I modified some of what are called the operational layers.

1:01:30 So the operational layers, as Derek mentioned, they define the content of the application.

1:01:35 Basemaps provide you with...your user with geographic reference.

1:01:39 Operational layers define the content, support the tasks...

1:01:43 ...and the user workflows, the real business needs of the application.

1:01:48 So I've added two operational layers.

1:01:51 I've added this Linc...my Lincoln Gang Crimes layer.

1:01:54 Again, all I had to do was copy a layer tag that was already in here...

1:01:59 ...and modi...paste it and then modify the label...

1:02:03 ...change the visibility, and modify the URL.

1:02:06 And the URL, again, I simply get that from the Services directory.

1:02:11 It's very easy.

1:02:13 Then I added a feature service.

1:02:15 So the Incidents layer that I published in the very beginning using ArcGIS Server Manager...

1:02:21 ...I added that layer as a feature service layer.

1:02:25 And we'll, we'll take a look at how that's reflected inside the viewer in just a moment.

1:02:30 So I made a few additional changes.

1:02:32 I modified some of the default widgets that are supplied with the viewer.

1:02:36 So I modified the XML that defines the Bookmarks widget.

1:02:40 I added a new Query widget called Graffiti Tags.

1:02:44 Again, all of these are simple modifications to XML files.

1:02:49 And I added a Time widget.

1:02:52 And we're not going to dive into the XML for each of those.

1:02:55 That would be...Derek would be very unhappy with me...

1:02:58 ...and we'd run way over and you'd probably all fall asleep.

1:03:00 But I do want to show you how these changes appear inside the viewer.

1:03:04 You can always come by and talk to us afterwards, go to the booth...

1:03:08 ...or go to another session to get more information about that.

1:03:11 But I want to point out that all of the changes are simply modifications...

1:03:16 ...configuration changes to default XML files.

1:03:20 So I'm going to close the Find Address utility...

1:03:22 ...and let me go to my bookmarks and we'll just kind of explore around the application a little bit.

1:03:26 So you see I've modified the default bookmarks to give me one for the northeast division.

1:03:32 And you see how the layer...you know, again, my services start to appear.

1:03:37 I could go into...I could go into the center division, or back out to the city of Lincoln.

1:03:43 Let me close that.

1:03:44 Let's go ahead, and again we'll find an address.

1:03:47 So let's...let's bring up the address again for Lincoln High School.

1:03:55 So I'll locate that...

1:03:57 Again, this isn't a service that I have running on my machine, it's a service that's being hosted by Esri.

1:04:02 I'll zoom out a little bit so you can see a little bit of that area around there.

1:04:06 Again, I can toggle my basemaps.

1:04:08 I can go from the streets map to the aerial to the topo...

1:04:12 ...and we'll go back to streets here for just a moment...

1:04:15 ...and click on this More button or hover or the More button.

1:04:19 So now you notice I can Show/Hide some of the layers that I have.

1:04:23 So maybe I want to turn on my Graffiti Tags layer.

1:04:26 So here we have that layer drawing, and we can zoom in a little bit.

1:04:30 But I've also added a widget, or I've customized a widget to support these graffiti tags.

1:04:35 So that's one way we typically present, or represent, operational layers inside of the Flex Viewer.

1:04:42 So here I have a Query widget that is supported by my Graffiti Tags layer.

1:04:49 So I can very easily get information about these incidents as they're reported.

1:04:55 It's a very nice, effective way to present point-based information.

1:04:59 It's got a very dynamic...dynamically changing information.

1:05:04 And now we have one more...there's one more capability I want to show here.

1:05:08 So if you remember in the very beginning, I published this Incidents layer as a...out of ArcMap.

1:05:19 And I incorporated the time capability inside of that.

1:05:23 So I'm going to go ahead and turn on this Filter By Time widget.

1:05:27 And again, because I published this with that capability added...

1:05:32 ...I can very easily create a widget or modify a widget...

1:05:36 ...that will allow me to step through these incidents...

1:05:39 ...these are from July or June 2006...

1:05:42 ...and see those incidents changing, over time.

1:05:46 And here's the little Info window to get some more information about one of these...one of these features.

1:05:51 So again, very easy changes, no coding required, just config...modifications to default configuration files.

1:05:59 You can create these very rich Internet applications, these mashups, quite easily.

1:06:06 Derek?

1:06:10 So no one's going, "Oooh!" Honestly, for those of you...Dan did a phenomenal job, and he showed the code.

1:06:18 For those of you who might feel a little intimidated by the XML configuration file, don't be. Okay? If...

1:06:25 ...the configuration file...

1:06:27 They can do it.

1:06:28 He did a lot of fancy customizations, but I mean...yeah, exactly. If I can do it, you guys can

do it.

1:06:34 Because I am not a developer, okay?

1:06:36 And basically, if you can edit HTML, you can edit this file.

1:06:42 So great, all right.

1:06:45 So what if you are a developer?

1:06:46 Or what if you have developers working in your organization and you want to...

1:06:50 ...and this...the ready...the ready-to-deploy solutions don't quite address your business needs, you know?

1:06:57 You guys could theoretically create and develop your own custom Web clients, okay?

1:07:03 And what we're saying is, we have what's called the ArcGIS Server Web Mapping APIs.

1:07:08 These are all available as a free download off of our Resource Centers.

1:07:12 By the way, that ArcGIS Viewer for Flex application is also available as a free download.

1:07:18 We just released the beta 2 release last Friday.

1:07:23 So we have three different APIs.

1:07:25 Application programming interfaces for you to write custom code...

1:07:28 ...to create your own Web clients to ArcGIS Server for JavaScript, Flex, and Silverlight.

1:07:35 They are listed in order of release, okay?

1:07:39 So there's no preference one over the other, they're all treated equally.

1:07:42 They're just listed in order of release.

1:07:44 So JavaScript came first, then Flex, and Silverlight came out last year.

1:07:48 They all access and work with GIS services and resources from ArcGIS.com through REST.

1:07:55 We all know what REST is now, a method to communicate.

1:07:58 It uses that ArcGIS Server services directory, right?

1:08:03 And it enables us to create rich Internet applications using ArcGIS Server.

1:08:09 Again, there's no preference one over the other, it depends on your organization or your personal preference.

1:08:15 If you're a shop that has a lot of Microsoft products, probably a lot of .NET developers...

1:08:20 ...chances are they may feel more comfortable using the Silverlight API, all right?

1:08:25 If you're a shop that wants to use JavaScript, right...

1:08:28 ...which is very intuitive for native Web developers, that might be the API you want to use.

1:08:33 It really depends on what you...what...what your organization is.

1:08:36 Because functionally, they are more or less equivalent.

1:08:39 We try to make them equivalent; however, each programming language may have its own little nuance.

1:08:46 What can I do with the Web mapping APIs, right?

1:08:50 Everything and anything, basically.

1:08:51 All these cool demos that you've seen here, all these applications you've seen...

1:08:55 ...they were built with these APIs.

1:08:57 So we give you the tools, the objects, the methods and properties to do Web editing which is new at 10, right, using a feature service.

1:09:05 So you could theoretically create a Web mapping client that edits data remotely through a browser from a geodatabase.

1:09:15 Still not impressed. That's big.

1:09:17 For those of you who know geodatabases, that is big.

1:09:19 In fact, the ArcGIS Viewer for Flex comes with, out of the box, an edit widget, okay, that does that.

1:09:29 You can do querying, all right?

1:09:30 So you can query for information.

1:09:32 You saw Dan do that in his demo.

1:09:34 You can also do simple editing...sorry, mapping.

1:09:37 I'm reading these out of order here. All right?

1:09:39 You saw [unintelligible] by viewing a map service, and you can also do advanced GIS...

1:09:43 ...so you can access geoprocessing services in the form of a task.

1:09:48 Again, inside Desktop you can create an awesome, complicated model in ModelBuilder...

1:09:54 ...share that as a resource, attach that resource to a button in your Web client.

1:09:59 So all your end users have to do is click that button, it will run that model for you, okay?

1:10:07 So this table here is a quick comparison between the three different Web mapping APIs.

1:10:12 And as we've said before, functionally they are pretty much the same.

1:10:15 They all support the core services, the core features that are available to you from ArcGIS

Server.

1:10:21 However, each programming language may have little nuance.

1:10:24 The thing I want to highlight here is the green text.

1:10:29 Notice JavaScript has no green text.

1:10:32 All we're saying is that if you want a program in the Flex API, you may have to install Flash Player in your browser.

1:10:40 If you want to use the Silverlight API, you may have to install the Silverlight Player.

1:10:45 Some organizations, because of security restrictions, might not want these players running on their browser.

1:10:51 So something to consider, okay?

1:10:56 And here are the sessions related to the three different APIs, okay?

1:11:00 So I...I think...and I...it's not because I have a bias, but Flex...

1:11:06 ...for some reason they kind of got left off the schedule for UC...

1:11:10 ...till late in the day, so all the Flex sessions are pretty much tomorrow.

1:11:14 So, if...if you want to go to all three, that's great, but I would just say...

1:11:18 ...that if you want to do a Flex session...

1:11:19 ...you want to go to Flex tomorrow, otherwise it won't be offered later in the week.

1:11:26 Okay?

1:11:28 And again, we're going to have a slide at the end...

1:11:31 ...which shows you all the different sessions that we've referenced later on.

1:11:36 All right, Dan?

1:11:38 Okay, thanks Derek.

1:11:40 All right, so we're getting near the end here.

1:11:44 I want to take a look at a simple Web API application...

1:11:47 ...that...that leverages one of the new capabilities Derek mentioned...

1:11:51 ...and that's the ability to support simple Web editing in a...in one of these browser-based applications.

1:11:57 So here I am at the Web APIs in the Resource Center.

1:12:02 And as Derek mentioned, we have...there are three APIs to choose from, JavaScript, Flex, and Silverlight.

1:12:08 In this case, I want to go ahead and look at some of the JavaScript samples that are available.

1:12:14 So maybe I want to create one of these...

1:12:15 ...want to just, just start working on one of these simple Web applications...

1:12:19 ...to support VGI, volunteer geographic information.

1:12:23 So I'm going to browse through the samples...

1:12:26 ...and you'll see that there are a number of editing samples that are available to me.

1:12:31 So I'm going to go ahead and take a look at this default editor sample.

1:12:34 And one of the great things about these samples is that, in all cases, I can view live samples.

1:12:40 So right off the bat, I get a feeling for whether or not this sample application is going to work for me...

1:12:46 ...as I get started in my application development.

1:12:49 So here I have some editing templates that are available to me...

1:12:53 ...I can click on one of these and I see how that is reflected in the browser...

1:12:59 ...and I think yeah, this, I think this will probably work for my...for my needs.

1:13:03 So I'm going to go ahead and close this, and you'll notice that I'm also presented with the code.

1:13:09 So I can just copy this code block and paste that into an editor on my local machine.

1:13:16 Again, I could use notepad, or maybe I want to just copy that into Visual Studio.

1:13:22 So I can edit that a little bit more easily.

1:13:24 Now, we're...we're running a little low on time.

1:13:26 So what I'm going to do is just show you the changes that I've made to this...this sample.

1:13:33 So I pasted that in here and I made a few very simple modifications.

1:13:37 So notice that there's an extent variable.

1:13:41 So I had to modify this extent variable...

1:13:43 ...using the xmin, ymin, xmax, and ymax for the service that I wanted to present in my little editing sample.

1:13:52 Where do I get that information?

1:13:53 Well again, I get that from the Services directory.

1:13:57 In this case, I'm looking at my Lincoln Gang Crime feature service...

1:14:00 ...and I'm looking at this Crime Alert Gang Activity layer.

1:14:04 So I went and simply pulled the extent information out of here...

1:14:09 ...and pasted that into this new HTML file called jseditor.html.

1:14:16 Now, there was one operational layer that I had to change.

1:14:23 Let's go ahead and take a look at that.

1:14:25 Oops. Here we go.

1:14:28 Where am I? Oh, here we go.

1:14:32 So here's my Operations Point layer.

1:14:35 So again, I just had to copy the URL for my Feature Service layer...

1:14:41 ...and pasted it over the layer that was in the default sample.

1:14:45 Now, in the sample, there's actually a, a polygon layer and a line layer that are presented as well.

1:14:50 So I simply removed those or deleted those from the code...

1:14:54 ...and also made sure that they were not part of this map.addlayers function.

1:15:00 So that is essentially it, the only other change I had to make to this file...

1:15:04 ...was to modify what's called the proxy URL.

1:15:07 So the proxy URL is a page that resides on my local machine.

1:15:12 That proxy page simply makes a request to ArcGIS Server on behalf of this application.

1:15:19 So now let's go ahead and take a look at the finished product.

1:15:23 I've bookmarked this, JS Incident Mapping, so here's the end result of that.

1:15:28 So ve...some very simple code changes...

1:15:30 ...and maybe we found out that there has been an incident...

1:15:33 ...maybe a vandalism incident here on...Stadium Drive.

1:15:37 Maybe somebody wasn't too happy about Nebraska leaving the Big 12...

1:15:42 ...they decided to take matters into their own hands a little bit.

1:15:46 So we'll go ahead and enter in some attributes...

1:15:48 ...for this 710 Stadium Drive...put in Graffiti Removal.

1:15:58 And the type...this is actually being pulled right out of the geo...

1:16:01 ...this is based on the settings that are in the Editor template...

1:16:05 ...all right, so we'll just leave that with vandalism.

1:16:08 Notice that we have a nice date picker that we can use, and maybe enter in the time...

1:16:14 And last thing, I want to browse to an attachment, so I've enabled Attachments for this layer, another capability at ArcGIS 10.

1:16:21 We'll go ahead and...and enter all that information.

1:16:24 So there, we've already created a feature inside the geodatabase.

1:16:29 Now, if I go back to a Flex viewer, that also has this editing template or editing widget enabled.

1:16:36 I can go ahead and enable that.

1:16:40 You see when I enable that, that new feature appeared, that's the feature that I just added through the JavaScript viewer.

1:16:45 I can click on that, here's the attachment...and maybe we want to...

1:16:50 Can you blow up the picture at all, or...?

1:16:53 See if we can open that, and there we go.

1:16:57 So hopefully, somebody has this graffiti removal hotline written down and we can get this taken care of.

1:17:05 Dude, this a tough crowd, they're not laughing at anything, anything!

1:17:07 I know, I know! That's a funny picture!

1:17:13 All right, so again, very quickly, very easily, we were taking advantage of the Web APIs...

1:17:18 ...the samples, and some of these new capabilities that are available in ArcGIS 10. Derek?

1:17:24 Thanks Dan.

1:17:25 All right, we're getting close, so hang tough ladies and gentlemen.

1:17:30 All right, so this slide basically talks about the different editions...

1:17:34 ...and license levels of ArcGIS Server.

1:17:37 It can be confusing, but just...

1:17:40 ...it boils down to a simple two by three matrix and that's what the slide talks about.

1:17:45 You can get ArcGIS Server at three different editions.

1:17:51 Basic, standard, and advanced.

1:17:55 Basic allows you to set up an ArcSDE geodatabase...

1:18:00 ...and it allows you to share and create geodata services, that's it.

1:18:05 Standard is what most people probably get.

1:18:08 It allows you to do some 2D mapping, globe mapping, geoprocessing, and Web editing.

1:18:14 And then advanced gives you everything, all the extensions, all the functionality.

1:18:18 Now, for each one of the different editions on all the rows, there are two different levels.

1:18:24 And it depends on capacity.

1:18:25 How big is your organization, how ma...how many services do you really plan to share?

1:18:31 There's ArcGIS Server Workgroup...

1:18:34 ...in which case the ArcSDE Geodatabase is implemented on Microsoft SQL Server Express 2008, supports 10 concurrent users.

1:18:44 That does not mean Web users.

1:18:45 We're talking users for your intranet.

1:18:50 And the database has a size capacity of 10 gigabytes, okay.

1:18:54 Key thing to be aware of is that ArcGIS Server 10 ships...

1:18:59 ...with SQL Server Express 2008 Release 1...

1:19:04 ...which has that four gigabyte size limitation.

1:19:08 So if you want to have that 10 gigabyte size limitation...

1:19:11 ...you have to go to Micosoft, download, for free...

1:19:14 ...Microsoft SQL Server Express 2008 Release 2.

1:19:18 It's not our fault, they kind of released it after us.

1:19:21 We couldn't really do much about it.

1:19:24 The other option is, of course, is ArcGIS Server Enterprise...

1:19:28 ...which allows you to implement your ArcSDE geodatabase...

1:19:31 ...on one of five database platforms that we support.

1:19:35 SQL Server, Oracle, DB2, Informix, and Postgres.

1:19:40 And you have an unlimited size capacity, unlimited number of users.

1:19:48 We kind of touched on this throughout the session...

1:19:51 ...but we want to formally present it to you.

1:19:52 There's the ArcGIS Server Resource Center, right?

1:19:55 Just go to resources.arcgis.com.

1:19:59 And this is a great starting point to get information.

1:20:03 All the Web help is here, the blog is here, the Web mapping APIs are here...

1:20:08 ...the ArcGIS Viewer for Flex is here, you can a...get everything here.

1:20:11 The development blog, okay.

1:20:15 So thank you guys very much...

1:20:16 We ask that you fill out the evaluations, let Dan and I know what we've done right or wrong, hopefully right.

1:20:22 We talked about ArcGIS Server, right?

1:20:24 We know what it is now as a product, we know the four components.

1:20:28 We know how to publish a map service, the workflow is easy, three steps.

1:20:33 We know about common terms like a cached map service versus a dynamic map service...

1:20:39 ...basemap versus operational layer.

1:20:42 We talked about the different clients to ArcGIS Server.

1:20:46 And if you are a developer or you want to create advanced clients, we talked about the Web mapping APIs.

1:20:52 And we also talked about editions and licensing.

1:20:54 So thank you guys very much, we really appreciate it.

1:20:57 If you have any questions, come...you can ask now or here is a list of all the sessions we referenced for your specific topic, okay?

1:21:05 All right, and find that regional group meeting tonight.

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