

What's New in ArcGIS 10 for Server

Join this session to learn about all the new features coming with ArcGIS 10 for Server and why you should care about them. This is a high level overview of what is new in ArcGIS 10 for Server including live demonstrations and discussion on web editing, compact cache, iPhone support, SharePoint integration and much more.

<http://video.esri.com/watch/63/whats-new-in-arcgis-10-for-server>

Video Transcription

00:01 My name is Ismael Chivite. I am the ArcGIS Server product manager.

00:05 I want to group kind of the different features that we added to the product into thematic sections...

00:11 ...so we will talk about what is new that affects how you deliver Web mapping. How do you create Web maps?

00:20 What is new that will make your analysis in [ArcGIS] Server more powerful?

00:24 What is new that allows you to create new geocollaboration workflows and Web editing applications?

00:31 What is new regarding deployments of ArcGIS Server, specifically deployments in the cloud on Amazon EC2?

00:37 And then we'll have a few slides at the end that kind of take a few other important things...

00:42 ...but that I was not able to get into these groups.

00:45 Before I start, I want to let you know that ArcGIS Server 10 has some nice additions, actually many, many, many of them...

00:54 ...many little and big things, but basically builds upon 9.3.1.

01:00 9.3.1 was so far our best release for ArcGIS Server, very solid; always software has issues but it's a fairly stable release...

01:09 ...and we just built upon it. We are not dramatically changing things.

01:13 In fact, from a migration point of view, the migration from 9.3.1 to 10 is pretty, pretty smooth.

01:18 You can actually, for instance, leave ArcSDE 9.3.1 running and install ArcGIS Server 10...

01:23 ...so you can do Web editing and some of the things you have here.

01:27 Your applications working with the Web mapping APIs built on top of 9.3.1 can hit 10 services...

01:34 ...except those things that are new, of course, but they will continue to work.

01:37 And your 10 applications will be able to connect to your 9.3.1 services as well.

01:43 So let's talk first about Web mapping.

01:47 What is new that makes Web mapping easier or more...more powerful in ArcGIS Server 10?

01:55 First of all, we are putting a lot of effort trying to make Web mapping accessible to the non-GIS expert...

02:04 ...the non-GIS administrator, so everyone could build a Web mapping application.

02:09 And I want to highlight the role that ArcGIS.com plays in all of this. ArcGIS.com is a public site hosted by Esri.

02:17 And it allows you to find, create, and share geographic information maps with others.

02:23 And in the context of ArcGIS Server as you can imagine, these maps are coming from ArcGIS Server.

02:28 They are ArcGIS Server services, and people just create mashups and they share them with others.

02:34 To me, the powerful thing about ArcGIS.com is not that we have a fully fledged GIS application...

02:40 ...that you can use from a Web browser. I think the power is that it gives a different...

02:45 ...fresh look at how we allow people to build geographic knowledge and share it with others.

02:52 With ArcGIS.com, you no longer need to be an administrator, an ArcGIS Server administrator...

02:57 ...and have root access to the machine to create a Web mapping application.

03:02 Anyone can now go to this site and take ArcGIS Server services and create a mashup without developing a single line of code...

03:09 ...and then share that information with others.

03:12 That's very powerful because it fosters collaboration within the organization, allows you to push your GIS investments...

03:19 ...across the organization so people can use tools that are easy to use this geographic information.

03:25 There are two viewers that we are going to talk about, the ArcGIS.com Viewer and the ArcGIS Explorer Online.

03:33 So let's do a quick demonstration so you can see these in action.

03:37 I guess many of you are familiar already with ArcGIS.com. You have seen the site.

03:46 I'm not sure what's going on with the resolution here. Excuse me just a second.

03:57 Okay; that's better.

03:59 So, I'm going to go to ArcGIS.com, and you probably have seen this site already.

04:06 But let's look at this site from the context of the ArcGIS Server user.

04:11 As you know, you can come to ArcGIS.com, go to the gallery, and the gallery displays different maps that people create.

04:17 You can find maps within ArcGIS.com by using the Search...

04:21 ...and this search can work on public maps that everyone can access but also on the groups to which you belong.

04:29 So you can create groups within ArcGIS.com so you only share maps with people that belong to these groups.

04:35 Now the question is how these maps get in here in the first place.

04:40 So often, everything starts with ArcGIS...ArcGIS Desktop and ArcGIS Server.

04:45 So this is ArcGIS Desktop, and I have a map.

04:49 I'm going to publish a map and put it...push it to ArcGIS.com so you can see that experience.

04:54 So, the first thing that I'm going to do is...you can see that I have different petroleum assets here...

05:00 ...wells, pipes, and oilfields, and I'm going to create a map service out of this and push to ArcGIS.com.

05:05 Because I want people to mash up this information with other basemaps, I'm actually going to get rid of that basemap...

05:13 ...and publish just my business data.

05:15 And now I'm going to save my map document, and I'm going to use the Map Service Publishing toolbar.

05:22 So, now I can just push this map service to my server, and this will create a new map service.

05:31 At this point, people with Web browsers can access my map document because it's a new map service.

05:38 So, in fact, I'm going to use a browser now to access this map service.

05:45 So, let me go back to my laptop. As you can see, this is a remote desktop to a machine.

05:49 I'm going to...going down to my laptop and kind of connect to the Services directory.

05:54 The Services directory is basically an HTML page that displays the services that run in my server.

06:00 And this is a page that normally only the ArcGIS administrator access. It's kind of pretty ugly looking. Right?

06:08 But it's just for administrators.

06:10 So, here you can see that I have a folder, and within this folder I have the map service that I just created.

06:16 And it exposes the different metadata information about it, and I can preview this map service from a Web browser.

06:24 You can see my oilfields, my pipes, and...and if I get close enough, the wells.

06:29 This is not different than 9.3.1. This is exactly what you saw in 9.3.1.

06:33 What has changed in 10 is that now we have a new link...

06:38 ...which allows you to open this map service that you created from a fancier application.

06:43 Well, this is one of these out-of-the-box ArcGIS.com applications.

06:48 The application includes a basemap, which by the way I can change.

06:52 For instance, I'm going to use this Bing Maps layer because it has more names for towns around.

06:59 The application also allows me to click on details and display a nice-looking legend...

07:04 ...which is created dynamically from my map service.

07:07 And if I go to Contents, I can even click here to control the visibility of different layers...

07:15 ...and I can even change the transparency of the layers that I have added to my application.

07:22 So, it's a very simple application. You can see that it has some print options, and so on.

07:29 The point here is that while I was changing the basemap, changing the extent, the transparency...

07:34 ...I was in fact creating a Web application.

07:37 I don't need to be an administrator to do that; anyone can use this application to mash up the services and create applications.

07:44 In fact, I can now take this and save it. So I will save this as a Persian Gulf Petroleum map.

07:58 And here I will provide some tags so people can more easily find my map.

08:04 This map is saved within my profile in ArcGIS.com.

08:09 So nobody can access this map at this point, unless I share it.

08:14 So, if I go to my content, you'll see all the different resources that I have shared with ArcGIS.com from ArcGIS Server.

08:22 And here you can see the Persian Gulf Petroleum map. If I click on it, you can see the...the thumbnail.

08:28 I can tweet my map, I can put it into Facebook, and I can also share it.

08:34 So, if I share it, I can say everyone can access it.

08:38 So if I click there, you could from your iPhone, your iPad, or any Web browser go to ArcGIS.com...

08:43 ...look for a smile, and automatically you'll get to this map.

08:46 So, you can create maps from it, but I'm not going to do that.

08:51 I want to keep that secret to the UC 2010 Group...

08:55 ...so any person belonging to the UC 2000 Group within ArcGIS.com can now search and find this map.

09:03 So if I go to Groups, UC 2010, you'll see that now it has my Petroleum Map map. Okay?

09:10 So let's say that I'm a different user; I logged in to the Web site with a different account, I used the Search...

09:15 ...I look for Petroleum, I find this map. Now I can look at the details, which gives me the metadata.

09:22 I can also see...look at some comments that people may have added to this map.

09:27 And, of course, I can open it.

09:29 I can open it with the same application I used to create the map or with ArcGIS Explorer Online.

09:35 ArcGIS Explorer Online is yet another application that is hosted within ArcGIS.com...

09:40 ...and it's a bit more powerful, more functional than the one you saw before.

09:45 It's built on Silverlight, so you need the plug-in, but it has some fancier capabilities to create presentations...

09:50 ...to add notes and graphics on top of the map.

09:54 And it also has, of course, the, you know, similar functionality like if I want to change the basemap, I can change it there.

10:03 And I can add additional content from ArcGIS Server. I can add here a...a...a little note, and so on.

10:13 I'm not going to go into the details of ArcGIS Explorer Online.

10:16 The only point I want to make here is that for the first time...

10:19 ...we have a very excellent nice gateway into your ArcGIS Server services.

10:25 That's something that people will get; people connect to the Services directory or to ArcGIS Server Manager or even...

10:32 ...either they need an administrator password or they get into this developer thing.

10:37 ArcGIS.com is an easy-to-understand site on which people can very easily get maps from here and there...

10:45 ...create applications, sharing them, add comments, and so on. And that is extremely powerful.

10:50 You'll see people within your organizations getting this GIS thing, because it's just a map; they don't need to be GIS experts.

10:58 That is, I believe, truly very powerful.

11:04 So, don't forget; this is a public site. It's being hosted by Esri.

11:10 Now many of you have limitations or constraints.

11:15 They need to keep your applications very secure because they have sensitive data.

11:19 And ArcGIS.com is not one of these places where you want to put sensitive data.

11:23 It has this type of Flickr kind of security. Right?

11:28 Yes, you have groups and you can restrain things...

11:30 ...but petroleum assets and expiration sites, you probably don't want to put into ArcGIS.com.

11:35 Well, we have other applications that kind of fit that niche...

11:38 ...where you have to have an application that is hosted in your network.

11:44 And that is the ArcGIS Viewer for Flex, which we released in beta about a week ago...

11:49 ...and we actually give it...gave it an update on Monday to add additional widgets.

11:55 The ArcGIS Viewer for Flex is basically an application that you can download locally, and then you can configure it.

12:00 You can configure the layers, the map extent, but also the widgets, the tools that the application has.

12:06 When I go to ArcGIS.com and I use these applications that you saw, the...the tools are there; you cannot add or remove tools.

12:12 In this application, you have full control over the tools that the user is exposed to.

12:17 So, it allows you to create very focused applications by simply tweaking a text file.

12:23 Also, as a developer, you can extend the viewer, so you can create custom widgets, which plug into this viewer application.

12:33 Let's...let's have a look at the...the experience of...of this thing.

12:47 Okay. So in this case, I'm going to go to the Resources.ArcGIS.com.

12:52 Remember, this in the past used to be Resources.Esri.com.

12:56 Now it's Resources.ArcGIS.com. We like to change names on things like this.

13:01 You go to Server, to the Server Resource Center, and now you click on Out-of-the-box applications or Applications, right here.

13:11 And in this, you can see some of the applications that we saw before like ArcGIS.com, and so on...

13:18 ...in the Web Mapping Applications tab...

13:21 ...the ArcGIS.com Viewer, which we saw; the ArcGIS Explorer Online, which we saw too...

13:26 ...and then the ArcGIS Viewer for Flex.

13:28 So you come here, and you click on Download Flex Viewer. This is going to...going to give you a small folder...

13:34 ...which contains a configurable application.

13:37 I'm going to go back to my remote desktop session, and I'll go to the root folder. This is the Web Server folder.

13:48 And here you can see this Flex Viewer folder. That is what I downloaded from that site.

13:54 And if I open that folder, you see that it has different files...

13:58 ...and this is the configuration file that you can tweak to customize the application.

14:02 We'll see that in just a minute. For now, I'm just going to access the application that you will get out of the box.

14:13 Demos Flex Viewer. So literally, any...all you need to do is to get the application and put it into a Web server.

14:22 And at that point, this is what you get.

14:24 It has a few widgets in the top, different basemap switchers here, and then you can just navigate your maps...

14:32 ...and it has a bookmarks widget so you can navigate to different places, and many...many different tools.

14:39 I'm not going to get into the details of this, because throughout the demonstration or this session...

14:44 ...you're going to see this viewer all the time with different demonstrations.

14:48 So back to my Web server; if you want to create your custom application, what you would do is simply you copy, you paste...

15:02 ...and then I'm going to rename this to...let's call this Petrol.

15:07 I get into here, and I edit this XML file.

15:12 And this XML file, well, can be changed; you can change the title here. Right?

15:20 Petroleum, whatever, and then, I know, this is going to be pretty tight on time.

15:29 I thought this session was one hour and a half.

15:32 And then, remember this is the...this is the map we created before. Remember this one. Right?

15:37 So, this is the map I want to display into my application.

15:40 So I'm going to copy the URL, go back here and say, for operational layers, I want one that is called Petroleum.

15:51 It's dynamic, and then the URL will be this one. Okay.

16:01 And then I save that, go back to my browser, and instead of going to Flex Viewer, I go to Petrol.

16:10 So this will load the same application but now, if I...let's...let's go to the Middle East area...

16:17 ...which is where I have the data.

16:24 Okay. Now I can go to here, Petroleum; that's the layer we...we configured, and those are my petroleum assets, right there.

16:35 Okay? You understand? I mean, it's an easy...easy process, right? Configuration through text files.

16:42 We'll work on it; we will add more tools.

16:43 We are thinking also about creating kind of a non text file experience to configure this application.

16:49 But for know, you can download this thing and...and just use it. Download, configure, and deploy.

16:56 You can deploy within your intranet, secure it; you can extend it; it's a wonderful tool.

17:03 More out-of-the-box things. Now in ArcGIS Server 10, you can put your maps very easily into SharePoint, so we have...

17:10 You go to Esri.com/sharepoint, and you can download Web parts.

17:14 You need to ask your SharePoint administrator to install these Web parts within your SharePoint site.

17:19 But at that point, if you have permissions to edit the look and feel of your SharePoint pages, you'll see two controls...

17:26 ...a control that displays information in a table view and also in map view.

17:31 And it's easy to configure, I mean, there is...it's...

17:34 ...what you see what you get experience to add your maps and layers into this Web part.

17:41 iPhone is another one.

17:43 Every time I publish a map service, it can be accessed by Web browsers, by ArcMap, and now by iPhone.

17:49 So you can download the iPhone application and have an experience similar to the ArcGIS.com one...

17:55 ...where you search for a map and then right there will be your map.

17:59 So without writing a single line of code, you can get maps into an iPhone application.

18:04 We also have an SDK, which allows you to build these iPhone applications from scratch...

18:08 ...and they can, of course, hit your ArcGIS Server services.

18:12 So, this was kind of a big effort for us in ArcGIS Server 10, kind of bring down the...

18:19 ...the barriers of entry to creating Web applications and using ArcGIS Server services.

18:30 But that's just about the application.

18:32 We did a lot at the map service level to make sure that your maps are more beautiful and more efficient.

18:41 First of all, we are increasing the number of map services available to you so you can create these mashups.

18:47 And I want to highlight that with ArcGIS Server 10, the use of Bing Maps is, in practice, is kind of free for ArcGIS Server users.

18:56 Bing Maps free for ArcGIS Server users, and I say...

19:00 ...I say "free," quote, because there are some limits to the amount of tiles that you can use from virtual...from Bing Maps.

19:07 But the number is so big that, in practice, for Internet applications, it's going to be pretty much free. Okay? For you.

19:14 The number is...is big enough. And on top of this Bing Maps licensing change, we have added more content to ArcGIS.com...

19:23 ...more layers, as you know, from other presentations on ArcGIS Online and ArcGIS.com.

19:28 If you want the details, I think you should go to these sessions.

19:31 But I wanted to highlight this Bing Maps thing.

19:35 The other thing is you want to create your own map services...

19:39 ...and we made changes in the map service engine so you can create more beautiful maps.

19:44 In the past, you know that in 9.3.1 we released this new optimized map service. Remember that...the optimized map service?

19:52 Well, it had a few limitations.

19:54 You couldn't use text placement from Maplex; you couldn't use cartographic representations.

20:00 Those limitations are gone.

20:01 You can now use them with optimized map services, which is the fastest way to get dynamic map services done.

20:09 And, also, we added other enhancements like support for query layers...

20:13 ...so you can add contents to the map document that you are going to publish as a map service...

20:21 ...that hit a SQL Server or Oracle database directly without having ArcSDE in the middle.

20:29 We will talk about that later.

20:34 Map animations is another one.

20:36 Yes, you can create more beautiful maps because we support cartographic representations and Maplex.

20:40 But now your maps can have...be...they can be animated. And it's actually quite easy to do that.

20:48 Actually, many of you using the developer APIs created map animations in Web browsers in the past.

20:53 But now, as you will see, it's just much, much easier than ever before.

20:58 Let me show you that with a demonstration.

21:17 Having problems here with the resolution for some reason.

21:20 Anyways, back to my map document, Petroleum Assets.

21:23 If I identify my oilfields, you'll see that there is a field that tells me when this map was discovered, or opened. Okay?

21:35 We are going to use this field to enable map animations on the map service.

21:39 So I'm going to right-click on the Fields layer, and there's a new tab...the Time tab.

21:45 This allows me to create time-aware layers.

21:48 Here's the Time field; the file format, which is just a year...

21:52 ...and I checked so information when I go back and forth in time is displayed cumulatively.

Okay?

22:00 This is how I defined the map...the time properties of my layers.

22:04 So all you need is basically features that have a date. That's all you need to create map animations.

22:11 Now, once you have enabled this time awareness on the layer, you can use different tools to go back and forth in time.

22:22 So, here in ArcMap, you can see this slider bar, and I can go back and forth. Okay.

22:27 But this is ArcMap, and we are talking about ArcGIS Server.

22:30 So, how this works in ArcGIS Server...very easy.

22:33 All you need to do is to publish a map service which has time-aware layers.

22:38 So, I'm going to click again here; I'm going to republish the...the map service, and it will complain.

22:44 It will say it already exists. So I'm going to overwrite and then publish again, now with time information.

22:53 And, as you probably know, I need to clear the cache again.

22:57 By the way, in 10 you can clear the cache programmatically. You don't need to go manually and do it.

23:04 I know it's kind of a pain to...to update the Services directory.

23:07 So let's go back to that service and back in the Services directory...

23:13 ...and now I'm going to refresh my cache in my browser here, hopefully.

23:23 And you can see that it has time info.

23:27 So the service is advertising to clients that there is some time information associated with my map.

23:34 So now applications can connect to the service and figure it out. Okay, I can enable a slider bar so you can go back and forth.

23:41 So let's see that.

23:42 I'm going to open the Flex Viewer.

23:48 And, in this case, I changed the configuration of my viewer so it centers on that area.

23:53 It adds the layer that we just published, and also I added a new widget, the time widget.

23:59 So I click in here, and now, oh, everything goes away, because it's filtering by time.

24:04 It's only displaying 1900s for oilfields.

24:09 And now I can go back and forth and display here information, out of the box, no coding necessary. Right?

24:19 Of course, with the APIs, the new APIs support this and you can do your custom applications as well.

24:29 We don't have time for details, but it's really incredible what you can do with that.

24:32 I mean it's not like you can just go back and forth.

24:34 You can have a slider bar with two knobs, so you can do only from 1900s to 1905, and then move that time window around.

24:44 You can represent data by age, so if you are representing a hurricane, as time moves on...

24:51 ...the hurricane will be smaller and smaller, because it happened a long time ago.

24:55 You know what I mean?

24:56 You can animate image services; you can animate vector data, images, weather, all these things.

25:02 So it's pretty amazing what you can do with animations.

25:04 And that helps us kind of communicate better through maps.

25:09 Many of you are using cache map services...

25:11 ...and that's a good thing because it's probably the fastest and most scalable way to publish basemaps...

25:18 ...high, rich cartography on the Web.

25:20 But creating these map caches is often kind of a nightmare, right?

25:25 Because, you know, you have to create these folders with millions of small map tiles.

25:30 And moving that thing around servers takes for days, fails.

25:35 We know that; we are suffering ourselves when we put the map caches in ArcGIS Online.

25:41 So, in 10, we are introducing a new format for the compact cache...it's...for the map...map cache.

25:47 It's called the compact map cache format.

25:51 And it's nothing but big chunks of files that have the map tiles inside, so when you look at the map cache...

25:58 ...you'll see that rather than having many millions of tiny 5 or 10 kilobyte map tiles, you have larger chunks.

26:08 And that makes a tremendous difference, because operating systems like Linux or Windows have trouble managing files...

26:15 ...or folders that have millions of map tiles.

26:18 Just to give you an example, you create a map cache of Europe land use, about four...four million map tiles.

26:24 Just to delete the cache takes hours...hours just to delete the map tiles.

26:32 If you want to move your map tiles from your staging environment to your production environment, it takes...

26:39 ...in our case, it took about nine hours to move just four map...four million map tiles...nine hours of time, moving.

26:46 And the process can fail because the network...you know how it works.

26:50 With a compact cache, we went from hours to minutes, from nine hours to nine minutes...

26:56 ...just because we were using compact cache...I mean, no secret.

26:59 These guys, Windows and Linux, can more quickly move 10 gigs of data if they are in just a few files...

27:07 ...rather than spread over millions of them.

27:11 It also helps with creation.

27:13 Especially with these maps that are very simple, we spend a lot of time writing to disk as opposed to rendering the images.

27:19 So you can see things like what used to take five hours to cache now takes one hour to cache.

27:25 When the maps are more complex, we often spend more time rendering the map tiles than writing them to disk.

27:31 So the difference between compact cache and exploded cache is not that big...at creation time.

27:38 But deleting the cache is still slow with exploded, so for workflows where you are updating the cache...

27:44 ...compact cache is perfect, because you can delete the map tiles quicker, and then you just replace them with the new caches.

27:50 So this is a very nice addition to ArcGIS Server 10 and...

28:03 ...okay, so, let me just open Windows Explorer here so you can see what these caches look like...ArcGIS cache.

28:17 I have imagery here, the same structure as before but now we have these bundle files...

28:23 ...and you will notice that this one has 45 megabytes.

28:26 Inside these compact, or bundle files, we have many map tiles.

28:31 And you may think, well, but now you need to open the file and then it might be slower than

before.

28:35 It's actually not slower than having exploded map caches. We did the retrieval tests on them.

28:43 How do you create these map caches? No complication at all.

28:46 You take your map service as usual, go to Service Properties, Caching tab, and you say I want to cache my map.

28:54 In 9.3.1, this is the way you used to build map caches. No different in 10.

28:59 But now you have an option, which by default is compact, and you can change from exploded to compact. Okay?

29:07 That's all you need to do to create a compact cache; just pick that.

29:10 Also, one more important thing. When you pick compact, you have this option enabled.

29:15 It's the local directory, and this is a very important option when you have a caching job that needs many machines.

29:22 So, let's say I...I'm trying to cache the whole U.S., takes 15 days to cache the whole U.S.

29:28 I need to get down to 1 day; well, let's add 15 machines, right?

29:33 Well, didn't work that way because we had all these 15 machines trying to write to the same location at once...

29:39 ...and we had tremendous I/O bottlenecks.

29:41 So it doesn't matter how much iron you throw to your map caching job...

29:47 ...it won't scale beyond a specific number of...of servers.

29:51 With this option, we address that.

29:52 What we do is we have every machine writing chunks of the map tiles locally on the machine...

29:59 ...and then, from time to time, when the bundles are ready, we move them to the common location where the real cache is.

30:05 And that allows us to scale much better.

30:09 Do you understand? Do you follow that? Yes?

30:13 And then the last thing with compact cache, too, is that when you look at the tile format, not the map cache format...

30:20 ...the format of the images on that cache format.

30:22 We have a new option; it's called Mixed, and this is very nice when you are caching imagery.

30:27 When you are caching imagery, you want to cache JPEG, because it's compressed.

30:31 You don't want to cache PNG 32, but JPEG has an issue; it's that browsers do not support transparency.

30:38 So you...you can see the edges of the images with black or white pixels.

30:43 This will basically look and see...okay, this map tile contains no pixels with no data, JPEG.

30:52 This map tile has a few no-data pixels, then PNG 32.

30:58 So the clients will see nice looking imagery in the optimal format. Only on the sites, we will use PNG 32.

31:07 And because part of the image actually has no data, PNG 32 doesn't work that bad in terms of the size of that image.

31:14 Yes? I see some of you are thinking about it? Yeah? Okay.

31:22 That's the compact cache.

31:24 [Inaudible audience question]

31:27 From a speed point of view, it doesn't matter. I mean, if you have an...a map tile that has just a few pixels with no data...

31:35 ...because we cache that map tile with PNG 32, the size is going to be much bigger than if you cache with JPEG.

31:41 [Inaudible audience question]

31:45 No, at creation time, it's pretty much irrelevant. You know, using mixed versus just saying JPEG.

31:52 Okay, so there are more things with geoprocessing than...

31:55 ...a very interesting one is we have added more geoprocessing tools so you can create collaborative workflows...

32:03 ...for...for building a map cache.

32:05 So, basically, we have a tool to import and a tool to export map caches.

32:08 Import is kind of nice, because I have county A caching their county, county B caching their county...

32:15 ...and then I use the import GP tool to import this cache into the master estate or nationwide map cache.

32:23 And because map compact caches are so easy to move around, this workflow really works now.

32:29 Because I can ship my compact cache in a DVD and then import, and so on.

32:34 Export is similar; I can go to a map service, cache an extract...or an extract, a portion of that map cache...

32:43 ...and the interesting thing is that not only I can republish the map cache...

32:48 ...I can also take it to this laptop and read it with ArcGIS Desktop.

32:53 So we...we have created a disconnected map cache format where you don't need ArcGIS Server to look at the map cache...

32:59 ...you export, you put it into your laptop, and then when you navigate to that folder that has the map tiles...

33:05 ...it will look like a raster file...

33:09 ...literally, like a raster, and then in ArcMap, you display it.

33:12 So, for people that go to the field with tablets, it's perfect.

33:15 Extract the area in compact cache, push to the laptop, and then they can use the basemaps.

33:21 Right? Obviously, they cannot query the data and things like that, because they are just looking at images...

33:27 ...but for basemaps, it's just perfect.

33:31 Other map services enhancements...a lot, attachments.

33:34 Attachments are like files that you can associate with features in a geodatabase, like pictures and videos.

33:40 So you can have these geodatabase attachments, and then your map service will expose them...

33:45 ...so people over the Web can look at attachments to your features. They can even edit the attachments.

33:51 We look at this in another session; it's called Web Editing with ArcGIS Server 10, I believe, which is not in the agenda...

33:59 ...in the pocket agenda, but it's in the online agenda.

34:01 Geodatabase relationships; we had relationships in the geodatabase forever.

34:06 But when you were publishing your map services, these relationships didn't come through.

34:11 The Web browser client couldn't find out that partials are related to owners.

34:17 Now this come through, so I can click on a pipe and get all the related inspection records from a Web browser...

34:23 ...because the map service exposes these relationships.

34:27 Enhanced supports for subtypes and domains; this has to do with dealing with descriptions, which we didn't handle very well.

34:34 Stand-alone tables is another one. You put a stand-alone table in ArcMap, and then the

Services directory will display it.

34:41 So your Web browser applications can look at stand-alone tables, not only layers, many other things.

34:48 Let me highlight the last one. Support for spatial references with no well-known ID. What this means is very simple.

34:55 In 9.3.1, if you want to put a map service in a JavaScript application or a Flex application...

35:01 ...you have to use a projection that has a well-known ID.

35:05 Basically, you have to navigate, look up for a PRJ file that ships with our software, and then publish the map.

35:11 Otherwise, it won't work.

35:13 So, let's say you have a Plate Carree projection, and you want to center right in the 180 degrees...

35:19 ...so you have the view centered in the Pacific; that's not a projection that we supported in 9.3.1 with the JavaScript APIs.

35:25 But now, it's supported. Okay?

35:28 So folks like NOAA, Sun; that's kind of nice; because you can go across the dateline. Right? In your Web applications.

35:36 So what we did with Web mapping is...okay, what is what people really think about, care about...

35:42 ...people care about having beautiful maps...map animations, cartographic representations.

35:47 People care about having very fast map services, compact cache, and so on.

35:53 People care about having great use of experiences...the viewers in ArcGIS.com, the Flex Viewer...

35:59 ...and other experiences like iPhone, and so on.

36:02 Is this making sense? So this is all what we did in 10 to kind of make Web mapping more powerful for you.

36:11 Let's talk about analysis, because analysis is a unique characteristic of ArcGIS Server.

36:16 Many people do Web mapping, but very few do good analysis on the Web.

36:20 And you know this notion of the geoprocessing service. Right?

36:23 You author a geoprocessing model, and you can create a geoprocessing service so people can run analysis over the Web.

36:31 Every time we put a new tool in ArcGIS, it's server enabled.

36:36 We added over 150 geoprocessing tools in ArcGIS, in 10, and all of them you can use in a server context.

36:44 So I'm going to now go in alphabetical order and describe each of these tools.

36:51 I'm going to just talk about three of them.

36:54 Network allocation is a very interesting one.

36:56 For those of you who used to work with ArcInfo Workstation, the locate...allocate tool...

37:01 ...remember that one? Okay...to allocate resources to centers...service centers? No? Not many workstation people?

37:09 Go to the [ArcGIS] Network Analyst session. You'll learn about this tool. It's pretty cool.

37:14 Then, let me talk more about PDF creation and data extraction services.

37:18 Let me show that with a demonstration.

37:21 So you can create...you can create data extraction services relatively easily in ArcGIS 10...

37:35 ...that is, let me actually show the demo first and then we author the geoprocessing mode.

37:48 I have a Web application...this is the Flex Viewer one, and in this case...

37:52 ...I have added a widget that allows me to do data extraction.

37:57 Oh, that's right; I didn't create the service. Okay. So, I need to create the service.

38:02 Basically, this allows us to open a Web browser application, select an area of interest, and say I want layer A, B, and C...

38:09 ...in this format and in this spatial reference; please zip from me...for me.

38:13 So it will extract from the database, zip it up, and then send us a file down to the client, so you can use the data locally.

38:20 So how do you build this? Easy. Kind of easy. Let me show you.

38:24 So, first, you go to the folder where you have your maps, and so on, and you create a toolbox, okay?

38:37 Like the one you see here. And this...let me delete that so you can see the entire process.

38:43 That's an empty toolbox. In that toolbox, I'm going to create a geoprocessing model, and I'm going to publish it.

38:50 Now, if I go to system toolboxes and to the server tools category, you can see that this is new.

38:56 This is...this is the data extraction toolset.

38:59 And within it, we can see two tools, one that will zip the contents of the data and then send you an e-mail with that ZIP file...

39:09 ...and the other one, which will just send you the ZIP file, which is the one I'm going to use.

39:14 So I'm going to copy this tool into my toolbox, paste, and now I'm going to edit the tool.

39:26 And you can see, it's very simple; it's a simple geoprocessing model.

39:30 I'm going to double-click on the layers to clip, which are the layers that I want to extract...

39:36 ...and this is how I define the layers that the user will be able to extract.

39:41 That's one parameter. The area of interest is the polygon that the user is going to draw.

39:46 The feature format we'll see in a minute.

39:48 Because I have no rasters, I'm going to uncheck the model parameter so the user doesn't need to bother setting a raster format.

39:55 And these are optional like spatial reference, and so on, that you can check, but in this case, I'm going to leave that alone.

40:02 If I go to the model properties, you can see that the feature format is a value list.

40:07 This list displays the different formats that I can export to.

40:10 If you have the Data Interoperability extension with ArcGIS Server...

40:14 ...you can add any of the formats supported by that extension.

40:18 I think that they are in the hundreds, and they will be supported here.

40:21 And, of course, you can get rid of those that you don't like as well.

40:26 Just to see a little bit of the guts of this thing, if I edit the tool, you'll see that it's a Python script. Okay?

40:32 And this is what does all the logic of the clipping and the zipping.

40:36 And it's important to know it's a Python script because now you can tweak it and you can...

40:40 ...kind of customize this tool to your liking if you...if you wish.

40:45 Anyways, so now I have my geoprocessing model all set up.

40:49 I'm going to drag and drop my model into the table of contents to make my map geoprocessing aware.

40:56 And now I will save the document and publish it.

41:00 I won't use the map service publishing toolbar...

41:02 ...because MXD-based or optimized map services do not support geoprocessing tool layers.

41:09 So I'm going to simply click on the map MXD and publish to ArcGIS Server.

41:21 Let me refresh here...refresh.

41:27 Okay, I'll delete this guy, and now I publish to ArcGIS Server in this folder, and now I enable the geoprocessing capability...

41:39 ...so the map knows it has a tool layer in the table of contents...

41:43 ...so it basically enables geoprocessing on that service to expose the capabilities of these services...data extraction.

41:51 So at this point, the map service has been created along with the geoprocessing service.

41:57 So I just wait for it; here, you can see the geoprocessing service. I'm going to again clear the cache.

42:04 And now, if I come here, I'm going to clear the cache to here in the browser just to avoid any confusion there...

42:14 ...and kind of reload the application.

42:19 Here, reload. And I think we should be good to go.

42:24 So this widget, which I configured to the text file, is pointing to my service.

42:32 Ahh, there you go. Right?

42:33 It's displaying the layers. Remember when we configured the geoprocessing model?

42:38 We picked the layers. So I want wells, pipes, files...fields in shapefile format in this area...extract.

42:49 This is invoking the geoprocessing model. Right? No coding out of the box through this application.

42:57 That's a beauty, isn't it? Right? And now I can open this thing and save the ZIP file. Okay?

43:05 So you can download this today. Okay?

43:07 From...from the Resource Center and start playing with it because we published this model in the Resource Center.

43:14 So you can kind of practice and configure your applications, just to play, and, of course, if you have ArcGIS...

43:19 ...you can create your own.

43:23 Now, were we, data extraction. Oh, yes. This one, I think you're going to like this one.

43:28 This is about printing. Okay? Printing.

43:31 So in ArcGIS 10, how much time do we have left?

43:36 Fifteen minutes? Yeah. Okay. In ArcGIS 10, we added this thing called ArcPy mapping.

43:41 It's a Python model that allows you to do cartographic production kind of thing, automating cartographic production.

43:46 And we normally talk about it in the context of [ArcGIS] Desktop, so people can create these map books and such...

43:51 ...can be used in [ArcGIS] Server as well.

43:53 So I'm going to give you a...a brief demonstration so you can see how that works.

44:00 Save to PDF. Same thing. I have the ArcGIS Viewer for Flex; it's pointing to a map service...

44:07 ...and I'm going to navigate to an area of interest and say Create PDF.

44:13 This is going to call a geoprocessing service, which is this...is using this Python script thing...

44:18 ...and it tells me, oh, you can change the map title; this is my map.

44:23 You can change the map style. These map styles are actually map documents that I authored in ArcGIS Desktop...

44:30 ...that define the layout, the marginalia elements around the map.

44:34 Is it an 8- by 11-inch size paper or is it 33 by 44 inches?

44:40 You define those styles on the server, and then this guy kind of recognizes that.

44:46 And then you can also force the scale to be, in this case, 1,000, and you may also want to include attributes.

44:56 I'm not going to include attributes.

44:57 But attributes basically allow your PDF to have all the attributes that your features have in the geodatabase...

45:04 ...will be put within your PDF file so people can do things like identify and search and things like that.

45:10 Anyways, this thing is creating the PDF, and it should have been done by now, but maybe it's kind of sleepy.

45:22 Let's wait a little bit.

45:25 [Inaudible audience question]

45:28 It's a geoprocessing service, so you can run it from any API.

45:31 But if you want an out-of-the-box experience for hitting this, that's the client...

45:36 ...the ArcGIS Viewer for Flex at this point.

45:41 Okay. So, now I'm going to save my PDF on disk.

45:45 I can preview from the browser, but I'm going to save it on disk because when you use Adobe Reader...

45:51 ...you can get some nicer features.

45:54 First of all, look at the scale. It's fixed to what we said...1,000 exact.

45:59 And this is important because having this PDF file in that scale allows me to really print the map at 1:1,000. Okay?

46:06 The other one is layer visibility. So if I want to turn on the buildings, I can turn them on enough...from PDF.

46:15 If I want to have a coordinate readout, you can see in the bottom part that I have it.

46:21 If I want to zoom in and zoom out, I can use these simple tools, and if I do a Ctrl F, I can look for Fourth Street.

46:31 Right?

46:32 You can see it highlighted right there, so it can find annotation within your map, and you can do Find on that.

46:40 So that's a lot, isn't it? Right? That's a lot that you can do.

46:44 But not only you can do these simple things, you can do all sort of crazy stuff like I want to print this pipe...

46:51 ...and this pipe will be made out of 1:1,000-scale maps that will kind of follow along.

46:58 Those things you can automate with Python and then publish as a geoprocessing service.

47:02 You can have a multipage PDF document with the map, a table, and a chart.

47:08 Right?

47:09 And you can see also that the title changed with what we defined from the Web application.

47:14 So we don't have time to look at this, but we will publish this in the Code Gallery so you can download it.

47:20 And it's just a Python script; it's easy to...to set up.

47:24 And it can combine information that is local on your server as well as services coming from other servers.

47:32 So if you want to display your business data on top of ArcGIS Online basemaps, you can still use this Python script...

47:38 ...and have a PDF that pulls the Bing Maps information or the ArcGIS Online basemap...

47:43 ...pulls from your ArcSDE database, and creates a PDF file so you can print.

47:47 You can enable layers, and so on.

47:54 Editing...editing is a very nice addition to 10...

47:58 ...allows basically people to edit the geodatabase over the Internet with simple Web browser applications.

48:03 Let me give you a couple of examples here.

48:11 Let's see Firefox. Yeah. No.

48:18 One...nah, I shouldn't do this. No, no, no. I'm going to do this this way. Yes.

48:30 We're...we're going to do it from scratch because I think, again, this is quite, quite powerful.

48:36 Let's go to this folder.

48:41 We're going to author a map document.

48:43 We are going to create a service that can be used to edit, and we are...

48:46 ...we are going to use an application to edit that information.

48:49 My ArcMap document has observations, different observations that I'm collecting in this area.

48:55 I want to create a service to edit this information.

48:58 I'm going to get rid of the map, and I'm going to save this map document...

49:10 ...here. Okay?

49:12 I saved the map document. This is the information I want to edit.

49:15 This information is in a multiuser geodatabase in SQL Server Express, specifically.

49:20 And now, if I actually edit the information...

49:25 ...you'll see that when you edit the information, you work with this notion of templates.

49:29 You're familiar with this notion of templates, right?

49:31 They were described in the users...in the Plenary Session, but essentially the experience is...

49:36 ...I click on the feature I want to add, and then I draw on the map. And that will create it.

49:40 And this tool...this feature has associated attributes, and so on.

49:45 So first you add the layers, you create the templates, and then you publish the map service.

49:53 When you publish the map service, it's complaining about it already exists. I will overwrite.

49:58 You need to enable feature access.

50:00 When you enable these things, you allow Internet clients to edit your geodatabase information over the Web.

50:11 Okay? Just by enabling that thing.

50:14 Now, because this map service has been published now to my server, I can again go to my services directory...

50:22 ...Save the Bay, and you can see that my map service has the feature service capability

enabled.

50:28 Do you see that there?

50:29 So let...let's look at this. I click on the feature server, and now I'm going to open my feature service from ArcGIS.com.

50:41 And those are my features.

50:47 And, as usual, you know that already, you saw that before, you can change the basemap and now look at this...

50:56 ...editing, so I click because the application recognizes that the feature service capability is enabled.

51:03 There you go, all the templates. So start having fun.

51:06 Alright? You click in there, and you start drawing.

51:09 This is simple sketching; this is not for accurate editing.

51:13 And here are the attributes with all the geodatabase domains.

51:17 This is a date field, and so on.

51:20 And, in fact, if I zoom in a little bit on this guy, you'll see that I can change the vertices, I can move the feature...

51:29 ...or I can delete it and go to a point, and I add a new point; I can add attachments to the features.

51:37 That's pretty incredible.

51:38 How many lines of code?

51:42 Zero! Right? Simple sketching. Now you can get pretty sophisticated with Web editing.

51:49 Don't think that this is just geosketching kind of things.

51:52 Here's another example.

51:57 This is a quite complicated one. We need to edit polygons that cannot overlap; they cannot have gaps.

52:04 You know, it's kind of...we need to maintain the topological relationships.

52:08 So we build a Web editing application with the Web mapping APIs...

52:11 ...that support editing that allows me to kind of do this editing.

52:14 So you can see here that really the distribution of crops doesn't really quite work well.

52:19 So I can get this guy selected and say actually I want to split so this guy goes like that...

52:28 ...and this will create that feature there so I can change the attributes now.

52:32 And maybe these I need to adjust a little bit, so what I'm going to do is I'm going to take this one.

52:37 I'm going to split it a little bit here. Okay. And now I'm going to select this one, and I'm going to merge it with that one.

52:48 Okay? That's pretty nice. Sophisticated editing, but simple user interface.

52:54 We did not build ArcEditor on the Web. Right?

53:01 Okay?

53:04 So that's something that all the Web mapping APIs now support...now support all this type of advanced editing.

53:11 And we don't have a lot of time, but there is this geometry service that we had before.

53:16 How much time is left?

53:19 Eight minutes! Oh, that's plenty of time.

53:22 So we have this geometry service which you use to do geometric manipulations.

53:26 We actually used that service in this demonstration that you show.

53:30 How do you think we were doing the splits on the merge?

53:32 We were going to the database, pull the geometries to the client, get the geometry, let the user draw a line...

53:38 ...and then we were giving this service, the geometry service, the geometry of the parcel, the line that the user draw...

53:45 ...and then the geometry service sends me back the polygon split.

53:49 And then we call this feature service and say delete here, add there, update, and that's where the split and merge happens.

53:56 So these are very powerful tools for the developer to create fairly sophisticated Web editing over the Web. Okay?

54:04 So tons of new things in the geometry service, tons of things in the Web mapping APIs to work with them.

54:13 This is powerful too. You know, at some point, you really need a lot of powerful tools to edit...

54:21 ...and a Web browser is just not enough.

54:24 So we allow in 10 ArcMap to connect to this editing service, so I can use ArcMap...we don't have time to demo...

54:32 ...but I ask you to go to the [ArcGIS] Server Island to see it if you're interested.

54:36 I go to ArcMap. I connect to a map service. I add the map service to ArcMap.

54:40 Because that map service has the feature service capability enabled, I can right-click on the layer like there...

54:46 ...and I say Edit layers locally.

54:49 So what ArcMap will do is it will go to the server, fetch the geometry and the attributes, all the features in the current extent...

54:56 ...store them locally, either on a file geodatabase or on a...

55:02 ...a multiuser enterprise geodatabase, and then you start editing.

55:06 You can now disconnect from the server because you are editing the data that is local and then you come...

55:11 ...go back to the map service and say synchronize layers, and it will just happen.

55:16 It will take the changes you made and send them back to the geodatabase through the feature service.

55:22 Right? A really powerful tool.

55:26 And it's a pity we don't have this one hour and a half, but we need to keep going.

55:31 ArcGIS Server runs on Amazon EC2.

55:33 We have a couple of sessions just for this and just a few thoughts here.

55:38 The reason why we decided that we wanted you to be able to run ArcGIS Server on Amazon is because...

55:43 ...it really simplifies the deployment of ArcGIS Server.

55:47 You cannot imagine how many calls we get with people who doesn't know how to set up ArcGIS Server users...

55:54 ...the SOC and the SOM, and they have issues installing the Web server...

55:58 ...and not to mention the issues that people have with their IT department to get ArcGIS Server up and running.

56:03 It's just the red tape of getting the server up and running so you can get that.

56:08 So Amazon is kind of a nice environment where these things get addressed.

56:13 Amazon provides a self-service experience for renting servers in their data centers.

56:22 So you can literally, in a matter of minutes, follow a wizard and create a fully functional ArcGIS Server machine.

56:28 You don't need to install anything. You just say I want a machine with two...two cores or with four cores.

56:34 I want it with ArcGIS Server 10, and there you go.

56:38 That's the machine. It's a next, next, next experience to get a machine running on the Web immediately.

56:45 The other reason is now this kind of simple management or quick access to ArcGIS Server.

56:50 The other reason is elasticity.

56:52 In the Amazon cloud, you can say, My ArcGIS Server deployment now has one machine...

56:57 ...but you can very easily say, Now I want to add additional machines to my deployment to sustain higher loads.

57:04 And then I can remove the machines very easily as well.

57:07 So, you have these elastic ArcGIS Server clusters that can grow along with the load in your applications.

57:16 But again, that's kind of covered in a separate section...session. You should probably join if you are...want details on that.

57:24 And so many things...the search service to index GIS assets within your enterprise.

57:31 It's a search service, kind of like a Google approach to search GIS datasets...new service.

57:37 Enhanced access to databases. This is the query layers concept I introduced before where you can literally open ArcMap...

57:43 ...type a SQL query, and anything that the database understands and returns as stand-alone table or a layer...

57:49 ...we will display in ArcMap, and then you can push that map to the ArcGIS Server so you have a map service.

57:57 So it gives you more flexibility on how you access data from databases; you don't need to have ArcSDE installed...

58:02 ...and also you can use the power of SQL to define how these data are...are going to be brought to ArcMap...

58:11 ...things like on-the-fly joins, how do you call it when you do a summary...

58:18 ...aggregation functions like sum are not supported in ArcMap; with SQL queries are supported.

58:23 Enhanced image services. The big thing here is they truly are now part of ArcGIS Server.

58:28 There's not a separate project or server like the image server; it's just an extension to ArcGIS Server.

58:34 There are no longer ISDefs; it's just a mosaic dataset.

58:39 You can extend the server with this new concept of server object extension...

58:43 ...which now you can easily build with REST and SOAP endpoints.

58:46 And there is also enhanced OGC support.

58:50 That's pretty much all I can do in one hour.

58:54 If you have any questions...although maybe we are running out of time already, right? Yes? No? If you have any questions, just throw them.

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