Microsoft

tech·days

Hong Kong | 2013

You make
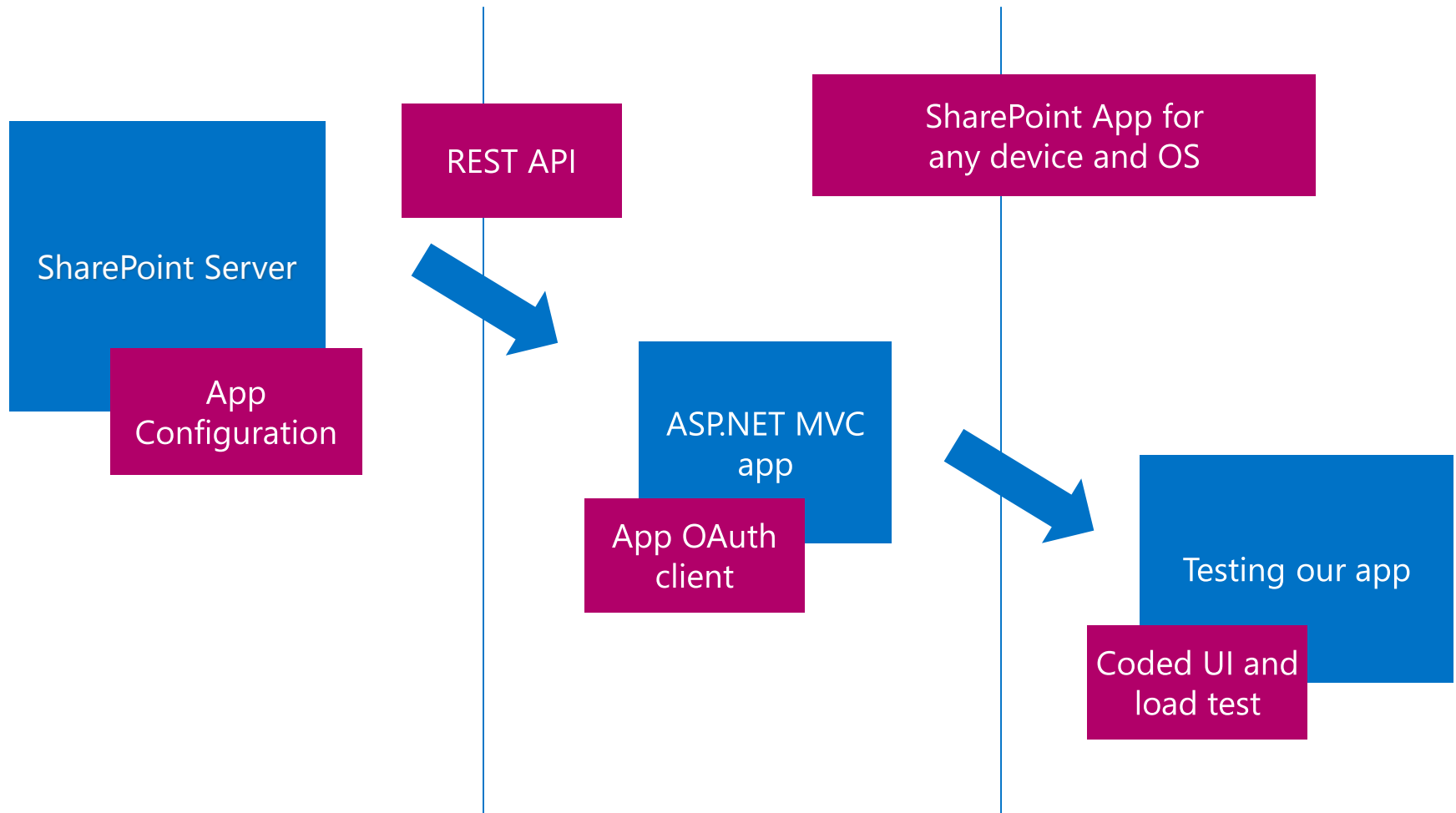the difference

Microsoft

Web development with SharePoint 2013

Albert Ho
Technology Evangelist
Microsoft

Agenda

- SharePoint 2013 new "App" model
- Building an ASP.NET MVC 4 project as a SharePoint App
- SharePoint REST API
- Using SharePoint REST API for our ASP.NET MVC 4 project
- Perform coded UI test
- Perform web performance and load test
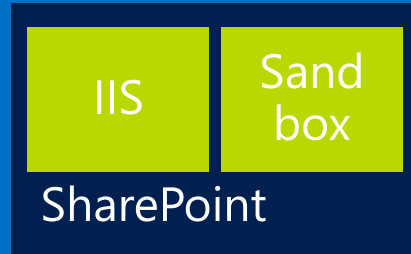
Key Learning Objectives

SharePoint Server

App Configuration

REST API

ASP.NET MVC app

App OAuth client

SharePoint App for any device and OS

Testing our app

Coded UI and load test

SharePoint 2013
new "App" model

Evolution of SharePoint Development

2007

IIS

SharePoint

Code runs from GAC on same w3wp.exe as SharePoint web application

2010

IIS | Sand box

SharePoint

Code runs on SPUCWorkerProcess.exe or calls client.svc (CSOM)

2013

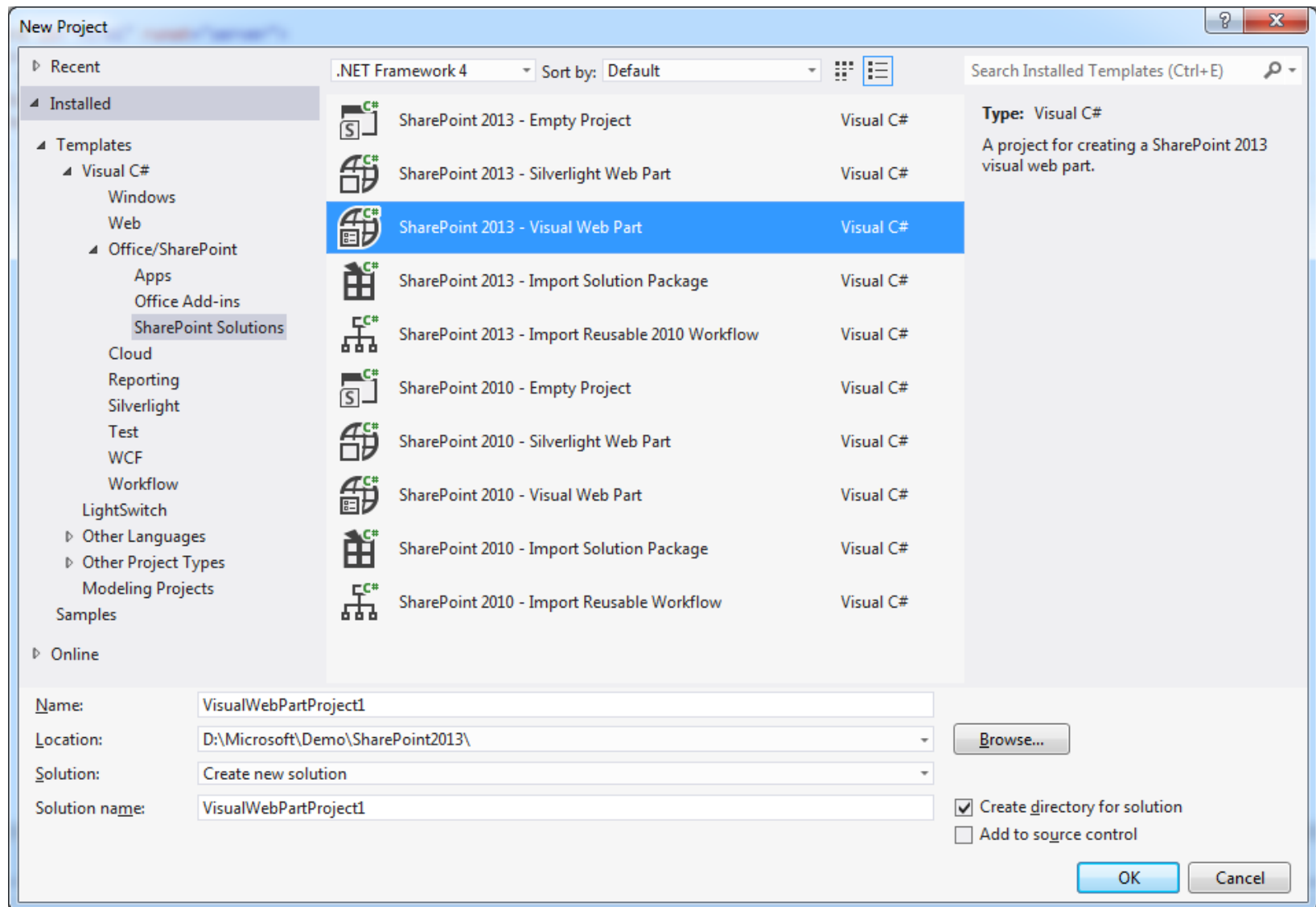IIS with _api

SharePoint

App
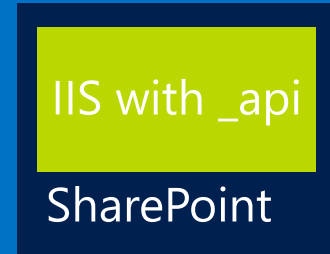
Code runs outside of SharePoint but has trust to leverage capabilities exposed in _api

Traditional Full-Trust Solutions

SharePoint 2007 / 2010 Challenges

- Full-Trust solution custom code on server
  - Root cause of most SharePoint outages / issues when there are bugs, as they run on the same SharePoint server process
  - Every time some code changes, requires a big server touch
  - Not possible in 3rd party hosted environments, as not enough permission

- Sandbox
  - Possible in 3rd party hosted environment
  - But limited set of things you can do

- In both, developers must know SharePoint specific API

New "App" approach
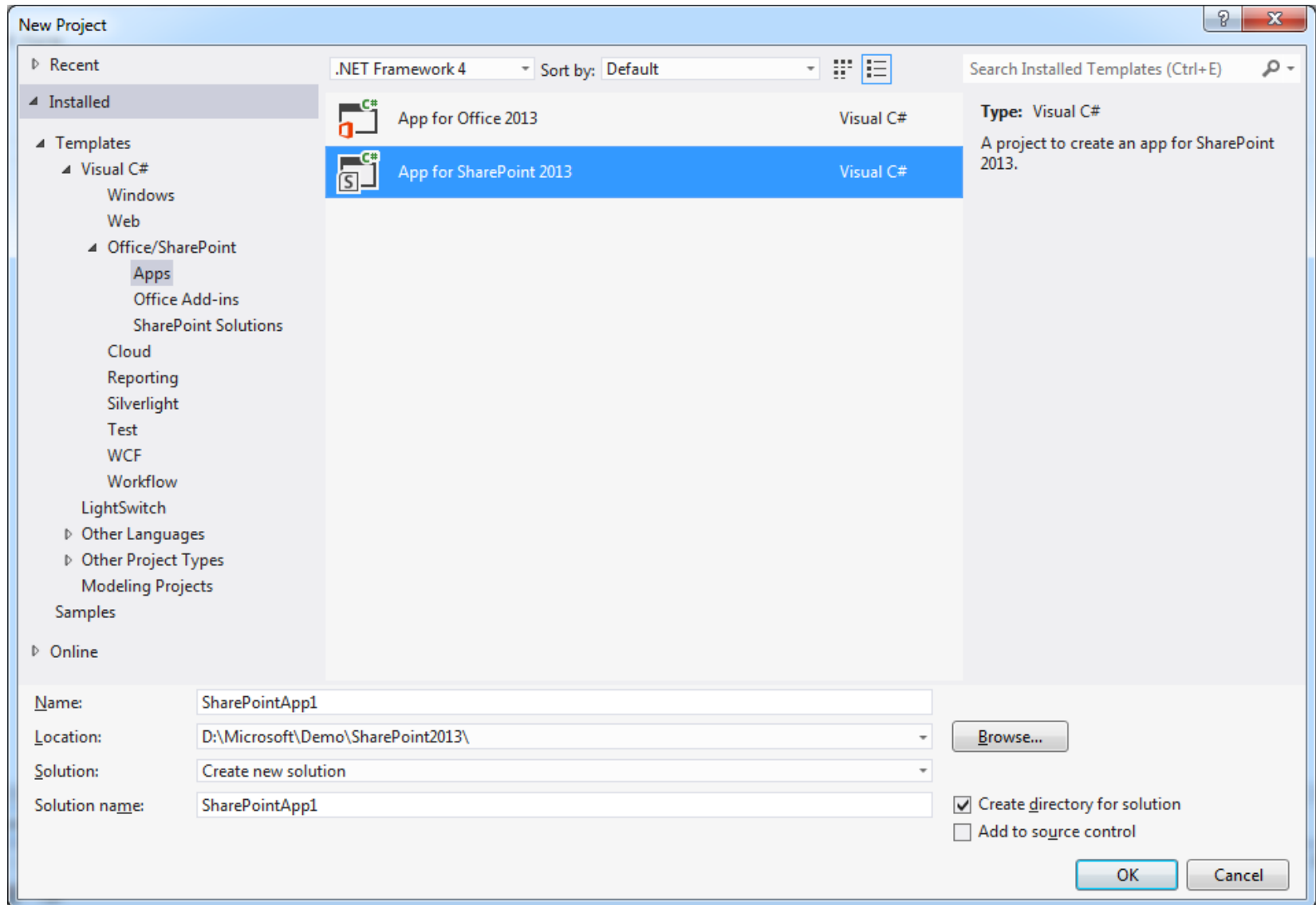
Benefits of new "App" model

- SharePoint apps do not run on the same server process
  - **Clear server and client separation**

- Custom code executes on client-side

- Apps are granted permissions to SharePoint via OAuth

- Apps communicate with SharePoint via OData / CSOM

- Acquire apps via centralized location
  - App Catalog
  - Public Store (via submission process)

	Full-Trust Solutions	Sandboxed Solutions	Apps
Use Client-Side SharePoint API	X	X	X
Use Server-Side SharePoint API	X	(X)	
Use Remote Services	X	(X)	X
App-based Permissions (OAuth2)			X
On-Premise Deployment Friendly	X	X	X
Hosted Deployment Friendly		X	X
Distribution via Store			X
SharePoint Provided Schematics for Install / Upgrade / Uninstall			X

Hosting: Choice of Three Architecture Approaches

Cloud-based Apps

Get remote events from SharePoint
Use CSOM/REST + OAuth to work with SP

Provider-Hosted App

"Bring your own server hosting infrastructure"

| **SharePoint Web** |──| **Your Hosted Site** |

Autohosted App

Auto-managed by Office 365 SharePoint Online – provisioned "invisibly" to Windows Azure as apps are installed

| **SharePoint Web** |──| **Windows Azure** |

SharePoint-Hosted App

Provision an isolated sub web on a host web
- Reuse web elements
  (lists, files, out-of-box web parts)
- No server code allowed; use client JavaScript for logic, UX

| **Host Web** |

| **App Web** |

* All apps use the AppManifest.xml file

Building an ASP.NET MVC 4 project as a SharePoint App

Demo

Building a ASP.NET MVC
SharePoint App

OAuth Protocol Flow in SharePoint 2013

Content Server

SharePoint 2013 Web Server

User
- desktop computer
- laptop computer
- mobile device
- tablet or iPad

Authentication Server

Trusted ACS server that authenticates applications and creates OAuth tokens

Client App

Web Server running remote app code
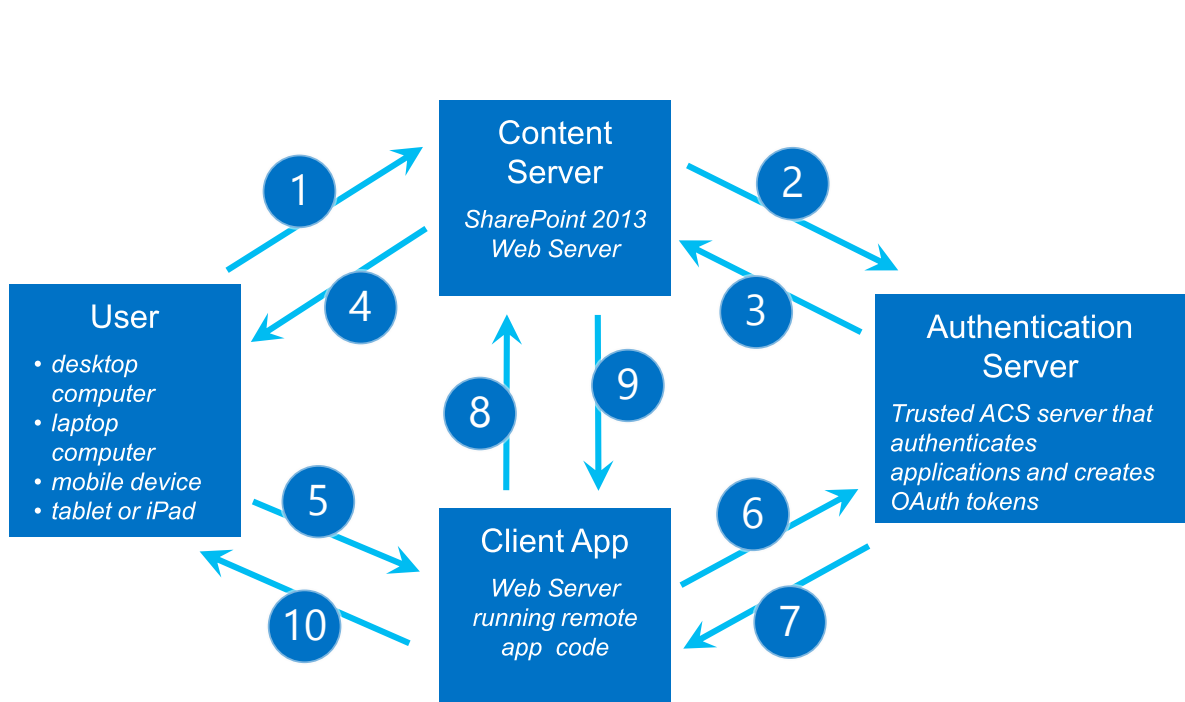
1. SharePoint Authenticates user using claims
2. SharePoint requests context token from user
3. SharePoint requests context token from user
4. SharePoint passes context token to user
5. User POSTS to app passing context token
6. Client App is able to pull refresh token out of the context toke. Client app then passes refresh token to ACS to request oAuth token
7. ACS returns OAuth token to client app
8. Client App makes CSOM/REST calls to SharePoint site passing OAuth token
9. SharePoint returns site content to app
10. Client App returns HTML to user device

Provider-hosted App Lifecycle

Provider app Infrastructure

Deploy App

Office 365

Tenant A

App Developer
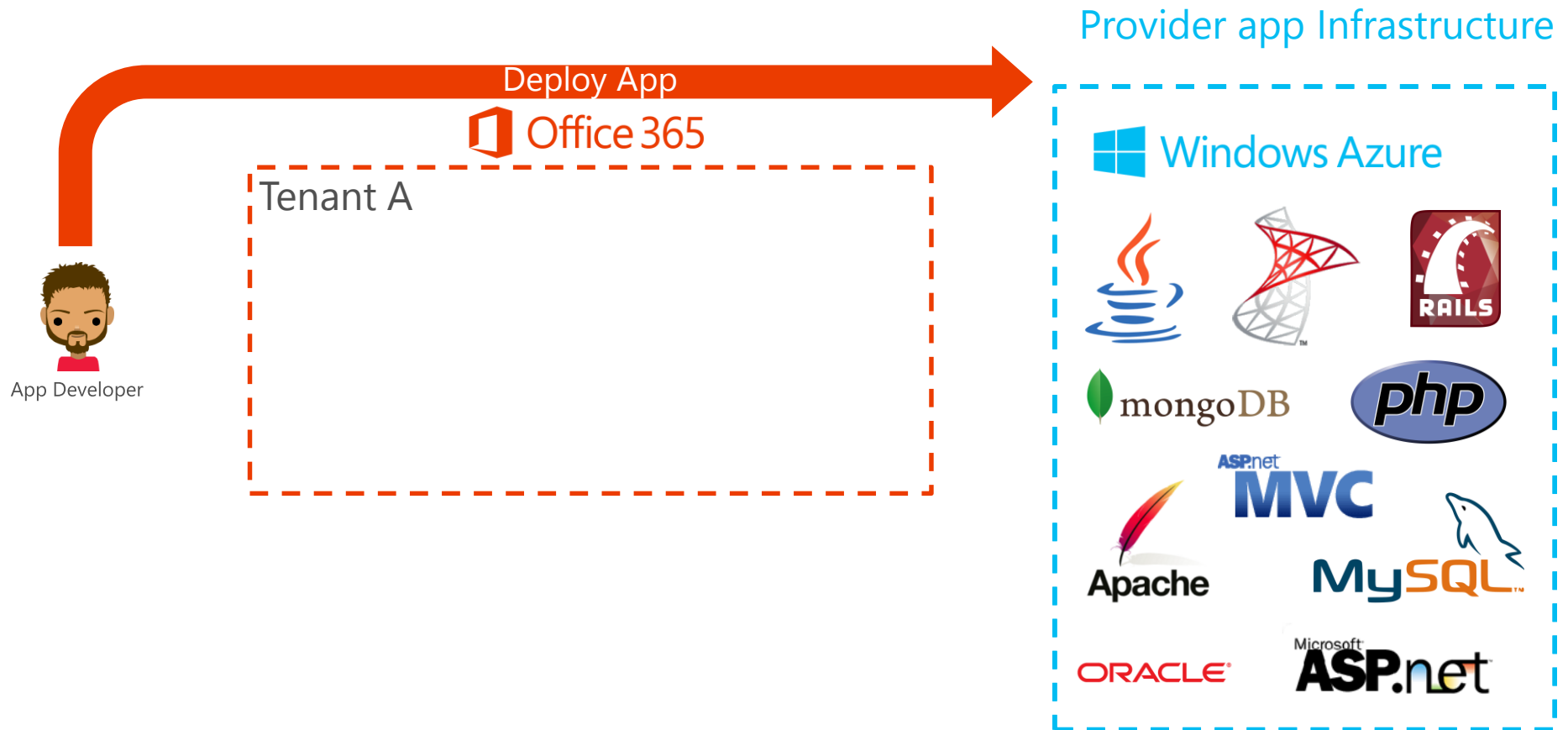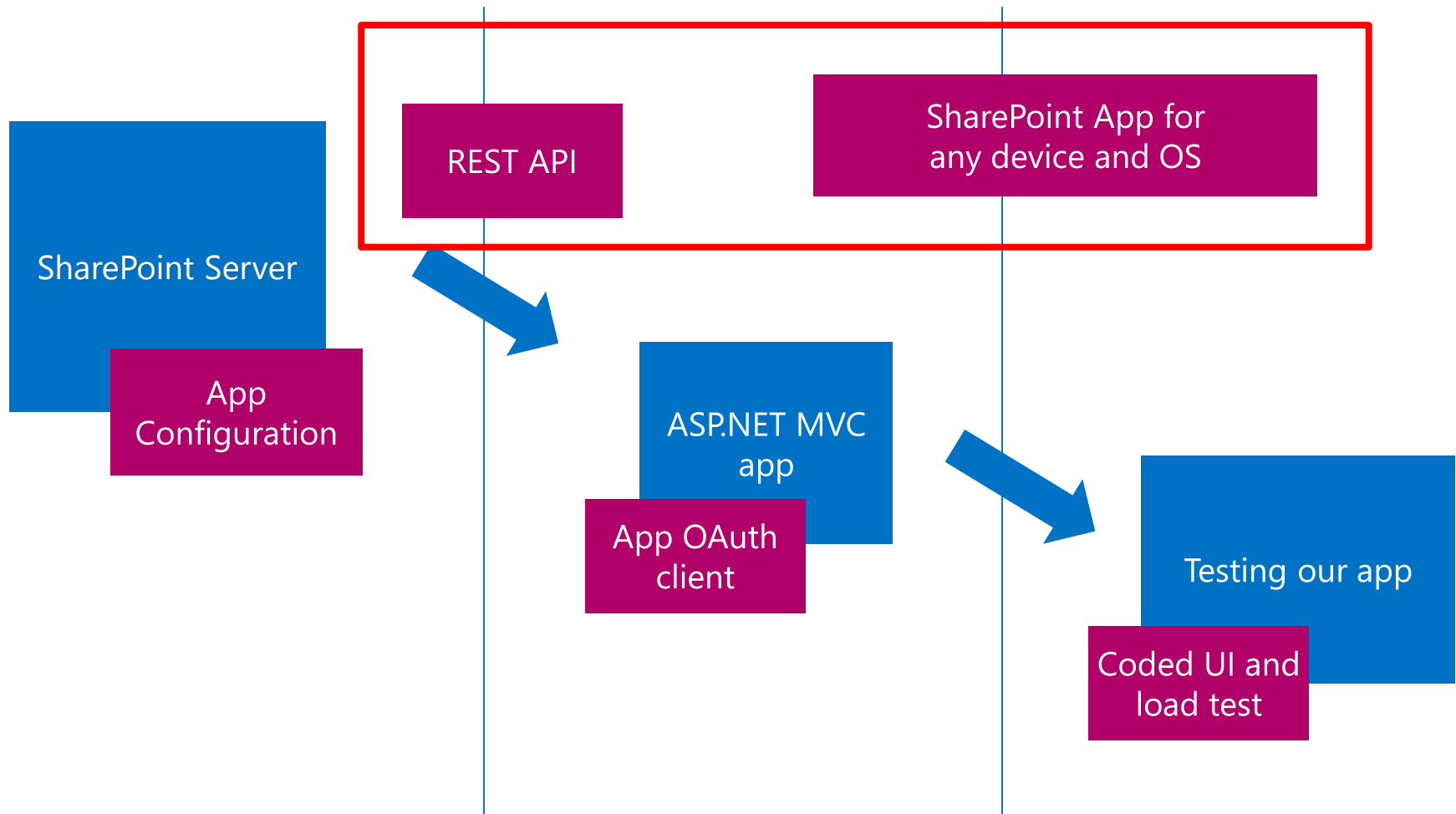
Provider-hosted App Lifecycle
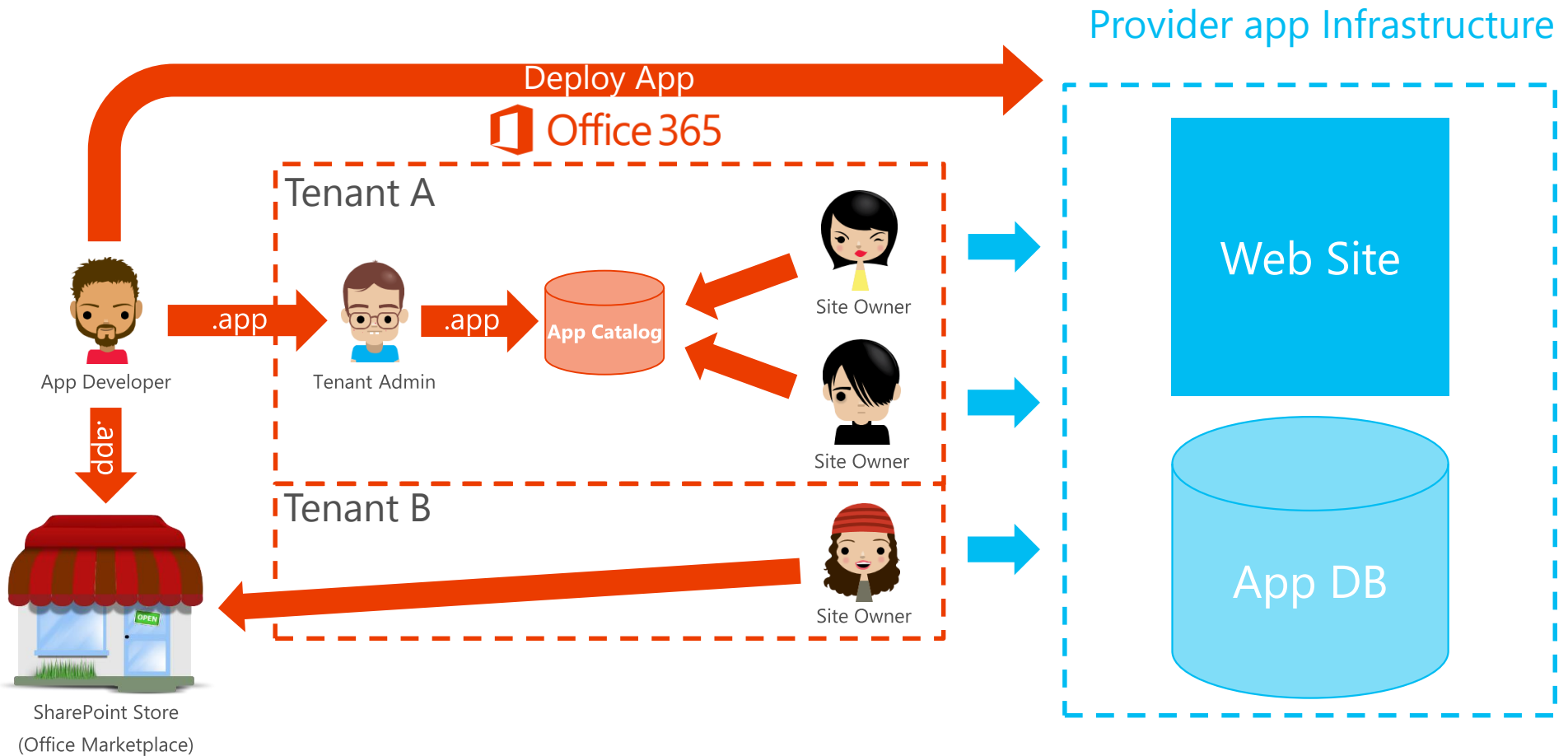
Key Learning Objectives

SharePoint REST API

With the new cloud app model for SharePoint and its rich service APIs, your apps can now consume SharePoint better than ever before.

What data can we extract ?
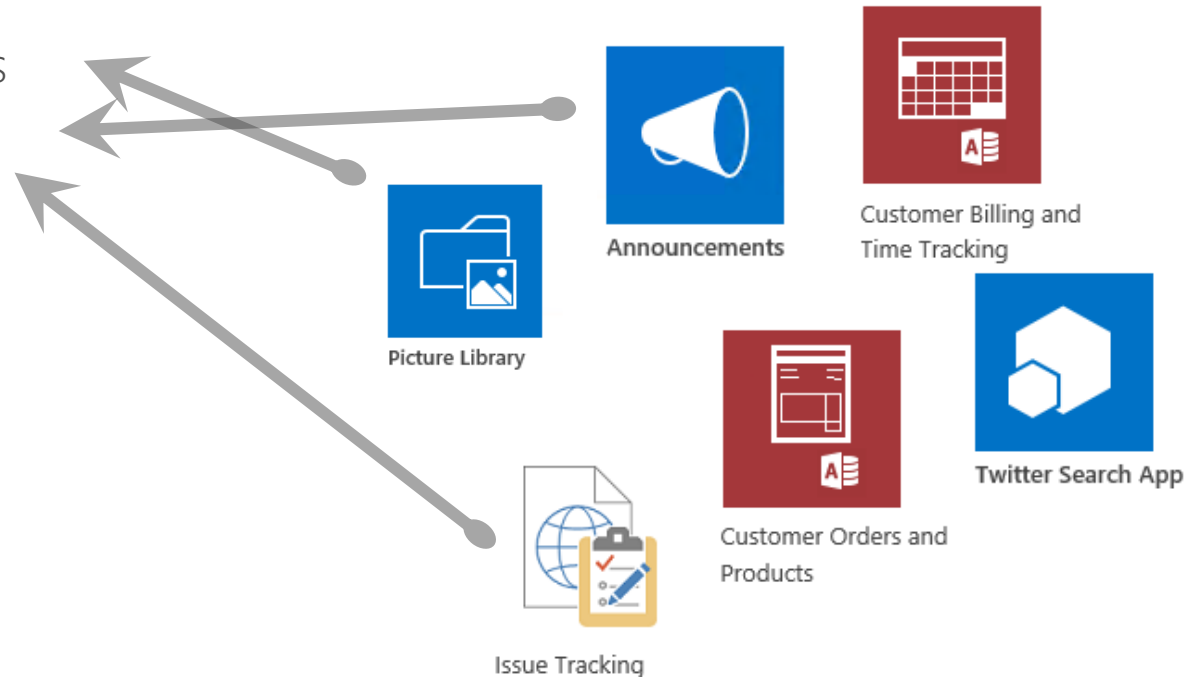
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<?xml version="1.0" encoding="utf-8" standalone="yes" ?>
- <feed xml:base="http://demoo15/_vti_bin/client.svc/" xmlns="http://www.w3.org/2005/Atom"
    xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
    xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataserv
- <entry>
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      type="application/atom+xml;type=entry" title="FirstUniqueAn
      6b8a797f3d49')/FirstUniqueAncestorSecurableObject" />
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      title="RoleAssignments" href="Web/Lists(guid'79e95c59-ddbf-
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      title="ContentTypes" href="Web/Lists(guid'79e95c59-ddbf-423
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      title="EventReceivers" href="Web/Lists(guid'79e95c59-ddbf-4
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
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      href="Web/Lists(guid'79e95c59-ddbf-4232-8319-6b8a797f3d
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      type="application/atom+xml;type=entry" title="InformationRi
      6b8a797f3d49')/InformationRightsManagementSettings" />
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      href="Web/Lists(guid'79e95c59-ddbf-4232-8319-6b8a797f3d
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
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    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
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    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
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    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      href="Web/Lists(guid'79e95c59-ddbf-4232-8319-6b8a797f3d
    <link rel="http://schemas.microsoft.com/ado/2007/08/datase
      title="WorkflowAssociations" href="Web/Lists(guid'79e95c59-
    <id>39af030b-5add-4e6b-931a-e327d41319db</id>
    <category term="SP.List" scheme="http://schemas.microsoft.com
```

```xml
- <content type="application/xml">
  - <m:properties>
      <d:AllowContentTypes m:type="Edm.Boolean">true</d:AllowContentTypes>
      <d:BaseTemplate m:type="Edm.Int32">104</d:BaseTemplate>
      <d:BaseType m:type="Edm.Int32">0</d:BaseType>
      <d:ContentTypesEnabled m:type="Edm.Boolean">false</d:ContentTypesEnabled>
      <d:Created m:type="Edm.DateTime">2011-08-19T21:11:46Z</d:Created>
      <d:DefaultContentApprovalWorkflowId m:type="Edm.Guid">00000000-0000-0000-0000-000000000000</d:DefaultContentApprovalWorkflowId>
      <d:DefaultDisplayFormUrl xml:space="preserve">/Lists/Announcements/DispForm.aspx</d:DefaultDisplayFormUrl>
      <d:DefaultEditFormUrl xml:space="preserve">/Lists/Announcements/EditForm.aspx</d:DefaultEditFormUrl>
      <d:DefaultNewFormUrl xml:space="preserve">/Lists/Announcements/NewForm.aspx</d:DefaultNewFormUrl>
      <d:DefaultViewUrl xml:space="preserve">/Lists/Announcements/AllItems.aspx</d:DefaultViewUrl>
      <d:Description xml:space="preserve">Use this list to track upcoming events, status updates or other team news.</d:Description>
      <d:Direction xml:space="preserve">none</d:Direction>
      <d:DocumentTemplateUrl m:null="true" />
      <d:DraftVersionVisibility m:type="Edm.Int32">0</d:DraftVersionVisibility>
      <d:EnableAttachments m:type="Edm.Boolean">true</d:EnableAttachments>
      <d:EnableFolderCreation m:type="Edm.Boolean">false</d:EnableFolderCreation>
      <d:EnableMinorVersions m:type="Edm.Boolean">false</d:EnableMinorVersions>
      <d:EnableModeration m:type="Edm.Boolean">false</d:EnableModeration>
      <d:EnableVersioning m:type="Edm.Boolean">false</d:EnableVersioning>
      <d:EntityTypeName xml:space="preserve">AnnouncementsList</d:EntityTypeName>
      <d:ForceCheckout m:type="Edm.Boolean">false</d:ForceCheckout>
      <d:HasExternalDataSource m:type="Edm.Boolean">false</d:HasExternalDataSource>
      <d:Hidden m:type="Edm.Boolean">false</d:Hidden>
      <d:Id m:type="Edm.Guid">79e95c59-ddbf-4232-8319-6b8a797f3d49</d:Id>
      <d:ImageUrl xml:space="preserve">/_layouts/15/images/itann.png</d:ImageUrl>
      <d:IrmEnabled m:type="Edm.Boolean">false</d:IrmEnabled>
      <d:IrmExpire m:type="Edm.Boolean">false</d:IrmExpire>
      <d:IrmReject m:type="Edm.Boolean">false</d:IrmReject>
      <d:IsApplicationList m:type="Edm.Boolean">false</d:IsApplicationList>
      <d:IsCatalog m:type="Edm.Boolean">false</d:IsCatalog>
      <d:ItemCount m:type="Edm.Int32">1</d:ItemCount>
      <d:LastItemDeletedDate m:type="Edm.DateTime">2011-08-19T21:11:46Z</d:LastItemDeletedDate>
      <d:LastItemModifiedDate m:type="Edm.DateTime">2011-08-19T21:11:46Z</d:LastItemModifiedDate>
      <d:ListItemEntityTypeFullName xml:space="preserve">SP.Data.AnnouncementsListItem</d:ListItemEntityTypeFullName>
      <d:MultipleDataList m:type="Edm.Boolean">false</d:MultipleDataList>
      <d:NoCrawl m:type="Edm.Boolean">false</d:NoCrawl>
      <d:ParentWebUrl xml:space="preserve">/</d:ParentWebUrl>
      <d:ServerTemplateCanCreateFolders m:type="Edm.Boolean">true</d:ServerTemplateCanCreateFolders>
      <d:TemplateFeatureId m:type="Edm.Guid">00bfea71-d1ce-42de-9c63-a44004ce0104</d:TemplateFeatureId>
      <d:Title xml:space="preserve">Announcements</d:Title>
    </m:properties>
  </content>
```

What new opportunity it leads to from these data ?
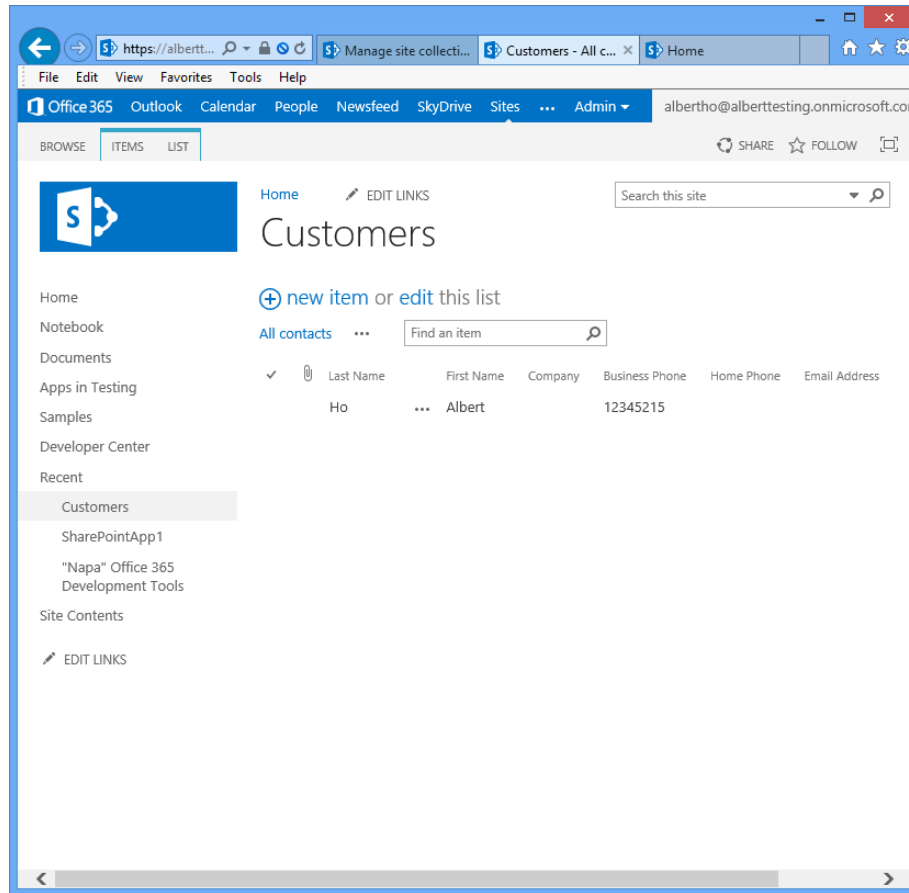
Traditional
SharePoint site
on browser

Win 8 App on slate

Cross device

How can we make better use of extracted data ?

Push Notifications

SharePoint

SharePoint Data

Notifications

Dynamics CRM

Notifications

Search REST API

SharePoint People Data through REST API

Search REST API

Push Notifications, auto populate when new orders when it arrives

Workflow integrated, updating the order status

SharePoint REST service architecture
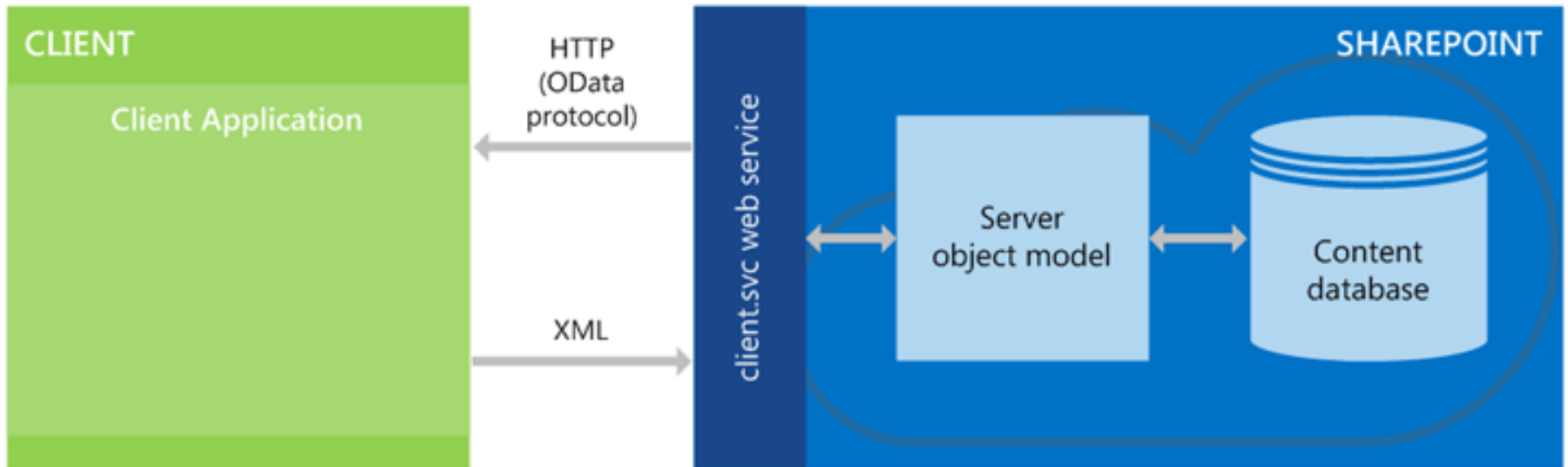
SharePoint REST URI syntax structure
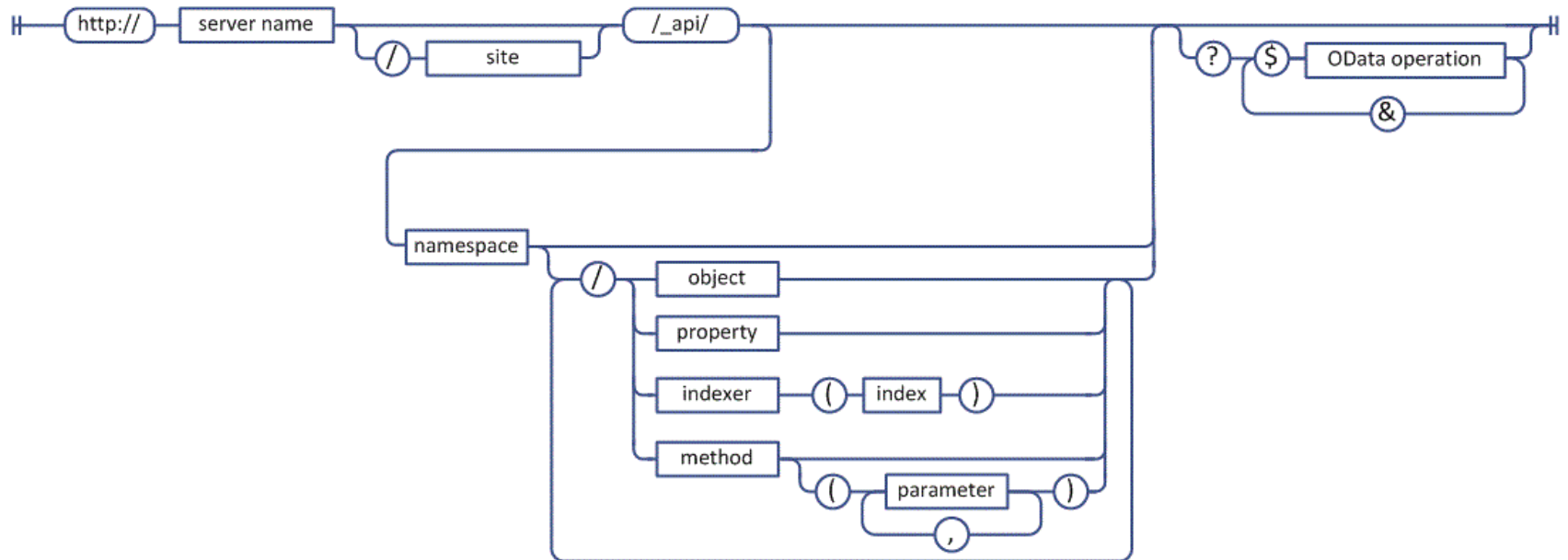
http://server/site/_api/web/lists/getByTitle('Announcements')/fields/getByTitle('Description')

http://server/site/_api/web/lists('<guid>')/fields/getById('<guid>')

Multiple parameters
http://server/site/_api/web/getAvailableWebTemplates(lcid=1033, includeCrossLanguage=true)

Odata query options
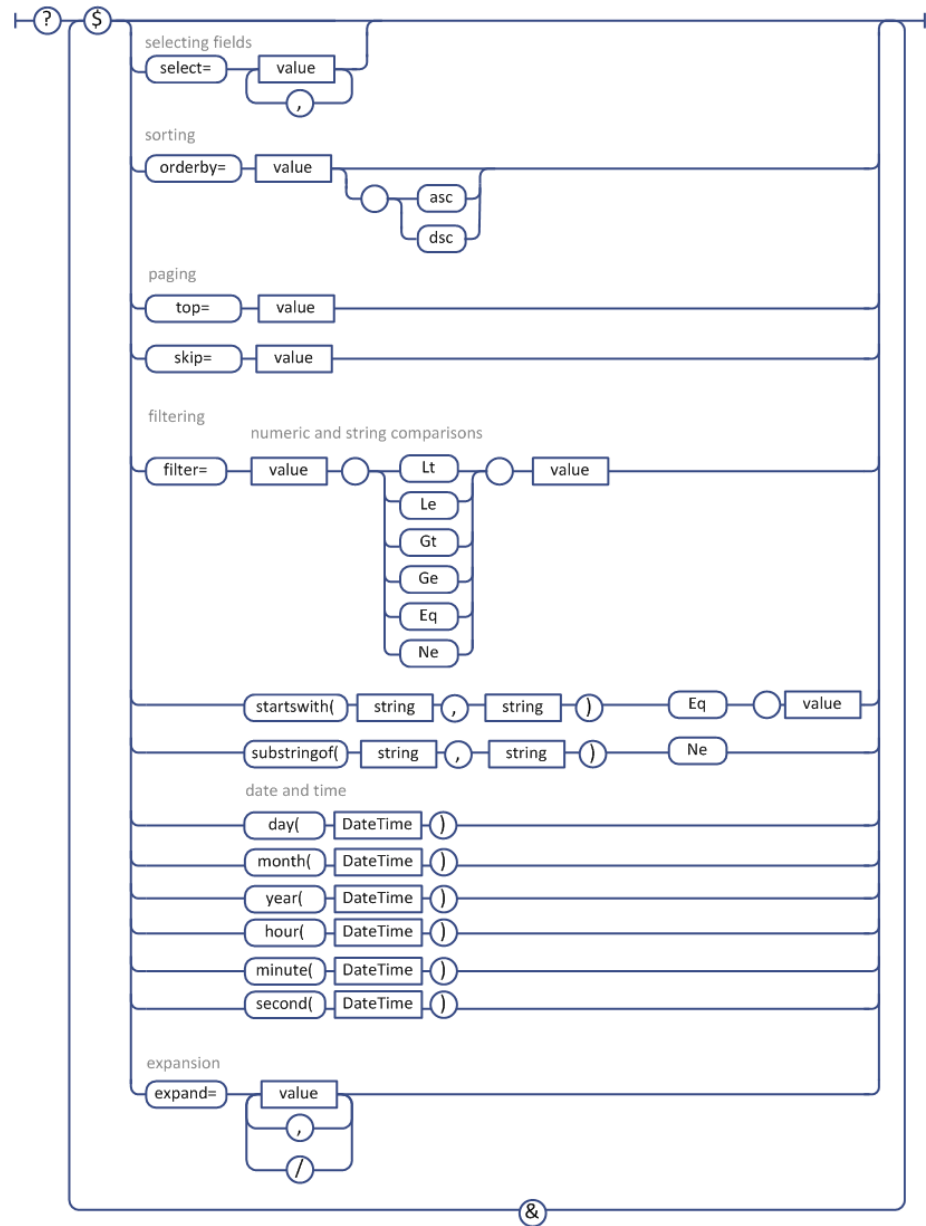
OData Implementation Details

- OData maps CRUD operations to HTTP verbs
  - Read operations mapped to HTTP GET
  - Insert operations mapped to HTP POST
  - Update operations mapped to HTTP PUT or HTTP MERGE
  - Delete operations mapped to HTTP DELETE

- Methods will be mapped into either...
  - Navigator operations (e.g., web.getByTitle) via a GET
  - Service operations via a POST, PUT, MERGE or DELETE

Microsoft®
SharePoint

Demo

Using Internet Explorer to test
SharePoint REST API

Using SharePoint REST API for our ASP.NET MVC 4 project

Demo

Using SharePoint REST API
to pull data

Fiddler Web Debugger

File   Edit   Rules   Tools   View   Help   GET /book

Replay   X   ▶ Resume   ⬇ Stream   Decode   Keep: All sessions   Any Process   Find   Save   Browse   Clear Cache   TextWizard   Tearoff   MSDN Search...

Web Sessions   <<

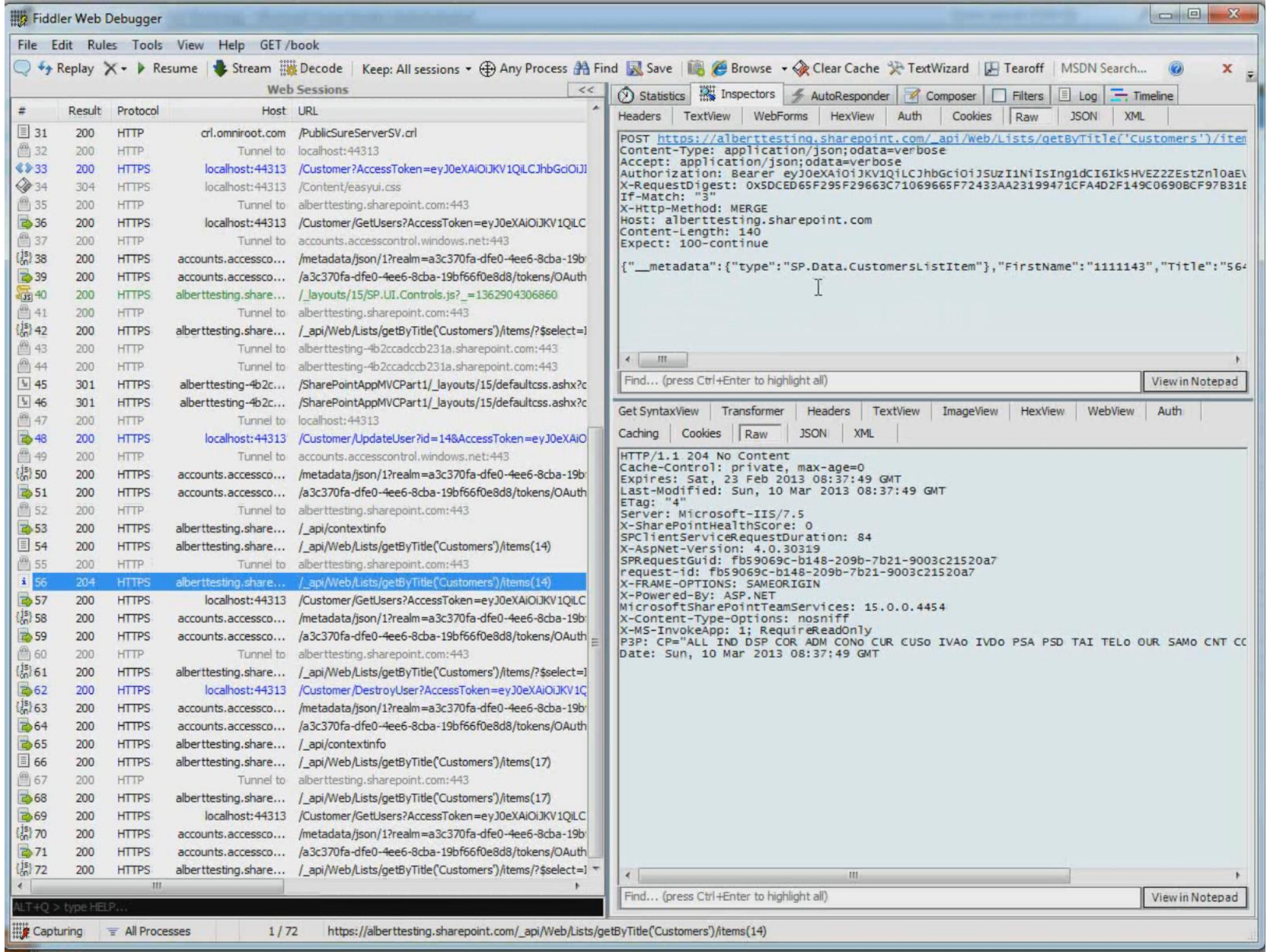| #	Result	Protocol	Host	URL
5	200	HTTPS	alberttesting.share...	/_vti_bin/client.svc/ProcessQuery
6	200	HTTPS	alberttesting.share...	/_layouts/15/appredirect.aspx?instance_id=145ea9a3%
7	200	HTTP	Tunnel to	localhost:44313
8	200	HTTPS	localhost:44313	/?SPHostUrl=https%3A%2F%2Falberttesting%2Esharep
9	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
10	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
11	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
12	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
13	200	HTTPS	alberttesting.share...	/_vti_bin/client.svc/ProcessQuery
14	304	HTTPS	localhost:44313	/Images/heroAccent.png
15	200	HTTPS	alberttesting.share...	/_layouts/15/SP.UI.Controls.js?_=1362904270731
16	304	HTTP	www.microsoft.com	/pkiops/crl/MicSecSerCA2011_2011-10-18.crl
17	304	HTTP	crl.microsoft.com	/pki/crl/products/tspca.crl
18	304	HTTP	crl.microsoft.com	/pki/crl/products/MicCodSigPCA_2010-07-06.crl
19	304	HTTP	mscrl.microsoft.com	/pki/mscorp/crl/mswww(6).crl
20	304	HTTP	crl.microsoft.com	/pki/crl/products/microsoftrootcert.crl
21	304	HTTP	crl.microsoft.com	/pki/crl/products/MicCodSigPCA_08-31-2010.crl
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23	304	HTTP	crl.microsoft.com	/pki/crl/products/CodeSignPCA2.crl
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25	304	HTTP	crl.microsoft.com	/pki/crl/products/WinPCA.crl
26	304	HTTP	crl.microsoft.com	/pki/crl/products/MicrosoftRootAuthority.crl
27	304	HTTP	mscrl.microsoft.com	/pki/mscorp/crl/mswww(5).crl
28	304	HTTP	www.microsoft.com	/pki/CRL/products/Microsoft%20Windows%20Hardware
29	304	HTTP	mscrl.microsoft.com	/pki/mscorp/crl/Microsoft%20Secure%20Server%20Auth
30	304	HTTP	crl.microsoft.com	/pki/crl/products/MicrosoftTimeStampPCA.crl
31	200	HTTP	crl.omniroot.com	/PublicSureServerSV.crl
32	200	HTTP	Tunnel to	localhost:44313
33	200	HTTPS	localhost:44313	/Customer?AccessToken=eyJ0eXAiOiJKV1QiLCJhbGciOiJ
34	304	HTTPS	localhost:44313	/Content/easyui.css
35	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
36	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
37	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
38	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
39	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
40	200	HTTPS	alberttesting.share...	/_layouts/15/SP.UI.Controls.js?_=1362904306860
41	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
42	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=]
43	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
44	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
45	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c
46	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c

Statistics   Inspectors   AutoResponder   Composer   Filters   Log   Timeline

Headers   TextView   WebForms   HexView   Auth   Cookies   Raw   JSON   XML

GET https://alberttesting.sharepoint.com/_api/web/Lists/getByTitle('Customers')/items
Accept: application/json;odata=verbose
Authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ik5HVEZ2ZEstZnl0aDlaE1V
Host: alberttesting.sharepoint.com

Find... (press Ctrl+Enter to highlight all)   View in Notepad

Response is encoded and may need to be decoded before inspection. Click here to transform.

Get SyntaxView   Transformer   Headers   TextView   ImageView   HexView   WebView   Auth
Caching   Cookies   Raw   JSON   XML

JSON
  d
    results
      {}
        __metadata
          etag="3"
          id=2ac3db1f-2b3e-4c4e-b5f9-cc129dc8c3a8
          type=SP.Data.CustomersListItem
          uri=https://alberttesting.sharepoint.com/_api/Web/Lists(guid'9368b09d-5b33-40c7-965f-a5581
        Email=albert@cbaworldnz.com
        FirstName=321765
        Id=12
        ID=12
        Title=32167575
        WorkPhone=343243
      {}
        __metadata
          etag="3"
          id=d5c314dc-e5ca-45ac-bd73-c1cb290d18b2
          type=SP.Data.CustomersListItem
          uri=https://alberttesting.sharepoint.com/_api/Web/Lists(guid'9368b09d-5b33-40c7-965f-a5581
        Email=a32442@hotmail.com
        FirstName=11111

Expand All   Collapse   JSON parsing completed.

Capturing   All Processes   1 / 46   https://alberttesting.sharepoint.com/_api/Web/Lists/getByTitle('Customers')/items/?$select=Id,FirstName,Title,WorkPhone,Email&$orderby=Title,FirstName

Fiddler Web Debugger

File Edit Rules Tools View Help GET /book

Replay X ▾ ▶ Resume | ⬇ Stream ⬚ Decode | Keep: All sessions ▾ ⊕ Any Process 🔍 Find 💾 Save | 📷 🌐 Browse ▾ ❖ Clear Cache ⚒ TextWizard | 🖵 Tearoff | MSDN Search... ❓ ✕

Web Sessions <<

#	Result	Protocol	Host	URL
📄 31	200	HTTP	crl.omniroot.com	/PublicSureServerSV.crl
🔒 32	200	HTTP	Tunnel to	localhost:44313
◆▶ 33	200	HTTPS	localhost:44313	/Customer?AccessToken=eyJ0eXAiOiJKV1QiLCJhbGciOiJJ
◈ 34	304	HTTPS	localhost:44313	/Content/easyui.css
📄 35	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 36	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
🔒 37	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
📄 38	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
📄 39	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
📄 40	200	HTTPS	alberttesting.share...	/_layouts/15/SP.UI.Controls.js?_=1362904306860
🔒 41	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 42	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1
🔒 43	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
🔒 44	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
📄 45	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c
📄 46	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c
🔒 47	200	HTTP	Tunnel to	localhost:44313
📄 48	200	HTTPS	localhost:44313	/Customer/UpdateUser?id=14&AccessToken=eyJ0eXAiO
🔒 49	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
📄 50	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
📄 51	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
🔒 52	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 53	200	HTTPS	alberttesting.share...	/_api/contextinfo
📄 54	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(14)
🔒 55	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
ℹ 56	204	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(14)
📄 57	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
📄 58	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
📄 59	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
🔒 60	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 61	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1
📄 62	200	HTTPS	localhost:44313	/Customer/DestroyUser?AccessToken=eyJ0eXAiOiJKV1Q
📄 63	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
📄 64	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
📄 65	200	HTTPS	alberttesting.share...	/_api/contextinfo
📄 66	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(17)
🔒 67	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 68	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(17)
📄 69	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
📄 70	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b
📄 71	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
📄 72	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1

ALT+Q > type HELP...

Inspector panels

⏱ Statistics 🔍 Inspectors ⚡ AutoResponder 📝 Composer ☐ Filters 📋 Log 📊 Timeline

Headers TextView WebForms HexView Auth Cookies Raw JSON XML

POST https://alberttesting.sharepoint.com/_api/Web/Lists/getByTitle('Customers')/iten
Content-Type: application/json;odata=verbose
Accept: application/json;odata=verbose
Authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ik5HVEZ2ZEstZnl0aaEV
X-RequestDigest: 0x5DCED65F295F29663C71069665F72433AA23199471CFA4D2F149C0690BCF97B318
If-Match: "3"
X-Http-Method: MERGE
Host: alberttesting.sharepoint.com
Content-Length: 140
Expect: 100-continue

{"__metadata":{"type":"SP.Data.CustomersListItem"},"FirstName":"1111143","Title":"564

Find... (press Ctrl+Enter to highlight all) | View in Notepad

Get SyntaxView Transformer Headers TextView ImageView HexView WebView Auth

Caching Cookies Raw JSON XML

HTTP/1.1 204 No Content
Cache-Control: private, max-age=0
Expires: Sat, 23 Feb 2013 08:37:49 GMT
Last-Modified: Sun, 10 Mar 2013 08:37:49 GMT
ETag: "4"
Server: Microsoft-IIS/7.5
X-SharePointHealthScore: 0
SPClientServiceRequestDuration: 84
X-AspNet-Version: 4.0.30319
SPRequestGuid: fb59069c-b148-209b-7b21-9003c21520a7
request-id: fb59069c-b148-209b-7b21-9003c21520a7
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: ASP.NET
MicrosoftSharePointTeamServices: 15.0.0.4454
X-Content-Type-Options: nosniff
X-MS-InvokeApp: 1; RequireReadOnly
P3P: CP="ALL IND DSP COR ADM CONo CUR CUSo IVAo IVDo PSA PSD TAI TELo OUR SAMo CNT CC
Date: Sun, 10 Mar 2013 08:37:49 GMT

Find... (press Ctrl+Enter to highlight all) | View in Notepad

🐕 Capturing � All Processes 1 / 72 https://alberttesting.sharepoint.com/_api/Web/Lists/getByTitle('Customers')/items(14)

File   Edit   Rules   Tools   View   Help   GET /book

🔍 ✈ Replay ✕ ▾ ▶ Resume 🔻 Stream ▦ Decode | Keep: All sessions ▾ ⊕ Any Process 🔍 Find 💾 Save | 🖥 🌐 Browse ▾ ⚡ Clear Cache 🔧 TextWizard | ⬚ Tearoff | MSDN Search... ⚫ ✕ ⌄

Web Sessions `<<`

#	Result	Protocol	Host	URL
📄 31	200	HTTP	crl.omniroot.com	/PublicSureServerSV.crl
🔒 32	200	HTTP	Tunnel to	localhost:44313
◇ 33	200	HTTPS	localhost:44313	/Customer?AccessToken=eyJ0eXAiOiJKV1QiLCJhbGciOiJI
◈ 34	304	HTTPS	localhost:44313	/Content/easyui.css
🔒 35	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 36	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
🔒 37	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
🗐 38	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b'
📄 39	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
📄 40	200	HTTPS	alberttesting.share...	/_layouts/15/SP.UI.Controls.js?_=1362904306860
🔒 41	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
🗐 42	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1
🔒 43	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
🔒 44	200	HTTP	Tunnel to	alberttesting-4b2ccadccb231a.sharepoint.com:443
📄 45	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c
📄 46	301	HTTPS	alberttesting-4b2c...	/SharePointAppMVCPart1/_layouts/15/defaultcss.ashx?c
🔒 47	200	HTTP	Tunnel to	localhost:44313
📄 48	200	HTTPS	localhost:44313	/Customer/UpdateUser?id=14&AccessToken=eyJ0eXAiO
🔒 49	200	HTTP	Tunnel to	accounts.accesscontrol.windows.net:443
📄 50	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b'
📄 51	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
🔒 52	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 53	200	HTTPS	alberttesting.share...	/_api/contextinfo
📄 54	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(14)
🔒 55	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
✎ 56	204	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(14)
📄 57	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
🗐 58	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b'
📄 59	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
🔒 60	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
🗐 61	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1
📄 62	200	HTTPS	localhost:44313	/Customer/DestroyUser?AccessToken=eyJ0eXAiOiJKV1Q
🗐 63	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b'
📄 64	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
📄 65	200	HTTPS	alberttesting.share...	/_api/contextinfo
📄 66	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(17)
🔒 67	200	HTTP	Tunnel to	alberttesting.sharepoint.com:443
📄 68	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items(17)
📄 69	200	HTTPS	localhost:44313	/Customer/GetUsers?AccessToken=eyJ0eXAiOiJKV1QiLC
🗐 70	200	HTTPS	accounts.accessco...	/metadata/json/1?realm=a3c370fa-dfe0-4ee6-8cba-19b'
📄 71	200	HTTPS	accounts.accessco...	/a3c370fa-dfe0-4ee6-8cba-19bf66f0e8d8/tokens/OAuth
🗐 72	200	HTTPS	alberttesting.share...	/_api/Web/Lists/getByTitle('Customers')/items/?$select=1

ALT+Q > type HELP...

⊘ Statistics | ▦ Inspectors | ⚡ AutoResponder | 📝 Composer | ☐ Filters | 🗐 Log | 📊 Timeline

Headers | TextView | WebForms | HexView | Auth | Cookies | Raw | JSON | XML

POST https://alberttesting.sharepoint.com/_api/Web/Lists/getByTitle('Customers')/iten
Content-Type: text/xml;charset=utf-8
X-RequestDigest: 0X14650DA89984F6F6974C9B300B19649695CDCAB5BCE62993D5AAEA420D41D2D57D
If-Match: "1"
Authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ik5HVEZZZEstZZn10aEV\
X-Http-Method: DELETE
Host: alberttesting.sharepoint.com
Content-Length: 0

Find... (press Ctrl+Enter to highlight all)   [View in Notepad]

Get SyntaxView | Transformer | Headers | TextView | ImageView | HexView | WebView | Auth

Caching | Cookies | Raw | JSON | XML

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Expires: Sat, 23 Feb 2013 08:37:55 GMT
Last-Modified: Sun, 10 Mar 2013 08:37:55 GMT
Server: Microsoft-IIS/7.5
X-SharePointHealthScore: 0
SPClientServiceRequestDuration: 131
X-AspNet-Version: 4.0.30319
SPRequestGuid: fc59069c-f1b9-209b-1f87-a1d0d800b3c7
request-id: fc59069c-f1b9-209b-1f87-a1d0d800b3c7
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: ASP.NET
MicrosoftSharePointTeamServices: 15.0.0.4454
X-Content-Type-Options: nosniff
X-MS-InvokeApp: 1; RequireReadOnly
P3P: CP="ALL IND DSP COR ADM CONo CUR CUSo IVAo IVDo PSA PSD TAI TELo OUR SAMo CNT CC
Date: Sun, 10 Mar 2013 08:37:55 GMT
Content-Length: 0

Find... (press Ctrl+Enter to highlight all)   [View in Notepad]

🐾 Capturing | ▽ All Processes | 1 / 72 | https://alberttesting.sharepoint.com/_api/Web/Lists/getByTitle('Customers')/items(17)

Returning ATOM XML vs. JSON

Response data format selected with ACCEPT header

- XML can be easier to deal with from managed code
- To get ATOM XML response use
"application/atom+xml"
- JSON is easier to deal with when using JavaScript
- To get JSON response use
"application/json;odata=verbose"

```
<entry xml:base="http://contososerver/_vti_bin/client.svc/"
       xmlns="http://www.w3.org/2005/Atom"
       xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
       xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metad
  <id>7d0dc2d2-3389-49ec-adb4-43385f374add</id>
  <category term="SP.List" scheme="http://schemas.microsoft.com/ado/2007/08
  <link rel="edit" href="Web/Lists(guid'0a432ace-c6c8-4541-babc-e3c8bc3411a
  <title />
  <updated>2012-02-18T12:37:15Z</updated>
  <author>
    <name />
  </author>
  <content type="application/xml">
    <m:properties>
      <d:Id m:type="Edm.Guid">0a432ace-c6c8-4541-babc-e3c8bc3411a6</d:Id>
      <d:Title>Customers</d:Title>
    </m:properties>
  </content>
</entry>
```

```
{
  "d":{
    "__metadata":{
      "id":"d8d432f4-90a6-42d3-84c1-9f6b6a47f97f",
      "uri":"http://contososerver/_vti_bin/client.svc/Web/Lists(guid'0
      "etag":"\"0\"",
      "type":"SP.List"
    },
    "Id":"0a432ace-c6c8-4541-babc-e3c8bc3411a6",
    "Title":"Customers"
  }
}
```

Creating Lists with JavaScript and jQuery

Create appropriate JavaScript object and convert to JSON format for request body

Create request headers for HTTP Request

Send request to Web server using jQuery $.ajax function

Get form digest value from control on page

Convert request body data to string-based JSON object

```javascript
function onCreateList() {
    var newList = {
        "__metadata": { "type": "SP.List" },
        "BaseTemplate": 104,
        "Description": "A list created by REST",
        "Title":$("#newListTitle").val()
    }

    var requestHeaders = {
        Accept: "application/json;odata=verbose",
        "X-RequestDigest": $("#__REQUESTDIGEST").val()
    }

    $.ajax({
        type: "POST",
        url: _spPageContextInfo.webAbsoluteUrl + "/_api/web/lists",
        contentType: "application/json;odata=verbose",
        data: JSON.stringify(newList),
        headers: requestHeaders,
        success: onDataReturned,
        error: onError
    });
}
```

What's possible with _API?

And more...

Supported Client Technologies
SharePoint 2013 Client side Object Model (CSOM) and REST/OData

_api

SharePoint

Client

Execute
Query

JavaScript
Library

Silverlight
Library

.Net CLR
Library

OData /
REST

Custom Client Code

Key Learning Objectives

SharePoint Server

App Configuration

REST API

SharePoint App for any device and OS

ASP.NET MVC app

App OAuth client

Testing our app

Coded UI and load test
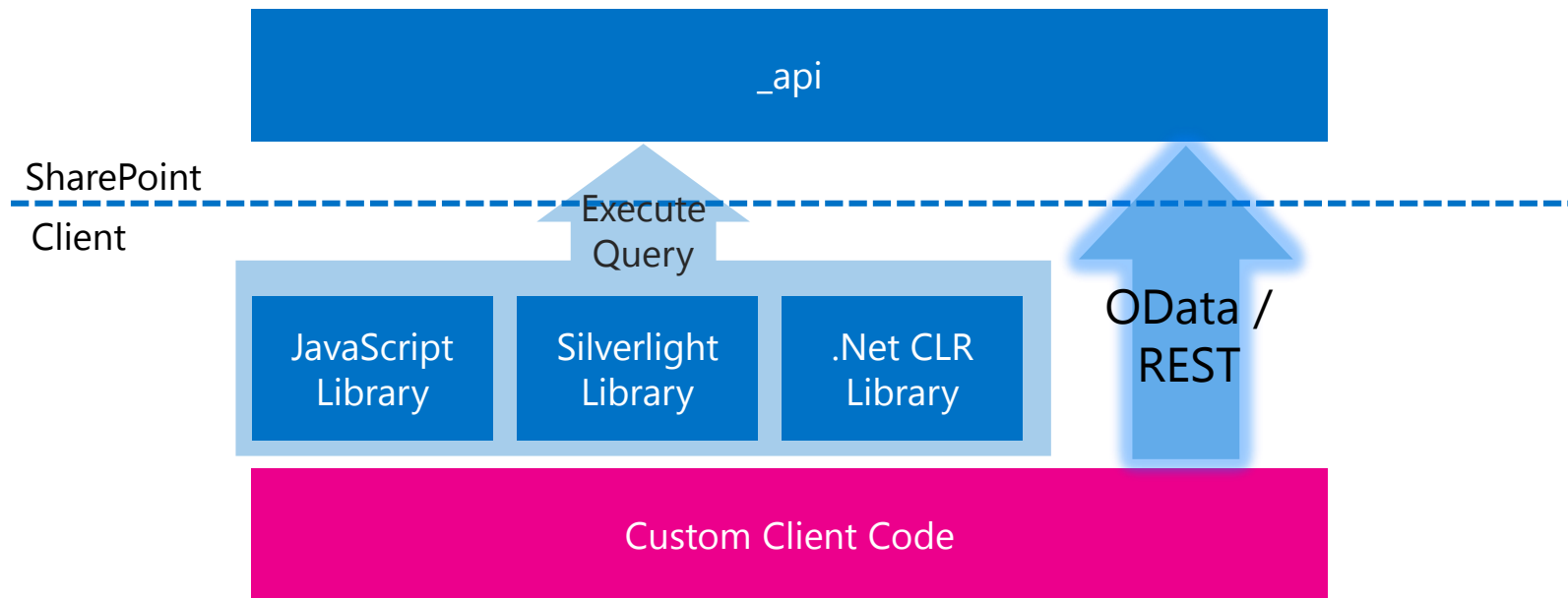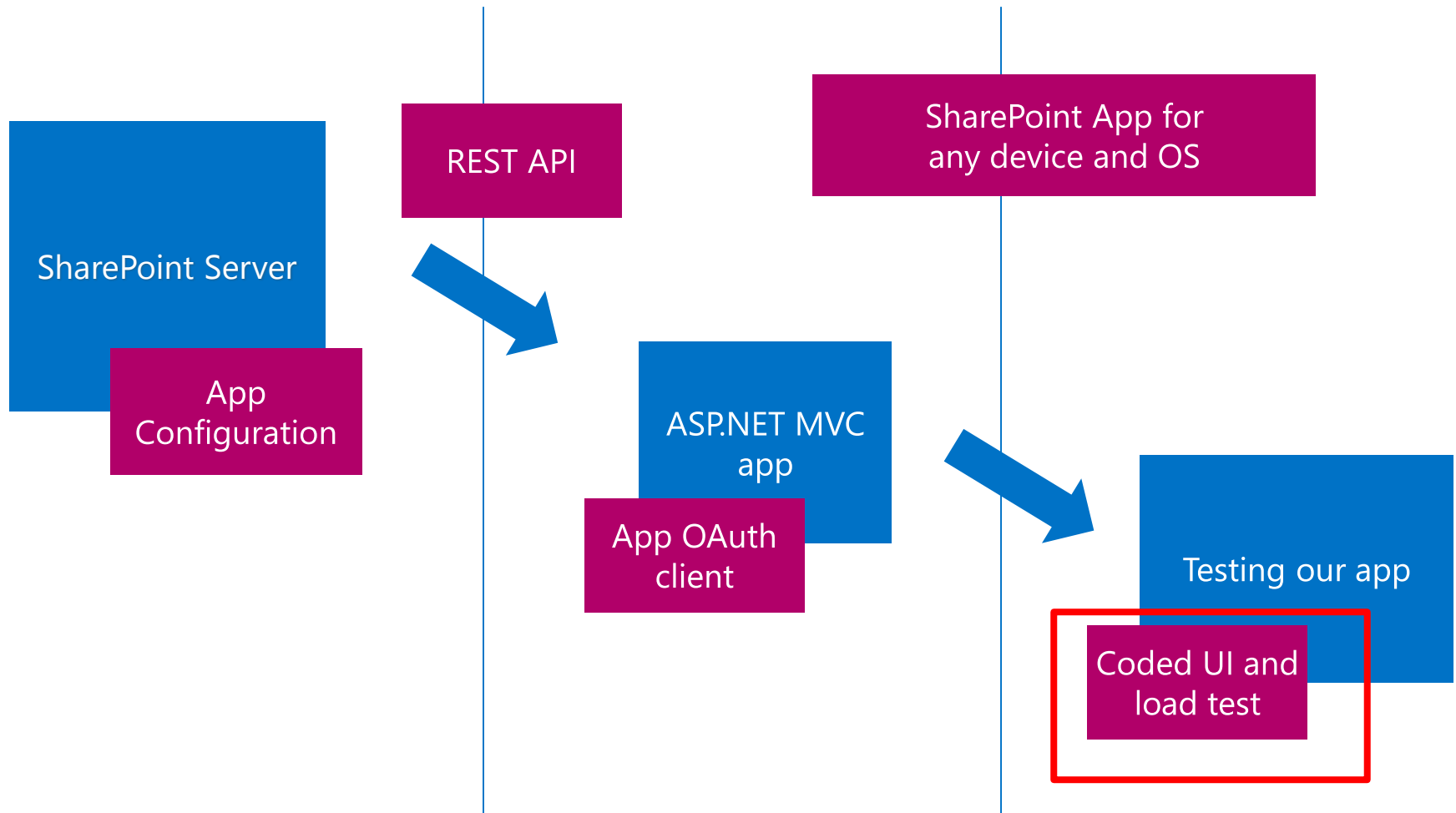
Perform coded UI test

New Project

? ✕

.NET Framework 4.5 ▾ Sort by: Default ▾ ⊞ ☰

Search Installed Templates (Ctrl+E) 🔍▾

◢ Installed

　　　Windows Store
　　Windows
　　Web
　　▷ Office/SharePoint
　　Cloud
　　Reporting
　　Silverlight
　　Test
　　WCF
　　Windows Phone
　　Workflow
　　XNA Game Studio 4.0
　▷ Visual C++
　▷ Visual F#
　　SQL Server
　▷ JavaScript
　　LightSwitch
　▷ Other Project Types
　　Modeling Projects
　Samples

▷ Online

C# Coded UI Test Project		Visual C#
C# Unit Test Project		Visual C#
C# Web Performance and Load Test Project		Visual C#

Type: Visual C#

A project for Coded UI tests.

Name: CodedUITestProject1

Location: C:\Demo\SharePoint2013\   ▾   Browse...

Solution: Create new solution   ▾

Solution name: CodedUITestProject1   ☑ Create directory for solution
                                                        ☐ Add to source control

OK   Cancel

Demo

Coded UI test

Coded UI Test Benefits

Perform functional tests. Useful assertion rules.
E.g. add, update, delete then verify.

Automation scripts happen at controls id level, not just
VBScript recording X, Y co-ordinates

Save time and can be repeated, and run by Test agent
on other machines

Perform Web Performance and Load test

Demo

Web Performance & Load tests

# Integrating results back to TFS

Summary

Learned the new "App" model in SharePoint 2013, learned various deployment options

Encourage ASP.NET MVC adoption, use your favorite model to build SharePoint App, or any other languages

REST API expose SharePoint data to different kind of devices. E.g. web, mobile, slate

Perform quality testing for your SharePoint app

Key Learning Objectives
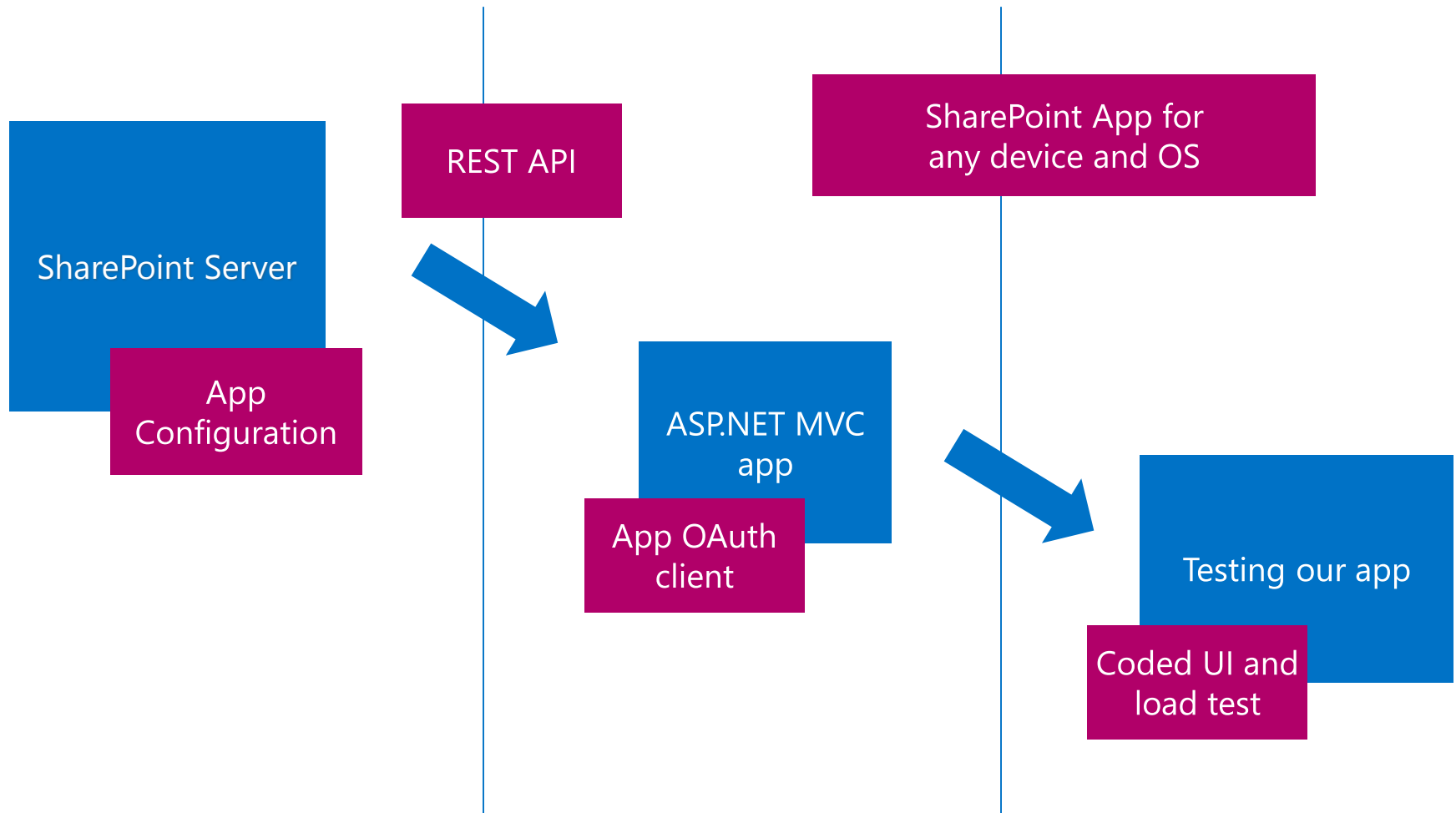
What's next ?

Get Visual Studio 2012 Ultimate - Trial 90 days

http://www.microsoft.com/visualstudio/eng/downloads

Download Office Developer Tools for Visual Studio 2012

http://www.microsoft.com/visualstudio/eng/office-dev-tools-for-visual-studio

Builds apps for SharePoint Overview

http://msdn.microsoft.com/en-US/office/apps

Start your next SharePoint project as an "App"

Note : as a Premium or Ultimate MSDN subscriber, you get a free 1-year of Office 365
subscription including SharePoint online developer account

Learn the SharePoint REST API

http://msdn.microsoft.com/en-us/library/fp142385.aspx

Q & A

Email : albert.ho@microsoft.com