

FUTURE DECODED

6-7 OTT '16 / MILANO

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OFF02 - Microsoft Graph API

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The opportunity



USERS

1.2B

Office users

300%

growth in share
using 3rd-party
apps

50K+

new O365
small businesses
per month

85%

of Fortune 500
has MS Cloud
services



DATA

4T+

emails sent with O365 per month

3B minutes

of Skype
calls daily

1B+

meetings
created
per month



INTELLIGENCE

Microsoft Graph API calls

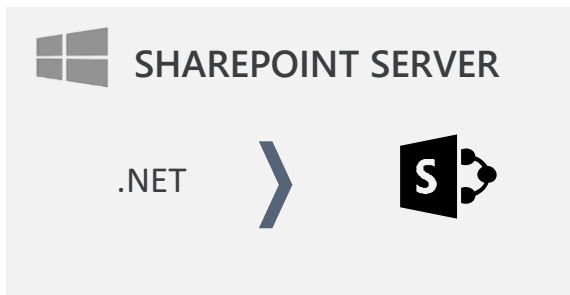
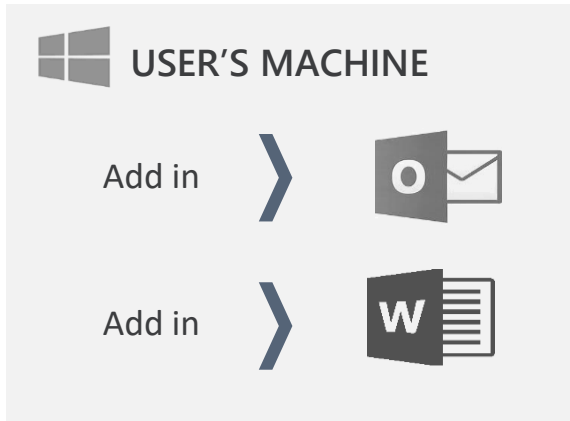
420% monthly growth

4 trillion

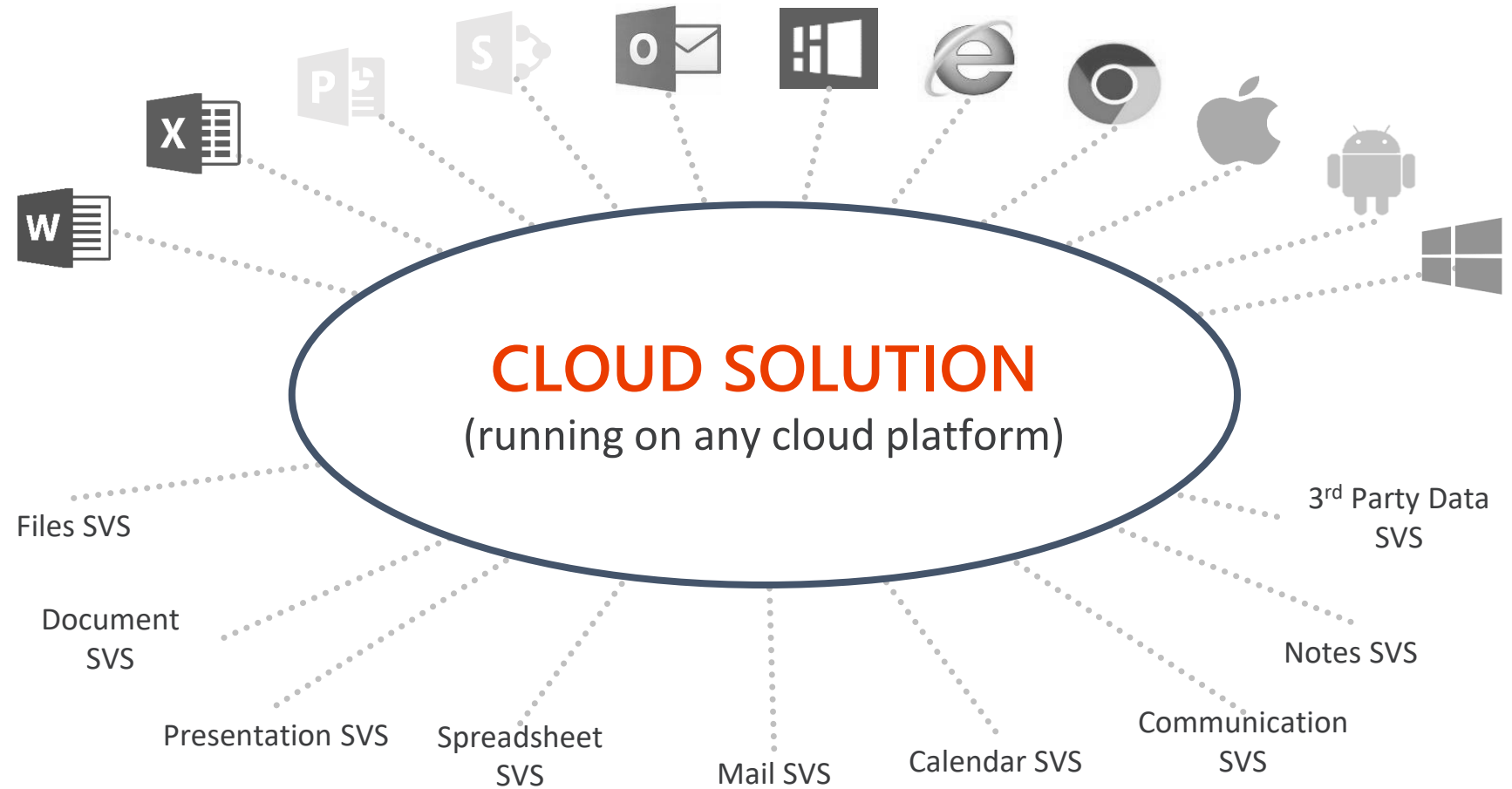
data nodes

Shift in solution model

LEGACY MODEL



CLOUD MODEL



Office Platform

WHAT CAN I BUILD?



ADD-INS AND WEB PARTS:

Make your solution a native part of the modern Office



WEB AND DEVICE APPS:

Build smarter apps by connecting to Office services



VOICE, VIDEO, CONNECTORS, AND BOTS:

Create the next generation of productivity solutions



**FUTURE
DECODED**

MILANO
OCT 6-7 / 2016

In partnership with:



A nighttime cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, there is a multi-level highway with long-exposure light trails from cars, showing red and white streaks. A pedestrian bridge with railings and some greenery is visible on the right side. The image is split diagonally from the bottom left to the top right, with the left side being a darker, more muted blue and the right side being a warmer, more vibrant orange and red.

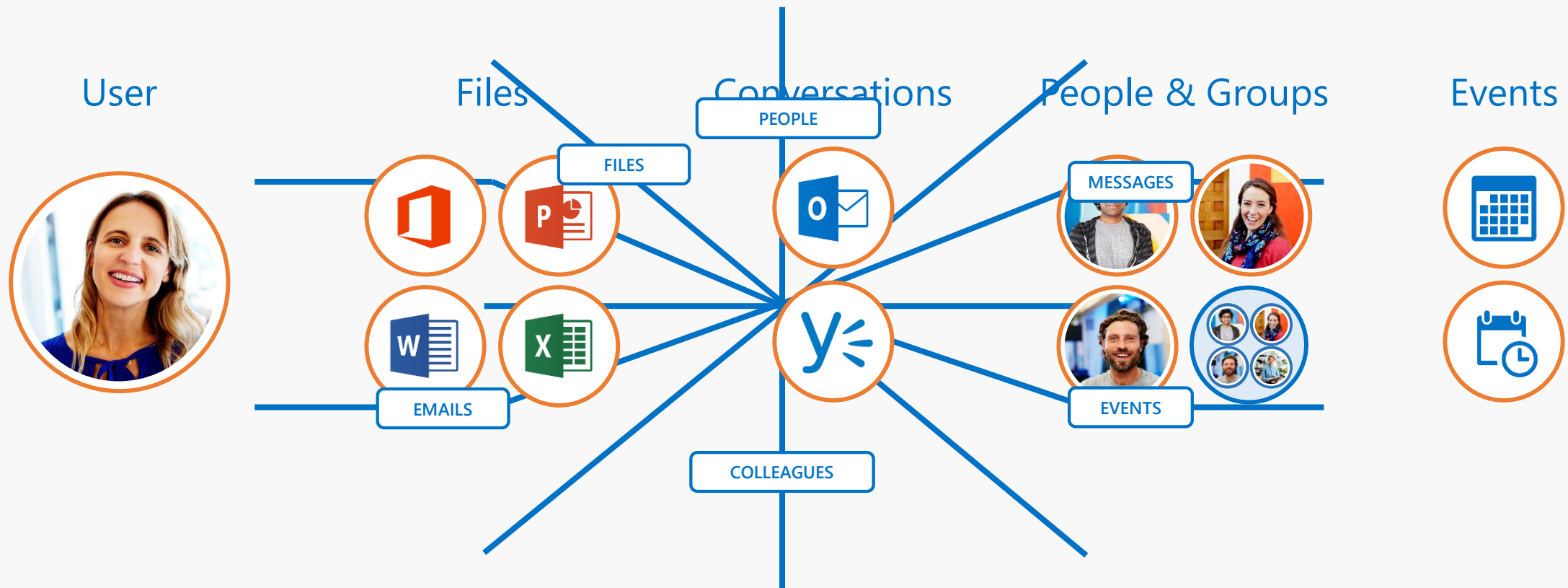
Microsoft Graph

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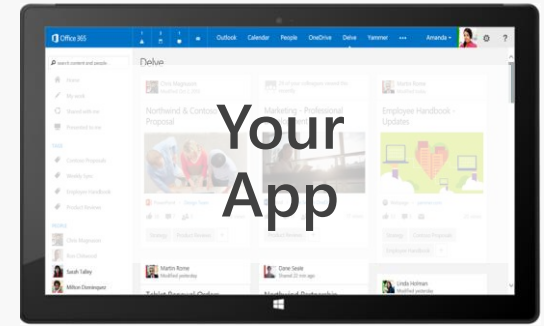
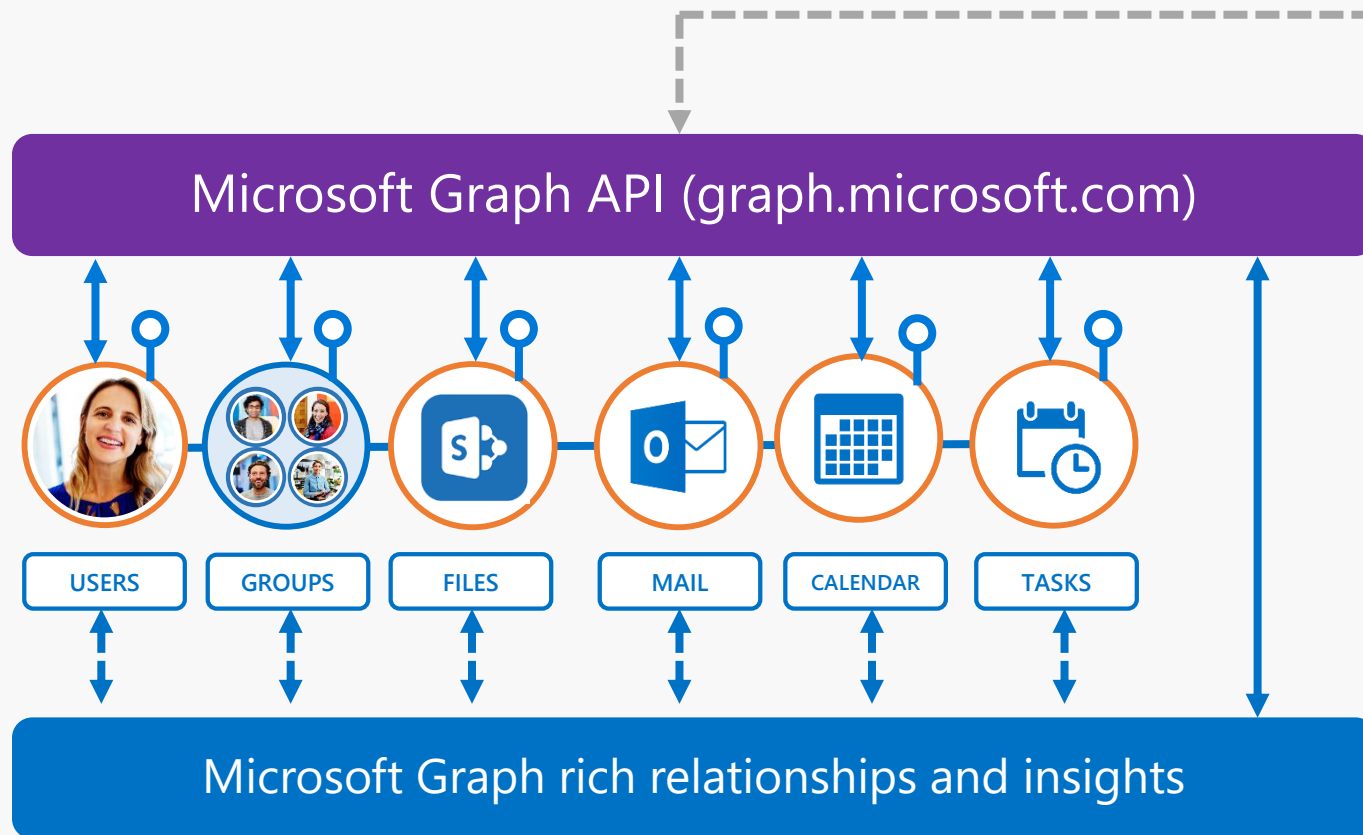


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Microsoft Graph

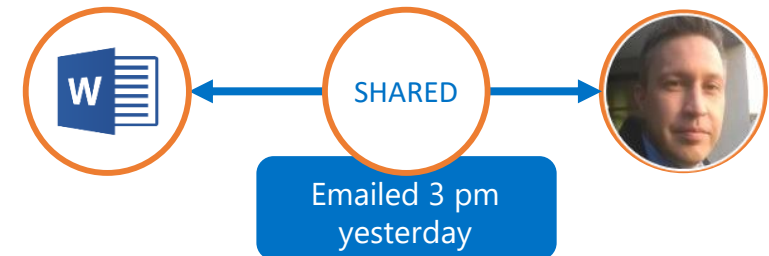


Intelligence in Microsoft Graph



Rich relationships and insights

- Relationship
 - A relationship is a direct navigation from one object to another.
- Rich relationship
 - A rich relationship has metadata, and can connect to one or more objects. It is exposed in OData as an entity.
- Insight
 - An insight is an inferred rich relationship created by the Microsoft Graph intelligence.



So, what is Microsoft Graph?

Single API for:

<https://graph.microsoft.com/>

1. Accessing data

/me, /users, /groups, /messages, /drive,

2. Traversing data

/drive/items/<id>/lastmodifiedByUser

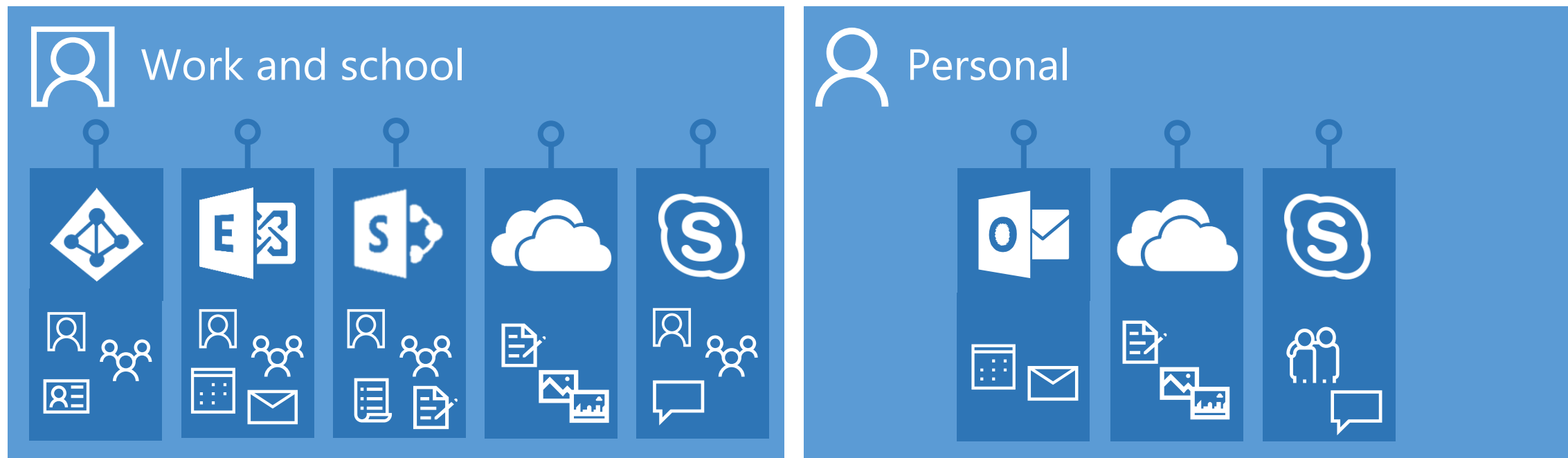
3. Accessing insights

/insights/trending

4. Work/School and Personal



State of the world before Microsoft Graph



- Many different APIs to access data
- Separate auth stacks for work and personal

Diverse API styles and endpoints



Azure Active Directory Graph API

<https://graph.windows.net/contoso.com/users>
<https://graph.windows.net/contoso.com/groups>



Windows Live profile API

<https://apis.live.net/v5.0/me>



SharePoint User Profile API

https://contoso.sharepoint.com/_api/SP.UserProfiles.PeopleManager/GetMyProperties

Exchange HD Picture API

<https://graph.microsoft.com/v1.0/me/photo>



Outlook REST API

<https://outlook.office.com/api/v2.0/me/Messages>



<https://outlook.office.com/api/v2.0/me/Events>



Office Graph in SharePoint Online

[https://contoso.sharepoint.com/_api/search/query?Querytext='*&Properties='GraphQuery:actor\(ME,action\:1020,or\(action\:1020\,action\:1003,action\:1001,action\:1024,action\:1005,action\:1037,action\:1039,action\:1036\)'\&SelectProperties='DocId,Title](https://contoso.sharepoint.com/_api/search/query?Querytext='*&Properties='GraphQuery:actor(ME,action\:1020,or(action\:1020\,action\:1003,action\:1001,action\:1024,action\:1005,action\:1037,action\:1039,action\:1036)'\&SelectProperties='DocId,Title)



OneDrive for Business API

https://contoso-my.sharepoint.com/personal/yina_contoso_com/_api/v2.0/drive
https://contoso.sharepoint.com/sites/designCouncil/_api/v2./drive



OneDrive API

<https://api.onedrive.com/v1.0/drive>



Today's world with Microsoft Graph

Microsoft Graph
<https://graph.microsoft.com>

 Work and school

 Personal



Unified API style – single endpoint

Operation

GET my profile

GET my files

GET my photo

GET my mail

GET my calendar

GET my manager

GET last user to modify file foo.txt

GET users in my organization

GET group conversations

GET people related to me

GET my tasks

GET my notes

GET files trending around me

Service endpoint

<https://graph.microsoft.com/v1.0/me>

<https://graph.microsoft.com/v1.0/me/drive/root/children>

[https://graph.microsoft.com/v1.0/me/photo/\\$value](https://graph.microsoft.com/v1.0/me/photo/$value)

<https://graph.microsoft.com/v1.0/me/messages>

<https://graph.microsoft.com/v1.0/me/calendar>

<https://graph.microsoft.com/v1.0/me/manager>

<https://graph.microsoft.com/v1.0/me/drive/root/children/foo.txt/lastModifiedByUser>

<https://graph.microsoft.com/v1.0/users>

<https://graph.microsoft.com/v1.0/groups/<id>/conversations>

<https://graph.microsoft.com/beta/me/people>

<https://graph.microsoft.com/beta/me/tasks>

<https://graph.microsoft.com/beta/me/notes/notebooks>

<https://graph.microsoft.com/beta/me/insights/trending>

A nighttime cityscape featuring a multi-lane highway with long-exposure light trails from cars in shades of red, orange, and white. In the background, several tall skyscrapers are illuminated, with one prominent tower showing a blue and white light pattern. A pedestrian bridge with railings and potted plants runs across the middle ground. The overall scene is a vibrant urban environment at night.

Demo

[https://graph.microsoft.io/
en-us/graph-explorer#](https://graph.microsoft.io/en-us/graph-explorer#)

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What's New?

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What's been GA over the last year?

- Azure Active Directory
- Outlook mail, calendar and contacts
- Office 365 groups and conversations
- OneDrive drives and files
- SharePoint & LiveID profiles
- WebHooks (callbacks) for Outlook and OneDrive data
- Excel API
- Extend Graph with your own LOB info for Outlook
- FindMeetingTimes scheduling API

What's new in preview?

- SharePoint Sites and Lists*
- Hybrid on-premise support for Outlook
- @mentions social gestures
- Simpler query syntax without \$
- OneDrive large file upload
- Azure AD
 - Administrative Units
 - Invitation Manager
 - Privileged Identity Management
 - Identity Protection
 - Application proxy
- Coming soon
 - Delta queries for Outlook and Azure AD
 - Intune API*
 - Office 365 Reports

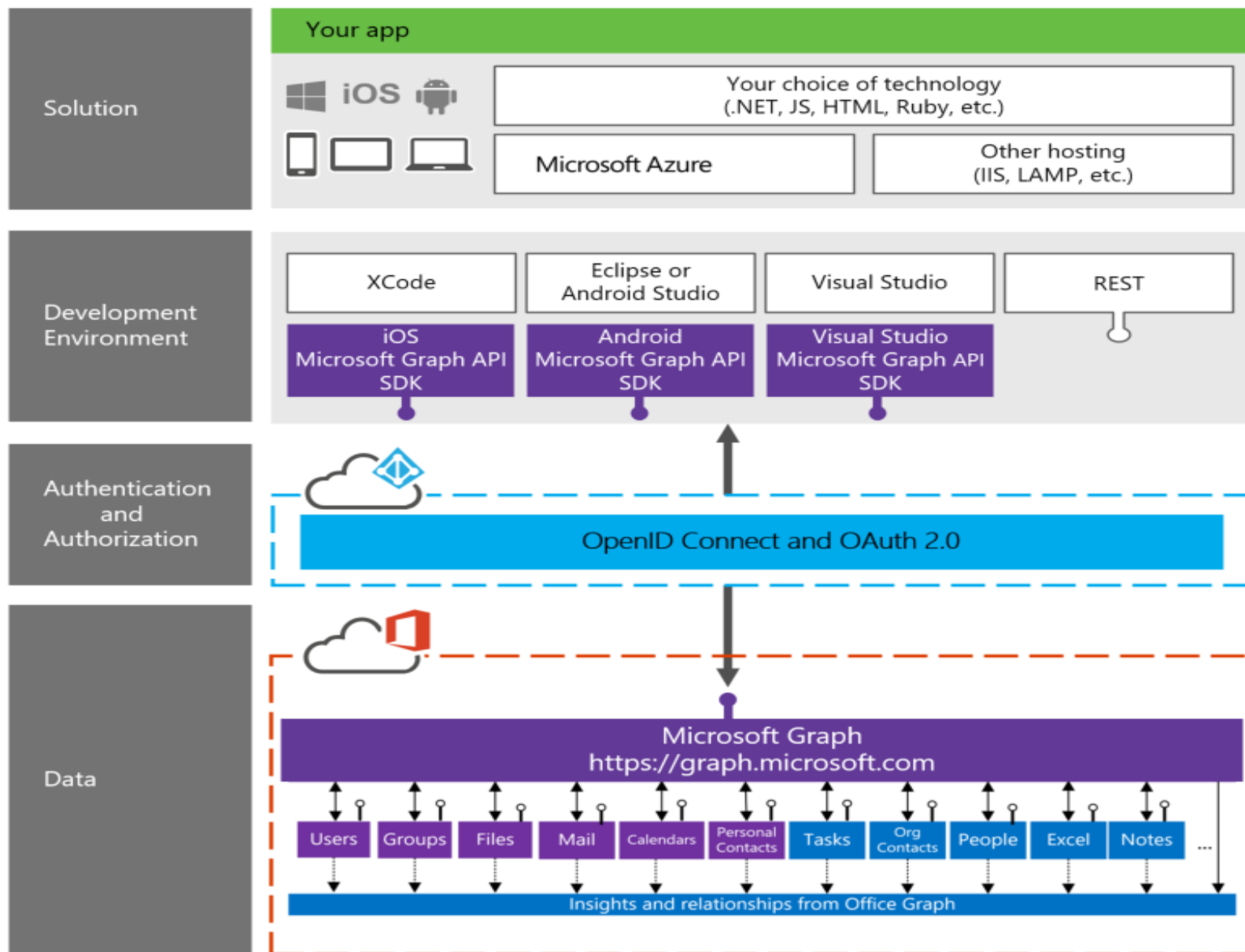


Solution architecture

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App Registration

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Register your app to use the Microsoft Graph

- Every app must (v1)
 - be registered in an Azure Active Directory tenant
 - declare in advance that it will access the Microsoft Graph
 - declare in advance all of the permission scopes it needs for the Microsoft Graph
- Every app must (v2)
 - be registered in the Application Registration Portal (<https://apps.dev.microsoft.com/>)

“Spend most of your time building the parts of your app that add value and differentiate it from the crowd.” – Application Registration Portal

<https://blogs.msdn.microsoft.com/italy/2016/04/19/azure-ad-single-sign-on-in-una-web-app-multi-tenant-con-openid-connect-e-adal/>

A night cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, a multi-lane highway is visible with long-exposure light trails from cars, showing red and white streaks. A pedestrian bridge with a railing and some greenery runs across the highway. The overall scene is a vibrant urban environment at night.

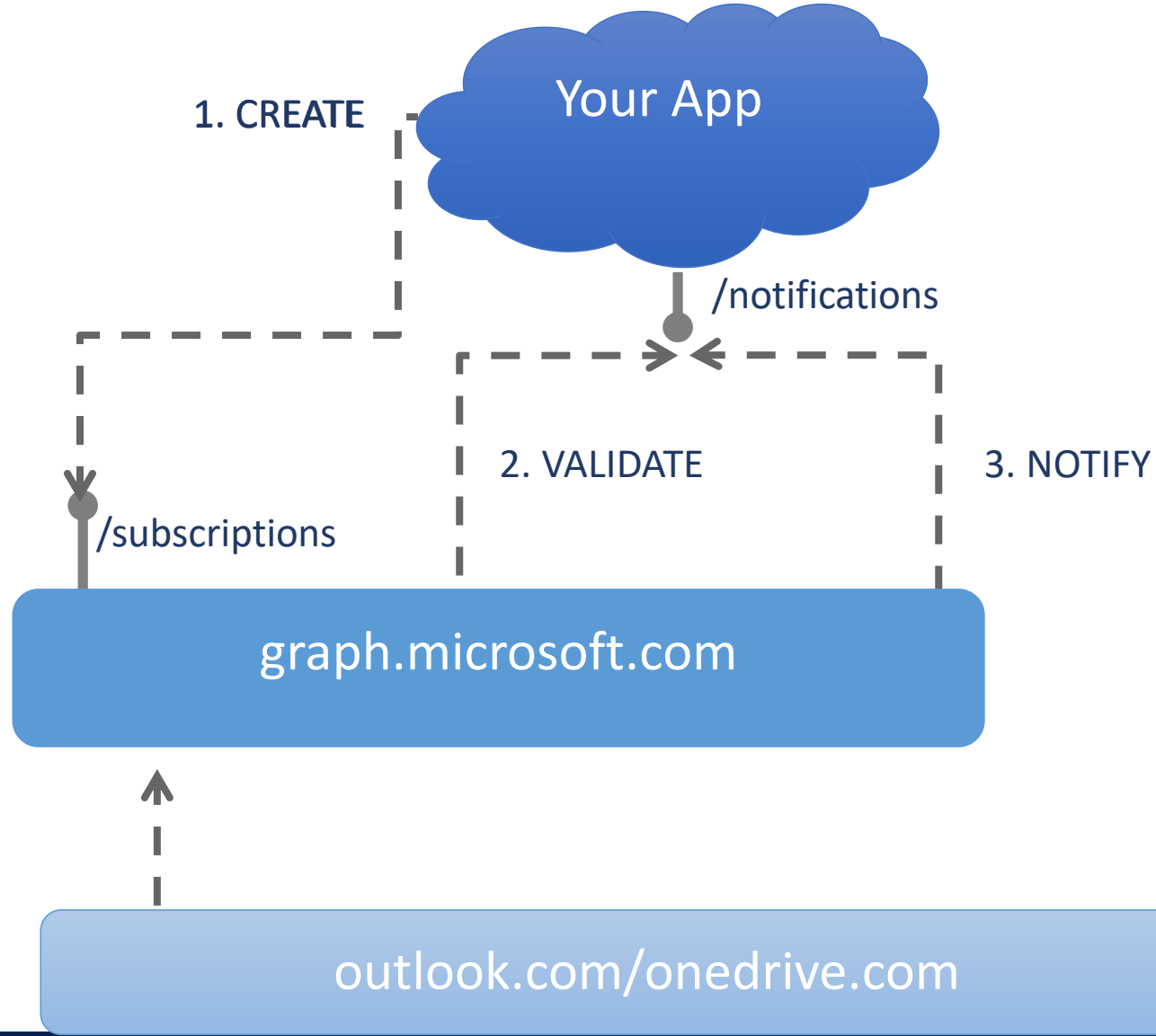
WebHooks

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Webhooks on the Microsoft Graph



Outlook/OneDrive Apps



Subscription API

- APIs
 - Create, read, delete a subscription
 - Update a subscription to extend the expiry date
- Endpoint Validation
 - Synchronous part of subscription creation
 - Respond by echoing back the parameter
 - Use clientState to check validity

```
{  
  changeType: "created  
              updated  
              deleted",  
  notificationUrl: "URL",  
  resource: "string",  
  expirationDateTime:  
              "ISO Date",  
  clientState: "string",  
  id: "string"  
}
```

A nighttime cityscape featuring tall skyscrapers and a multi-level highway. The image is split vertically: the left side shows a clear view of the city, while the right side shows light trails from vehicles on the highway, creating a sense of motion. The text 'Microsoft Graph SDKs' is overlaid on the left side.

Microsoft Graph SDKs

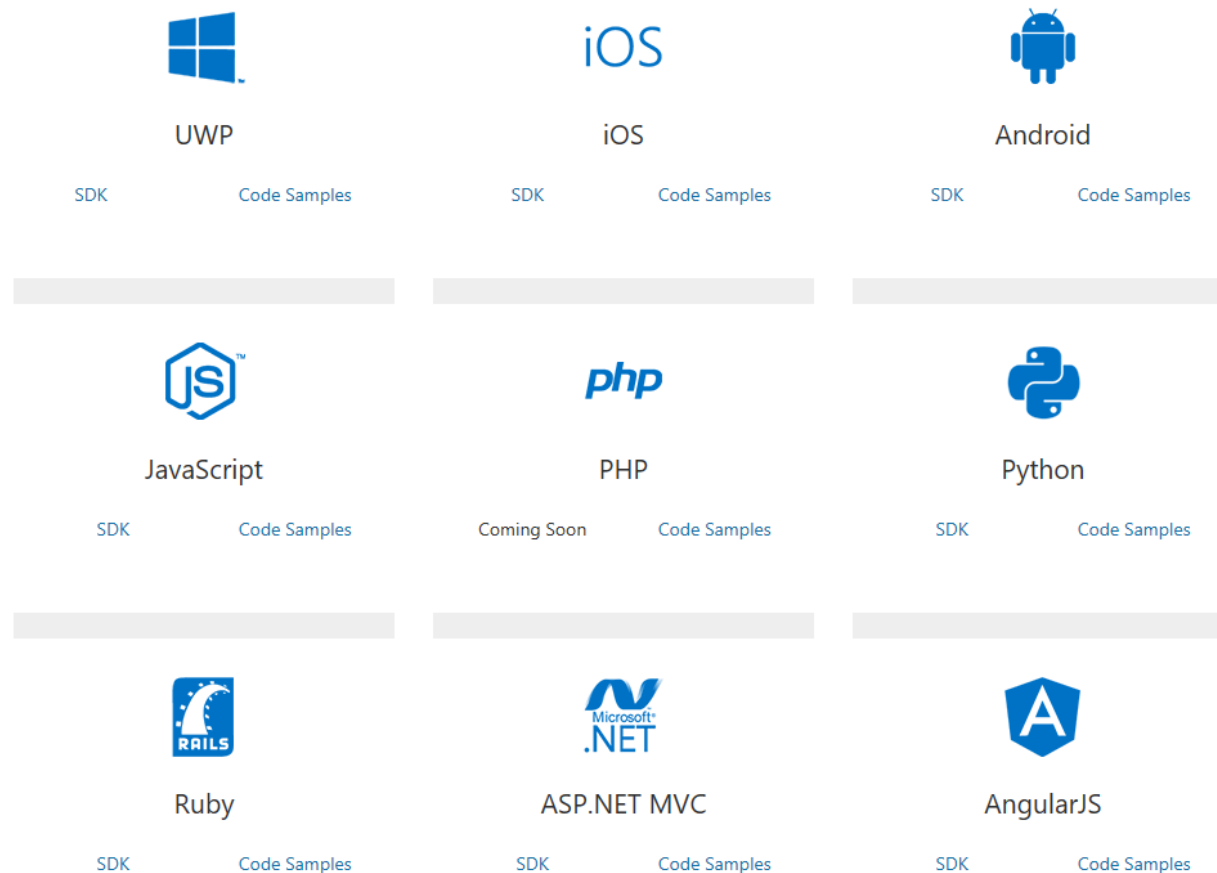
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Microsoft Graph SDK

- Target the /v1.0 branch
- Decoupled for easy authentication integration
 - Active Directory Authentication Library (ADAL)
 - Microsoft Authentication Library (MSAL)
 - ...
- Available on multiple platforms
- Consistent primitives



Consistent primitives

// C#

```
var user = await graphServiceClient.Me.Request().GetAsync();
```

// Do something...

// Java

```
graphServiceClient.getMe().buildRequest().get(new ICallback<User>() {
```

```
    // Do something...
```

```
});
```

// Obj-C

```
[[[graphServiceClient me] request] getWithCompletion:^(MSGraphUser *user, NSError *error){
```

```
    // Do something...
```

```
}];
```

Codename "Viper"

- <https://github.com/microsoftgraph/MSGraph-SDK-Code-Generator>



Cross-Platform notes

aka.ms/xplat-graph

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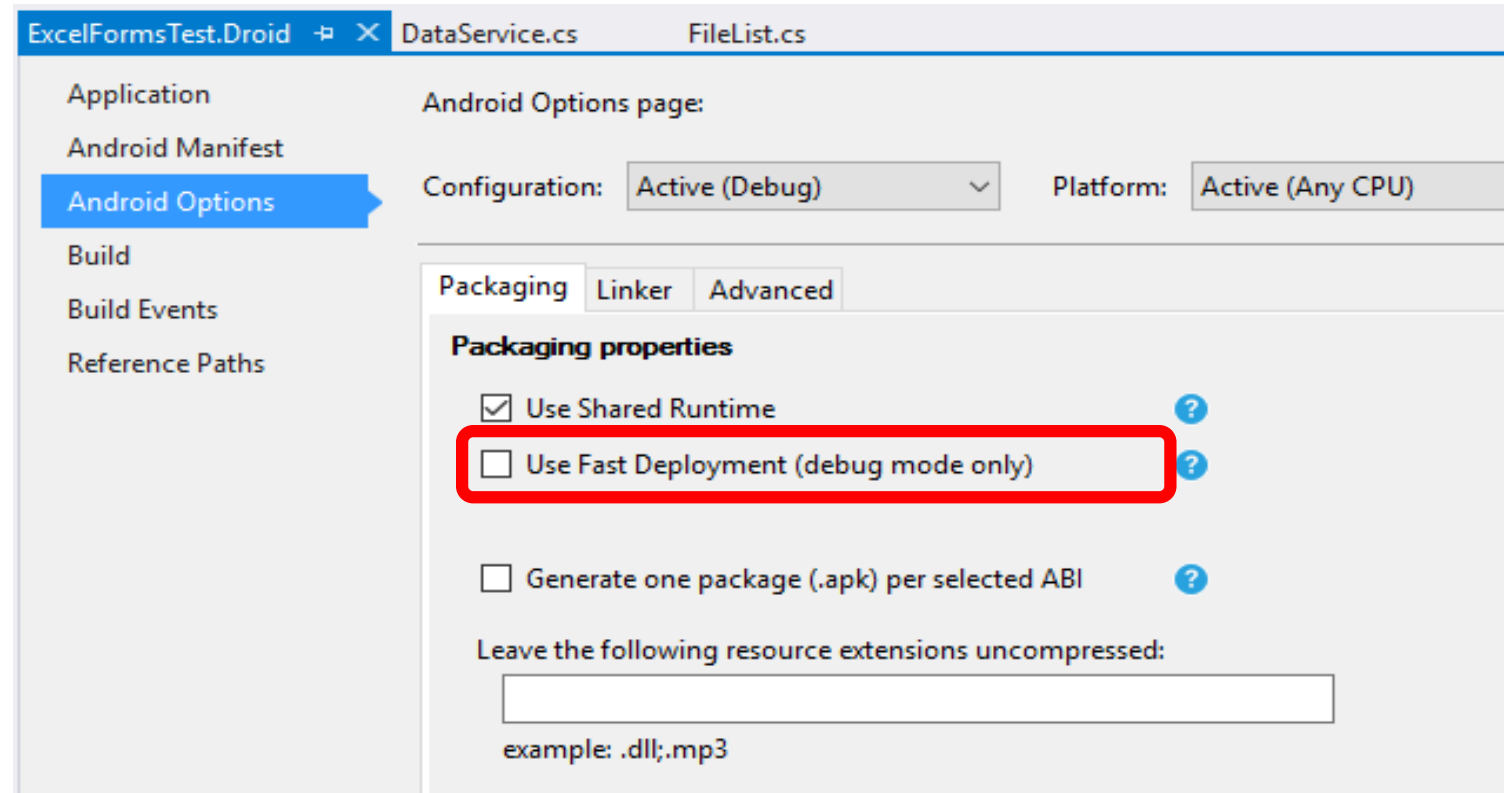
PCL Profile 7

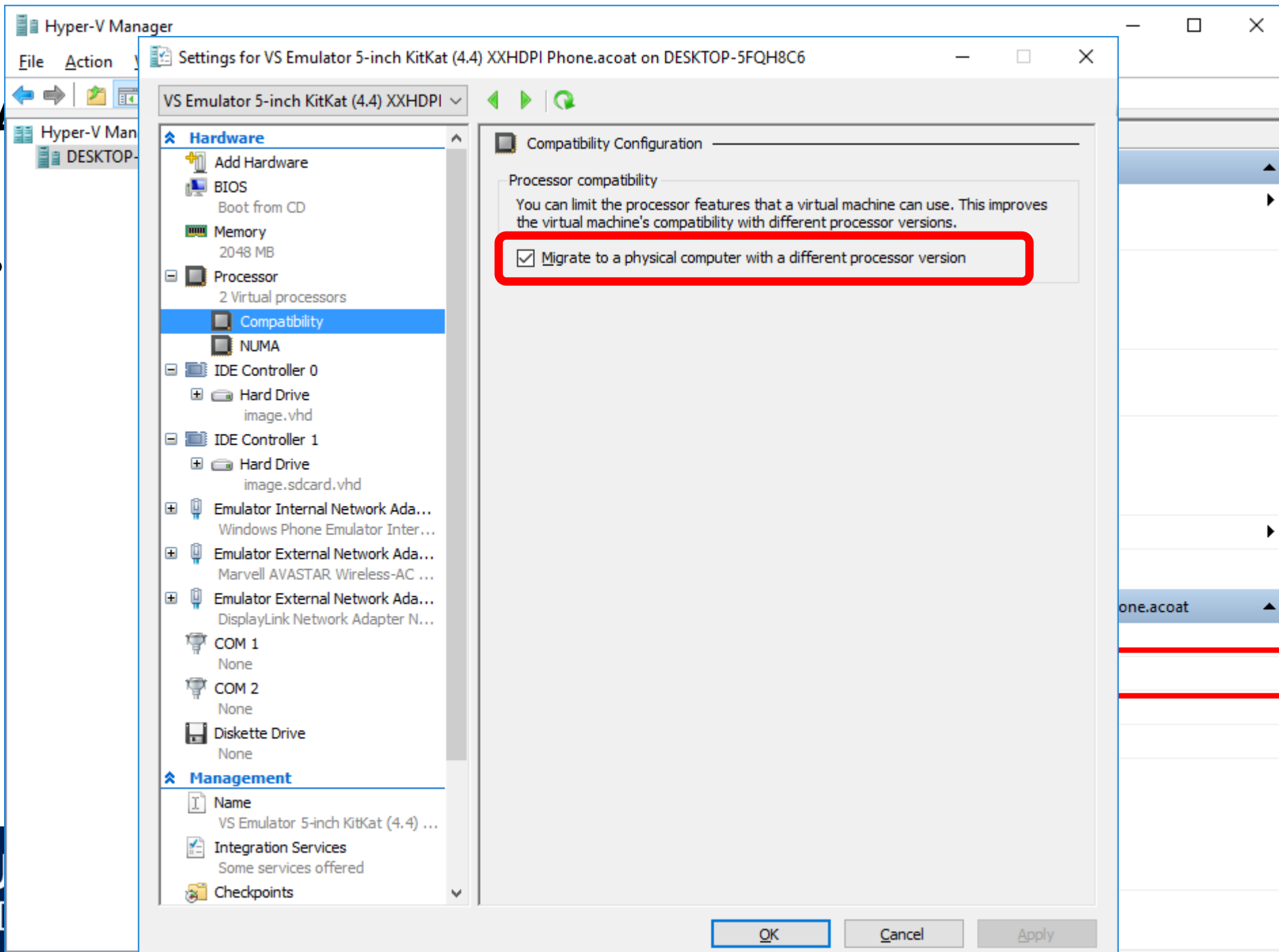
- No WP8 support
 - Default is 111
 - Edit the Project file

```
ExcelFormsTest.csproj  X ExcelFormsTest.Droid
1  <?xml version="1.0" encoding="utf-8"?>
2  <Project ToolsVersion="12.0" DefaultTargets="Build" xmlns="http://schemas.microsoft.com/build/2009/
3    <Import Project="$(MSBuildExtensionsPath)\$(MSBuildToolsVersion)\Microsoft.Common.props"
4    <PropertyGroup>
5      <MinimumVisualStudioVersion>10.0</MinimumVisualStudioVersion>
6      <Configuration Condition=" '$(Configuration)' == '' ">Debug</Configuration>
7      <Platform Condition=" '$(Platform)' == '' ">AnyCPU</Platform>
8      <ProjectGuid>{DDE723DC-8E7F-4781-AF49-CBAF735DB946}</ProjectGuid>
9      <OutputType>Library</OutputType>
10     <AppDesignerFolder>Properties</AppDesignerFolder>
11     <RootNamespace>ExcelFormsTest</RootNamespace>
12     <AssemblyName>ExcelFormsTest</AssemblyName>
13     <TargetFrameworkVersion>v4.5</TargetFrameworkVersion>
14     <TargetFrameworkProfile>Profile7</TargetFrameworkProfile>
15     <FileAlignment>512</FileAlignment>
16     <ProjectTypeGuids>{786C830F-07A1-408B-BD7F-6EE04809D6DB};{FAE04EC0-301F-474B-8042-E56B654446FD};{
17     <NuGetPackageImportStamp>
18     </NuGetPackageImportStamp>
19   </PropertyGroup>
20   <PropertyGroup Condition=" '$(Configuration)|$(Platform)' == 'Debug|AnyCPU' ">
21     <DebugSymbols>>true</DebugSymbols>
```


Android deployment

- Turn off Fast Deployment





A nighttime cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, a multi-lane highway shows long-exposure light trails from vehicles, with red trails from taillights and white/yellow trails from headlights. A pedestrian bridge with railings and some greenery is visible on the right side of the highway. The overall scene is a vibrant urban environment at night.

OneDrive File Pickers

<https://github.com/rgregg/onedrive-markdown-editor-sample>

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OneDrive File pickers

- Value proposition
 - Save and open files to and from OneDrive with only a few lines of code
 - Quickly integrate your app with OneDrive
 - Authentication is handled by picker
- Capabilities
 - Short-lived URL to download contents of the file
 - Long-lived sharable link to view or edit a file
 - Open and save files across OneDrive for Business, OneDrive Consumer and SharePoint using the same code
 - Simplest and fastest way to integrate with OneDrive
 - Available on iOS, Android, .NET and Javascript

Prerequisites of OneDrive File Picker for JS SDK

- Log in to the [Microsoft Application Registration Portal](#) using your Microsoft account, or a work or school account.
- Click **Add an app** and enter a name for your app.
- After your application is created, configure it to support the JavaScript picker:
 - Click **Generate New Password** to create an **Application secret**. This value is not necessary for the picker, but it must be created.
 - Click **Add Platform** and then select **Web**.
 - Enter one or more **URLs** where the picker will be hosted on your website. Each page that hosts the picker needs to have a redirect URL provided.
 - Click the **Save** button to save your changes.
- Copy the Application Id for your application and use it in the JavaScript options object you provided to [open](#) or [save](#) a file.

Office Platform

WHAT CAN I BUILD?

Make your solution a native part of Office on every platform

Build smarter apps by connecting to Office services

Engage users through conversations





Questions?
@_geniodelmale

Slides:
<http://www.communitydays.it/>

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