

1 Introduction

This document ~~provides a detailed~~ walks you through ~~of the~~ steps of deploying Virtual Health Solution and its ~~.The deployment guide explains the deployment of following~~ components.

Component Name	Component Description	Component Type
HealthCare.Portal	Virtual Health Web App	Web App
SharePoint assets	SharePoint artifacts	SharePoint Site
VHCBot	Virtual Health BOT for Scheduling	Web App

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2 System Requirements

2.1 Office 365 Plan Requirements

~~It is recommended to use~~ Office 365 Enterprise E3 and above are recommended.

E3 Plan details are available here:

<https://products.office.com/en-us/business/office-365-enterprise-e3-business-software>

Other plans:

<http://office.microsoft.com/en-us/business/compare-all-office-365-for-business-plans-FX104051403.aspx>

~~Note: For developers who build solutions that extend Office and the Office 365 experience across desktop, web, and mobile platforms, you may wish to join Office 365 developer program: <https://dev.office.com/devprogram>. Benefits include a one-year, FREE Office 365 developer subscription and many more.~~

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2.2 Browser Requirement

~~The preferred browser is Microsoft Edge on Windows 10. Otherwise, the Skype for Business plugin may not work correctly or may need additional configuration.~~

~~For all testing, it's recommended to use a Windows client with the Microsoft Edge browser while choosing In Private Session.~~

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2.2.3 Azure Subscription

The Virtual Health ~~Solution Templates~~ requires an Azure subscription to host the following services:

- Website/Web App
- Application Insight
- Key ~~v~~vault
- Azure ~~t~~Table

~~Note: For basic test deployments, the 30-day FREE trial is sufficient. If you need additional time after the trial ends, upgrade your trial subscription to Pay-As-You-Go.~~

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2.2.2.3.1 Minimum Azure Web App Configuration

The Virtual Health web apps need at least a Standard configuration to cater to the needs of a pilot. However, the Standard tier can be scaled out as per based on the need of your application need.

Configuration	Details																
Mode – Standard Instances – A single instance in Shared or Standard mode already benefits from high availability, but you can provide even greater throughput and fault tolerance by running additional web site instances. In Standard mode, you can choose from 1 through 10 instances, and if you enable the Auto scale feature, you can set the minimum and maximum number of virtual machines to be used for automatic scaling. http://www.windowsazure.com/en-us/documentation/articles/web-sites-scale/	Web Sites Standard (Promotional Pricing): The Standard tier offers multiple instance sizes as well as scaling to meet changing capacity needs. Prices for Standard are as follows: <table border="1"><thead><tr><th>SIZE</th><th>CPU CORES</th><th>MEMORY</th><th>PRICE PER HOUR</th></tr></thead><tbody><tr><td>Small</td><td>1</td><td>1.75 GB</td><td>\$0.10 (~\$74 / month)</td></tr><tr><td>Medium</td><td>2</td><td>3.5 GB</td><td>\$0.20 (~\$149 / month)</td></tr><tr><td>Large</td><td>4</td><td>7 GB</td><td>\$0.40 (~\$298 / month)</td></tr></tbody></table> Note: Refer to the below link below to learn know more about the pricing models: http://www.windowsazure.com/en-us/pricing/details/web-sites/	SIZE	CPU CORES	MEMORY	PRICE PER HOUR	Small	1	1.75 GB	\$0.10 (~\$74 / month)	Medium	2	3.5 GB	\$0.20 (~\$149 / month)	Large	4	7 GB	\$0.40 (~\$298 / month)
SIZE	CPU CORES	MEMORY	PRICE PER HOUR														
Small	1	1.75 GB	\$0.10 (~\$74 / month)														
Medium	2	3.5 GB	\$0.20 (~\$149 / month)														
Large	4	7 GB	\$0.40 (~\$298 / month)														

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2.2.2.3.2 Software Requirements

Since the services will be deployed in Azure PaaS, there is no separate software requirements.

3 Prerequisites

3.1 Office 365 and Azure

The following prerequisites are important for the ~~v~~Virtual ~~H~~Health application.

Office 365	Details
Plan	<p>Purchase Office 365 Enterprise E3 plan:</p> <p>https://products.office.com/en-us/business/office-365-enterprise-e3-business-software</p> <p>Other plans:</p> <p>http://office.microsoft.com/en-us/business/compare-all-office-365-for-business-plans-FX104051403.aspx</p> <p><u>Office 365 developer program:</u> https://dev.office.com/devprogram offers a one-year, FREE Office 365 developer subscription</p>
Domain(Optional)	<p>Domain for Office 365.</p> <p>This is <i>optional</i> for <u>the</u> Virtual Health Ddeployment.</p>
Site Collection	<p>Provision a site collection for Virtual Health.</p> <p>Ppreferably <u>a</u> Publishing site.</p>

Azure	Details
Azure Subscription	<p>Azure subscriptions will host <u>the</u> following services:</p> <ul style="list-style-type: none">• Website/Web App• Application Insight• Key vVault (<i>Optional</i>)• Azure tIable
SSL Certificate	<p>SSL certificates are <u>required</u> for:</p>

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3.1.1 Trusted Application Endpoint

Before you proceed with the Virtual Health Solution deployment, you must deploy the Trusted Application Endpoint.

Trusted App Sample Code Download Link	Usages
https://github.com/OfficeDev/skype-docs/tree/master/Skype/Trusted-Application-API/samples/AnonMeetingJoinSamples	<p>Download the AnonMeetingJoinSamples and deploy the sample as an Azure cloud service or an Azure App Service.</p> <p>Note down the https endpoint of the Cloud Service e.g. https://yourcloudservice.com</p> <p>This will be used in Web.Config of Virtual Health Portal (HealthCare.Portal) for key TrustedApi.</p> <pre><!--Trusted API endpoint--> <add key="TrustedApi" value="HTTPS_URI_TRUSTED_APP" /></pre>

Note:

1. AnonMeetingJoinSamples > Getting started > Prerequisite > step 3

<https://github.com/OfficeDev/skype-docs/tree/master/Skype/Trusted-Application-API/samples/AnonMeetingJoinSamples#prerequisites>

As you go through the steps for the quick registration tool and reach the second to last consent URL on Skype for Business Online Application Registration Portal, consent will be requested.

Step 3 Tenant admin consent and Trusted Endpoint creation

The final application registration step includes Tenant Admin Trusted Endpoint setup and Tenant Admin consent

Before a Trusted Application can be used in your tenant or another tenant, a tenant administrator for the Skype for Business tenant must provide consent to the app. Launch the following URL in your app to allow Tenant Admins to provide the required consent to your app permissions. Alternatively, you can click [here](#) to launch the link and log in using Tenant Admin credentials.

```
https://login.windows.net/common/oauth2/authorize?response_type=id_token&client_id=95a6fb90-5b90-4a42-9b0d-ce4b240b212f&redirect
```

Before a trusted application can be used in your tenant or another tenant, a tenant administrator must create a Trusted Endpoint. To create an endpoint for your application, you can use the following command in the Skype for Business Admin PowerShell. Update the placeholder parameter to a desired SIP Address within your tenant domain.

```
New-CsOnlineApplicationEndpoint -Uri "sipsample_endpoint@domain.com" -ApplicationId "95a6fb90-5b90-4a42-9b0d-ce4b240b212f" -Name
```

Please refer to Set up a Trusted Application Endpoint and Tenant Admin Consent for full details

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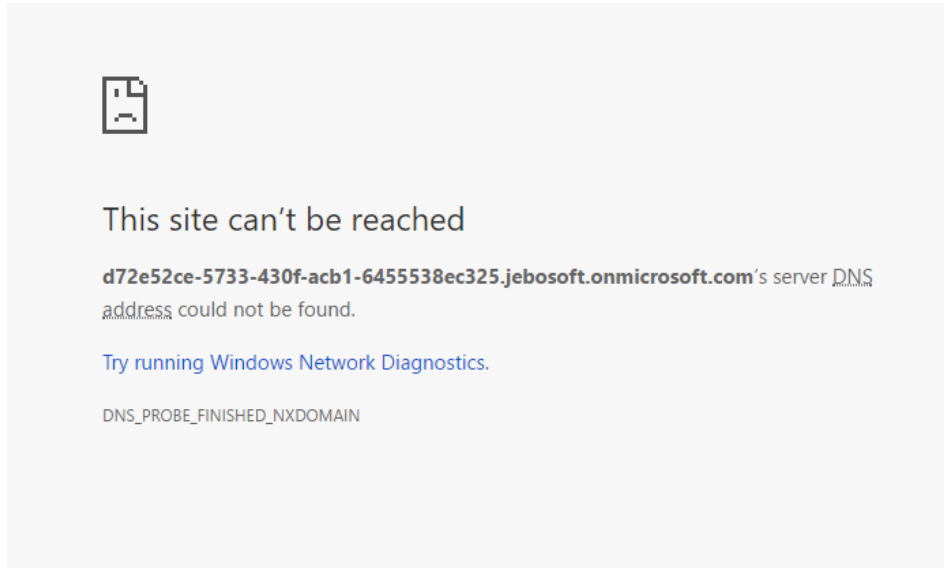
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Once consent is approved, you will see the callback go here. This is the expected behavior.



2. [AnonMeetingJoinSamples > Getting started > Prerequisite > step 6](#)

[Step 6 is not necessary for deploying the Virtual Health Solution.](#)

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3.4.3.2 Certificates Required for Deployment

The required certificates required for deployment are given in the below table below.

Certificate Type	Application	Purpose
Self-signed or CA issued* *Only Required if Trusted Application is going to use certificate-based authentication (OAuth flow) else client and secret-based OAuth flow should work fine.	Trusted Application Endpoints.	This certificate will be used to set up the OAuth with an Azure Active Directory (Azure AD) application.

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4 First-Time Provisioning and Configuration

This section will provide the steps on how to provision and configure any new environment for the first time. This step is not required once the new environment is set up.

Open a notepad or xml notepad to note down the configuration values as you go through this section. These configurations will be used during the deployment of the Web Apps.

4.1 SharePoint Site Collection Provisioning

This section describes the required steps required to provision a SharePoint site collection.

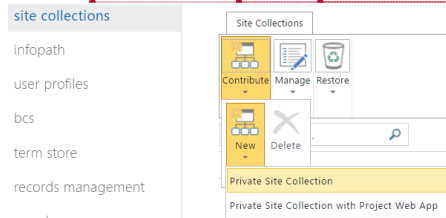
A. Provision SharePoint site collection

a.1. Sign in to the Office 365 admin center with your SharePoint Online admin user name and password.

b.2. Go to **Admin center > SharePoint**.

c.3. Click on **site collections** tab.

d.4. Click on **Contribute** → **New** → **Private Site Collection**



e.5. Click on **Private Site Collection**.

f.6. Fill in the details as shown below.

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new site collection

Title Healthcare Portal

Web Site Address

Template Selection 2013 experience version will be used

Select a language: English

Select a template:

Collaboration Enterprise Publishing Custom

Publishing Portal
Enterprise Wiki

A starter site hierarchy for an Internet-facing site or a large intranet portal. This site can be customized easily with distinctive branding. It includes a home page, a sample press releases subsite, a Search Center, and a login page. Typically, this site has many more readers than contributors, and it is used to publish Web pages with approval workflows.

Time Zone (UTC-08:00) Pacific Time (US and Canada)

Administrator Kelly Krout

7. Click **Ok**.

8. Note down the site collection's full URL (e.g. <https://virtualhealthtest123.sharepoint.com/sites/healthcare>) in the below format below.

```
<add key="SharepointSite" value="SITE_COLLECTION_URL" />
```

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4.2 SharePoint Configurations

Create a SharePoint Group and Add the people to the group who will have access to the settings page of the Virtual Health Solution.

1. Open the site collection.
2. Go to **site settings** → **Peoples and Groups**.
3. Click on **More**.
4. Click on **New** → **New Group**.

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- Fill in the details such as like Name as "VirtualPatientCare Admin" and select **group permission as contribute.**

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- Click **Create/Save**.
- Note down the SharePoint Group Name in the below format below.

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```
<add key="SharepointAdminGroup" value="SHAREPOINT_GROUP_NAME" />
```

4.3 Azure Web Apps Provisioning

The Virtual Health sSolution has the following web apps:

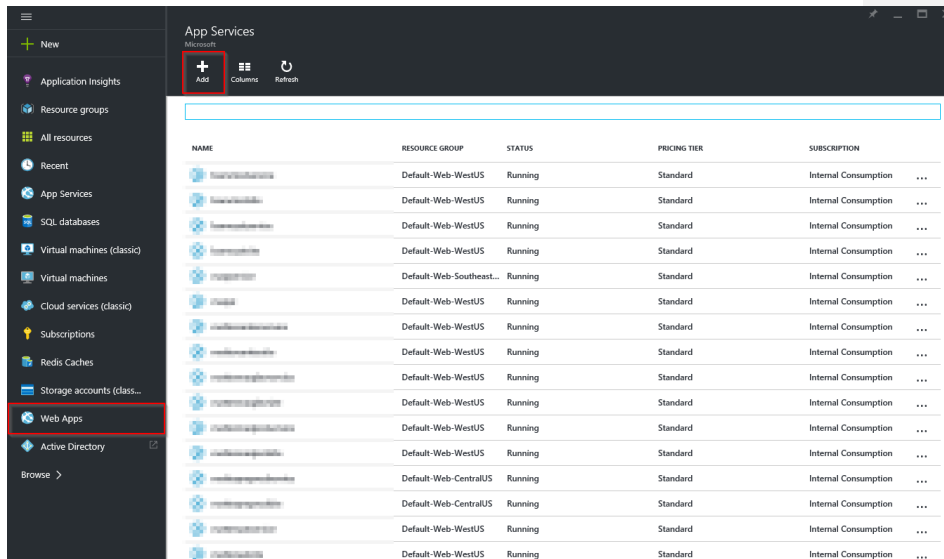
- HealthCare.Portal
- VHCBot

All ~~the~~ above web apps above can be provisioned using below the steps below. As an example, here is a walkthrough of the (steps only explaining for HealthCare.Portal web app provisioning)

A.4.3.1 PSteps to provision an aAzure website

- Login to the Azure management portal.
- Select **Web App Services**, and click on the Add button, and select **Web App**.

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3. Enter a name for the web app and the appropriate subscription Resource group and the App Service plan as shown below.

3.

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* App name
healthcareportaldemo ✓
.azurewebsites.net

* Subscription
Windows Azure MSDN - Visual Studio Ultiln ▼

* Resource Group
 Create new Use existing
 HealthcarePortal-India ✓

* App Service plan/Location
Default1(Southeast Asia) >

Application Insights On Off

Pin to dashboard

[Automation options](#)

4. While creating the website, if you mark the option "Applications Insights" as On, Application Insight will be provisioned. Note down the Application Insight key.

5. Click on the **Create** button at the bottom of the panel.

4. Note: You should select the App Service Location closest to your users. This will help in reducing network latency and potentially provide a better experience for users. Southeast Asia is the App Service Location used in the above example. This location (Southeast Asia) will be used to automatically create other services in the same location, (in above example it will be Southeast Asia) so that all required objects are co-located.

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4.3.2 Steps to configure Application Insights

a. In section 4.3.1 step 4, ~~While creating the website~~ if you marked the option "Applications Insights" ~~as~~ **On while creating the website**, Application Insight will be provisioned.

b. Note down the ~~a~~Application ~~i~~nsight key.

4.3.3 Website – Scaling

a. If you want to change the scaling of the website, ~~refer to the you can scale as per~~ pre-requisite section.

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Note down the following values from this section.

```
<add key="ida:HealthCarePortal" value="HEALTH_CARE_PORTAL_URL" />
<add key="iKey" value="APP_INSIGHT_KEY_HEALTH_CARE_PORTAL" />
BOT_WEBSITE_URL = https://xxx.azurewebsites.net [It will be used in BOT Configuration Section]
```

4.4 Bot Configuration

4.4.1 Register a Bot

8-1. Go to <https://dev.botframework.com>

9-2. Click on **Register a bot**.

10-3. Add the following details.

- Name: display name.
- Bot handle: unique ID, not used elsewhere.
- Messaging endpoint: HTTPS endpoint used by the bot framework; if Azure Bot Web App deployment is on <https://x.azurewebsites.net>, then this will be <https://x.azurewebsites.net/api/messages>


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dev.botframework.com/bots/new



Icon
Upload custom icon
30K max, png only

Name: * ?
VHC Bot

Bot handle: * ?
VirtualHealthCareDemo

Description: * ?
Virtual Health Care Bot for demo environment

Configuration

Messaging endpoint:
https://virtualhealthbotdemo.azurewebsites.net/api/messages

Register your bot with Microsoft to generate a new App ID and password

[Manage Microsoft App ID and password](#)

Paste your app ID below to continue

2b8ef04c-9140-47d2-a311-86f4b5a267be

Admin

Owners: ?
ritesp@microsoft.com

1-4. Click on **“Create Microsoft App ID and Password”**.

2. It will generate an App Id and a password and make a note of themit, and you need to update the same items in the wWeb.config file of Bot Project.

3-5. Click on **Register** to register the bot.

4-6. Note down the configurations values in the below format below.

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```
<add key="BotId" value="BOT_ID" />
<add key="MicrosoftAppId" value="BOT_APP_ID" />
<add key="MicrosoftAppPassword" value="BOT_APP_PASSWORD" />
```

4.4.2 Get the Bot Embed Code

Follow the below steps below. (Execute this step after completing execution of section 5.4.)

1. Go to <https://dev.botframework.com> after registering the Bot.
2. Click on **My Bots**.
3. Click on the Bot created for the Virtual Health.
4. Click on the **Edit** link, available for Web Chat under the Channel section.

	TEST LINK	ISSUES	ENABLED	PUBLISHED
 Skype	Add to Skype	0	Yes	<input type="checkbox"/> Off Edit
 Web Chat		0	Yes	<input type="checkbox"/> Off Edit

5. Click on **Add New Site**.
6. Type the name, for example, like "VirtualHealthBot".

How would you name your site?

Site name is for your reference and you can change it anytime.

Cancel Done

7. Click **Done**, and you will be redirected to the Configure Web Chat page.

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Configure Web Chat



+ Add new site VirtualHealthBot Disable 🗑️

VirtualHealthBot

Secret keys

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Show | Regenerate

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Show | Regenerate

Embed code

<iframe src="https://webchat.botframework.com/embed/VirtualHealthO365?s=YOUR_SECRET_HERE"></iframe> Copy

Preview

Enabling Web Chat Preview on this site will give users of your bot a preview version of the Bot Framework Web Chat control. The preview version includes new, beta features that have not yet been officially released.

Enable Preview

High-speed storage [PREVIEW]

8. Copy the embed URL, like https://webchat.botframework.com/embed/VirtualHealthO365?s=YOUR_SECRET_HERE
9. Click on **Show** to reveal the secret, and copy it and replace the YOUR_SECRET_HERE with the secret.
10. Copy the embed URL, as it will be required to be. It's required to update the embed URL in the Web.Config file of the HealthCare.Portal web project.
10. Note down the configuration value in below the format below.

```
<add key="botUrlEmbed" value="BOT_EMBED_URL" />
```

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4.5 Key Vault Provisioning and Configuration

Execute this step only if you are going to use Key Vault. If you are using Key Vault, make sure the Web.config of Virtual Health Web App has `<add key="IsKeyVaultEnabled" value="true" />`, otherwise, keep this value equal to `false`.

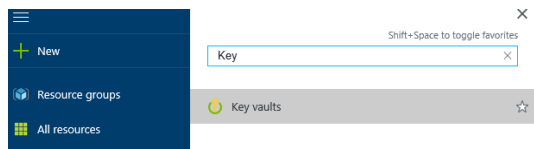
For Key Vault Provisioning and Configuration.

Note: Users should have access to:

- Create an Active Directory application using PowerShell.
- Assign the service principal to an Azure Active Directory application.

A.4.5.1 Key Vault Provisioning

1. Login to Azure management portal.
2. Click on New (+) on the left navigation Panel.
3. Search for Key Vault.



4. Click on Key Vaults.
5. Click on CreateAdd.
6. Fill in the details as shown below.

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7. Click on **Create**.
8. Once it is provisioned, open the Key Vault.
9. Click on **Secrets**.
10. Click on **Add** and fill the values like below.

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Create a secret

Upload options
Manual

* Name
IdaPassword

* Value
●●●●●

Content type (optional)

Set activation date.

Set expiration date.

Enabled Yes No

11. Click **Create**.

12. Add another secret with Name "SpoPassword", "EncryptionKey" and "EncryptionSalt". The values of these secrets will be, for example, like

SpoPassword: Password of a spo user
 IdaPassword: password of AAD user (most of the case it is same as spo user)
 EncryptionKey: Generate a new GUID
 EncryptionSalt: Generate a new GUID

Please generate new Guid for EncryptionKey and EncryptionSalt.

13. Note down the Key Vault Base URL in the below format below. (The Key Vault Base URL is the DNS Name listed on the Properties page.)

```
<add key="KeyVaultBaseUr1" value="KEY_VAULT_BASE_URL" />
```

4.5.2 Configure Azure AD Application for Key Vault and Associate the Certificate

1. Get the certificate for the Key Vault or create a self-signed certificate using the link <https://technet.microsoft.com/itpro/powershell/windows/pki/new-selfsignedcertificate>

Open the PowerShell command as Administrator.

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~~b.~~ Run the following in PowerShell after updating the text yellow highlighted in yellow below, which

~~2.~~ ~~It does~~ creates the following items:

- ~~Creates~~ The Active Directory application with the certificate.
- ~~The Create~~ service principal.
- ~~Assigns~~ reader role to the service principal.

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Below, ~~You need to~~ replace the ~~below text yellow~~ highlighted in yellow text with the actual values for your environment.

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Add-AzureRmAccount

```
PS C:\WINDOWS\system32> Add-AzureRmAccount
```

//The account that has privileges to create and assign service principal in the an Azure AD.

```
$cert = New-SelfSignedCertificate -CertStoreLocation "cert:\LocalMachine\My" -Subject "CN=o365virtualhealth" -KeySpec KeyExchange
```

```
$keyValue = [System.Convert]::ToBase64String($cert.GetRawCertData())
```

```
$app = New-AzureRmADApplication -DisplayName "virtualhealthKv" -HomePage "https://virtualhealtho365" -IdentifierUri "https://virtualhealtho365/virtualhealth" -CertValue $keyValue -EndDate $cert.NotAfter -StartDate $cert.NotBefore
```

```
$keyValue -EndDate $cert.NotAfter -StartDate $cert.NotBefore
```

//If you have multiple subscription make sure, you use following command

```
PS C:\WINDOWS\system32> Set-AzureSubscription -SubscriptionId
```

```
New-AzureRmADServicePrincipal -ApplicationId $app.ApplicationId
```

```
New-AzureRmRoleAssignment -RoleDefinitionName Reader -ServicePrincipalName
```

```
$app.ApplicationId
```

```
$app
```

```
$cert.ThumbPrint
```

Refer to this link for more details <https://docs.microsoft.com/en-in/azure/azure-resource-manager/resource-group-authenticate-service-principal>

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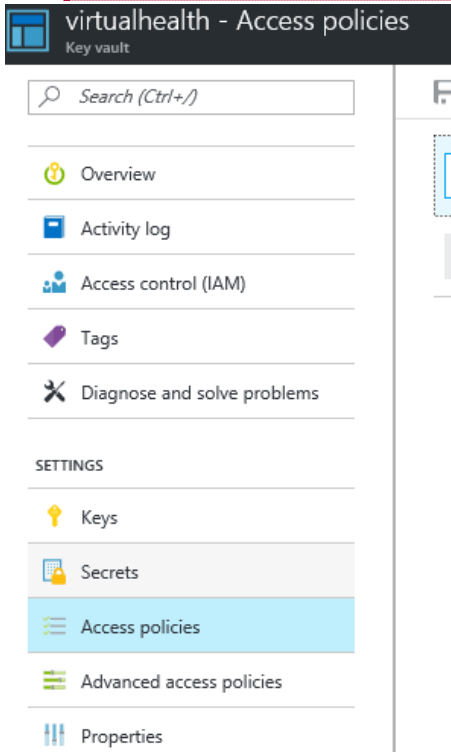
~~e.3.~~ Note down the thumb~~pr~~-print and application Id as it will be used in the Web.config of the HealthCare.Portal application.

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```
<add key="ClientId" value="AZURE_AD_APPLICATION_ID" />
<add key="Thumbprint" value="THUMB_PRINT_CERTIFICATE" />
```

Add Access Policy to Key Vault

1. Go to the Azure **Portal**.
2. Browse to **Key Vault** created earlier.
3. Go to **Access Policies**.



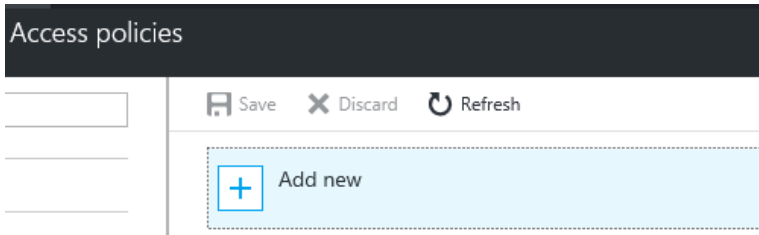
4. Click on **Add New**.

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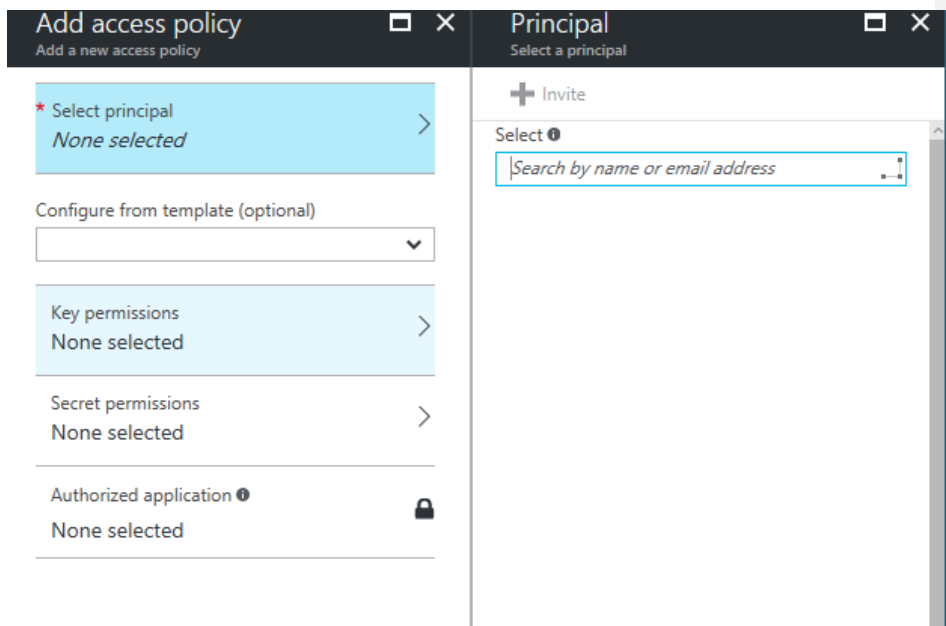
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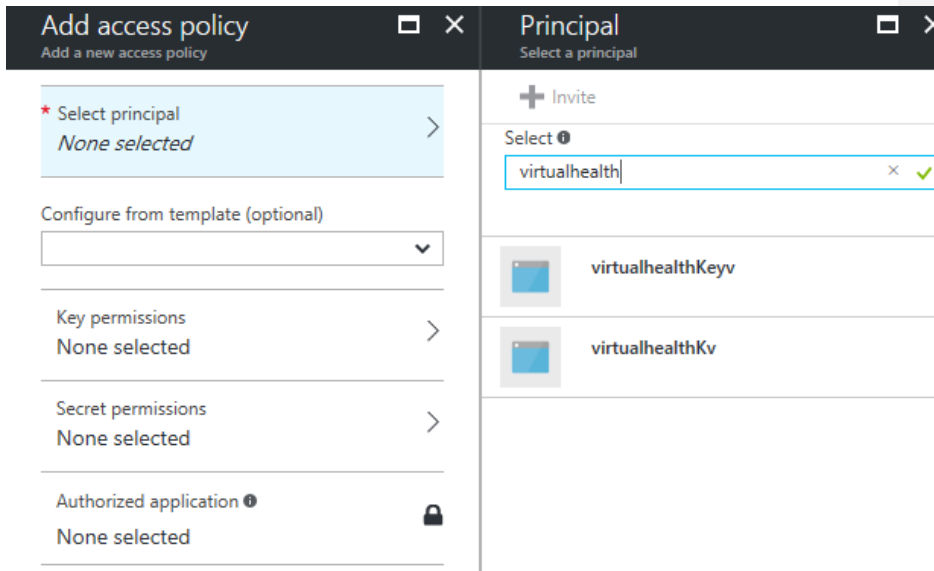


5. Click on **Service Principal**.

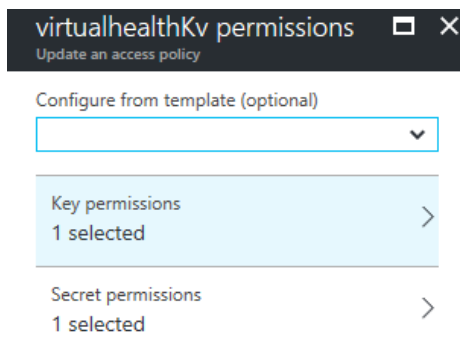
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6. Search the principal that was created earlier such as like virtualhealth.



7. Select the one which was created in [an earlier step](#).
8. Select the permission for Key and Secret (at least get permission should be assigned).



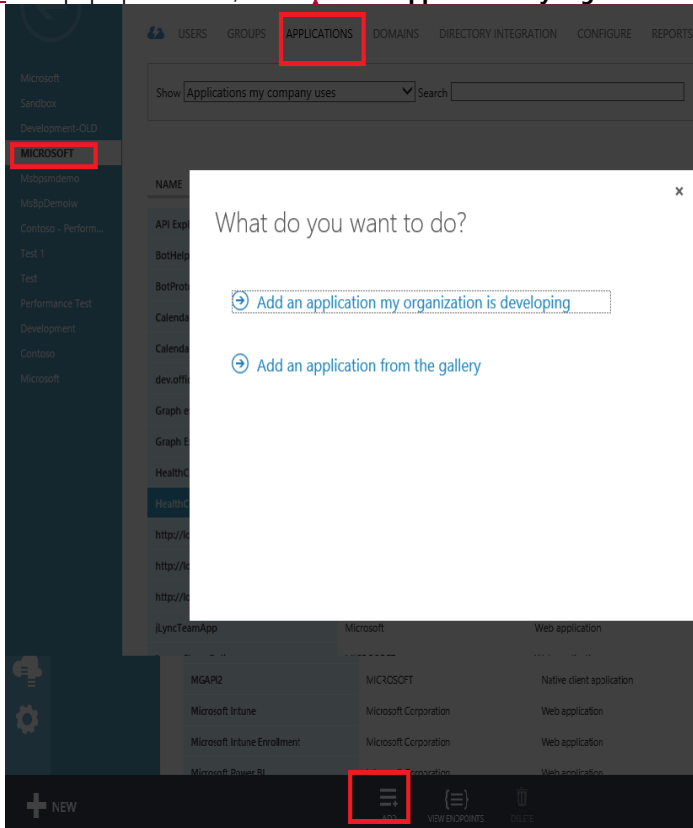
9. Click **Save**.

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4.6 Azure Active Directory (Azure AD) Application Provisioning and Configuration

4.6.1 Provision Azure AD applications

1. Login to [Classic Azure Management Portal](#) with Azure Admin Account.
2. Click on the **Active Directory** link on the left menu.
3. Select the **Active Directory**.
4. Click on **Applications** tab.
5. Then click on **Add link** at the bottom.
6. It will pop up a window, select **Add an application my organization is developing**.



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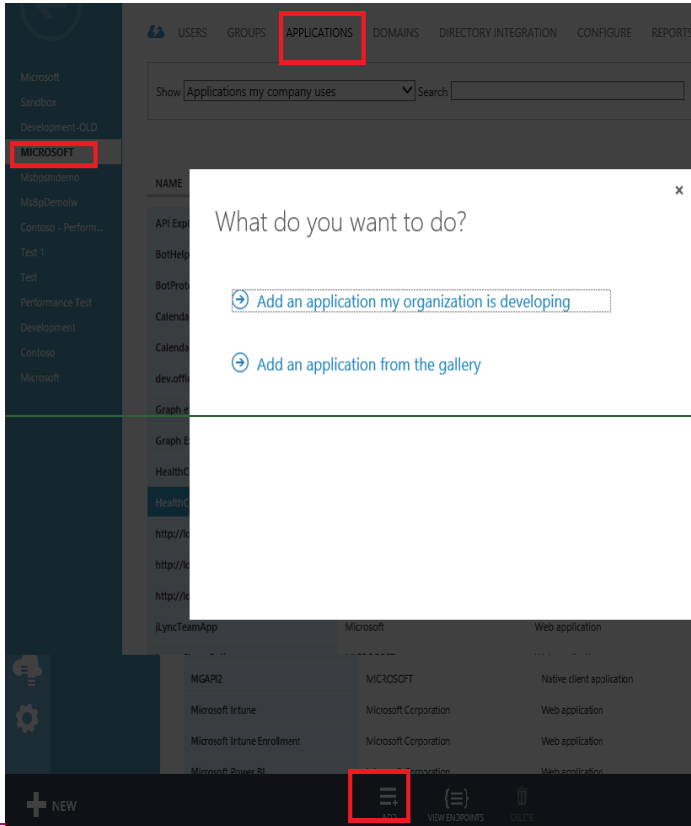
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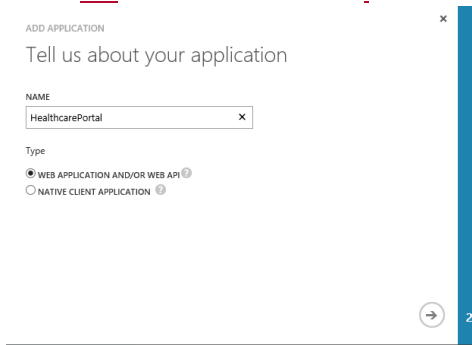
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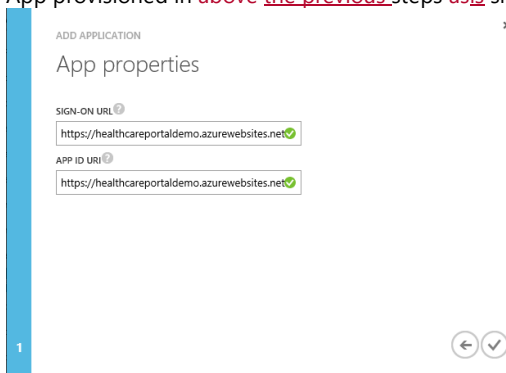
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4.7. Provision Azure AD Application for HealthCare Portal.

- a. Select the "Web Application AND/OR Web API" option.
- b. Provide the name "HealthcarePortal".



- c. Click the arrow to go next.
- d. Enter signSIGN-ON and APP ID URL as the valid URL (e.g. the Azure Rportal Web App provisioned in above the previous steps as shown as an example below).



- e. Click the checkmark to o okay.
- f. Click on the created application.
- g. Then navigate to the Configure tab.
- h. Go to the key's section, add a key or select duration and save the application settings by clicking Save at the bottom of the screen.
- i. It will generate a secret against the key, Make a note of it.
- j. Make a note of the client Id.
- k. Now go to the single sign-on section and add the +Reply URL as per application URL (i.e. HealthCare.Portal URL).
 ← Note: The Reply URL MUST end with a forward slash, otherwise the user will get an ambiguous error when trying to log into the application.
- l. Go to permissions to other applications.
- m. Click on Add application.
- n. Select **Skype for business online** and click the checkmark to o okay.
- o. Select the delegated permissions as shown in the below picture image below.

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keys

1 year	30-11-2016	30-11-2017	fc841111-1111-1111-1111-111111111111
Select du...	VALID FROM	EXPIRES ON	THE KEY VALUE WILL BE DISPLAYED AFTER YOU SAVE IT.

Copy and store the key value. You won't be able to retrieve it after you leave this page.

single sign-on

APP ID URI

REPLY URL
(ENTER A REPLY URL)

permissions to other applications

Skype for Business Online	Application Permissions: 0	Delegated Permissions: 5
Windows Azure Active Directory	Application Permissions: 0	
Add application		

- Read/write Skype user contacts and groups
- Receive conversation invites (preview)
- Read/write Skype user information (preview)
- Create Skype Meetings
- Initiate conversations and join meetings

p. Click on **Save** to save the application settings.

q. Note down the application secret from keys sections.

```
<add key="ida:ClientId" value="CLIENT_ID_AZURE_AD_APP_HEALTH_CARE_PORTAL" />
<add key="ida:ClientSecret" value="CLIENT_PWD_AZURE_AD_APP_HEALTH_CARE_PORTAL " />
```

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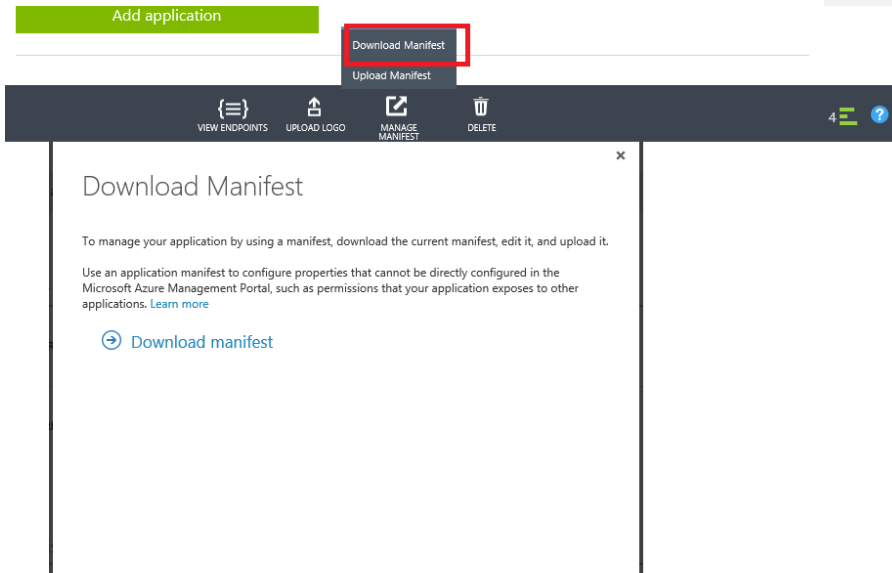
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2.4.6.2 Configure OAuth Flow

1. Open the Azure AD application created in step 7A.
- a.
2. Go to the **Configure** tab.
- b. At the bottom, click on **Manage Manifest**.
- 3.
- e. At the bottom, click on the **Manage Manifest**
- d. Click on **Download Manifest**.



e. Edit the .json file and update the following value to true.

```
"keyCredentials": [],  
"knownClientApplications": [],  
"logoutUrl": null,  
"oauth2AllowImplicitFlow": true,  
"oauth2AllowUrlPathMatching": false,  
"oauth2Permissions": [
```

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f. Save the file.

g. Upload the manifest file.

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4.7 Azure Web App Configurations

This step is optional if you are *not* using Key Vault.

The following configuration is required on the HealthCare.Portal Web App. [Go to portal.azure.com](https://portal.azure.com) to make configurations.

4.7.1 Add the Certificate to Web App

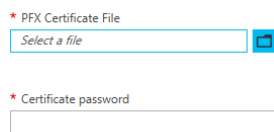
1. Click on **App Services**, available in the left navigation of the Azure portal.
- a. Click on **the Web App**.
- b. ~~Then~~ Click on **SSL Certificates**.
- c. ~~Then~~ Click to upload **the** certificate.

Note:

If you are using a self-signed certificate, then this certificate is the same certificate which was created during the Key Vault provisioning, [section 4.5](#). Export the *.pfx file with **the** password.

If you are using **the** CA certificate, then you should **be have a** *.pfx file available to you.

- e. Select *.pfx file and enter the password for the PFX file.



- f. Click **Upload**.

4.7.2 Add the Key to Azure Web App

To load the certificate, add the following entry **to** a **Azure Web App**.

- a. Click on **the Application Settings**.
- b. Scroll down and look for **the** App Settings section.

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- c. Enter WEBSITE_LOAD_CERTIFICATES as key and * as value.
- d. Then save the setting.

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4.8 Other Configurations

This section ~~will list down~~ other configurations elements that needs to be captured before deploying the ~~Web Apps~~. ~~For example, the tenant ID can be obtained in section 4.5.2 after the user executes the Add-AzureRmAccount command in PowerShell. It will be displayed on the screen with a few other items.~~

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```
<add key="ida:AuthorizationUri" value="https://login.microsoftonline.com" />
<add key="ida:AADInstance" value="https://login.microsoftonline.com" />
<add key="ida:Domain" value="0365_DOMAIN" />
<add key="ida:TenantId" value="TENANT_ID" />
<add key="ida:UserName" value="USER_NAME" />
<add key="SPOUserName" value="SPO_USER_NAME" />
<add key="ida:PostLogoutRedirectUri" value="HEALTH_CARE_PORTAL_URL" />
<add key="ida:MeetingSubject" value="MEETING_SUBJECT" />
<add key="TrustedApi" value="TRUSTED_API_URL" />
<add key="MobileSiteUri" value="MOBILE_SITE_URL"/>
<add key="DemoUserId" value="0365_USER_ID"/>
<add key="EmailServer" value="smtp.office365.com"/>

<!--This setting will turn ON or OFF the keyvault, it is recommended to use KeyVault in PRODUCTION deployment-->
<add key="IsKeyVaultEnabled" value="false" />
<!--Encryption key used for encryption the Query parameters, GUID. Optional when IsKeyValultEnabled = true-->
<add key="EncryptionKey" value="NEW_GUID" />
<!--Encryption Salt a GUID; Optional when IsKeyValultEnabled = true-->
<add key="EncryptionSalt" value="NEW_GUID" />
<!--Password of the SPO User (SpoUserName) , Optional when IsKeyValultEnabled = true-->
<add key="SpoPassword" value="SPO_USER_PASSWORD" />
```

5 Azure Web Apps Deployment (Continuous)

5.1 Update the Config file

- Open the HealthCarePortal.Sln in Visual Studio 2015.

Make sure the project loads successfully.

Note: If the project is loaded with Visual Studio 2017 and you see the following errors for the HealthCare.Core and HealthCare.Portal projects:

```
Error encountered while loading the project. Some project features, such as full solution analysis for the failed project and projects that depend on it, have been disabled.
```

```
This project references NuGet package(s) that are missing on this computer. Use NuGet Package Restore to download them. For more information, see http://go.microsoft.com/fwlink/?LinkID=322105.
```

Fix this by selecting **Tools -> NuGet Package Manager -> Package Manager Console**, click on the **Restore** button.

- After fixing the NuGet package issue and building the project, 305 warnings may be generated. This, however, does not interfere with the publishing process and can be ignored.

5.1.1 Update Bot Web.Ccconfig

1. Click on the VHCBot project and expand it.
2. Open the Web.Ccconfig file.
3. Update the following values.

```
<add key="BotId" value="BOT_ID" />
<add key="MicrosoftAppId" value=" BOT_APP_ID" />
<add key="MicrosoftAppPassword" value="BOT_APP_PASSWORD" />
<add key="ida:HealthCarePortal" value="HEALTH_CARE_PORTAL_URL"/>
<add key="ida:UserName" value="0365_USER_NAME" />
```

- 4. Save the file and close the file it.

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5.1.2 Update the HealthCare Portal URL

1. Click on the HealthCare.Portal project and expand it.
— Open the Web.Cc config file.

2. _____

3. Update the following values with values captured in the above section (use your notepad or xml notepad). For example:

The key `TrustedApi` has the value of the URL of the service that is deployed as the Trusted Application Endpoint.

The key `SharepointAdminGroup` has the value of "VirtualPatientCare Admin" as per section 4.2.

```
<!--Client ID of the application registered in the Azure AD to authenticate virtual health portal-->
<add key="ida:ClientId" value="CLIENT_ID" />
<!--Client Secret of the application registered in the Azure AD-->
<add key="ida:ClientSecret" value="CLIENT_SECRET" />
<!--0365 Tenant Domain-->
<add key="ida:Domain" value="xxxx.onmicrosoft.com" />
<!--0365 Tenant ID-->
<add key="ida:TenantId" value="GUID_TENANT_ID" />
<!--SharePoint site collection URL-->
<add key="SharepointSite" value="https://xxxx.sharepoint.com/sites/xxxxxx" />
<!--User name to access SharePoint resources-->
<add key="SPOUserName" value="xxxx@xxxx.onmicrosoft.com" />
<!--Post logout URR-->
<add key="ida:PostLogoutRedirectUri" value="https://xxxxxx.azurewebsites.net/" />
<!--Meeting subject to create UCAP meetings-->
<add key="ida:MeetingSubject" value="Appointment Details" />
<!--Azure webapp URL where virtual health is hosted-->
<add key="ida:HealthCarePortal" value="https://xxxxxx.azurewebsites.net/" />
<!--Key vault base URL, Optional when IsKeyValultEnabled = false-->
<add key="KeyVaultBaseUrl" value="https://xxxx.vault.azure.net" />
<!--Client ID of the application registered in Azure AD to access Key Vault, Optional when IsKeyValultEnabled = false-->
<add key="ClientId" value="CLIENT_ID_GUID" />
<!--Thumbprint of the certificate to access Key Vault Optional when IsKeyValultEnabled = false-->
<add key="Thumbprint" value="CERTIFICATE_THUMBPRINT" />
<!--Trusted Application endpoint, this is cloud/ app service https URL e.g. https://resourcename.cloudapp.net or https://yourtrustedapp.com or https://trustedapp.yourorgdomain.com or https://resourcename.azurewebsites.net-->
<add key="TrustedApi" value="HTTPS_URL_AZURE_CLOUD_SERVICE_FOR_TRUSTED_APP" />
<!--Application Insight Key-->
<add key="iKey" value="APP_INSIGHTS_ID" />
<!--Bot embed URI-->
<add key="botUrlEmbed" value="https://webchat.botframework.com/embed/xxxxxx?s=xxxxxx" />
<!--Lamna Web API URI, optional-->
<add key="MobileSiteUri" value="" />
<!--Email server to send email-->
```

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```

<add key="EmailServer" value="smtp.office365.com" />
<!--Admin group to access the configuration page of the Virtual Health-->
<add key="SharepointAdminGroup" value="SHAREPOINT_GROUP_NAME" />
<!--This setting will turn ON or OFF the keyvault, it is recommended to use KeyVault in
PRODUCTION deployment-->
<add key="IsKeyVaultEnabled" value="false" />
<!--Encryption key used for encryption the Query parameters, GUID. Optional when
IsKeyValultEnabled = true-->
<add key="EncryptionKey" value="NEW_GUID" />
<!--Encryption Salt a GUID; Optional when IsKeyValultEnabled = true-->
<add key="EncryptionSalt" value="NEW_GUID" />
<!--Password of the SPO User (SpoUserName) , Optional when IsKeyValultEnabled = true-->
<add key="SpoPassword" value="SPO_USER_PASSWORD" />

```

4. Save the file and close the file it.

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5.1.3 Update Deployment Tool Config file

Follow the [below](#) steps [below](#) to update the config file of [deployment tool](#). (Download [it](#) from [here](#).)

1. Open [the](#) DeploymentTool.exe.config file [after extracting the contents of the VirtualHealthDeploymentTool.zip file](#).
2. Update the appsettings values as per environment [path of Path of](#)

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```

<add key="basePath" value="SHAREPOINT_SITE_URL"/>
<add key="username" value="SPO_USER_NAME"/>
<add key="password" value="SPO_USER_PASSWORD"/>

```







3. Save it.






5.2 SharePoint Deployment

Deploy the SharePoint artifacts using [the below](#) steps [below](#):

1. Download the [deployment tool](#).

- The folder ~~would~~ contains the following file:

	DeploymentTool.exe	30-11-2016 21:11	Application	28 KB
	DeploymentTool.exe.config	28-11-2016 10:36	XML Configuration...	1 KB
	DeploymentTool.pdb	30-11-2016 21:11	Program Debug D...	60 KB
	DeploymentTool.vshost.exe	30-11-2016 21:11	Application	23 KB
	DeploymentTool.vshost.exe.config	28-11-2016 10:36	XML Configuration...	1 KB
	Microsoft.SharePoint.Client.dll	04-07-2014 04:43	Application extens...	554 KB
	Microsoft.SharePoint.Client.Runtime.dll	04-07-2014 04:43	Application extens...	288 KB

Organize					New					Open					Select					
PC > Data_New (D:) > ServicesCode > VirtualHealth > VirtualHealthDeployment > DeploymentTool																				
<input type="checkbox"/>	Name	Date modified	Type	Size																
<input type="checkbox"/>		AddAppointments.aspx	13-01-2017 11:36	ASP.NET Server Pa...	17 KB															
<input type="checkbox"/>		ContentTypes.xml	13-01-2017 11:36	XML Document	7 KB															
<input type="checkbox"/>		ListItem.xml	18-01-2017 10:54	XML Document	2 KB															
<input type="checkbox"/>		ListXML.xml	13-01-2017 11:36	XML Document	2 KB															
<input type="checkbox"/>		SiteColumn.xml	13-01-2017 11:36	XML Document	11 KB															

- Double click **DeploymentTool.exe**
- Select **Option 6**.
- Wait for PowerShell to complete the operation.

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```

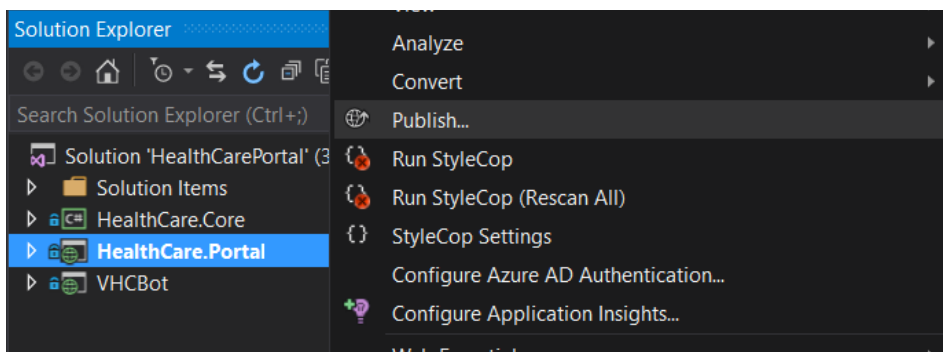
D:\ServicesCode\VirtualHealth\HealthCarePortal\DeploymentTool\DeploymentTool\bin\Release\DeploymentTool.exe
Deployed Column Hospital Department.
Deployed Column Peer Email Address.
Attendees content type created successfully
AvailableDates content type created successfully
Configuration content type created successfully
MeetingDetails content type created successfully
OnlineMeetingDetails content type created successfully
Questionnaires content type created successfully
QuestionnaireResponses content type created successfully
Peers content type created successfully
Provisioning List Available Dates.
Provisioned List Available Dates.
Provisioning List Online Meeting Details.
Provisioned List Online Meeting Details.
Provisioning List Configuration.
Provisioned List Configuration.
Provisioning List Attendees.
Provisioned List Attendees.
Provisioning List Meeting Details.
Provisioned List Meeting Details.
Provisioning List Questionnaires.
Provisioned List Questionnaires.
Provisioning List QuestionnaireResponses.
Provisioned List QuestionnaireResponses.
Provisioning List Peers.
Provisioned List Peers.
Provisioning List Appointments Page.
Adding Items in List: Configuration
Operation Completed
  
```

5.3 Virtual Health Deployment

There are multiple ways to deploy a **Web App** in Azure. This section **istalks** about Visual Studio Web Deploy publishing. Note that the UI shown in the following steps may differ from the latest Visual Studio 2017.

In **Solution Explorer**, right-click the project, and choose **Publish**.

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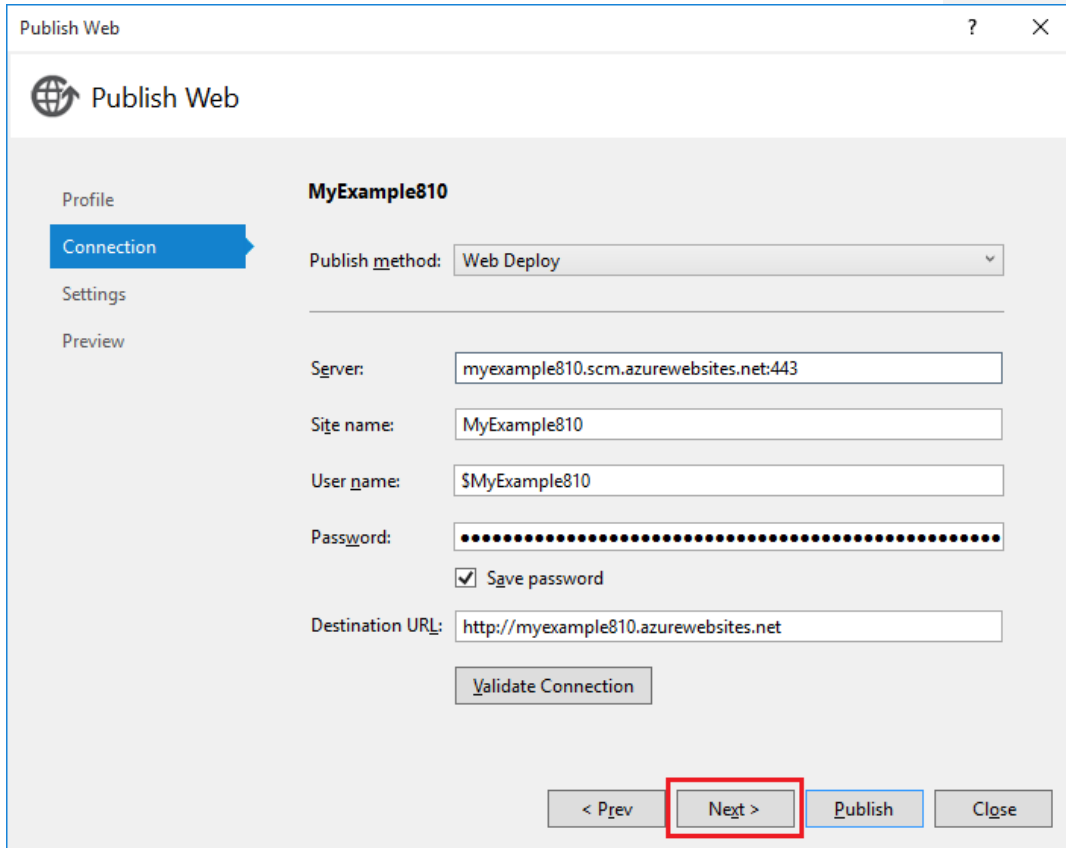


In a few seconds, the **Publish Web** wizard appears. The wizard opens to a *publish profile* that has settings for deploying the web project to the new web app.

Tip

The publish profile includes a user name and password for deployment. These credentials have been generated for you, and you don't have to enter them. The password is encrypted in a hidden user-specific file in the `Properties\PublishProfiles` folder.

1. On the **Connection** tab of the **Publish Web** wizard, click **Next**.

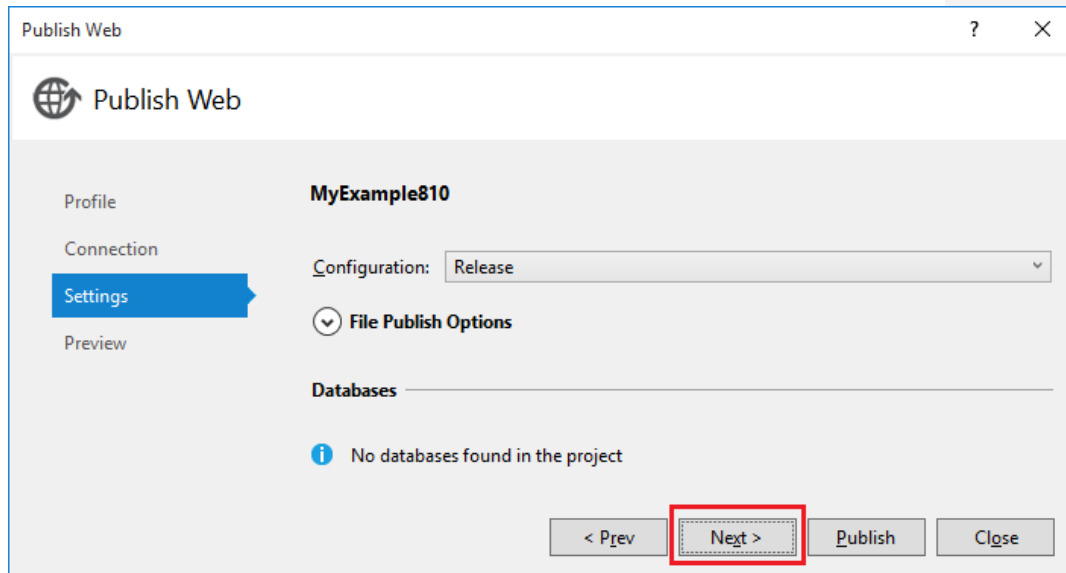


~~The **Next** is the **Settings** tab. Here you can change the build configuration to deploy a debug build for remote debugging. The tab also offers several **File Publish Options**.~~

~~2. **Settings** page is where you can change the build configuration to deploy a debug build for remote debugging. **Settings** also offers several **File Publish Options**.~~

~~2. On the **Settings** tab, click **Next**.~~

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On the **Settings** tab, click **Next**.

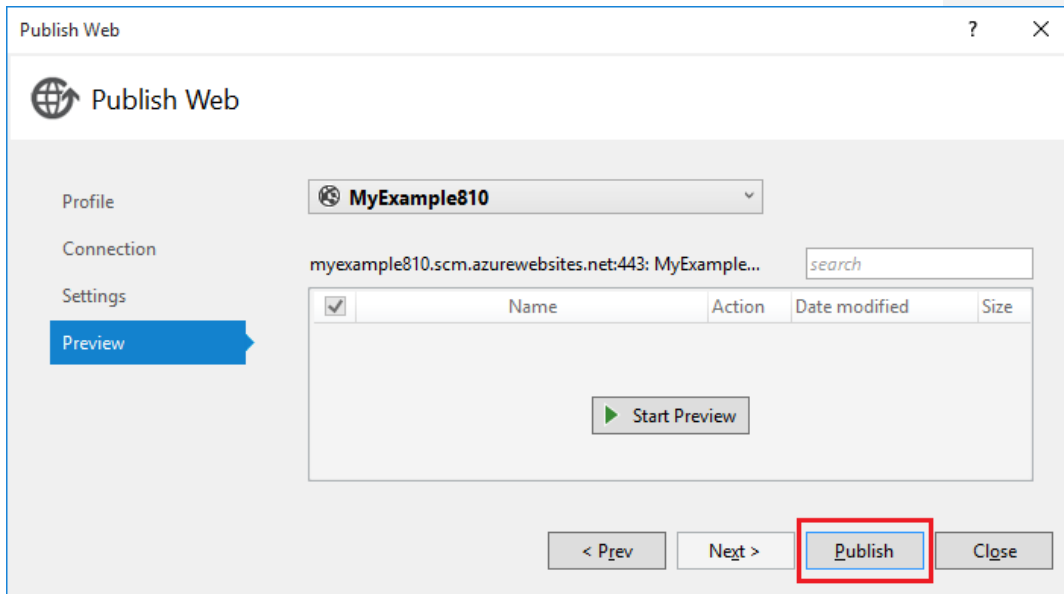
The **Preview** tab is next. Here you have an opportunity to see what files are going to be copied from your project to the API app. When you're deploying a project to an API app that you already deployed to earlier, only changed files are copied. If you want to see a list of what will be copied, you can click the **Start Preview** button.

3. The **Preview** page shows the files that are going to be uploaded from your project to the API app. After a project is deployed, you may need to redeploy a project with updates to an API app. Only changed files are uploaded. To see a list of files to be published, click the **Start Preview** button.

3. On the **Preview** tab, click **Publish**.

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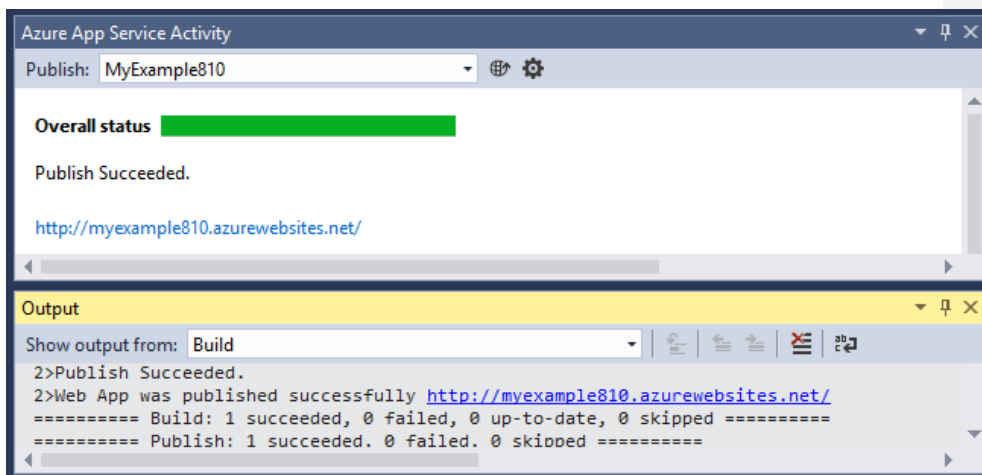
On the **Preview** page tab, click **Publish** to:

When you click **Publish**, Visual Studio begins the process of uploading/copying the files to the Azure server. This may take a minute or two.

The **Output** and **Azure App Service Activity** windows show the/what deployment actions that were taken and whether report successful completion of the deployment was successful.

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Upon successful deployment, the default browser automatically opens to the URL of the deployed web app, and the application that you created is now running in the cloud. The URL in the browser address bar shows that the web app is loaded from the Internet.

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5.4 VHC Bot Web App Deployment

Follow the same step as given in section 5.3 to deploy VHC Bot Web App.

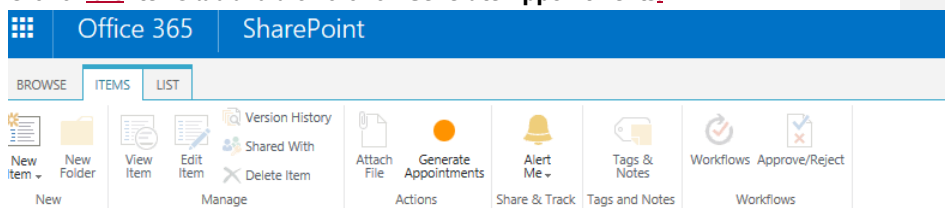
5.5 Post Deployment Configuration

5.5.1 BotUrlEmbed in Web.Config file of HealthCare.Portal

1. Go to section 4.4 and Get URL Embed code.
2. Note down the BotUrlEmbed.
3. Update the Web.Config of HealthCare.Portal with the above value.
4. Republish the HealthCare.Portal project again using Visual Studio.

5.5.2 Generate the Meeting Slots

1. Open the SharePoint Site Collection created in section 4.1.
2. Login as site collection administrator.
3. Go to **Settings** → **Site Contents**
4. Click on the "Available Dates" list
5. On the bottom, left corner, there will be a link to change to the classic view, click on "Return to classic SharePoint."
6. Click on the **Items** tab and then click on **Generate Appointments**.



7. Fill in the details as shown below. (Date and Check Select All Checkbox).

Home  EDIT LINKS

Add Appointments

Appointment Date: (mm/dd/yyyy)

Slots:

Select All

08:00 Am 02:00 Pm

09:00 Am 03:00 Pm

10:00 Am 04:00 Pm

11:00 Am 05:00 Pm

01:00 Pm 06:00 Pm

8. Click **Create Appointments** to
9. It will show the confirmation message.



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5.5.3 Populate Peers List

- 10.1. Open the SharePoint Site Collection created in section 4.1.
- 11.2. Login as the site collection administrator.
- 12.3. Go to **Settings** → **Site Contents**.
- 13.4. Click on the "Peers" list.
- 14.5. On the bottom left corner, there will be a link to change to the classic view, click on "Return to classic SharePoint."
- 15.6. Click on "new item."

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 **new item** or **edit** this list

All Items  

<input checked="" type="checkbox"/>	Title	Designation	Hospital Department	Peer Email Address
<input checked="" type="checkbox"/>	Admin 	CMO	Diabeties	admin@o365virtualhealth.com

16.7. Add details of admin and other doctors as below and click on **“Save”**.

Title *

Designation

Hospital Department ENT
 Emergency
 Cardiology
 Gastroenterology
 Gynaecology
 Haematology
 Nephrology
 Diabeties

Peer Email Address

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5.5.4 Populate Questionnaire List

17.1. Open the SharePoint Site Collection created in section 4.1.

18.2. Login as the site collection administrator.

19.3. Go to **Settings** → **Site Contents**.

20.4. Click on the **“Questionnaires”** list.

21.5. On the bottom, left corner, there will be a link to change to the classic view, click **“Return to classic SharePoint.”**

22.6. Click on **“new item”**.

[+ new item](#) or [edit this list](#)

All Items

✓ Title	Question	AllowMultipleSelection	Options	QuestionCategory
Do you have type 1 diabeties	Do you have type 1 diabeties	No	Yes/No	Diabetic
Has your condition improved?	Has your condition improved?	No	Yes/No	Fever

23.7. Add your question to the proper category and click on **“Save”**.

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Title *

Question

AllowMultipleSelection

Options
Options separated by semicolon (;)

QuestionCategory

6 Post Deployment Validations

6.1 Validate Home Page is Opening

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1. Open the HealthCare Portal Web App.
2. Login as an Active O365 Tenant user.
3. ~~2.~~ The Home page ~~should~~ looks like below ~~when~~ (Since there is no appointment.)



6.2 Validate Book Meeting

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1. Click on the **Book Meeting** link on the top navigation.
2. Fill in the details.
3. Click **Submit**.
4. ~~3.~~ The ~~D~~ashboard ~~should~~ shows ~~s~~ the meeting in a grid as shown below.

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Appointments

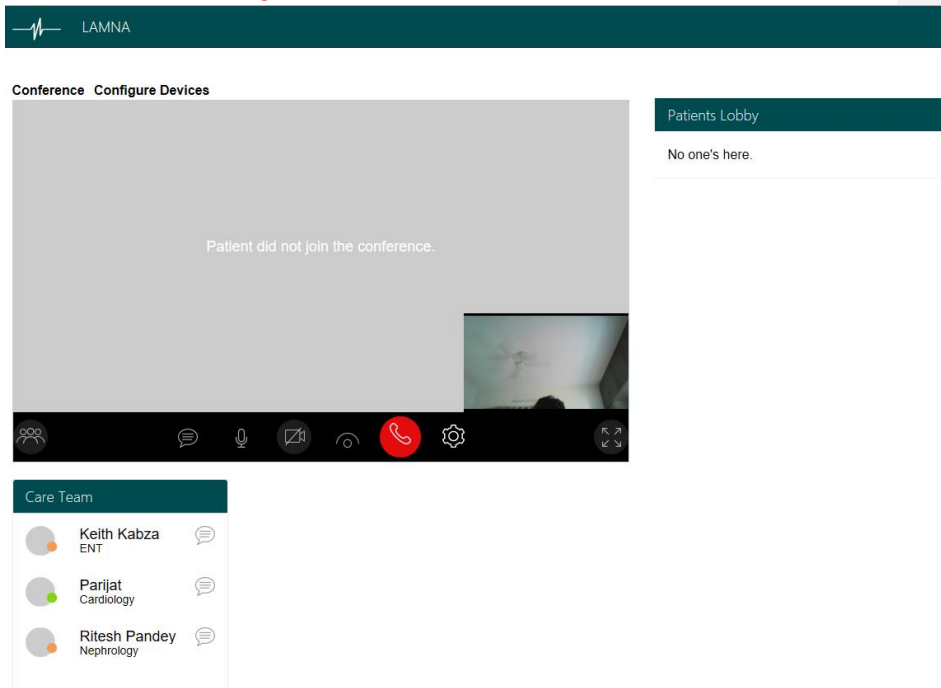
Subject	Doctor Name	Patient Name	Start Date/Time	End Date/Time	Join as Doctor	Join as Patient
Appointment Details	Dr. Keith Kabza	Rhonda Losey	9/27/2173 12:00:00 AM	9/27/2173 1:00:00 AM	Join as Doctor..	Join as Patient
Appointment Details	Dr. Keith Kabza	Michael Clifford	9/27/2173 12:00:00 AM	9/27/2173 1:00:00 AM	Join as Doctor..	Join as Patient

6.3 Join a Conference as Doctor

1. On the Home page, click on the **Join as Doctor** link to
1. It will open the page in a new tab.
- 2.
3. Wait for the page to load. See
- 4.2. It should look like the image below.

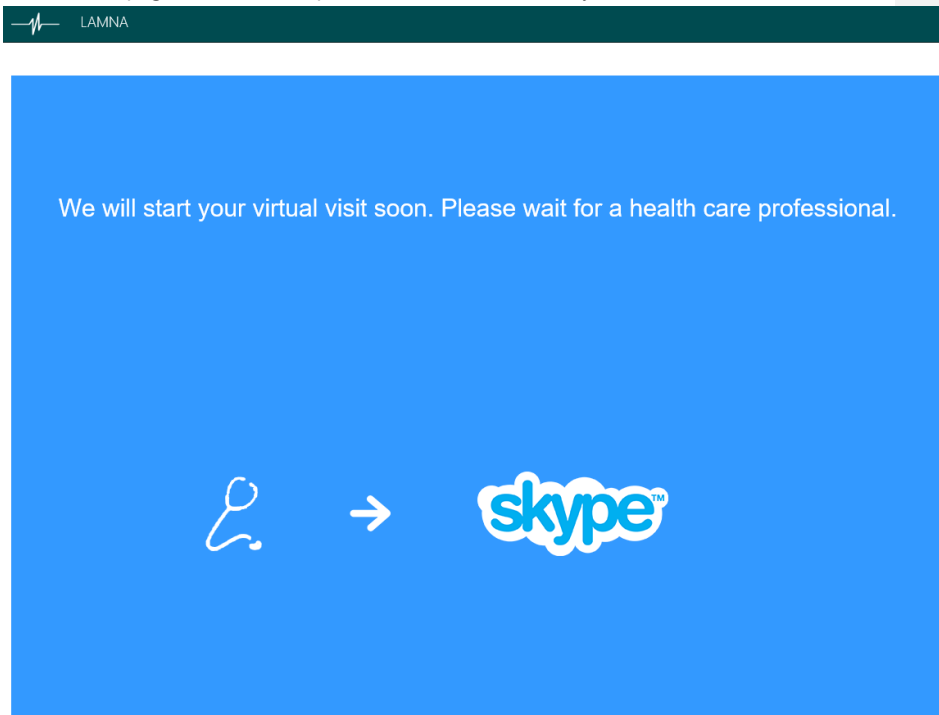
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6.4 Join a Conference as Patient

1. Go to the dashboard.
2. ~~Join the~~ Copy the URL of the patient link from the meeting ~~that the~~ which ~~d~~ Doctor has joined earlier.
3. ~~Open a new browser window~~ and
4. ~~3~~ paste the URL.
5. ~~4~~ Wait for the page to load. ~~The patient will wait in~~ the lobby.



6. ~~5~~ Go to the doctor's window.
7. ~~6~~ Click on **Admit**.

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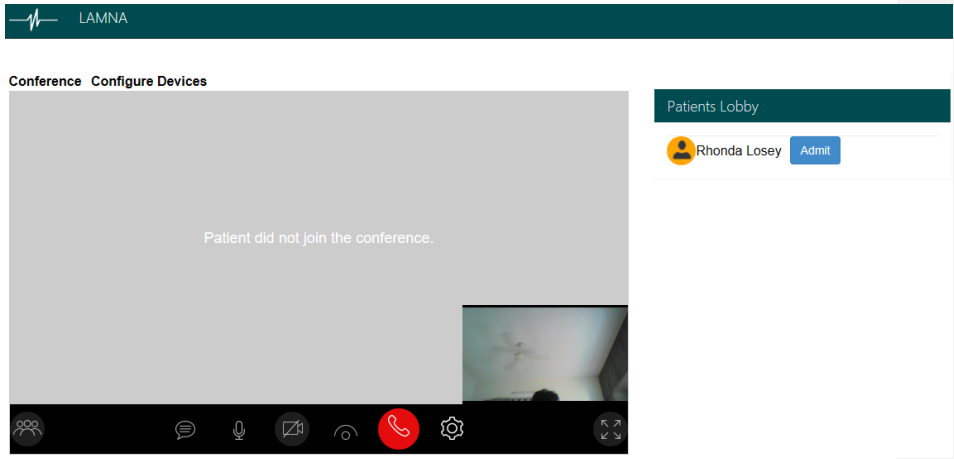
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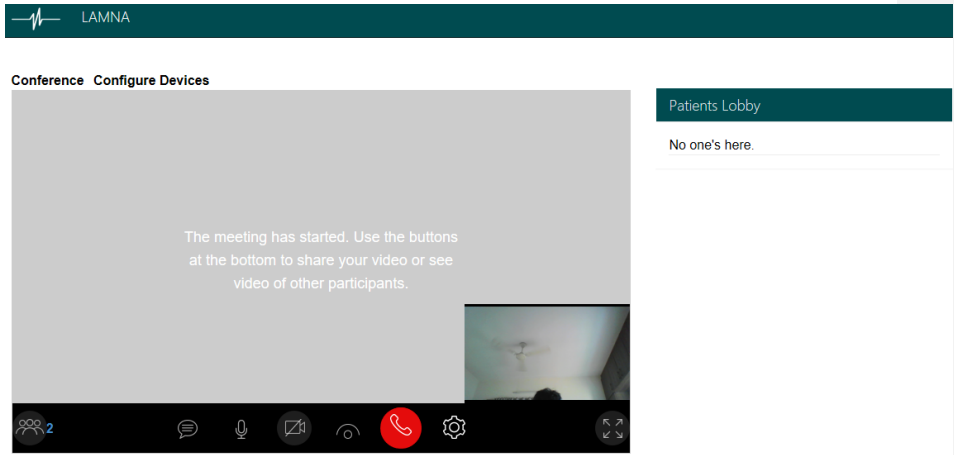
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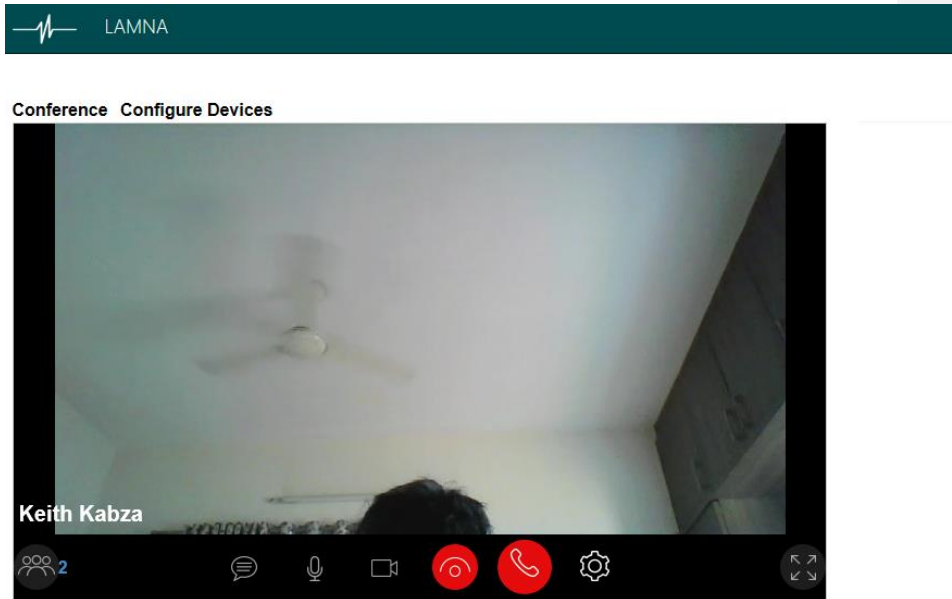
8.7. Meeting starts, and The doctor's window will is shown look like below.

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9.8. Go to the Ppatient's Wwindow, shown, it will look like below.

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6.5 Verify Configuration Page

1. Click on the **Configuration** link available in the navigation.
If the user is a member of "VirtualPatientCare Admin", then the page will load; and the user will see this page as shown below. Otherwise, the user will see an unauthorized message on the page.
- 1.

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Configuration

Configuration	Value
Default browser type for meetings	Microsoft Edge <input type="text"/>
Open Meeting in In Private browser	<input type="checkbox"/> Yes <input type="checkbox"/> No
Allow Participants to wait in Lobby	<input type="checkbox"/> Yes <input type="checkbox"/> No
Allow bandwidth calculation during Meeting conference.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Only meetings which are scheduled within 30 minutes can be joined.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Allow chat with peer doctors.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Allow meeting creation using Trusted Api.	<input type="checkbox"/> Yes <input type="checkbox"/> No

Save

Reports

Meeting Statistics

12. ~~Otherwise, user will see an unauthorized message on the page.~~

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6.6 Validate Book Meeting with Bot Page

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13. ~~Click on the "Book meeting with bBot" link available in the Global Navigation to~~

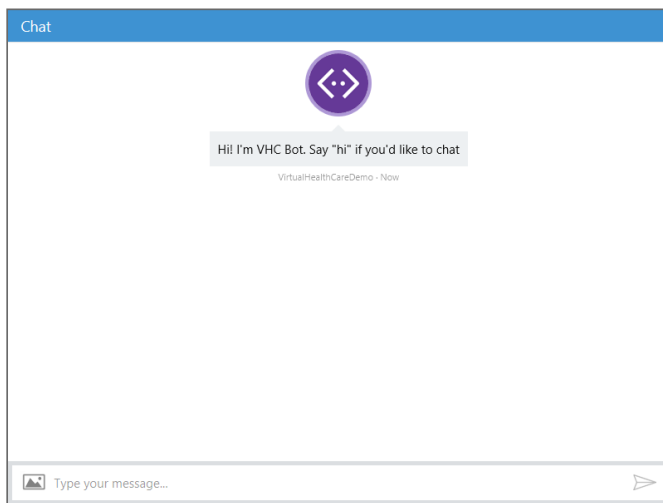
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14. ~~It will load the Bot page.- See the images shown below.~~

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Bot Meeting assistant



You may try typing below phrases like:

- "Book appointment for tomorrow",
- "Book appointment on 10/27/2016",
- "Cancel my appointment"