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Exercise 1: iFW Microsoft FHIR Server

How to Migrate your Integration Engine to the Cloud, IUC2019

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A. Table of Contents

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B. Purpose

The purpose of this exercise is to outline the steps and procedures needed to deploy the iFW Microsoft POC Project. This document will highlight all the components of the POC and will illustrate how it can be used for more demanding and exciting future endeavors.

For more detailed information about this POC, please refer to our official documentation here:

https://help.interfaceware.com/v6/automated-deployment-of-fhir-iguana-on-azure-vm

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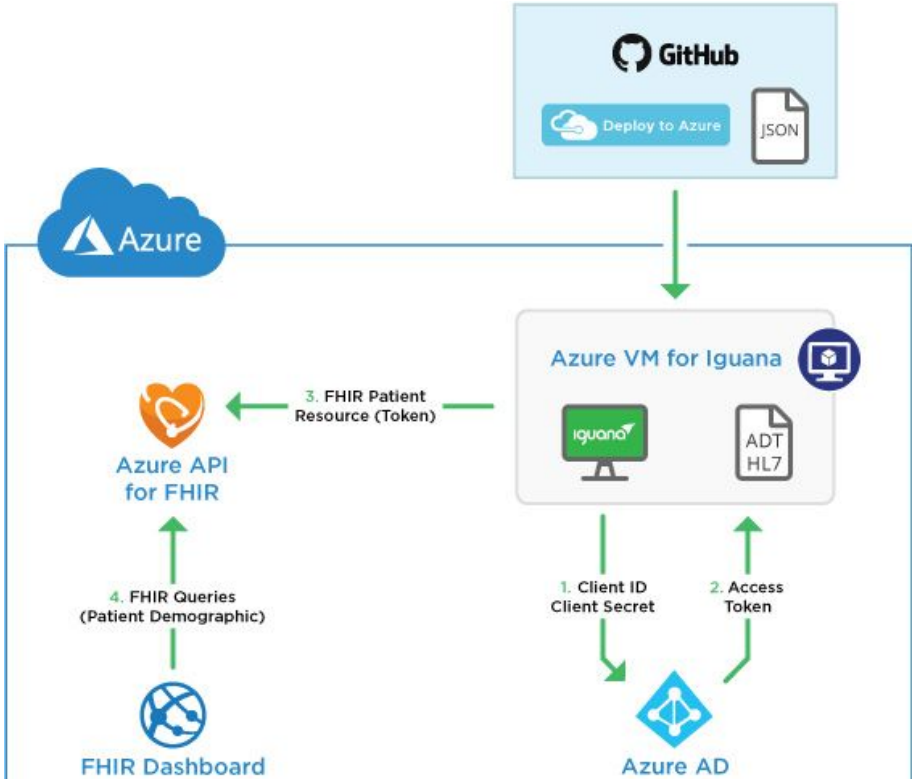
C. Architecture Diagram and Description

Components

- Azure Template on Github: Azure template assists the user with a click of the Deploy to Azure button or via powershell to auto provision the Azure VM and Iguana installation
- Azure: Cloud infrastructure that hosts the HL7 to FHIR POC (proof of concept)
- Azure AD: Azure Active Directory that provides secure access to Azure API services
- Azure API for FHIR: FHIR server with data storage that provides API access
- FHIR Dashboard: Web dashboard that displays patient demographics information from FHIR server
- Azure VM for Iguana: Azure virtual machine that hosts the Iguana application for converting HL7 v2 (ADT) messages to FHIR patient resources. The VM OS will be Windows Server 2016.



Workflow

1. Iguana sends client id and client secret to Azure AD to be authenticated
2. Azure AD sends back token to Iguana
3. Iguana sends FHIR patient resource to Azure API for FHIR
4. Clinician accesses FHIR dashboard to review Patient demographic

D. Prerequisites

This template **requires a FHIR Server to complete the overall workflow**. The official instructions on how to create one from Microsoft can be found here: https://github.com/Microsoft/fhir-server-samples. Once completed, the parameters needed from the FHIR server, as well as the rest of the Azure Resource Manager (ARM) Template can be seen below:

D. ARM Template Parameters	
Subscription	The azure subscription of the current azure active directory.
Resource Group	The resource group the VM is deployed to.
Location	The location of the VM.
VM Name	Virtual Machine Name.
Admin Username	Username to login to the VM.
Admin Password	Password to login to the VM.
Aad Service Client Id	The service id of the FHIR Server resource.
Aad Service Client Secret	The service secret of the FHIR Server resource.
Aad Authority	The authenticating link used for applications to connect to your domain. ex [https://login.microsoftonline.com/interfaceware.com] or [https://login.microsoftonline.com/interfaceware.onmicrosoft.com]
Aad Audience	Unless this differs, this will typically be the FHIR server URL in the format: [https://<AZURE API FOR FHIR NAME>.azurehealthcareapis.com]
FHIR Server URL	The FHIR Server URL. ex [https://<AZURE API FOR FHIR NAME>.azurehealthcareapis.com]
E. Microsoft FHIR Server Parameters	
FHIR Server URL	The FHIR Server URL. ex [https://<AZURE API FOR FHIR NAME>.azurehealthcareapis.com]
FHIR Dashboard Username	The username used to sign into the FHIR dashboard.
FHIR Dashboard Password	The password used to sign into the FHIR dashboard.
FHIR Dashboard URL	The FHIR Server URL. ex [https://<AZURE API FOR FHIR NAME>dash.azurewebsites.net]

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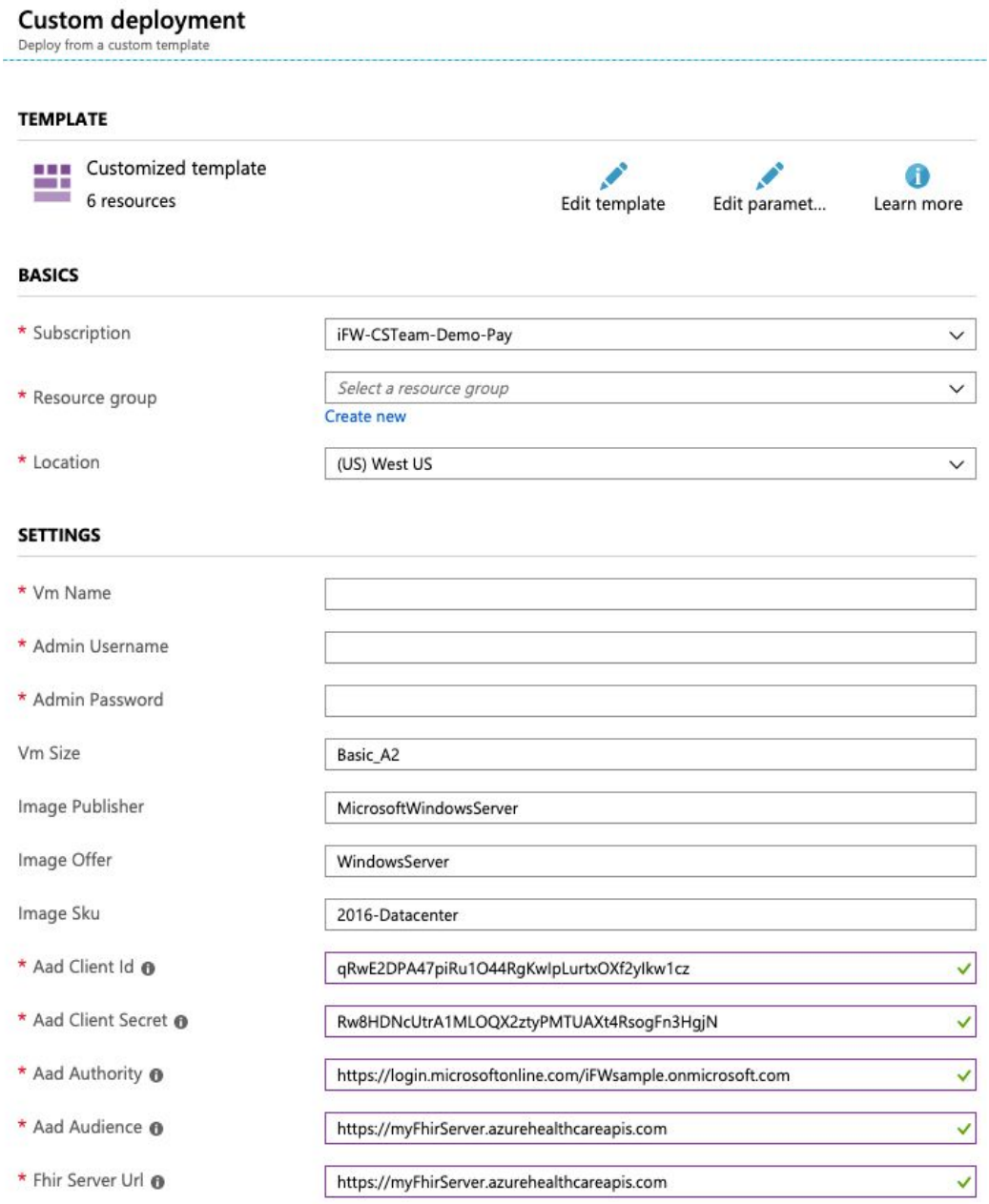
E. Deployment

1. Use the Deploy to Azure button to browse to the Azure Deployment portal.
2. Use the credentials from part C of the exercise guide to fill in the required parameters below:

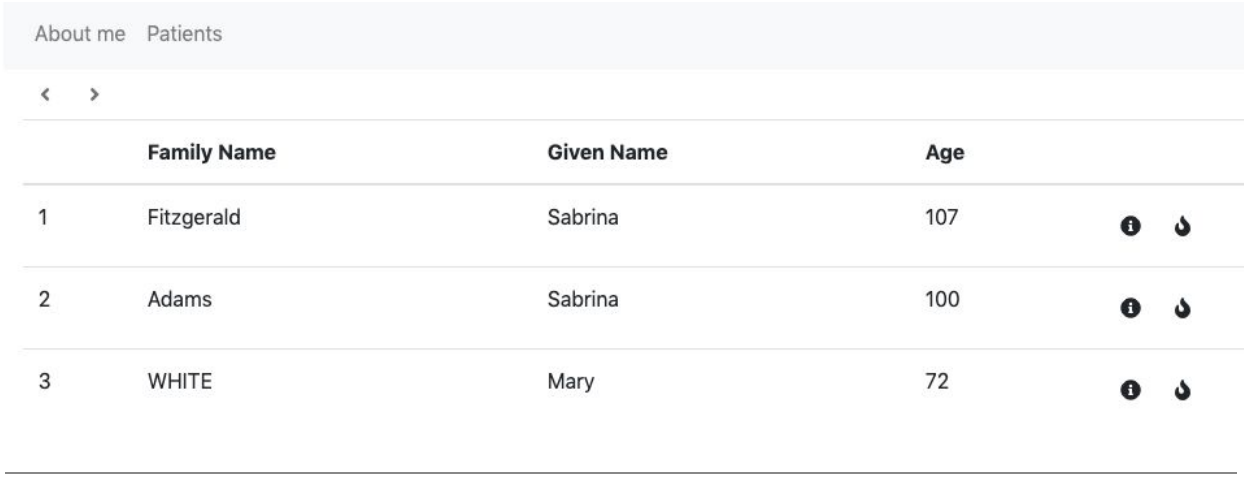


3. Deploy the template by accepting the terms and conditions, and clicking the Purchase button.
4. Click on the icon and navigate to the deployment progress.
5. Once the deployment is complete, navigate to the “Virtual Machines” section from the left panel of the Azure dashboard, and locate the virtual machine created. Once found, select it and click on connect to download the RDP file to connect.
6. Use the credentials from part C to connect to the server.
7. In the virtual machine, navigate to the server manager and select the Local Server, and set the IE Enhanced Security Configuration Setting to OFF for Administrators.
8. After disabling enhanced security, open IE and go to http://localhost:6543
9. Register Iguana by using a trial license.
10. Once at the dashboard, turn on either or both CHN 1: Random HL7 ADT Message and CHN1: HL7 From File channels. The dashboard should look similar to below:

	START/STOP		TYPE	CHANNEL NAME ▲	LAST ACTIVITY	ERRORS	QUEUED
☐	START	☐	TRANS ⇨ LLP	CHN 1: Random HL7 ADT Message	2019/06/22 16:45	--	0
☐	START	☐	FILE ⇨ QUE	CHN1: HL7 From File	--	--	--
☐	STOP	■	LLP ⇨ QUE	CHN2: Random HL7 ADT Receiver	2019/06/22 16:45	--	--
☐	STOP	■	QUE ⇨ QUE	CHN3: ADT To FHIR Mapper	2019/06/22 16:45	--	0
☐	STOP	■	QUE ⇨ TRANS	CHN4: FHIR Message to Server	2019/06/22 16:45	--	0
☐	START	☐	TRANS ⇨ QUE	CHN5: Clear FHIR Server	--	--	--

F. FHIR Dashboard

1. Navigate to the FHIR server Dashboard URL and login to the dashboard. Use the Dashboard URL, Username, and Password credentials from the FHIR server in part C of the exercise guide.
2. Once logged in, view the FHIR Dashboard. The FHIR resources created In Iguana will appear here. An example screenshot of this can be seen below:



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G. Exercise: Send HL7 Message to Microsoft Azure FHIR Server

At this point, the components that have been deployed are:

- Azure Virtual Machine
- Azure FHIR API

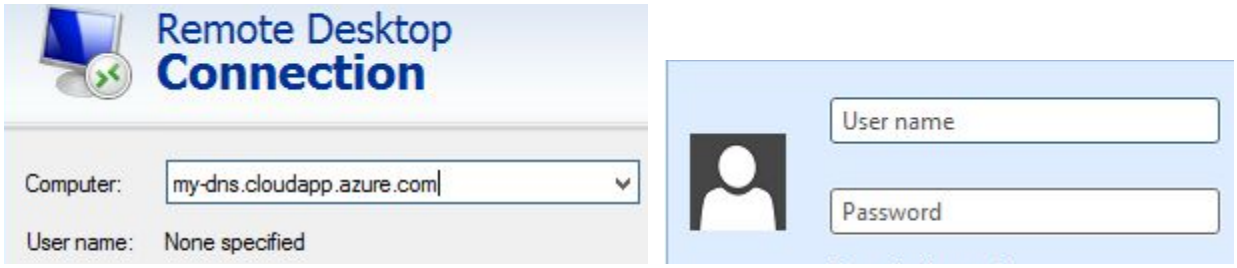
To complete the exercise, we must do 4 things:

1. **Remote** into our Azure VM
2. **Modify** an HL7 ADT File to include our First and Last name
3. **Turn on the CHN1: HL7 From File channel** in Iguana to start the interface and export our message as a FHIR resource to the FHIR Server.
4. **Observe the FHIR dashboard** (located on stage) to see your FHIR Resource. Your name will appear on the dashboard if you were successful.

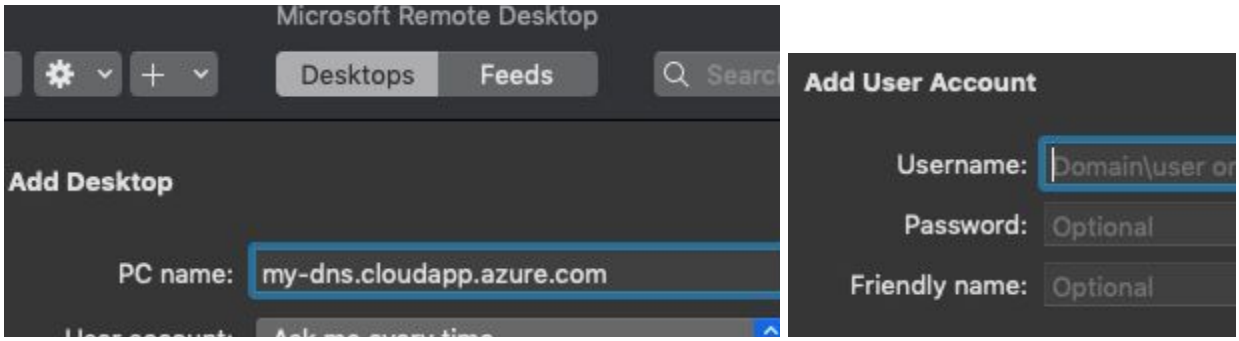
1. Remote Desktop Connection

In order to connect to the Azure Virtual Machine, please open Microsoft Remote Desktop on your computer (If you have a Mac this can be found in the Mac App Store), and use the DNS Name (Computer), and username and password credentials provided with your name tag to connect to the server.

Windows



Mac OS



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2. Modify HL7 ADT File

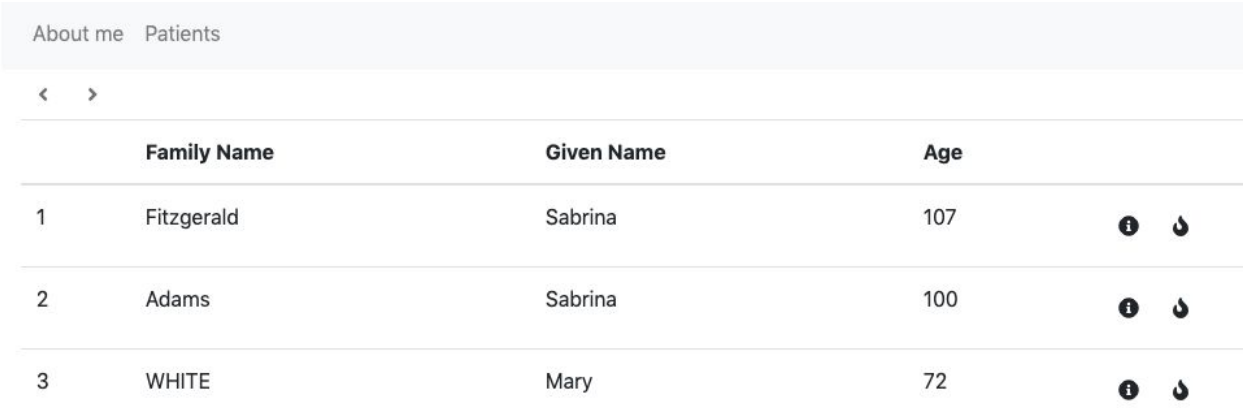
1. After remoting into the server, navigate to **C:\FHIR\ADT** and open the **HL7_ADT.txt** file using Notepad.
2. Change the PID name segment of the first entry to your first and last name. it should look like this: Doe^John
3. Once the field is changed, save HL7_ADT.txt, open Iguana, and sign in. The default credentials for logging in are:
    a. Username: **admin**
    b. Password: **password**

3. Sign into Iguana and start Channels

4. After signing in, turn on the CHN1: HL7 From File channel in Iguana to start the interface.

4. Observe the FHIR dashboard

5. Observe the FHIR dashboard (located on stage) to see your FHIR Resource. Your name will appear on the dashboard if you were successful.



	Family Name	Given Name	Age
1	Fitzgerald	Sabrina	107
2	Adams	Sabrina	100
3	WHITE	Mary	72