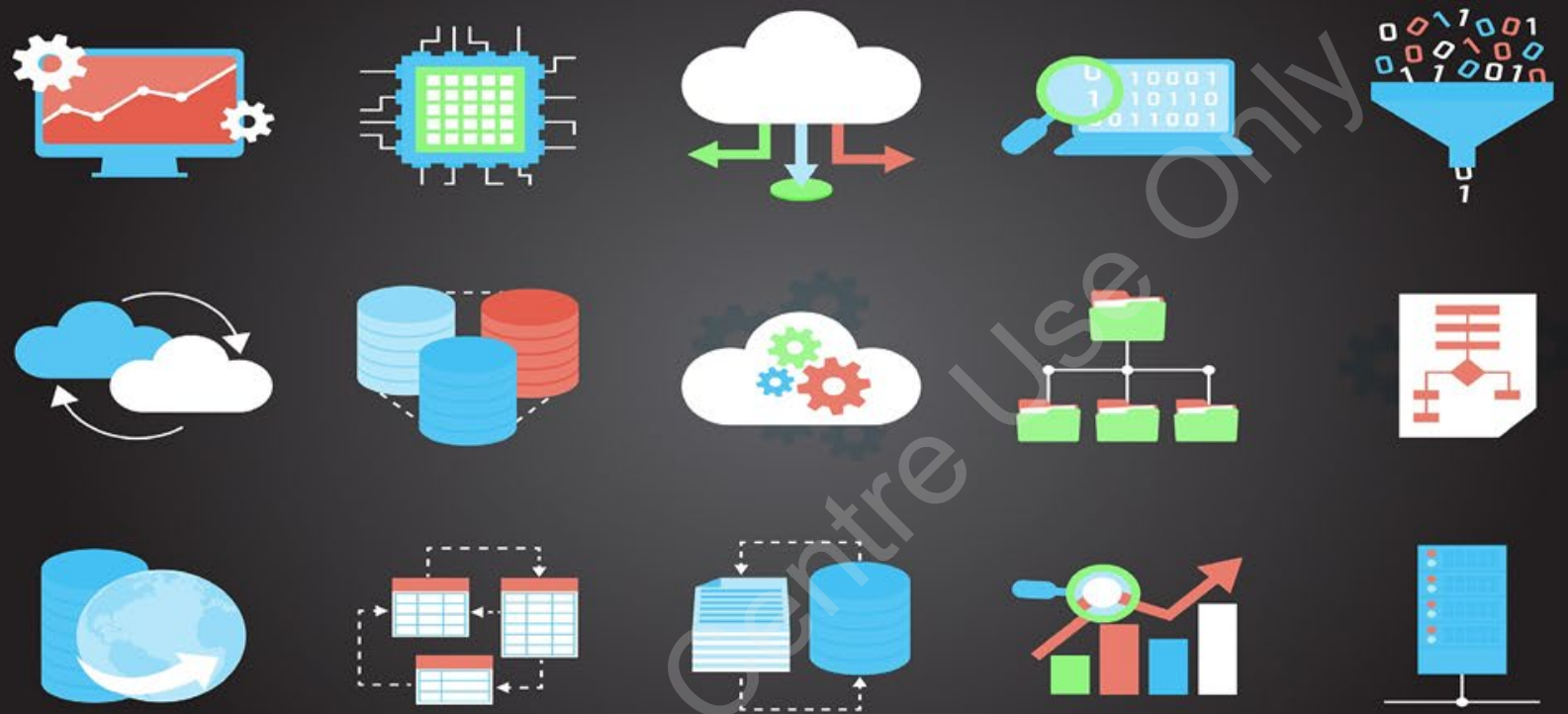
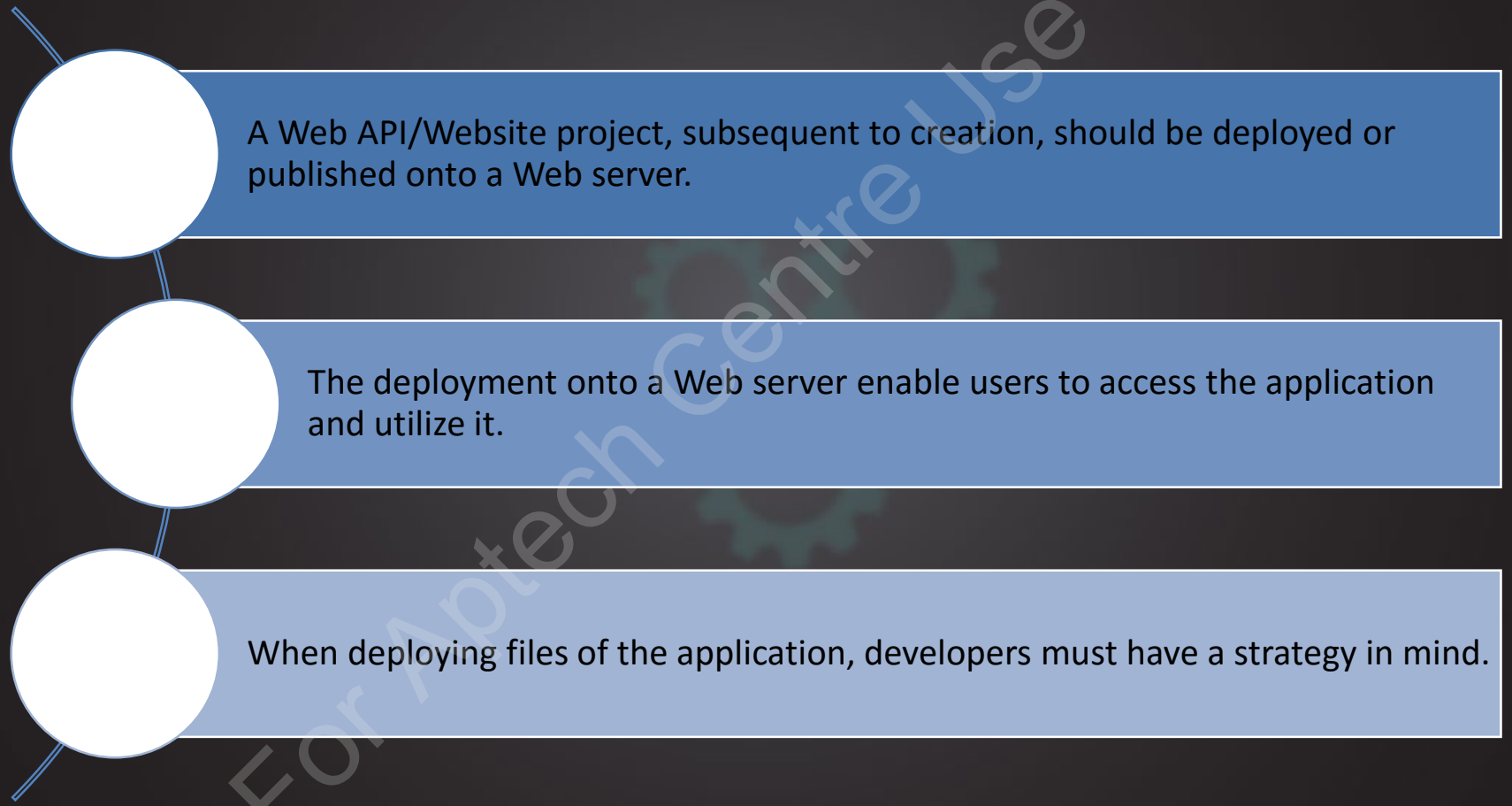


Session 09
Hosting and Consuming Web API

Objectives

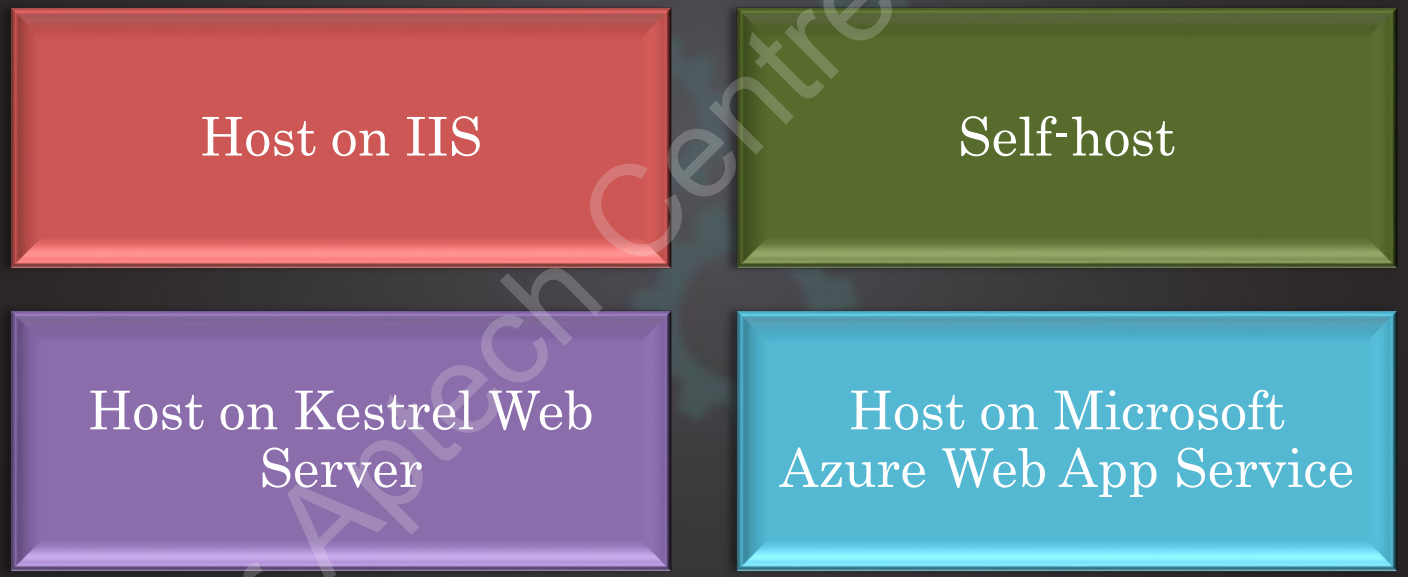
- Describe how to host Web API on IIS, self-host, and Kestrel Web server
- Describe how to host Web API on Microsoft Azure Web app service on Windows
- Describe how to host Web API on containers services
- Explain methods of consuming Web API in HttpClient
- Explain how to use Swagger and AutoRest

Hosting Web API in IIS, Self-host in a Process, or Host on Kestrel [1-2]



Hosting Web API in IIS, Self-host in a Process, or Host on Kestrel [2-2]

Hosting Options:



Hosting a Web API on IIS

In self-hosting, the Web API hosting is independent of the main (or, client) application. As a result, the real Web API hosting is on a console application that runs on the server or in a Windows Service.

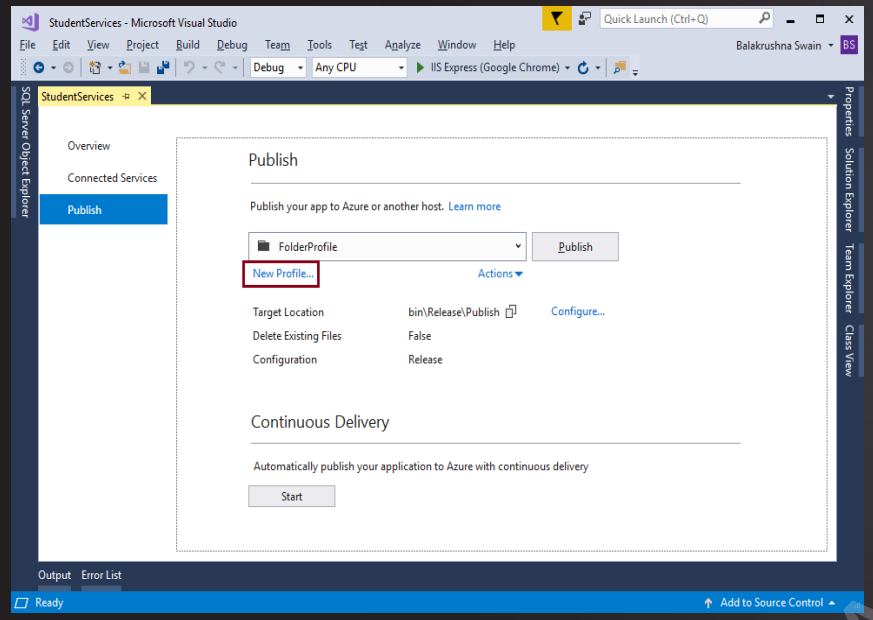
Using Kestrel for WebAPI Hosting

Following are the key points to remember about using Kestrel for WebAPI hosting:

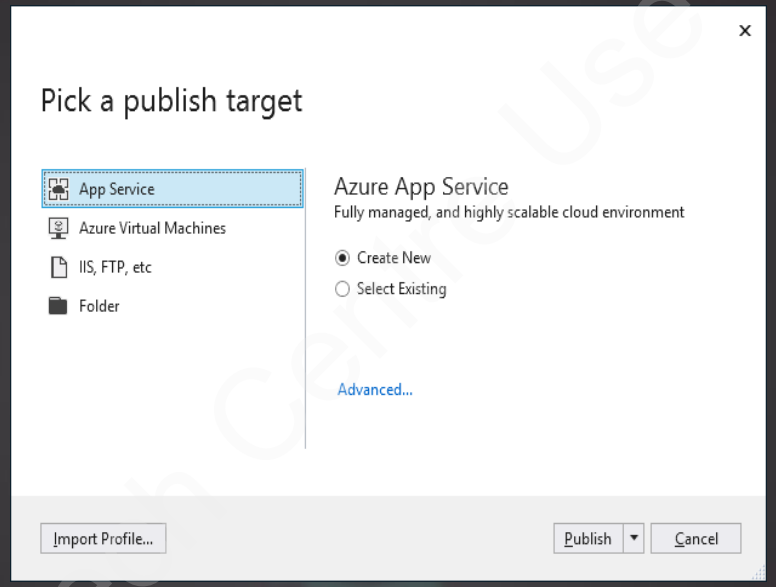
- ASP.NET templates include the default, open-source Web server named Kestrel.
- It is useful for hosting ASP.NET applications on any operating system.
- The use of Kestrel can be either ways, by itself or by using a reverse proxy server (examples Apache, Nginx, and IIS).
- HTTP requests are obtained from the Internet using a reverse proxy server, which undergo preliminary handling and are then, forwarded to Kestrel.

Hosting Web API in Microsoft Azure Web App

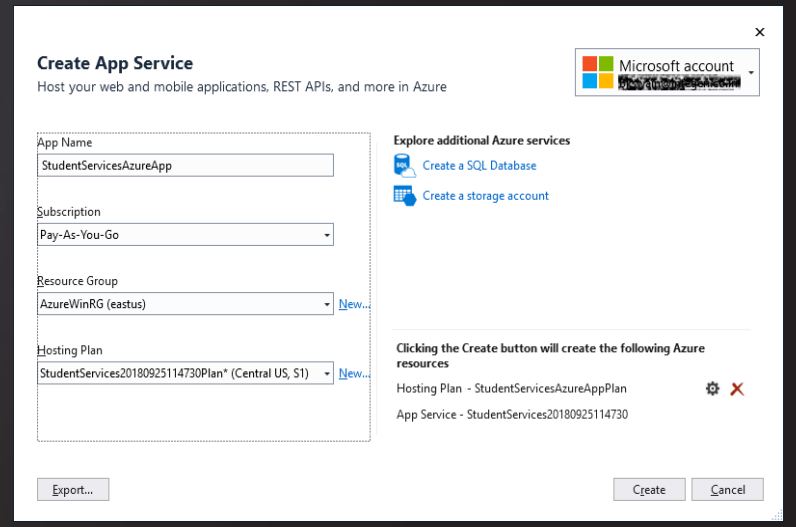
Publishing a Web API application to the Azure App service:



Publish Profiles



Web App Publish Profiles



Web App Settings

Hosting a Web API on Container Service [1-2]

Windows containers can be used as a means for automating the deployment process of .NET applications.

They help in delivering these applications as independent and portable containers that can run on any platform, such as Cloud, Linux, and Windows.

The salient feature of a container is that it retains the same environment across various deployments.

Hosting a Web API on Container Service [2-2]

The importance of a modern API and the use of a Docker container for hosting and running the API in the cloud can be described as follows:

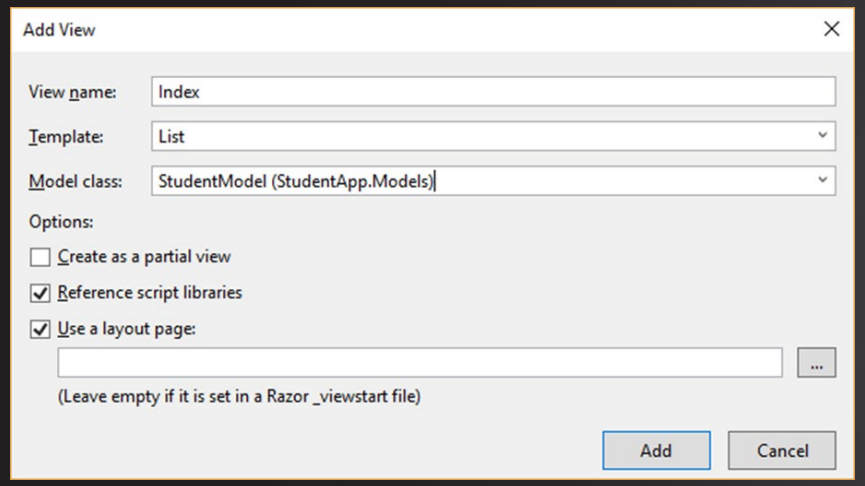
Importance of containers	• The use of containers increases deployment speed. This is because all dependencies of an application are within the container itself.
Application with dependencies	• At times, dependencies may get installed on a virtual machine. Thus, when applications are deployed on that virtual machine, there is a possibility of an impedance mismatch between the container and the dependency on virtual machine.
Deployment of Web application with its dependencies in a container	• A specific version of IIS and the ASP.NET framework are usually packaged. When it is rolled out as a container, the developer is confident that the Web application will perform as per the expectations.

Consuming Web API in HttpClient [1-2]

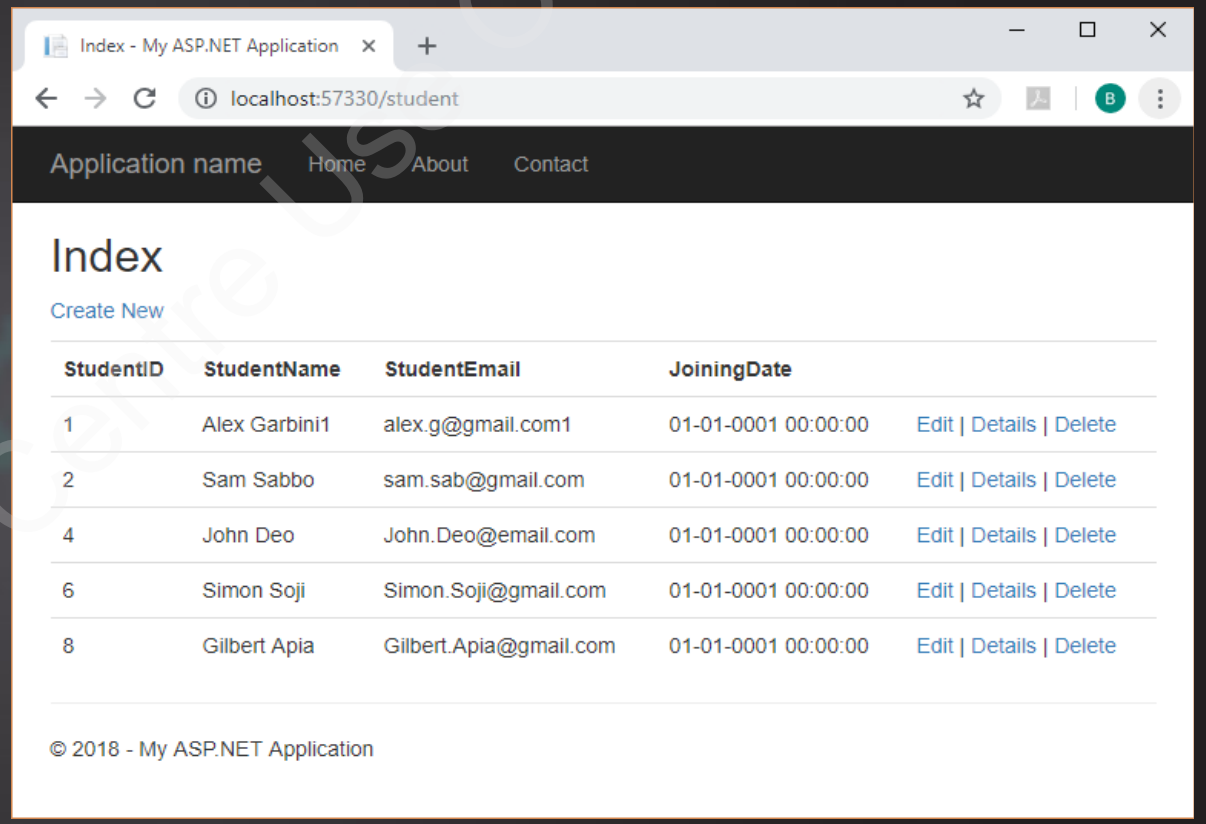
`HttpClient` class provides various methods while consuming ASP.NET Web API such as:

Method	Description
`GetAsync`	GET request is sent to a specified Uniform Resource Identifier (URI).
`PostAsync`	POST request is sent to a specified URI.
`PutAsync`	PUT request is sent to a specified URI.
`DeleteAsync`	DELETE request is sent to a specified URI.

Consuming Web API in HttpClient [2-2]



MVC View Scaffolding



MVC Application Using HttpClient

Using Swagger and AutoRest

Swagger is a language-agnostic specification used to describe REST APIs.

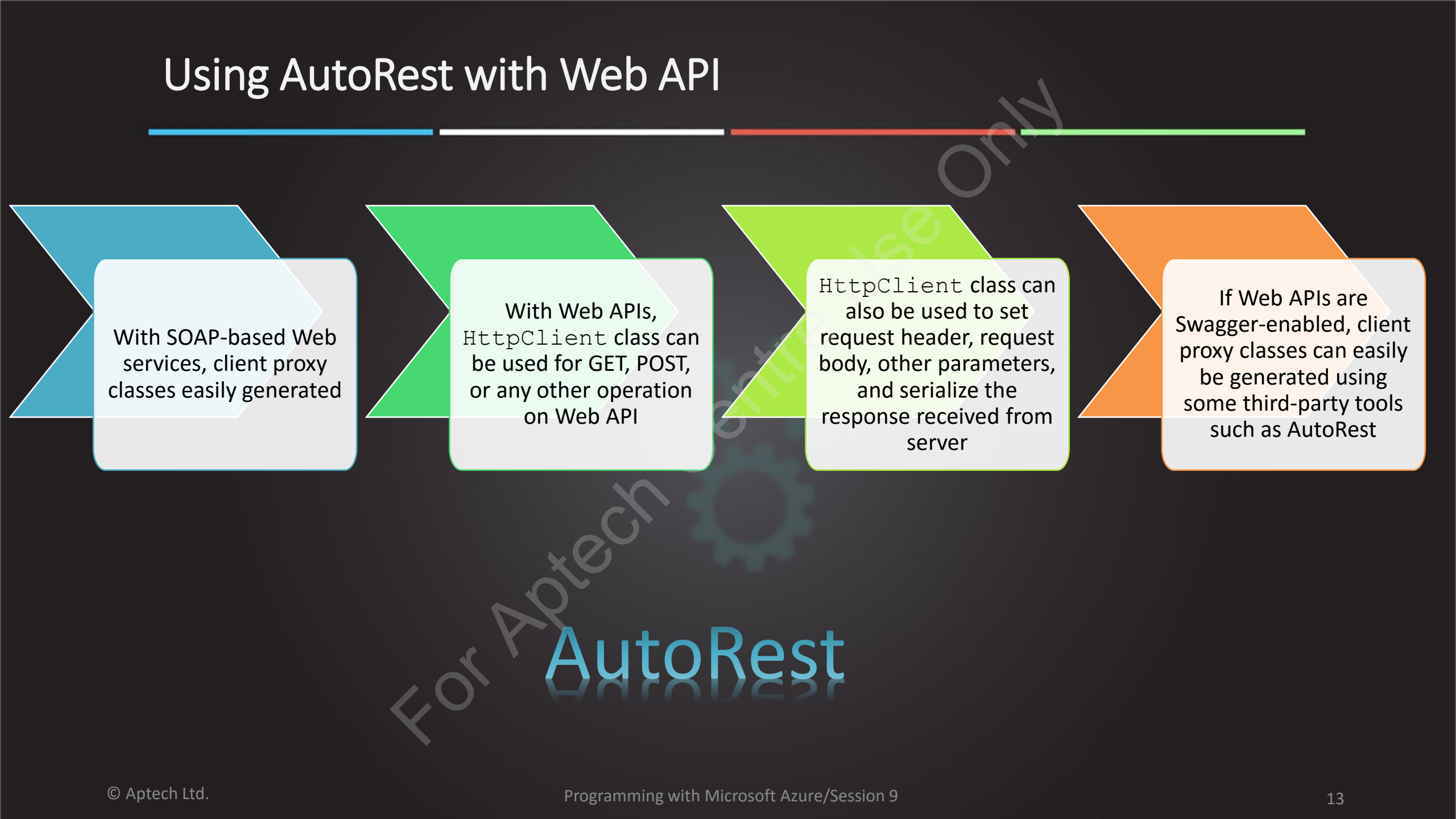
Swagger helps in solving the problem of creating help pages as well as suitable documentation for Web APIs.

Swagger is also referred to as OpenAPI as the Swagger project was donated to the OpenAPI Initiative.

The name OpenAPI is preferred. Some benefits of Swagger are API discoverability, client SDK generation, and interactive documentation.

Using AutoRest with Web API

- With SOAP-based Web services, client proxy classes easily generated
- With Web APIs, `HttpClient` class can be used for GET, POST, or any other operation on Web API
- `HttpClient` class can also be used to set request header, request body, other parameters, and serialize the response received from server
- If Web APIs are Swagger-enabled, client proxy classes can easily be generated using some third-party tools such as AutoRest



Summary

- Visual Studio offers strong support for packaging and deployment of Web applications and services.
- One of the ways to host a Web API application is by publishing it to IIS on an Azure VM.
- In self-hosting, the Web API hosting is independent of the main (or, client) application.
- Web API applications can also be hosted on the Kestrel server.
- Azure Container Service allows quickly deploying a production ready Kubernetes, DC/OS, or Docker Swarm cluster.
- Swagger is a language-agnostic specification used to describe REST APIs. Swagger helps in solving the problem of creating help pages as well as suitable documentation for Web APIs.