Cloud Computing

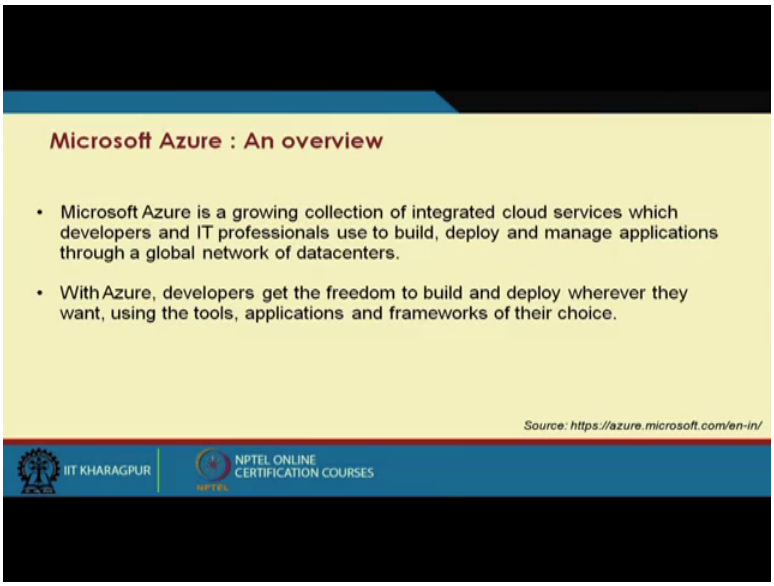
Prof. Soumya Kanti Ghosh
Department of Computer Science and Engineering
Indian Institute of Technology, Kharagpur

Lecture – 17
Case study with a commercial cloud: Microsoft Azure

Hi, let us continue our discussion on cloud computing. Today what we will discuss is one of the one some demo on a commercial cloud namely Microsoft azure. So, to see that how it works. So, as such I need to I let me mention that there is no specific preference for using azure though it is a very popular and use worldwide. So, the more of a it is showing a demo on the things as my students are comfortable on this that we thought that there demo and you will be good. And Secondly, we will be using a free login of this is azure. So, that it will be easy for you to replicate those who were interested to you can basically create your own login, and try this type of things. And I have a fill that how really a commercial cloud works, right.

So, that is the major motivation and any other type of things any other type of commercial or open source cloud you can use there is no, no nothing binding on the thing, but just to show that how to work on. The thing azure as we know that it is popularly a popularly a more popular for a platform as a service maintained by Microsoft have data centers Microsoft a data center across the globe, and as a huge user base for the things, right.

(Refer Slide Time: 01:43)



So, if you look at Microsoft azure knower view the it is a growing collection of integrated cloud services, which developers and I t professional used to build deploy and manage applications through a global network of datacenter right. Maintained by Microsoft in this case. With azure developers gets the freedom to build and deploy, wherever they want using the tools application and frameworks of their choice.

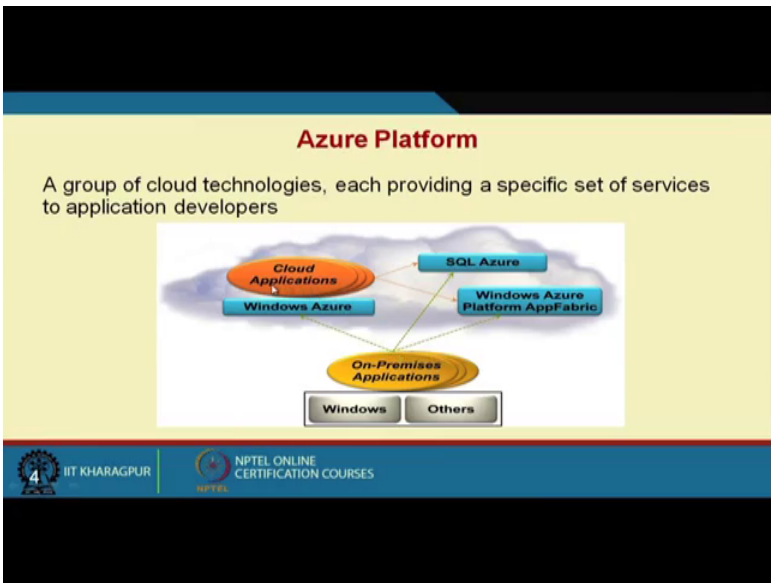
So that means, it gives AUB put as access to that for developing the things as we mentioned it is a primarily a pass type of services platform as a services it is extremely useful for I t professional. And developers to develop apps over the this over this platform. And any type of further matter it is true for any type of pass type of cloud, where the developers have a this developing platform, looking way of developing different type of apps on the thing, right. With without having installation and infrastructure on their own their own premises Microsoft azure. You can use there was a on the cloud or on one premise that sort of absence are also there.

(Refer Slide Time: 02:56)

So, as I was mentioning there Microsoft as a global presence and of data centers. And this picture we have taken again most of the things we have taken from Microsoft azure website.

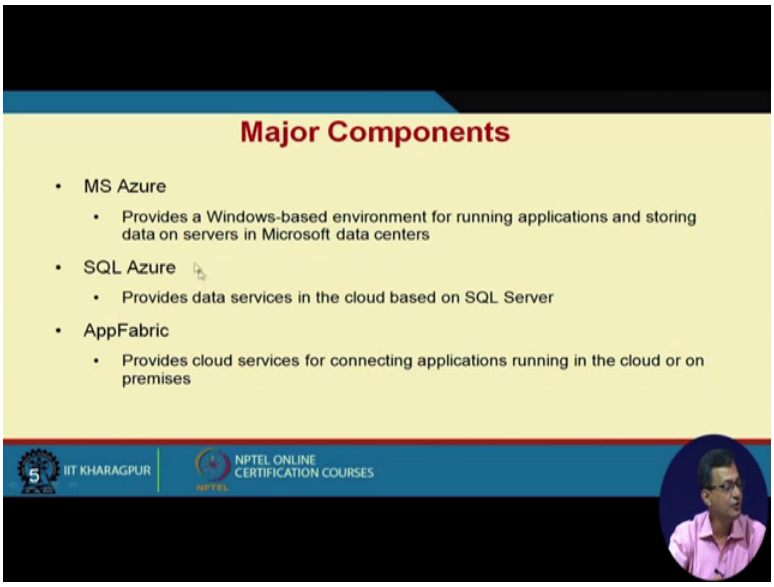
So, these are this picture maybe little figure may be little lower than maybe there are different type of data center. The idea is to say that is a global presence of data sensors which are interconnected and user can hook in to the azure as a cloud without bothering that where the it is actual application or the platform is like.

(Refer Slide Time: 03:32)



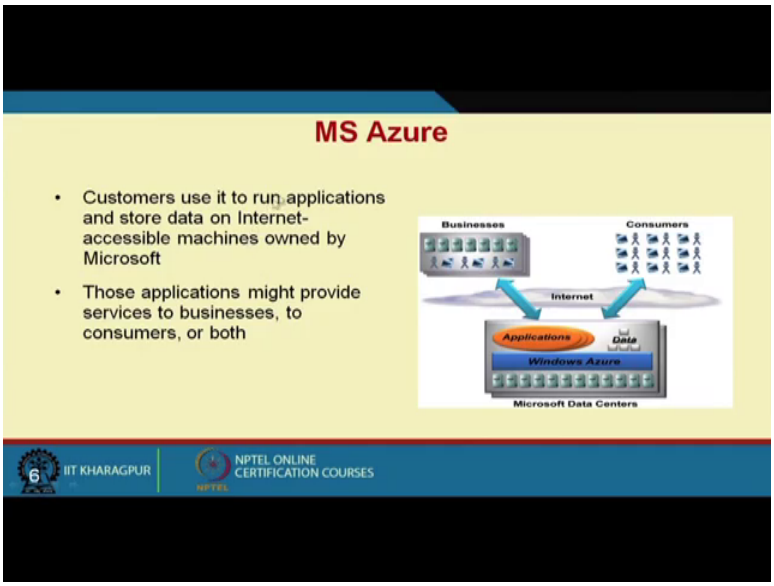
So, if you look at the azure platform it is a globa group of cloud technologies is providing a specific set of services to the applications. So, one the core is that azure or the Microsoft azure thing where the cloud applications are launched there is a SQL azure which gives a SQL server type of support there is a windows azure platform, windows azure platform fabric right. And the windows or other users on premise applications they can hook into this components.

(Refer Slide Time: 04:04)



So, if you look at the major components as we mentioned one is the Microsoft azure, provides a windows based environment for running application and storing data on servers in Microsoft data centers. SQL azure provides data services in the cloud based SQL server, and app fabric provides cloud services for connecting application running in cloud or on premises. So, it is important that there is app fabric it is say provides cloud services for connecting applications which may be running on the cloud, or on premise on premise servers and every things. So, it gives this say versatile way of connecting to different type of applications with a backend databases. So, it is it is say truly a development platform, and pass is suppose to be a developed platform.

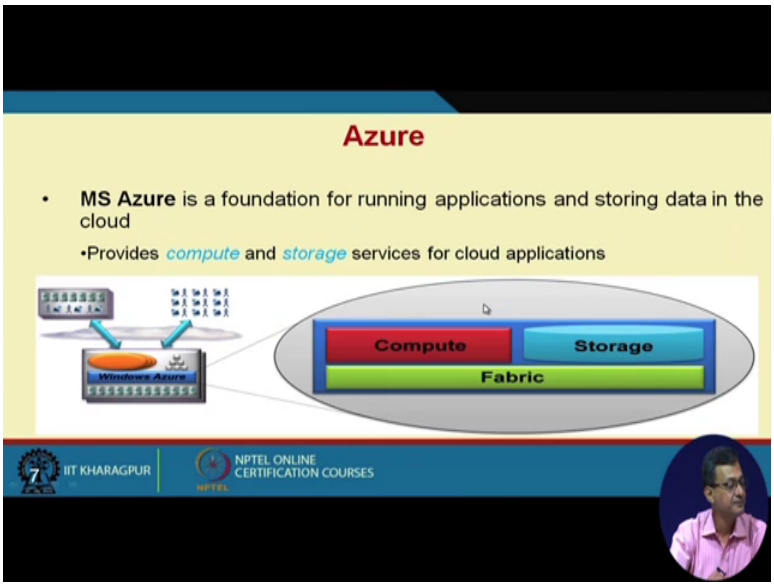
(Refer Slide Time: 05:01)



So, look at the other it look at a Microsoft azure customer, use to run application and stored data on data in internet accessible many machines or the which can be connected through the network connection and owned by or supported maintained by the Microsoft.

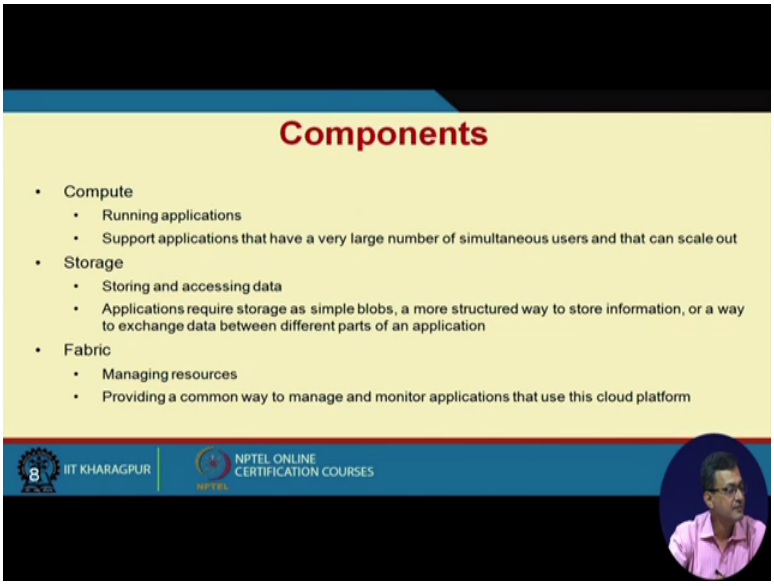
In case of Microsoft azure for other service provider there are other things those application might provide services to businesses 2 consumers or both right. So, provide services to business says services to consumer and look like here the picture shows that can be business oriented things like whole of your or a development things or partial of the development platform etcetera you leverage on the azure platform or it can be the individual consumer or customers which can connect to the things and here the azure fabric is there basic azure and which connect to it is backbone of bare metal systems, and it has data repository or data store. And then the applications which allows you to connect to the external volt. So, and we have a broad network connectivity for serving the thing.

(Refer Slide Time: 06:16)



So, azure is a foundation for running applications and storing data in the cloud. So, it provides as a as a cloud service provider, it is a foundation for running application and storing in the cloud provides compute, and storage services for cloud applications right. So, similarly it is compute storage and fabric. So, fabric is primarily binding the things with the pear metal that different data centers the resources etcetera. So, it is it keeps a layer above the things which allows for virtualization another type of supports.

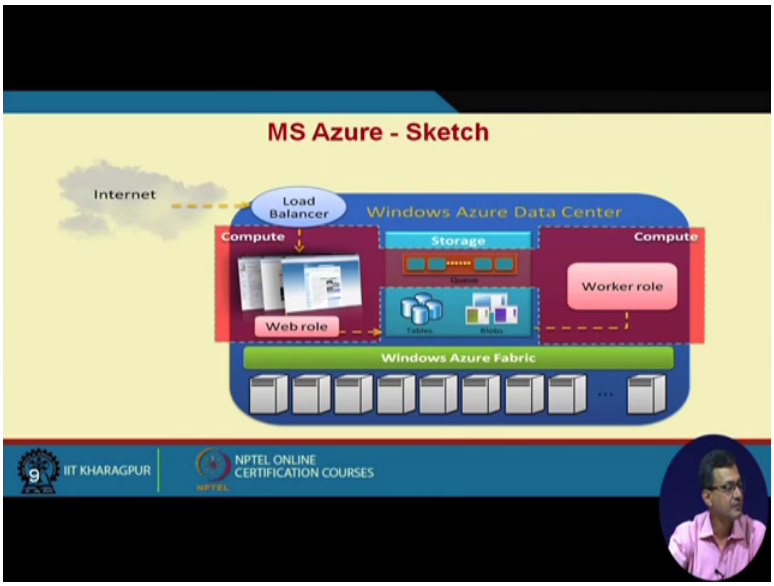
(Refer Slide Time: 06:54)



So, if we look at the component wise that uses the one is the compute component run running applications. Support applications that have a very large number of simultaneous users and that can scale out, right. So, it can scale up scale down and type of things.

Storage storing and access accessing data, applications request storage as a simple as simple blobs a more structure way to store information or a way to exchange data between different parts of the applications. So, it is more of a storage type of services and the fabric managing resources. So, whatever the underlying resources there the azure fabric allows to manage these resources. So, provide a common way to manage monitor applications that use the cloud platform. So, it as a monitoring tool to see that how that uses are there and basically managing the underlining resources or the bear metal resources that the backbone.

(Refer Slide Time: 07:53)

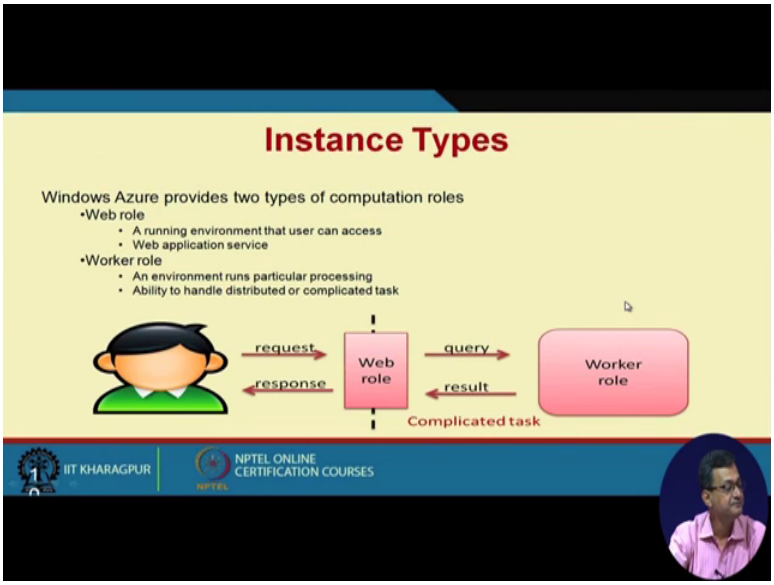


So, if you have the overall sketch. So, you have this bear metal at the things this azure fabrics which is the which basically interact with this resources or manages the resources. And then we have they are different type of thing compute storage compute and there are there are different things web role worker role, then tables blobs which are which are more about the storage more component of the storage part.

So, user are connected user customers or businesses connects to the things through a through the internet there is a load balancers, which look at that which distribute the load

which has the web role which allows you to the connector to the worker role of the compute.

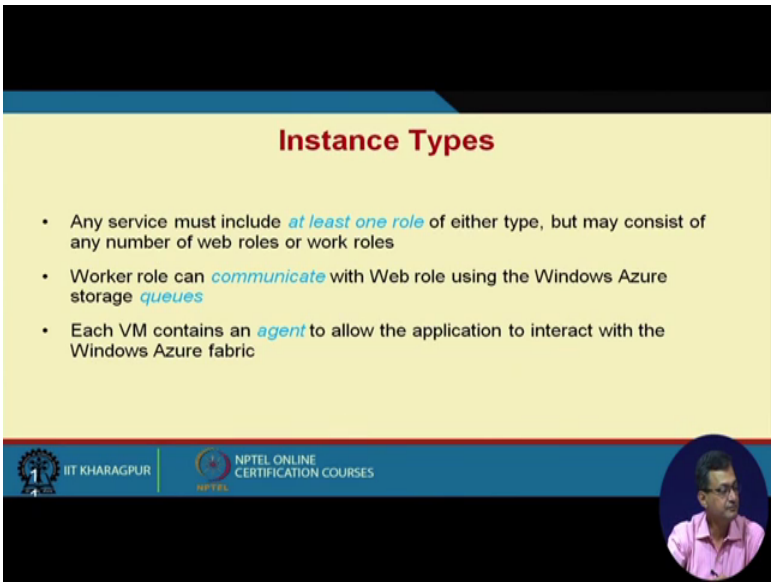
(Refer Slide Time: 08:43)



So, if you look at the instance type as we have discussed in the last slide. So, azure provides 2 types of computational role, one is the web role a running environment that users can access right. So, the user can access through internet. And web application service. So, these are the 2 things which are the web role and the worker role. And environment running particular processing alright. And ability to handle distributed or complicated tag or complex task. So, this is the worker rule. So, user request it is a web role it goes to the query as a worker role and re results and response comes into other way.

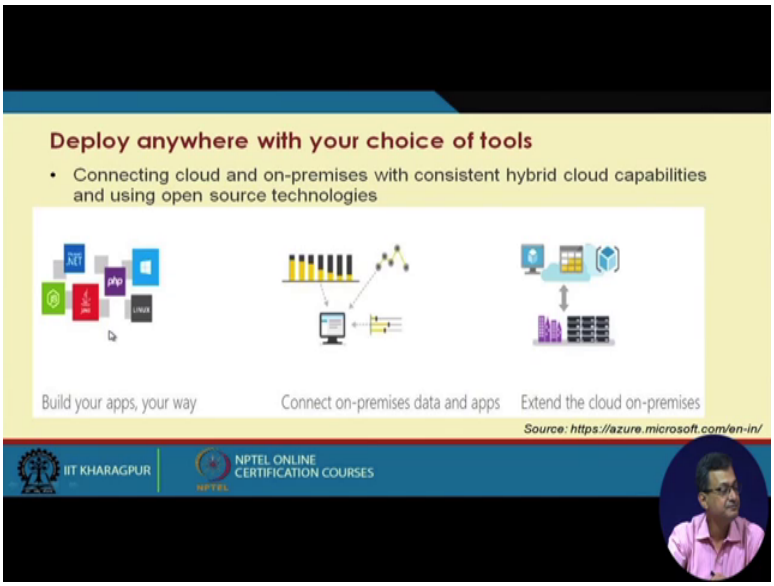
So, it is more of a acts as a interface between the complex task or completed task with the other ended the user of the consumer.

(Refer Slide Time: 09:36)



So, instance type any service must include at least one role of either type, but may consist any number of a web roles or worker roles right. So, that is important worker role can communicate with web role using azure storage queues right. So, the worker rule can communicate with the web role in the storage queues which we have seen in this picture see this is set of queues here it has a if this in the storage section of the thing or storage component. Each VM contains an agent a contains an agent to allow the application to interact with the azure fabric. So, each VM has a agent to which interact has a which can interact with the azure framework, which interact communicate with the underlining resources.

(Refer Slide Time: 10:30)

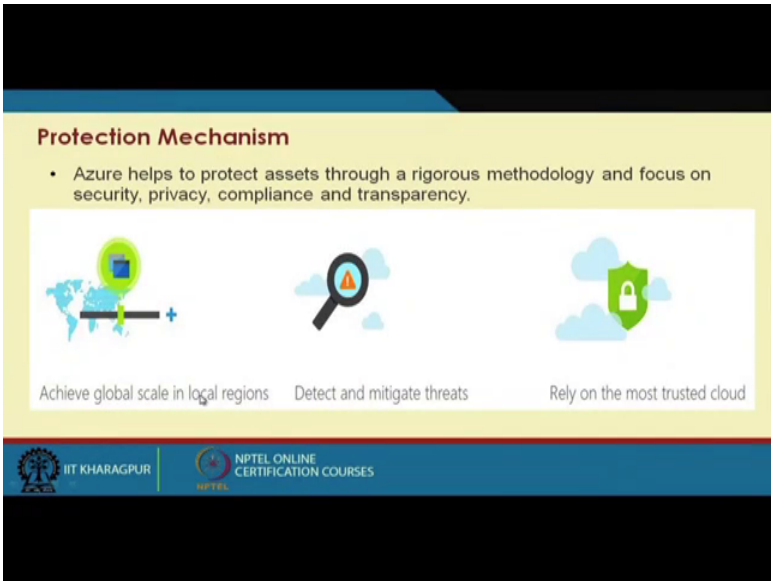


So, what is tries to give right. So, it deploy anywhere with your choice of tools. So, it gives a flexibility to give to deploy your application anywhere with the choice of tools. So, it connecting cloud an on premises with consistent hybrid capabilities and using open source technologies right. So, it has a ability it of cloud and on premises with consistent hybrid capabilities and using open source technology. So, it is what is a time. So, if you look at. So, it is one part of the looking at it is a build your apps your own way right. So, you can have your own apps connect on premise data and apps right. And extend the cloud on premises right. So; that means, one way is that you can develop your apps one way is that connect on premise data and app applications if required. And extend the cloud on premises right. So, you can extend those things pull it to this on premise applications.

So, what Microsoft try to focus on or try to give services that it is a it is a versatile of developing apps, it is a it and connect to your own on premise data and applications and you can extend that cloud component to with the on premise type of this. There are these are required for different type of applications or data which are something maybe a proprietary in nature some are legacy applications running on the things. And some things which may not which may not be so much so much high level of security or high level of proprietary things are there which can always you can run on the cloud and have more versatile or quick access one things. So, they also provide some of the protection

mechanisms helps to protect assets through rigorous methodology and focus on security privacy compliance and transparency, right.

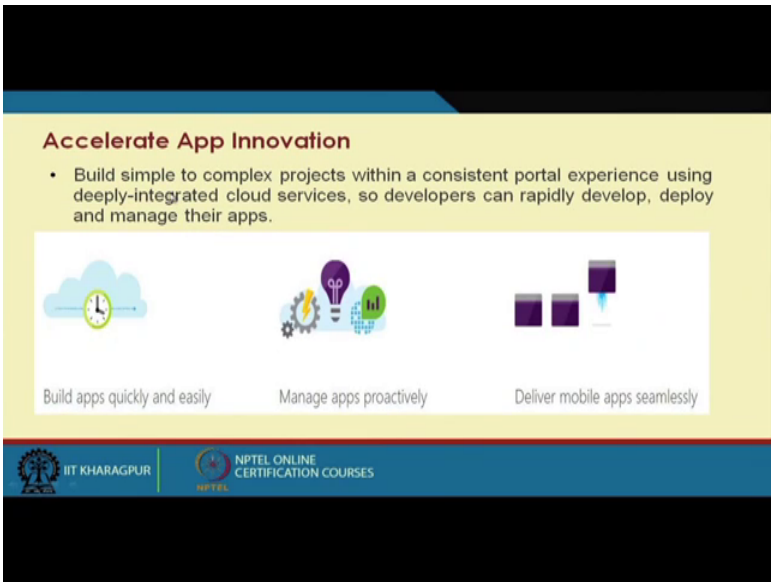
(Refer Slide Time: 12:41)



So, achieve global scale in local region detect and mitigate threats and rely on most trusted cloud.

So; that means, what it is tries to gives is that different security features privacy compliance transparency which gives a trust or a confident in the user base to use the assumes. So, that the thing and that is expected for any cloud provider that the selection of the cloud provider depends on how much how other than how much versatile or what type of services we are providing what type of security to my data and applications are there So that they try to pull it.

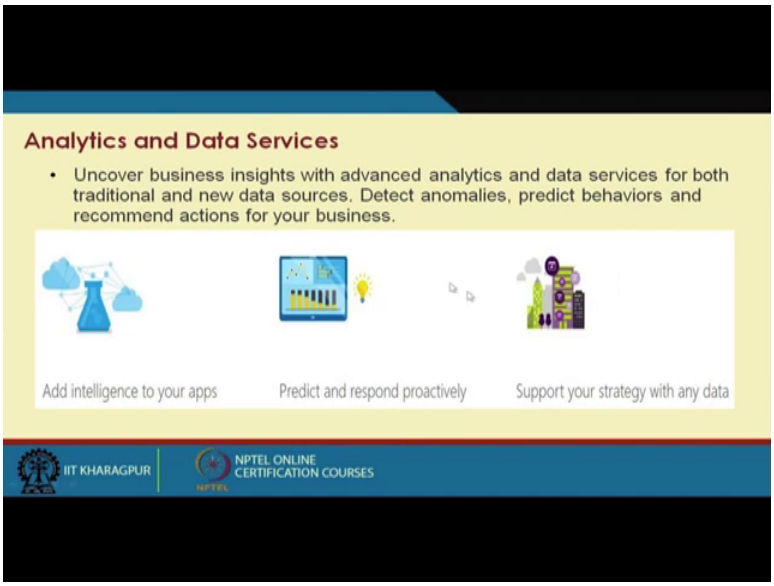
(Refer Slide Time: 13:26)



The other things are accelerate app innovations we will simple to complex projects within consistent portal experience using deeply integrated cloud service. So, developers can rapidly develop deploy and manage their applications.

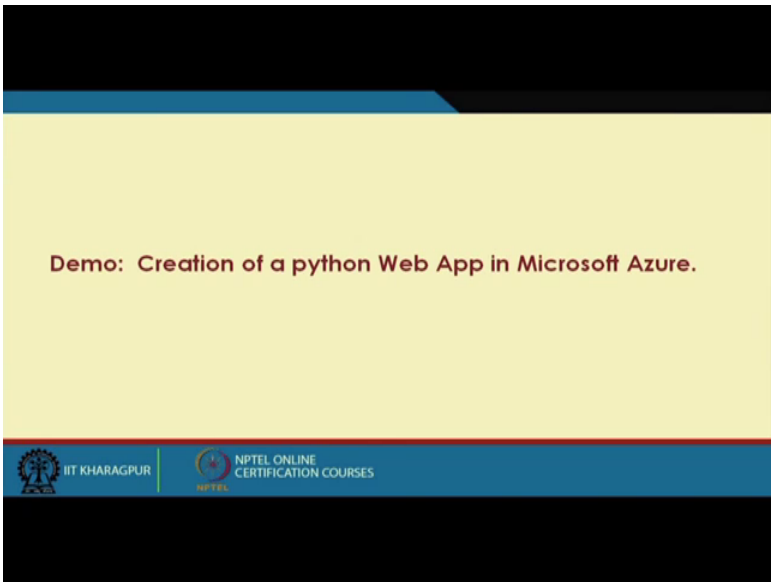
So, that that exactly as we have discussed earlier also that exactly the one of the reasons we are going for cloud right. I need to rapidly develop deploy and manage applications. Now as your is primarily a plat form as a service. So, if there is the development of the things is much more had it been a software as a service. Then uses of the things may be more and had it been IAS type of service then virtual means availability or (Refer Time: 14:07) using on virtual machines put have been the management focus. So, it build apps quickly and easily manage apps proactively. So, this management of the apps development of the apps management of the apps and deliver mobile app seamlessly. So, this apps can be quickly develop manage and deliver.

(Refer Slide Time: 14:36)



Analytics and data services, so is also what the claim that provide and not only they ask. So, uncover business insights with advanced analytics and data services for both traditional and new data source. So, detect anomalies predict behaviors and recommend actions for the businesses right. So that means, it gives several type of other Meta applications what we say is, not only or libraries which allows you to have some sort of a data analytics and data services out of it. So, which interact allow to add integers to your apps. Predict and respond proactively on some situations. And supports your strategy with any data. So, this sort of things are provided by as you, so that means, it has a reach set of data analytics and data service type of components or laborites which are allows you to component.

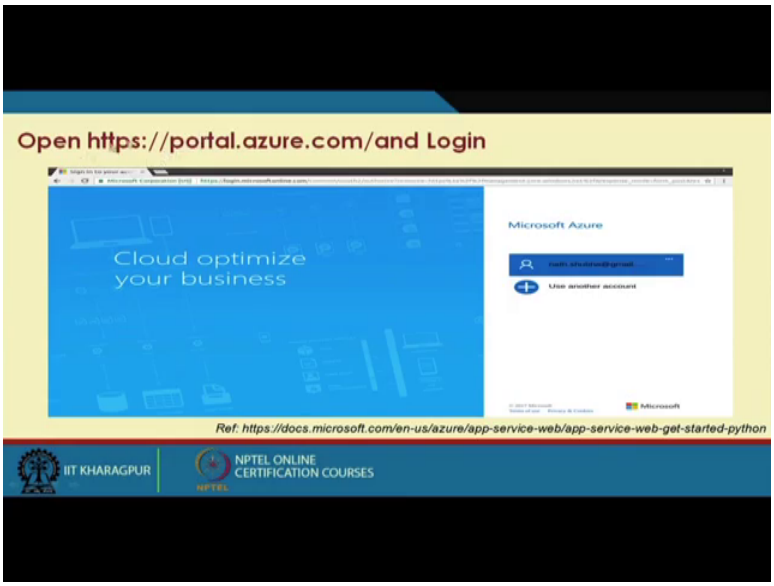
(Refer Slide Time: 15:39)



So, next thing what we will be doing to show you a very short demo on creation of a python web app in Microsoft area azure. So, it is it may not be that a very complex thing, but it is the idea is to show that how to use azure. So, what will be doing here, we will be primarily using a a open means free license or free login of the things. The idea is that So that you can have a you can yourself try without before going to paid login which has much more resources and might most applicable means much more applications development resources. So, before that you can basically try out your hand that how the azure think will be there; so, before one of my scholar anti of this course.

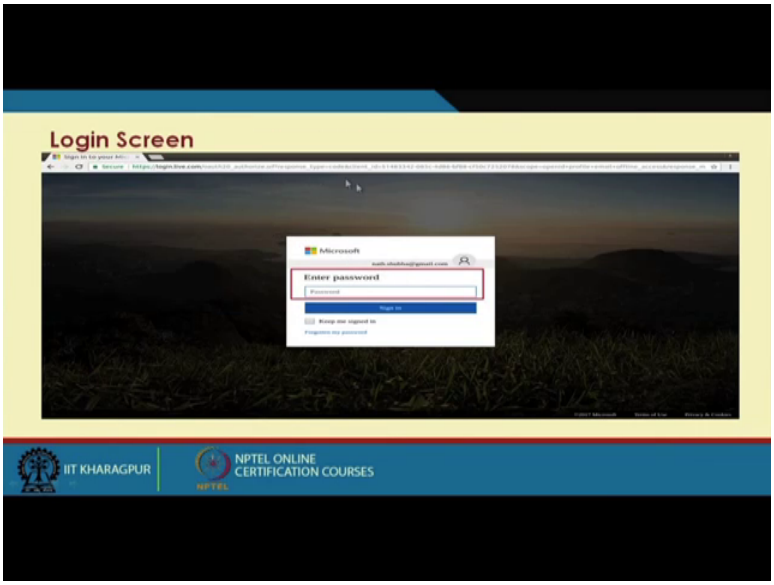
So, you a running on demo on these particular things, I will just quickly go through that some of the steps. So, the there may be little variant variation on the actual steps where (Refer Time: 16:50) swing, but it will be easy to look at it.

(Refer Slide Time: 16:55)



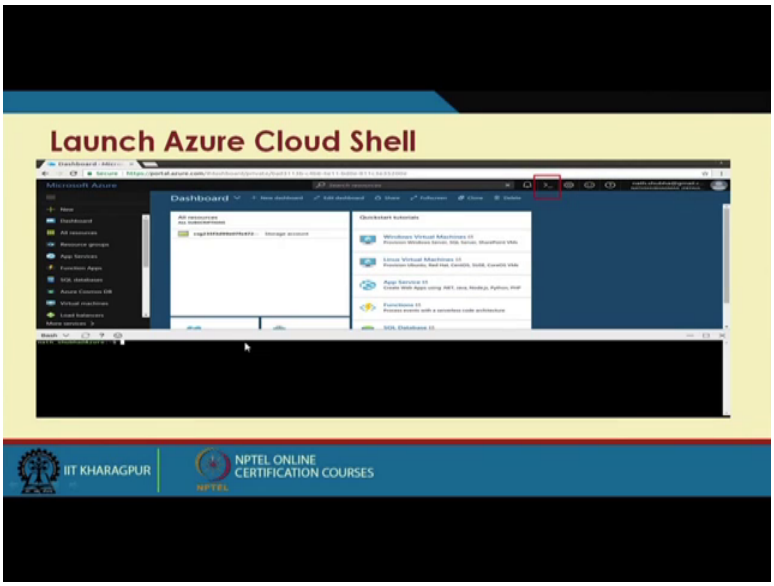
So, I can you can open this portal dot azure dot com I will log in to the things. So, with your login and password.

(Refer Slide Time: 17:03).



So, the login screens someone looks like this. And you can launch azure cloud cell after login into the this azure platform.

(Refer Slide Time: 17:07)

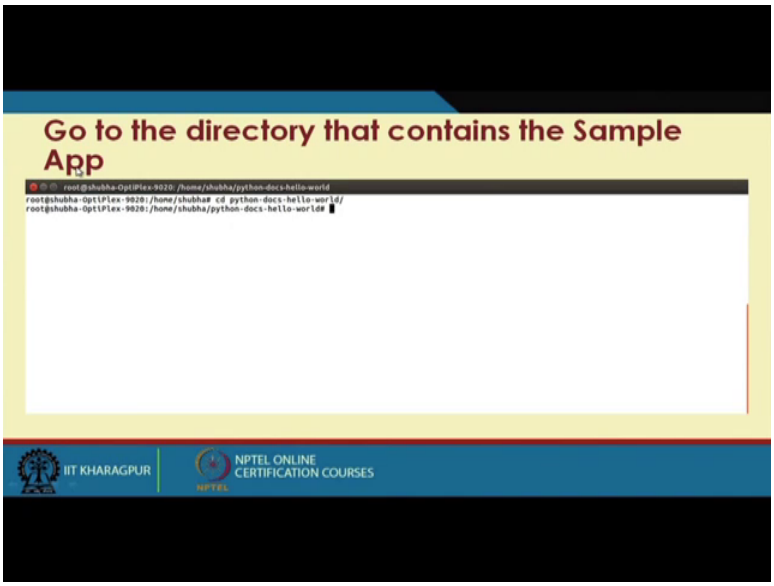


And you can basically download a sample app. So, in the terminal window run the following command to clone this sample app repository to your local machines.

(Refer Slide Time: 17:16)

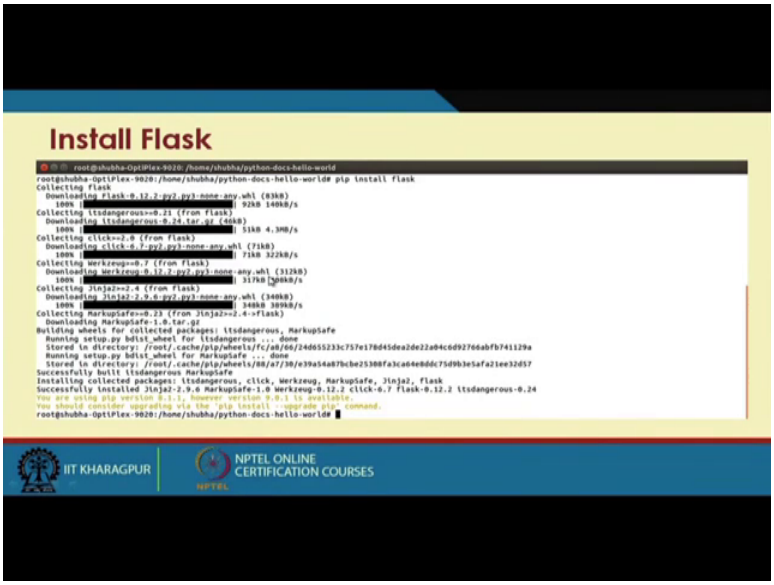
So, idea is that you can download this a particular sample app, which will allow which will be easier for the beginners to update the tabs according to your need, and then upload the thing same to the azure platform and run on the thing.

(Refer Slide Time: 17:47)

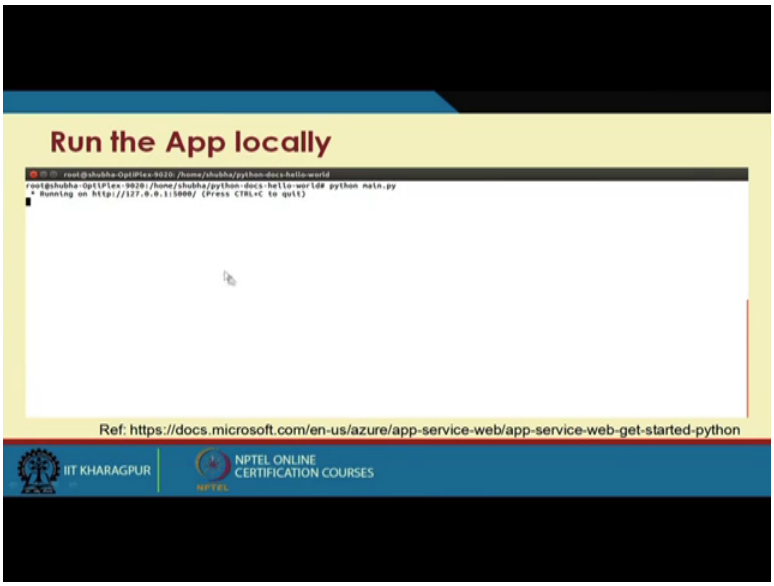


So, go to the directory that contains this downloaded sample app, in your local directory here where you go to the directory and then install the flask.

(Refer Slide Time: 17:55)

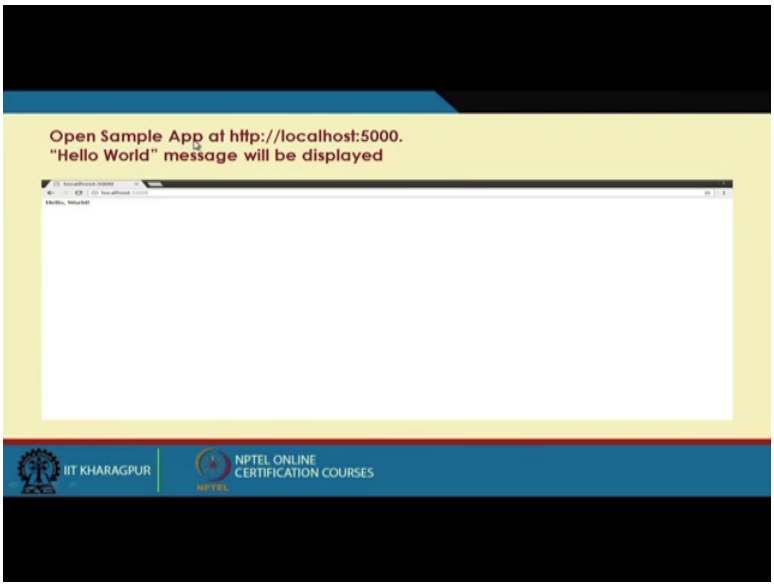


(Refer Slide Time: 17:58)



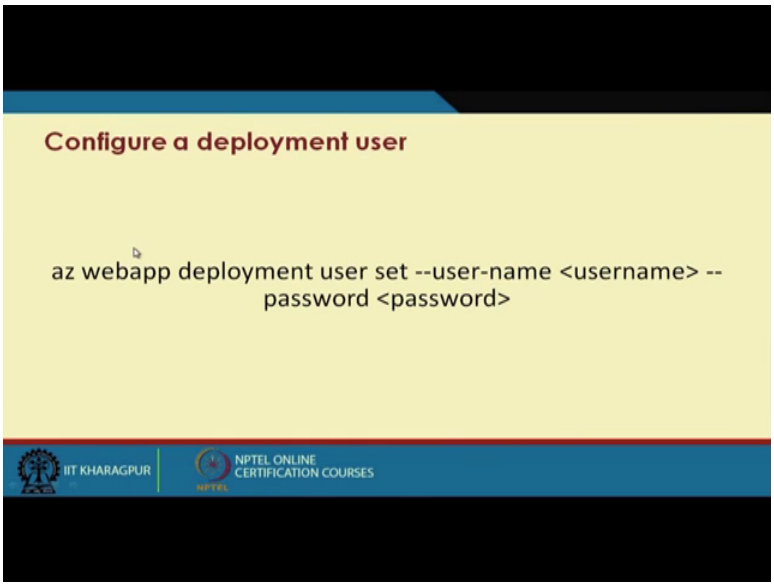
So, run the app locally once you check it that whether it is running locally.

(Refer Slide Time: 18:06)



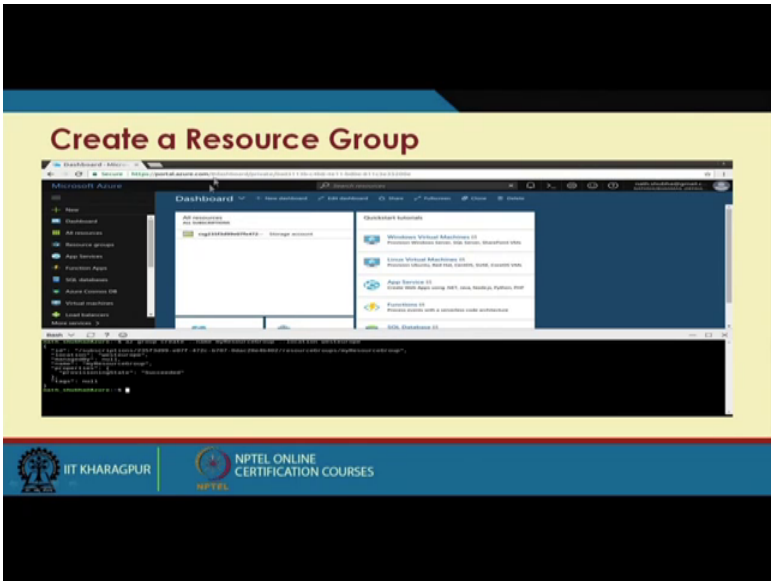
So, open the app in the by local dot by this particular things on a 5000 port and hello and message will be displayed that you can test. Then configure a deployment user by using this is the comment that show you.

(Refer Slide Time: 18:16)



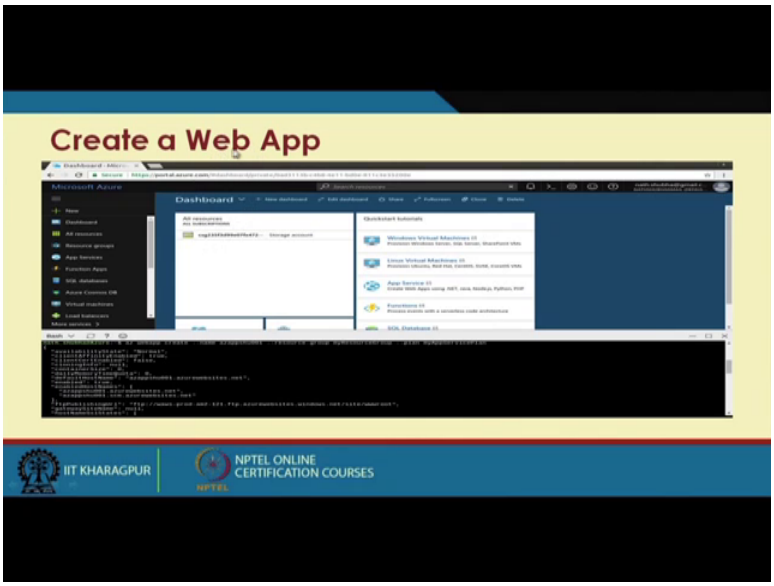
So, you creates a resource group in the dashboard of the azure. Create an azure app service plan.

(Refer Slide Time: 18:24)

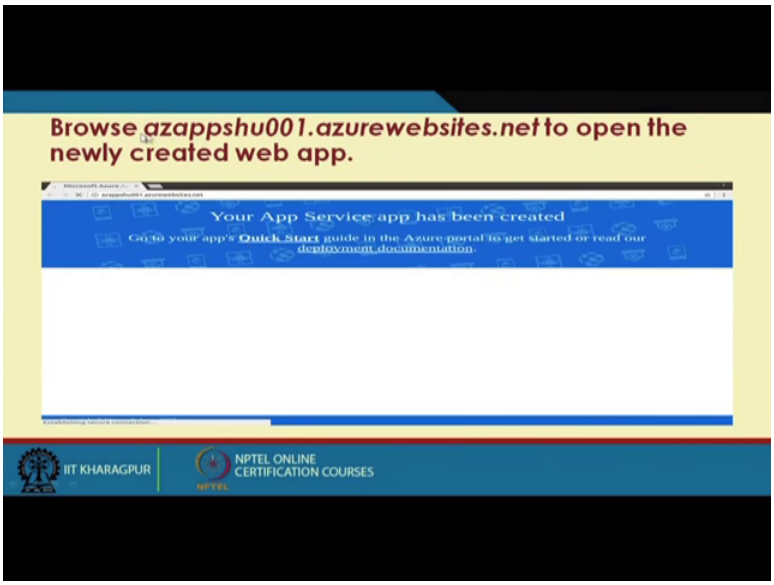


Create a web app of your own. And then browse through this particular URL to open the newly created app correct.

(Refer Slide Time: 18:38)

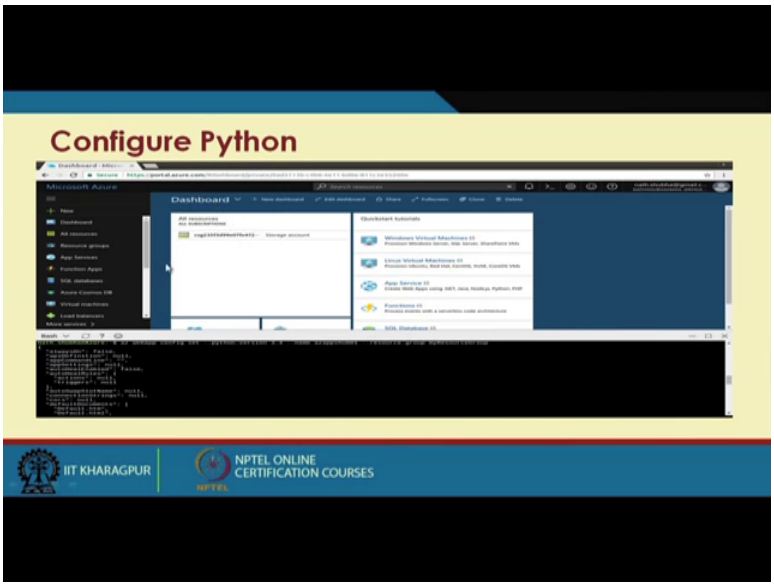


(Refer Slide Time: 18:42)



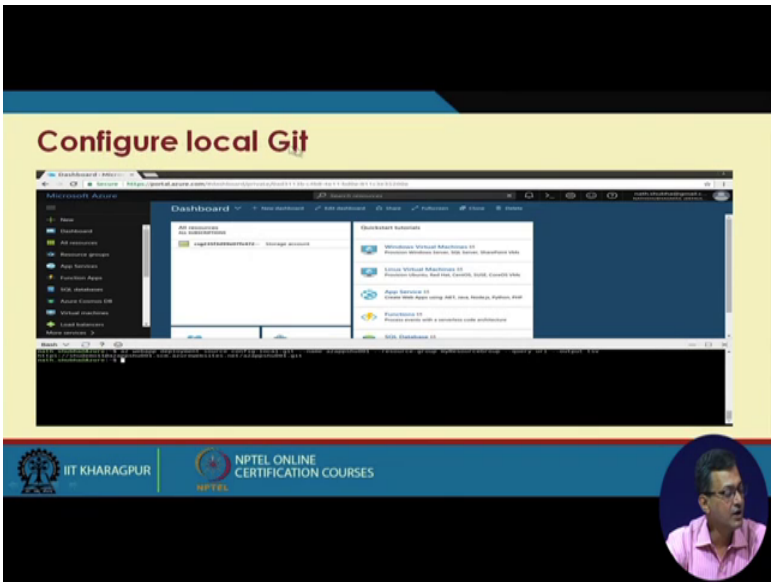
So, that you basically you, so you create your own app and learn on the as your platform.

(Refer Slide Time: 18:56)



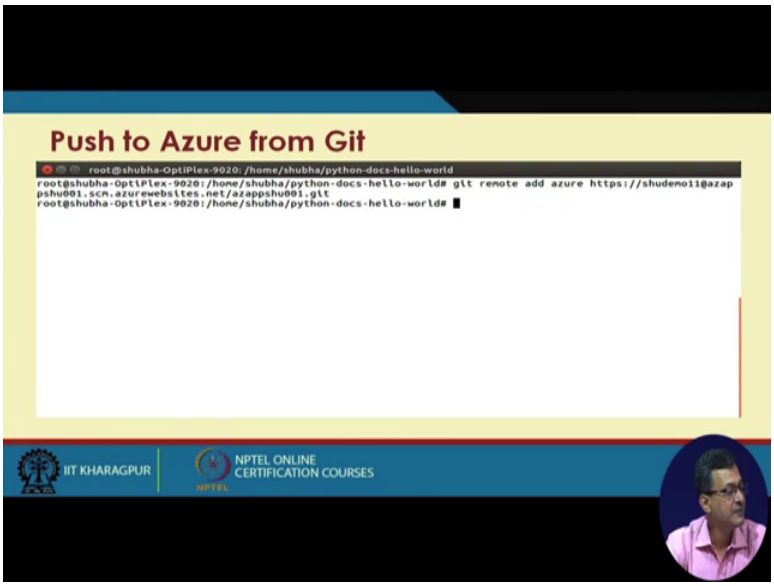
So, then you configure python in the in the particular using the azure dashboard.

(Refer Slide Time: 19:08)



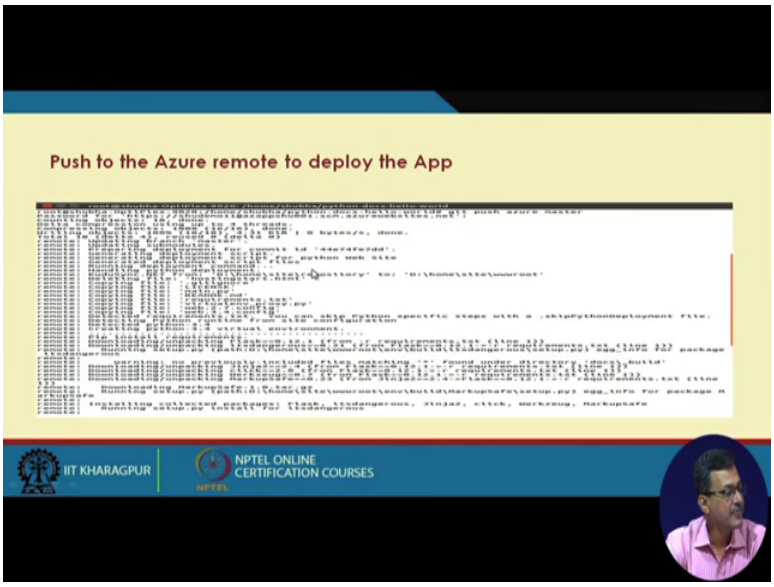
Configure local kit which will allow you to sing the data between the between your local machine and the that in the azure and the azure platform.

(Refer Slide Time: 19:19)



So, push to azure form get that will. So, you that that these are the commands. Push to the azure from the remote to deploy the particular app, and browse this again through this particular run it, right.

(Refer Slide Time: 19:26)

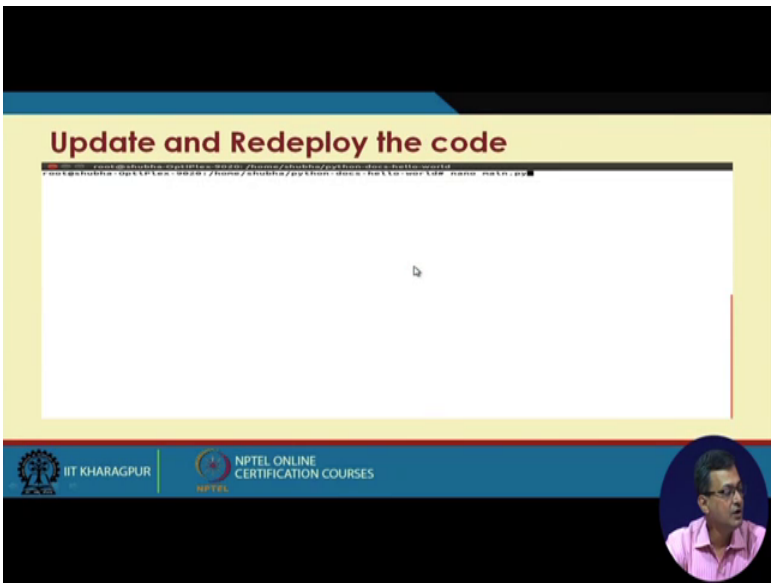


So, and update and re deploy the, but code.

(Refer Slide Time: 19:31)

So, use a local text editor open main dot p y that python file in the python app to make the changes, so whatever you want to make changes the python think.

(Refer Slide Time: 19:37)



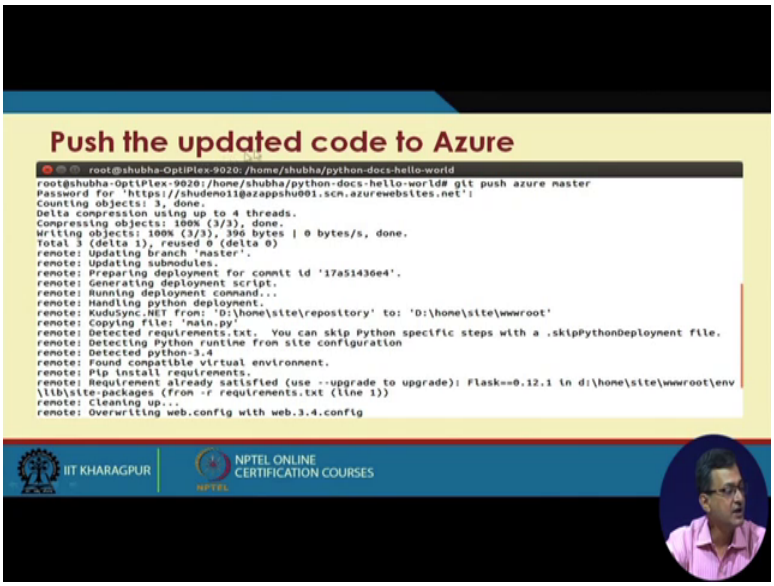
(Refer Slide Time: 19:41)

Like welcome to NPTEL course on cloud computing may be the simple a state forward text which is there, you can do other complex applications if you one.

(Refer Slide Time: 20:03).

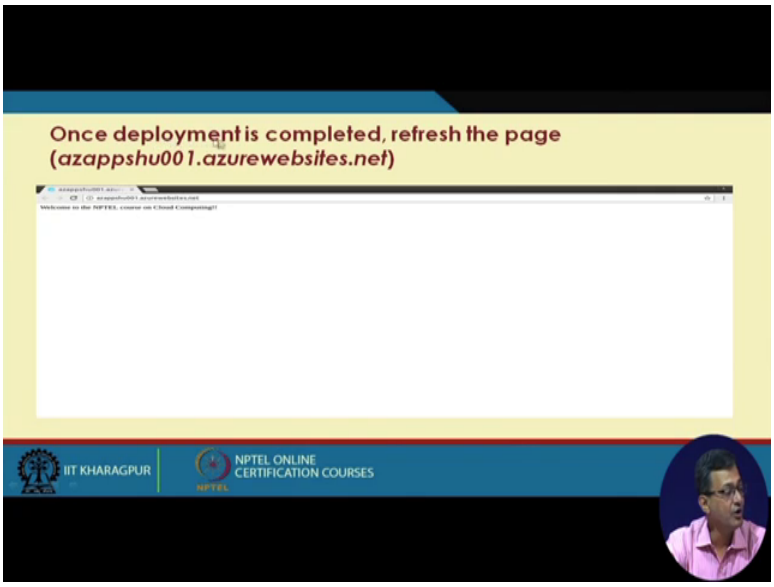
So, commit the changes in the GIT. So, so that it is a sinked with that as you push and upload the code to the azure.

(Refer Slide Time: 20:11)



So, these are the commands which again will be shown on that means, one a life demo.

(Refer Slide Time: 20:21)



Once the deployment is completed replace the page. So, that once you replace the page you can see that that particular URL that will come to NPTEL course in the cloud computing correct. So, what you will do now we will we will show you a particular the same exercise maybe little bit a few more screen will be there step by step, that how you can run a simple app in using Microsoft azure. So, the major idea is to so, that you can have a feel of how a commercial cloud there. So, if you if you use any other open source

cloud you of best type of things there the command line may be different the type of steps maybe little bit different, but never the less the basic philosophy will be the same. So, there is the idea is to give have a direct feel of the things. Thank you, so what we will do we will continue with the with the demo subsequently.