CITRIX

Deploying Citrix Cloud XenApp and XenDesktop Service with Oracle Cloud Infrastructure Classic

Deploying Citrix Cloud Services on Oracle Cloud Infrastructure (OCI) Classic provides greater agility in provisioning applications and desktops. Using OCI Classic can supplement resources of onpremises datacenters, allowing IT to satisfy sudden demand and support rapid geo expansion. This document guides you through the process of configuring Citrix XenApp and XenDesktop Cloud Services with Oracle Cloud Infrastructure Classic.

Introduction

Whether your organization is just beginning to adopt the cloud or has already achieved a cloudfirst approach, Citrix Cloud Services meets you where you are in your cloud journey. Citrix Cloud Services are available to help extend existing on-premises Citrix software deployments, to help create hybrid workspace services, and to provide simple approaches to consuming cloud-native technology. By deploying Citrix software as a service, Citrix Cloud Services simplify management of Citrix technologies. Unify virtual apps, desktops, data, device management, and networking on any cloud or infrastructure. This integrated approach is the simplest way to securely create and deliver digital workspaces.

This deployment guide also describes OCI concepts and components, and basic OCI implementation with Citrix Cloud Services. The architecture presented here delivers Citrix application and hosted shared desktop services to users via Citrix Cloud Services. It enables a hybrid approach in which organizations can simplify the running of Citrix management services form on-premise to Citrix Cloud Services and use OCI to deliver cloud-based XenApp services. In the current release of this solution with OCI, there are some limitations within Citrix Cloud Services that need to be considered when reviewing the overall solution.

To understand design decisions, this paper describes underlying OCI and Citrix Cloud Services components that are required for a deployment and explains the process for deploying Citrix Cloud Services with OCI Classic.

The first part of this guide describes the solution architecture. The second part is a "runbook" that gives specific procedures to install and configure a Proof of concept XenApp deployment on OCI Classic from Citrix Cloud Services.

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Note: All references to OCI in the remainder of this document refer to Oracle Cloud Infrastructure (OCI) Classic

Planning a Citrix XenApp Deployment: Design Choices

Runbook: Configuring XenApp and NetScaler Gateway Service in OCI Classic

The remainder of this document will focus on the step-by-step process of setting up and deploying the system. There are 7 major steps in the overall process:

- 1. Create a <u>Citrix Cloud account</u> via the onboarding service and subscribe to the Citrix Cloud XenApp and XenDesktop Service
- 2. Create a Oracle account and subscribe to Oracle Cloud Infrastructure
- 3. Configure OCI Windows infrastructure VMs (Active Directory, Cloud Connectors) , page 4.
- 4. Prepare the XenApp workload Golden Image, page 14.
- 5. Create a Machine Catalog using Citrix Studio, page 17.
- 6. Create a Delivery Group using Citrix Studio, page 22.
- 7. Configure NetScaler Gateway Service (NGS), page 24.

Step 1: Plan Your Deployment

The first step in an OCI implementation is to create a sizing plan based on specific requirements. There are different server functions that must be considered in the sizing of OCI resources: Infrastructure servers, XenApp workload servers. In planning, it's necessary to consider the appropriate sizing of each.

Sizing for Infrastructure Server Components

For most deployments, a single OCI Project Plan can host the infrastructure server components i.e. the Cloud Connectors, Active Directory, Bastion, File Services. To enhance availability, it is recommended that you deploy pairs of infrastructure instances in different zones with a region. As Table 3 shows, this results in a total of 7 infrastructure VMs.

Table 1: Infrastructure VMs Required.

Infrastructure Server	# VMs required
Citrix Cloud Connectors	2
Active Directory /DHCP/DNS	2
File Services	2
Bastion (Remote Host Management)	1
Total	7

Sizing for Workload Servers

In planning an OCI deployment, it's necessary to evaluate requirements; classify user types, such as XenApp hosted shared desktop (HSD) users and virtual desktop (VDI) users; and gauge application workload requirements for each user type. It's recommended that you perform some initial proof-of-concept (POC) workload testing to collect performance data to be used in deployment sizing. Complete the table below for each category of user.

You may need to expand or condense columns in the table depending on how many types of users you anticipate. Include the expected number of XenApp hosted shared desktop (HSD) users. Your deployment may feature more than one category of HSD workload (perhaps simulated with the Login VSI workloads). To accurately size the deployment, complete Table 4 using results from your proof-of-concept testing with representative application workloads.

Table 2: Workload Characteristics.

Resource	User Type #1	User Type #2	User Type #3
Workload description (e.g., Task Worker, Office Worker, Knowledge Worker)			
Workload classification (VDI or HSD)			
Expected number of users			
Expected IOPS per user			
Expected outgoing n/w bandwidth per user			
Expected CPU utilization (in cores) per user			
Expected memory requirement per user			
instance series used			
Storage consumption			
Expected storage type			

Sizing for XenApp HSD Servers

Step 2: Configure OCI Topology

In this step, the administrator creates the required OCI IaaS topology, including virtual network and VMs that will be used with XenApp infrastructure software components.

It's assumed that the administrator has first created the Oracle account, and has some general experience with creating VMs in OCI. To configure the IaaS topology in OCI for a XenApp deployment, you must first establish these four prerequisites:

- Configure Active Directory (AD)
- Creating VMs for infrastructure servers for Cloud Connectors

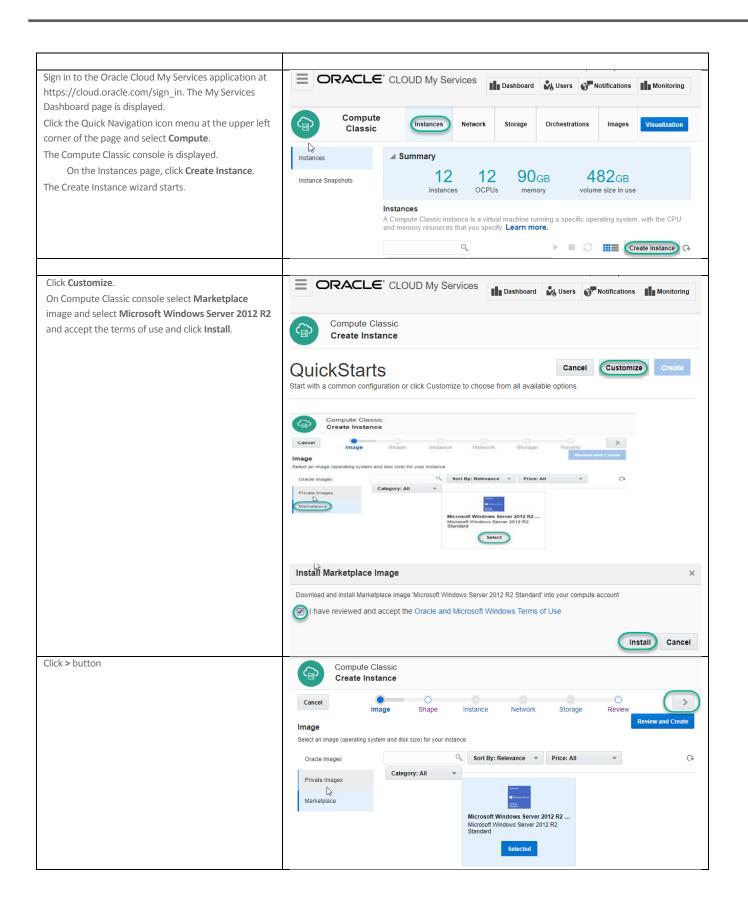
Create an OCI Virtual Network

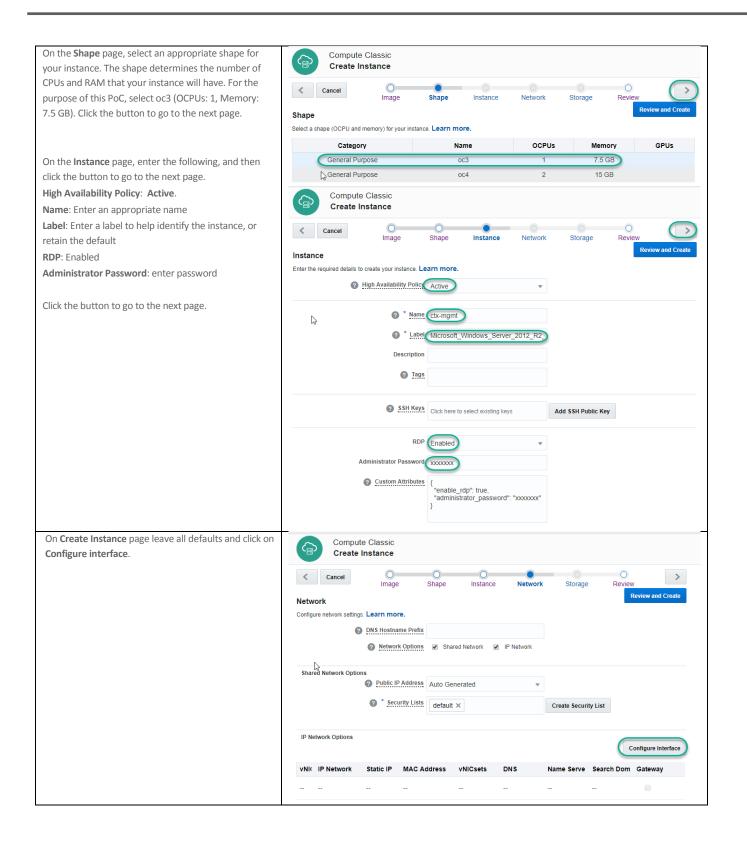
First the administrator should create a virtual network. Each virtual network contains subnets, each with a defined IP range, and each capable of holding multiple instances and other resources.

Instructions	Visual
Sign in to the Compute Classic console and Click the Network tab.	ORACLE [®] CLOUD My Services Ill Dashboard Users Structure Monitoring
Click the IP Network tab in the left pane and then click IP Networks. Click Create IP Network	Compute Classic Instances Network Storage Orchestrations Images Visualization
	IP Network IP Networks IP Exchanges IP Networks IP Networks IP Networks IP Networks IP Networks
	Virtual NIC Sets An IP network allows you to define an IP subnet in your account. The size of the IP subnet and the IP addresses in the subnet are determined by the IP address prefix that you specify while creating the IP network. Learn more. Routes Image: Create IP Network Comparison of the
Enter the required information:	Security Rules Name IP Addres IP Exchange Description Create IP Network X
Name: Enter a name for the IP network. IP Address Prefix: Enter the IP address prefix for this IP network, in CIDR format. When you create instances, you can associate a vNIC on the instance with an IP network. That vNIC on the instance is then allocated an IP address from the specified IP network.	Enter the required details to create your IP network. Specify a name for your IP network and enter the IP address prefix for this network in CIDR format. Learn more.
Click Create .	Create Cancel

Create a bastion machine

In order to connect to OCI instance a remote management or bastion instance is needed. This instance will require a public IP address that we will use for RDP access. This machine can be shut down or have the public IP address removed at a later time to secure the environment.





On Configure IP Network Interface page select the IP	Configure IP Network Interface ×
Network that created in the previous section and	
leave rest as defaults and click Save .	Create IP networks or add an interface to an existing IP network. You can configure the network properties for each interface, add each interface to the required vNICsets, or associate a static IP address or a public IP address with each interface. You can also specify an interface to be used as a default gateway. Learn more.
	linterface eth0 -
	2 VNIC Name eth0
	TP Network ctx/net (10.0.0.0/24) Create IP Network
	Range: 10.0.0.2 to 10.0.0.254.
	Public IP Address Select an IP Reservation
	Cloud IP Address Select an IP Reservation T
	MAC Address
	Virtual NIC Sets default ×
	O DNS
	Name Servers
	Search Domains
	Default Gateway
	Save Cancel
Click on Review and Create.	Compute Classic Create Instance
	Cancel Cancel Image Shape Instance Network Storage Review
	Storage You can attach existing storage volumes, or create and attach a storage volume to the instance. A persistent boot volume is created and used to boot your
	instance by default? Our can specify a different boot disk, or remove the persistent boot disk and boot from a nonpersistent boot disk instead. You can also attach additional storage volumes to an instance after the instance is created.
	Attach Existing Volume Add New Volume
	ि Name Disk # Size Type Delete On Termination Boot Driv∉
	ctx-mgmt_storage 1 27 GB storage/default 🛛 🕑 🗐
Click on Create .	Compute Classic Create Instance
	Cancel Cancel Image Shape Instance Network Storage Review
	Review
	Review your settings for the new instance.
	You are permitted to use resources above your subscription rate at additional cost. Details
	Image Microsoft Windows Server 2012 R2 Standard
	Shape oc3 (OCPUs: 1; Memory: 7.5 GB) High Availability Policy Active
	High Availability Policy Active Name Ctx-mgmt
	Label Microsoft_Windows_Server_2012_R2_20170927105814
	Description

Create and configure Active Directory

Citrix Cloud requires Microsoft Active Directory (AD) for authentication for users and for integration with the Citrix Cloud Connector and XenApp instances. Before a XenApp VM or Citrix Cloud Connector can be accessed in a OCI subscription for XenApp, it must successfully authenticate against the OCI AD domain controller. Repeat the same steps above and create VM for Active Directory.

In addition:

• Each VM should be joined to the Active Directory Domain instance in OCI with outbound port 443 open to allow access to the Internet.

Create Infrastructure Citrix Cloud VMs

Next, create VMs that will be installed with the required Citrix Cloud components. The Citrix Cloud Connector serves as a channel for communication between Citrix Cloud and your Resource Locations enabling cloud management without requiring any complex networking or infrastructure configuration such as VPNs or IPSec tunnels. The Cloud Connector authenticates and encrypts all communication between Citrix Cloud and your Resource Locations such as OCI Classic. There are no incoming connections. All connections are established from the Cloud Connector to the cloud. No communications between the Cloud Connector and Citrix Cloud are inbound. The connections all use the standard HTTPS port (443) and the TCP protocol. After you have installed the Cloud Connector, there is no need for any special configuration on the server. This removes all the hassle of managing delivery infrastructure. Citrix Cloud requires you install the Citrix Cloud Connector on two machines inside OCI Classic. This ensures continuous availability of your resource location. It enables you to manage and focus on the resources that provide the value to your end users. The Citrix Cloud Connector is stateless. All logs and alerts are sent back to Citrix Cloud. More additional info about how to create Citrix Cloud Connectors by following this document:

Table 3: VM Creation Settings

VM	Name	Description	Project Name	Instance	Region
(CTX-CC-1	Citrix Cloud Connector			
(CTX-CC-2	Citrix Cloud Connector			
(CTX-VDA	Citrix XenApp Golden Image			

1.	RDP into the private IP of the connectors created from a machine inside the OCI Virtual network.	Remote Desktop Connection Image: Connection Remote Desktop Remote Desktop Connection Remote Desktop Serie To condential Remote Desktop Serie Serie Serie To condential Connection Remote Desktop Serie To condential Remote Desktop Serie To condential Remote Desktop Connection
2.	Disable the IE Sec feature if enabled on the connector. Click Ok	Image: service of the ser
3.	Changed the preferred DNS server to be the Active Directory DNS Server.	Internet Protocol Version 4 (TCP/IPv4) Properties Ceneral Alternate Configuration You can get IP settings assigned automatically if your network supports tis capability. Otherwise, you need to ask your network administrator for the appropriate IP settings. IP address Subnet mask: Obtain DNS server address automatically Ottain DNS server address automatically Ottain DNS server address: Preferred DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2 Alternate DNS server: 10.0.0.0.2
4.	Change the DNS suffix to be the AD domain DNS address. From the IP Properties window click -> Advanced-> Click DNS-> click Append these DNS suffixes (in order). Enter the domain for AD then click Add. Click Ok. Click Ok again. Click Close. Click Close again.	Advanced TCP/IP Settings

5. Join the machines to the AD domain	Computer Name/Domain Changes X You can change the name and the membership of this computer. Changes might affect access to network resources. Computer name: CTX-CC1 Full computer name: CTX-CC1 Full computer name: CTX-CC1 Member of Omain: Ctx.opc
	O Workgroup: WORKGROUP OK Cancel
 After joining the domain RDP back into the cloud connector machine and install the Cloud Connector agent 	
 Login to Citrix Cloud console: https://citrix.cloud.com 	
Navigate to 'Resource Locations'	 Resource Locations
Click '+ Resource Location', name it and click Save	+ Resource Location C Refresh All
	ResourceLocation Save Cancel
8. Under the newly created resource location, click '+ Cloud	Add a Cloud Connector The Connector serves as a channel that authenticates and encrypts all communication between Citrix
Connectors' Click on 'Download'	Cloud and your resources. Download Refresh
	Prerequisite Installation Guide Deploy Download Deploy at least two Windows Copy the program file to your machines to your machines. Server 2012 G machines to your Active Directory. Copy the program file to your machines.
	Learn more about the Citrix Cloud Connector

9. Install the Connector. Login with the Citrix Cloud Subscription credentials and complete the installation	Citrix Cloud Connector Sign into Citrix Cloud to continue Sign In
10. The installation will begin and takes approximately 5 minutes. Once the installation has finished, the service connectivity tests are performed the result should show test successful. Click close to continue.	Ctrict Cloud Connectivity Test Installing Testing Service Connectivity. This could take a while. Maybe its time for a coffee break. Connectivity Test Connectivity Test Successful
Repeat the steps 8 to 21 to finalize the second cloud connector	
Once complete two cloud connectors should appear inside the Citrix Cloud Resource Locations	Cloud Cennectors Control All Account of Childhall Account of Childhall Control All Co

Step 3. Prepare the XenApp Golden Image VM

Virtual Delivery Agent (VDA) Installation

A Virtual Delivery Agent (VDA) is installed on each VM instance created on OCI that you want to make available to users. It enables the machine to register with the Citrix Cloud Connector, which in turn allows the machine and the resources it is hosting to be made available to users. In this release of Citrix Cloud with OCI there is no MCS provisioning integrated. Manual or out-of-band provisioning is required.

http://docs.citrix.com/en-us/citrix-cloud/xenapp-and-xendesktop-service/configure-vdas.html

Instructions	Visual
Action	
From the Citrix Cloud page click on XenApp and XenDesktop Service. Then click Downloads	Circle Cool and you and seedcamp you and seedcamp you and see constrained and you and seedcamp you and see constrained and you and see constrained and you and
Download the VDA to the XenApp instance in OCI	Downloads What Drivey Aper DDM What Drivey Aper DDM What Drivey Aper DDM experiments and policy for the start of the mathematical on the applications around distings for the value 4 words the mathematic temperature with Drivey Commission of Analyze Trave applications are prevented to DDL something is a user to experiment. Drive Commission of Analyze Trave applications are prevented to DDL something is a user to experiment.
A new web page will appear redirecting you to download the VDA. Choose Server OS VDA	D) Soundady / Clark-Cloud / Product Software / XernAcp and Xer/Deviatop Service Find Downloads Software U S
Save the installer to the XenApp instance in OCI	
Right click the installer and chose Run as Administrator. Select create a master image and click next.	KanDesktop 7.14 Environment Core Components Delivery Controller Petures Rewall Summary Instal Smart Tools Finish
Right-click the package and select Run as administrator.	
Uncheck the Citrix Receiver agent and then click Next	XeeDextop 7.14 Core Component Core Component Destroy Consoler Destroy Consoler Destroy Consoler Presd Sea there agent that is affect the on the value or physical machine that provides the sea there agent that is affect the on the value or physical machine that provides the sea there are physical machine that provide the sea there are physical machine that physical machin

Uncheck the components for App-V VDA and App Disk then click Next	XexCession 7.14 Additional Components Inclusion Concentration for Apply - VpC Serving Controlar Concentration for Apply - VpC Reveal Concentration for Apply - VpC Serving Controlar Concentration for Apply - VpC Inclusion Concentration for App	
Select Do it manually. Enter in the FQDN of two cloud connections. Click Next	XenDesktop 7.14 Delivery Controller Environment Configuration How do you want to enter the locations of your Delivery Controllers? Delivery Controller Go it manually Controller address Enrish Edit Delete Simany Controller address Install Controller address Finish Test connection.	
Select Optimize performance and click Next.	Note: Entry of invalid special characters will be ignored. Note: Any Group Policies that specify Delivery Controller locations will override settings provided here. Back Nett Cancel	
	Conc Composeds AddStood Composeds Colored Composeds Ordering Controller Fortand Fortand Senant Tools Force Force Manual Senant Tools Force Manual Senant Tools Force Manual Manual	

Select Automatically and click Next to configure		
Select Automatically and click Next to configure firewall rules automatically.	XenDesktop 7.14 Firewall Core Components Additional Components Delivery Controller Partices Firewall Smmary Insis Dot (CP) Semmary B0 (CP) 1644 (CP) Summary 1644 (CP) Insis Dot (CP) 1644 (CP) Somary 1644 (CP) 2598 (CP	
Click Install to start installation and it will take approximately 5 minutes.	Sect this option if you are not using Windows Trevails or if you want to create the nules yound!	
Select I do not want to participate in Call Home and click Next.		
Click Finish. The VM will restart since the Restart machine box is checked by default.		

Step 4: Create a Machine Catalog

The next step constructs a machine catalog that will contain machines generated from a master image. The virtual hard disk (VHD) for the OCI VM containing the XenApp golden image is used as the master software image. In this early release of Citrix Cloud with Oracle Public Cloud, Citrix Machine Creation Services (MCS), power management, and Oracle Cloud as a hosting connection are not available, however manual connections can still be made. In order to make connections to an instance in OCI, an out-of-band connection is available that allows for machine to be connected to in OCI using Citrix Cloud and NetScaler Gateway Service for secure access to the XenApp sessions. The process below shows how to create and out-of-band machine catalog to an instance in OCI.

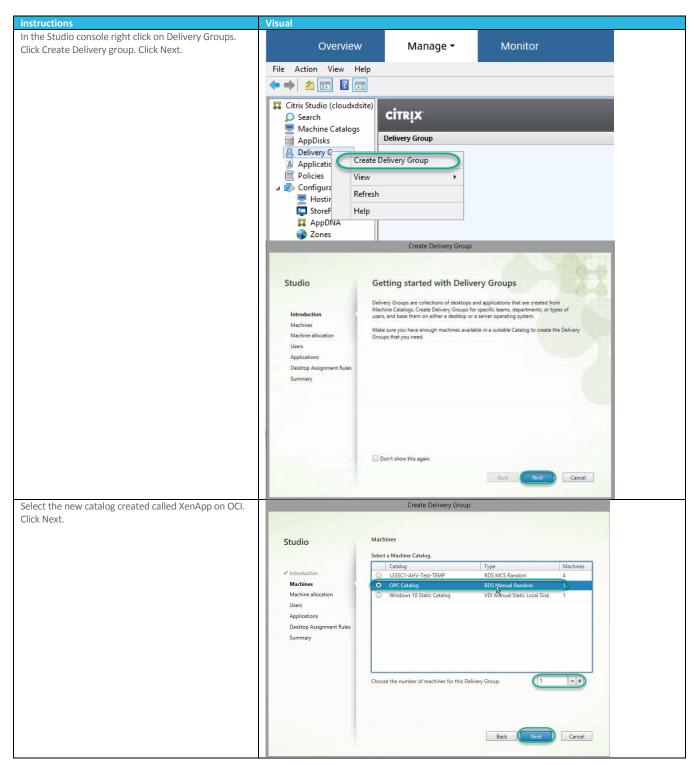
XenApp and XenDesktop Service on Citrix Cloud	
Login to Citrix Cloud console: https://citrix.cloud.com	
Select the appropriate 'Customer' you have subscribed to	
Click on the hamburger menu. Click on XenApp and XenDesktop Service then click on Manage Service Creation.	Citrix Cloud XenApp and XenDesktop Service Library Monitor Support Tickets Identity and Access Management Notifications Simpli Cloud. N Resource Locations Cloud. N XenApp and XenDesktop Service 2 Smart Tools Labs
Click manage	
In the Studio console click Create Machine Catalog.	Actions Machine Catalogs Create Machine Catalog View Refresh Help
The Studio window will appear. Click Next.	Machine Catalog Setup Studio Introduction Opensing System Machine Katalogs are collections of physical or virtual machines that you easign to users. You create Catalogs from Machine Katalogs are collections of physical machines that you easign to users. You create Catalogs from Machine Katalogs are physical machines in your environment. Machine States are physical machines in your environment. Machine Katalogs are physical machines in your environment. Machine Catalogs from that you States Instalod. Alex, ensure that the opensaring optimal machines (luch as Machine Creation Senices or Provisioning Serices) Oppater Accounts Summary Den't show this again Back Tenrel Den't show this again

In the Operating System section select Server OS for	
deploying a XenApp Catalog. Click Next.	Machine Catalog Setup
	Studio Operating System
	Studio Instruction Operating System Machine Template Security Virtual Machines Metwork Cards Computer Accounts Computer Accounts Summary Summary Studio Studi
In the Machine Management screen select Machines that are not power managed. Select another service or technology. Click Next	Back Cancel Machine Catalog Setup
	Studio Addine Management Advine Management Advin
Locate the machine on which VDA is installed on in Active Directory by searching in Add Computers. Click Ok. Click Next	Studio • Introduction • Operating System • Addrine Management Machine Summary

Enter a description for the Catalog then click Finish		Machine Catalog Setup
	Studio → Insuduction → Operating System → Machines Summary	Summary Machine type: Server OS Machine type: Physical Machine Catalog neareet Physical Machine Catalog description for administratore: Dynamic Machine Catalog descr

Step 5: Create a Delivery Group

The next step uses Citrix Studio to create a Delivery Group for the XenApp deployment.



In the Users section select Leave user management to	Create Delivery Group	
Citrix Cloud. Click Next.		
	Studio Users	
	Specify who can use the applications and desktops in this Delivery Group. You can assign users	
	 Introduction Introduction 	
	Achines Search as a Library offering you can assign to users.	
	Users Allow any authenticated users to use this Delivery Group. Applications Restrict use of this Delivery Group to the following users:	
	Desktops	
	Summary Add users and groups	
	Add Remove	
	Give access to unauthenticated (anonymous) users; no credentials are required to access StoreFront This feature requires a StoreFront store for unauthenticated users.	
	Sessions must launch in a user's home zone, if configured.	
	Back Next Cancel	
At the applications screen Click Next.	Create Delivery Group	
	Studio Applications	
	To add applications, click "Add" and choose a source. Then select applications from that source. You can optionally place new applications in a non-default folder and change application	
	✓ Introduction properties.	
	 ✓ Machines ✓ Users Add applications 	
	Applications	
	Summary	
	Add Properties Place the new applications in folder:	
	/ Applications	
	Change	
	Back Next Cancel	
	Create Delivery Group	
In the Delivery Group Name enter XenApp on OCI. Click Finish.	Create Derivery Gloup	
	Studio Summary	
	Studio Summary	
	Machine Catalog: OPC Catalog Machine type: Server OS	
	Machines Allocation type: Randda	
	Visers Machines added: CTX(CTX/DA02 1 unassigned v Applications Users: Allow authenticated users	
	Pesktops Launch in user's home zone: No	
	Summary	
	Delivery Group name: XenApp on OPC	
	Delivery Group description, used as label in Receiver (optional):	
	Успаря	
	Back Finish Cancel	

The Delivery Group will be created.	Studio	
	Creating Delivery Group	
	Adding machines	

Step 6: Securely accessing OCI using NetScaler Gateway Service

Once the Citrix Cloud connectors, Machine Catalogs, and Delivery groups are created the base XenApp instance can be remotely accessed. In order to assign the correct subscribers to the instance appropriate permission need to be applied using the Citrix Cloud Library.

instructions	Visual
From the hamburger menu click on Library	Citrix Cloud
Select the XenApp published resource in the Library then click on the then click manage subscribers	
Enter in the name of the user or group to publish the desktop to	Manage subscribers for Win 10 - Testing (Applications) X Step 1: Choose a domain Step 2: Choose a group or user Ctx.opc Administrator 2 Subscriber(s) Account Name Administrator USER Display Mane Display Mane Subscribed
The resource should now be published.	XenApp (Desktops)
Login to the Storefront URL, which is secure with NetScaler Gateway Service, with the created AD credentials and launch the XenApp or XenDesktop session	https://ctxsalliance.xendesktop.net/Citrix/StoreWeb/
The XenApp on OCI instance is now available for user to login to	Chi Sandhadt

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