

DB as a Service

VMware vCloud Automation Center



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1. Introduction

VMware vCloud Automation Center is an innovative self-service provisioning and lifecycle management solution that simplifies and automate deployments of infrastructure, multi-tier applications, desktop... and now any kind of IT service! It provides a secure portal where authorized administrators, developers or business users can request new IT services as well as manage specific cloud and IT resources based on their roles and privileges.

This solution provides automated installation and configuration for SQL Server 2012 service as a DB service. The solution utilizes industry's leading Cloud-enabled self-service provisioning solution, VMware vCloud Automation Center.

DB as a Service provisions database resources automatically based on available system resources, allowing application developers, architects, testers, and other consumers of databases to store and retrieve data without having to deal with lower-level database administration functionality. DBaaS helps make DBAs more productive by repurposing existing hardware resources, automating administration tasks, and facilitating a common policy framework across databases.

2. System Pre-requisites

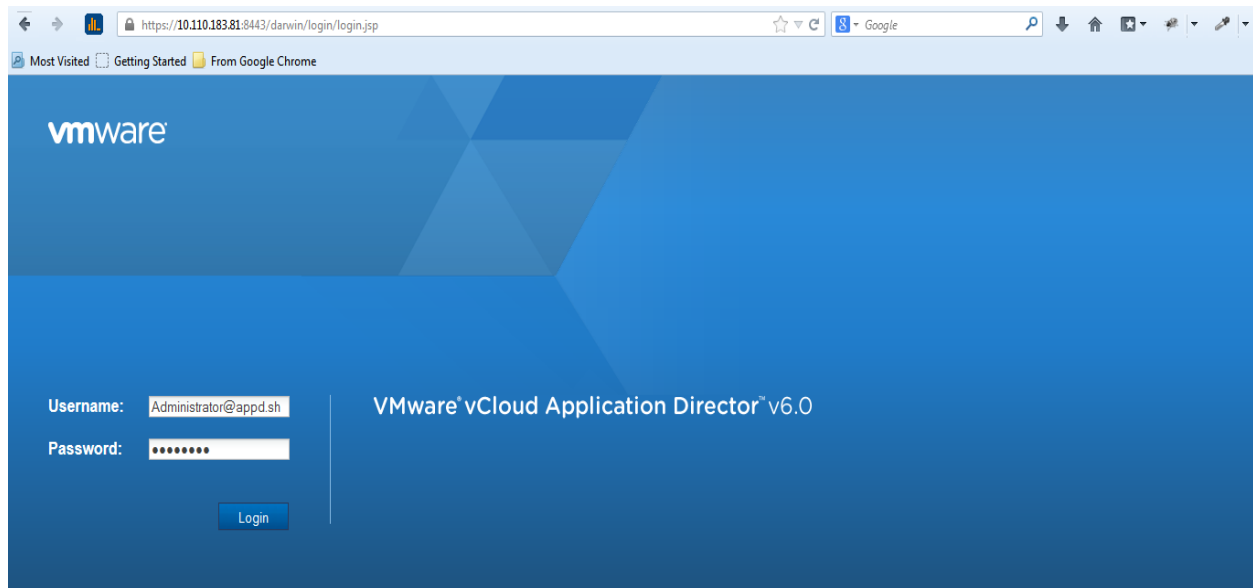
1. Install and configure VMware vFabric Application Director 6.0 with vCloud Automation Center (vCAC) 6.0. Refer the the [product documentation](#) for information about installing and configuring Application Director.
2. **SQL Server 2012** to be available as an application in the Application Director Applications.

3. Set up

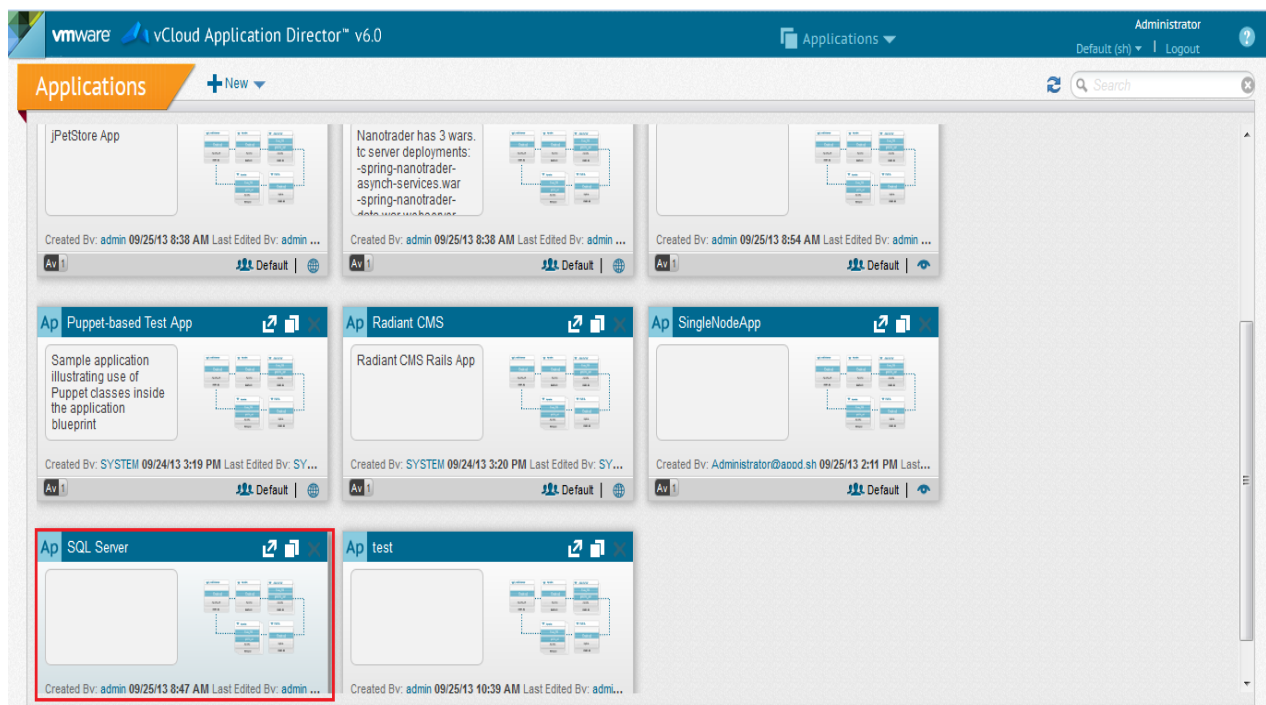
Follow the below steps to publish SQL server as a DBaaS In vCAC 6.0:

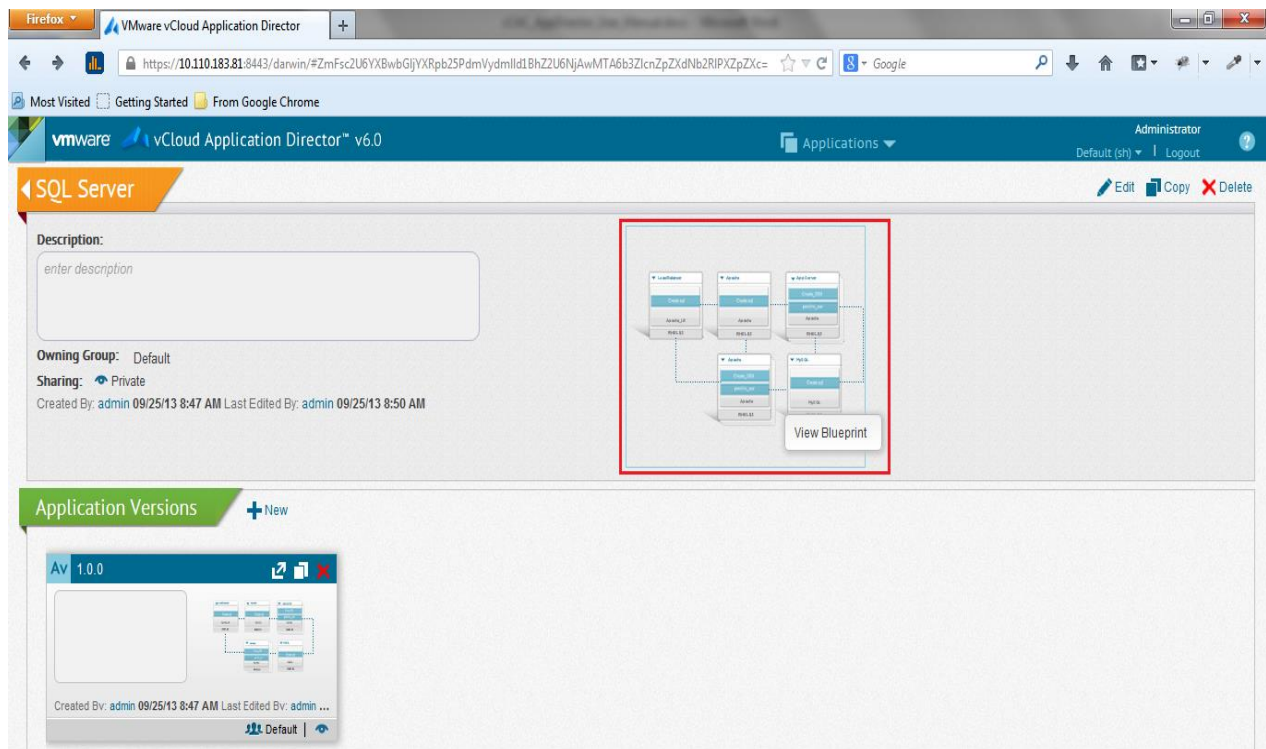
3.1 Publishing an App from Application director to the Service Catalog of vCAC.

1. Login to the Application Director v6.0 instance of the setup created.

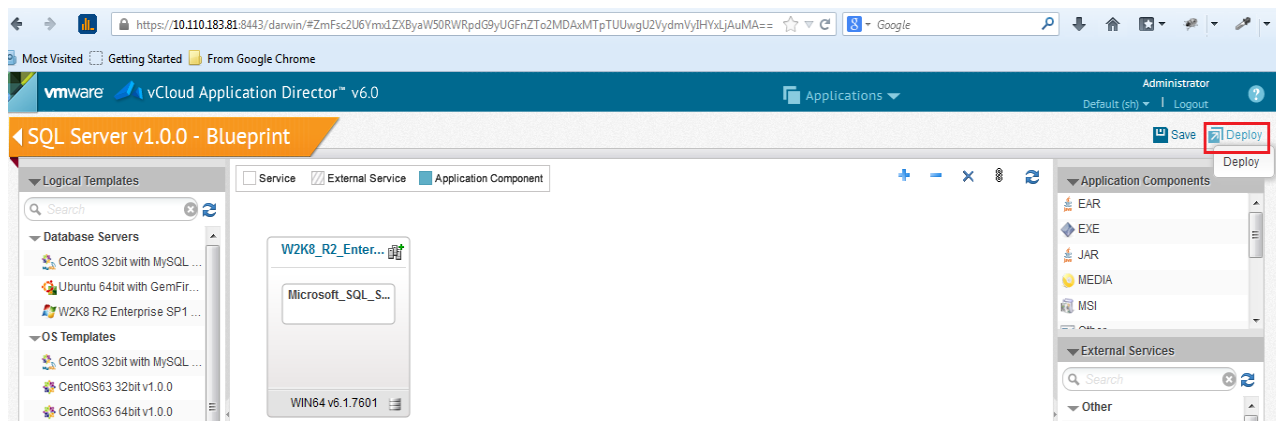


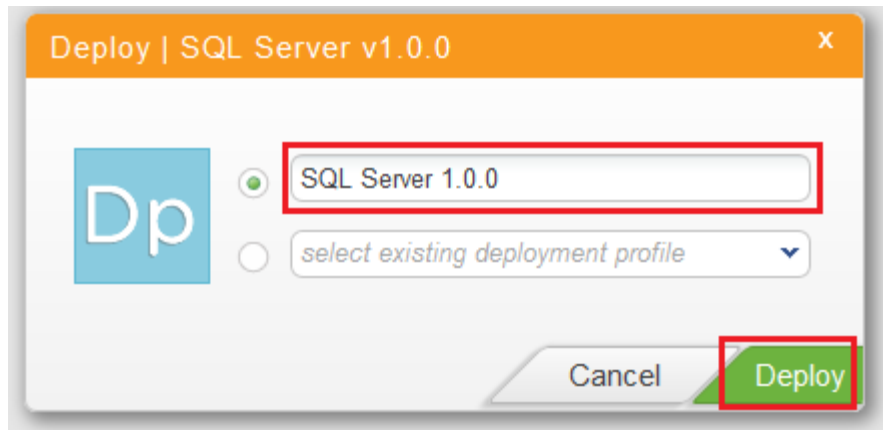
- Now navigate to **Applications** from the main menu and select **SQL Server** App and then select view blueprint. This will navigate to the blueprint canvas and click **view blueprint** as shown



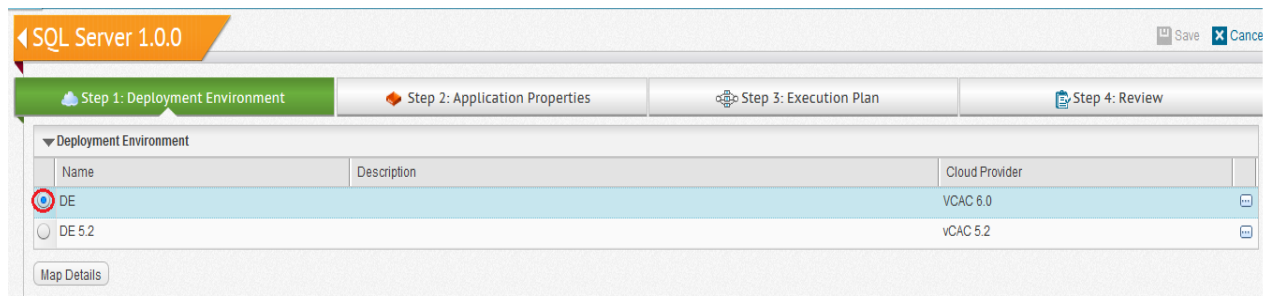


- Now click on the **Deploy** icon as shown and enter a new name for the Deployment Profile e.g. “SQL Server 1.0.0” and then click **Deploy**





4. This will bring up the deployment wizard. Select the only available Deployment Environment



5. Click on the “**Map Details**” button and select the appropriate **Cloud & Storage template** from the drop down list

vmware vCloud Application Director™ v6.0

SQL Server 1.0.0

Step 1: Deployment Environment | Step 2: Application Properties | Step 3: Execution Plan | Step 4: Review

Deployment Environment

Name	Description	Cloud Provider
<input checked="" type="radio"/> DE		VCAC 6.0
<input type="radio"/> DE 5.2		VCAC 5.2

Map Details

VM Templates

Node Name	Cloud
W2K8_R2_Enterprise_SP1_v1.0	W2K8 R2 Enterprise SP1
	win2k8

Disks

Node Name	Disk Name	Tags	Storage
W2K8_R2_Enterprise_SP1_v1.0	Disk1	Data Log	Auto
W2K8_R2_Enterprise_SP1_v1.0	Disk0	Binary Archive	Auto

<< Previous | Next >> | Publish | Deploy

- Now review the **Cloud Templates** (i.e. the vSphere Machine Blueprints) that will be used for this deployment and then click **Next** to review the Application Properties.

SQL Server 1.0.0

Step 1: Deployment Environment | Step 2: Application Properties | Step 3: Execution Plan | Step 4: Review

Deployment Environment

Name	Description	Cloud Provider
<input checked="" type="radio"/> DE		VCAC 6.0
<input type="radio"/> DE 5.2		VCAC 5.2

Map Details

VM Templates

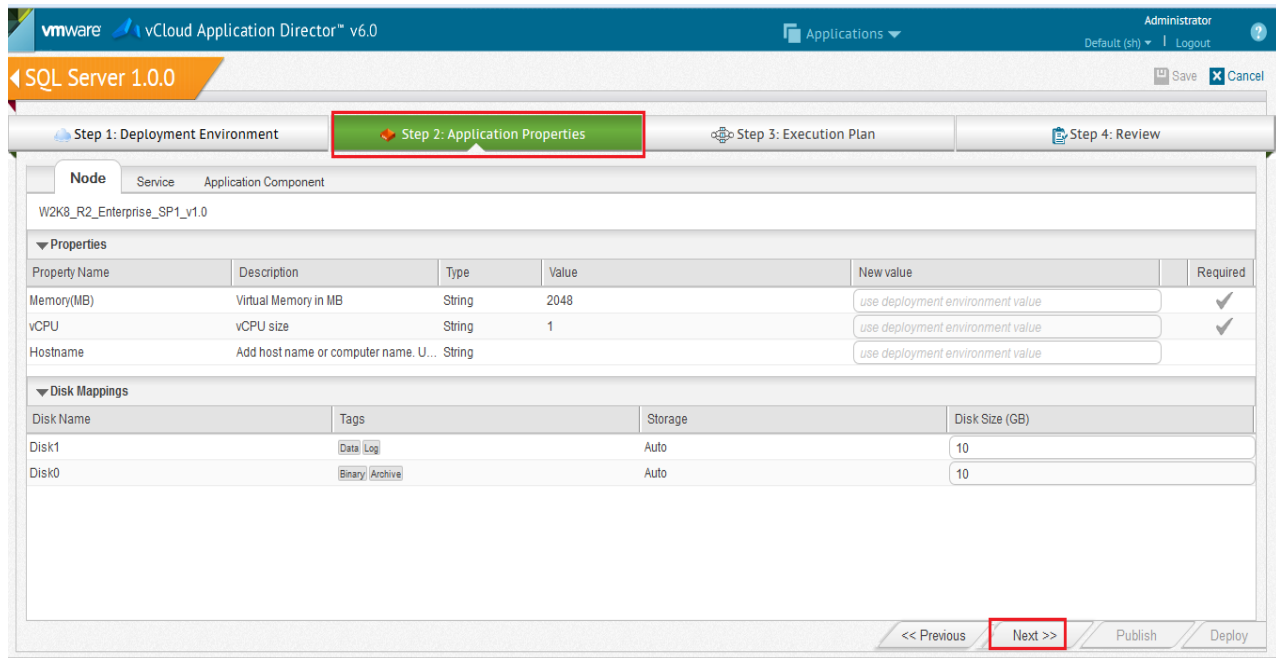
Node Name	Cloud
W2K8_R2_Enterprise_SP1_v1.0	W2K8 R2 Enterprise SP1
	win2k8

Disks

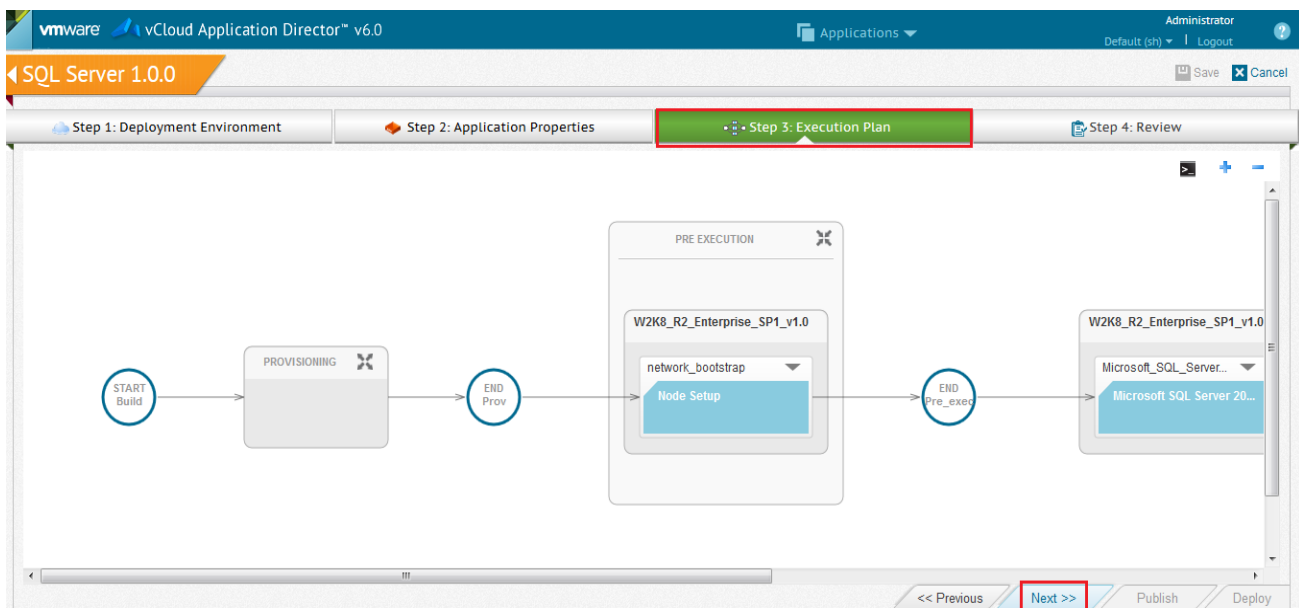
Node Name	Disk Name	Tags	Storage
W2K8_R2_Enterprise_SP1_v1.0	Disk1	Data Log	Auto
W2K8_R2_Enterprise_SP1_v1.0	Disk0	Binary Archive	Auto

<< Previous | Next >> | Publish | Deploy

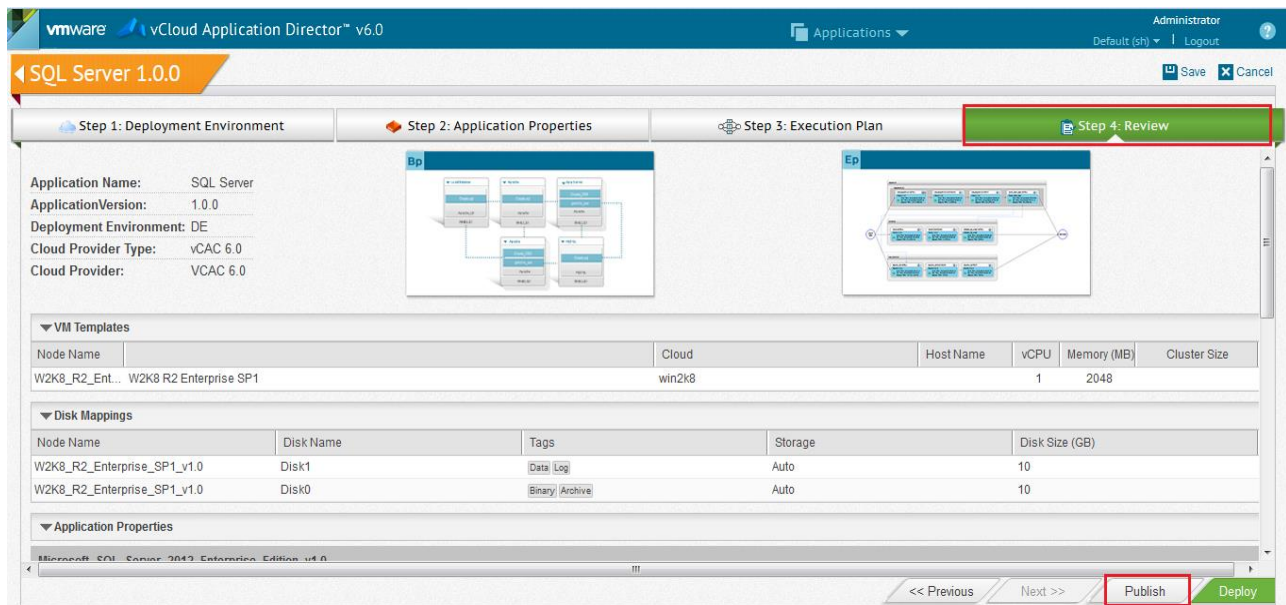
- Review the Application Properties and then click Next to review the execution Plan



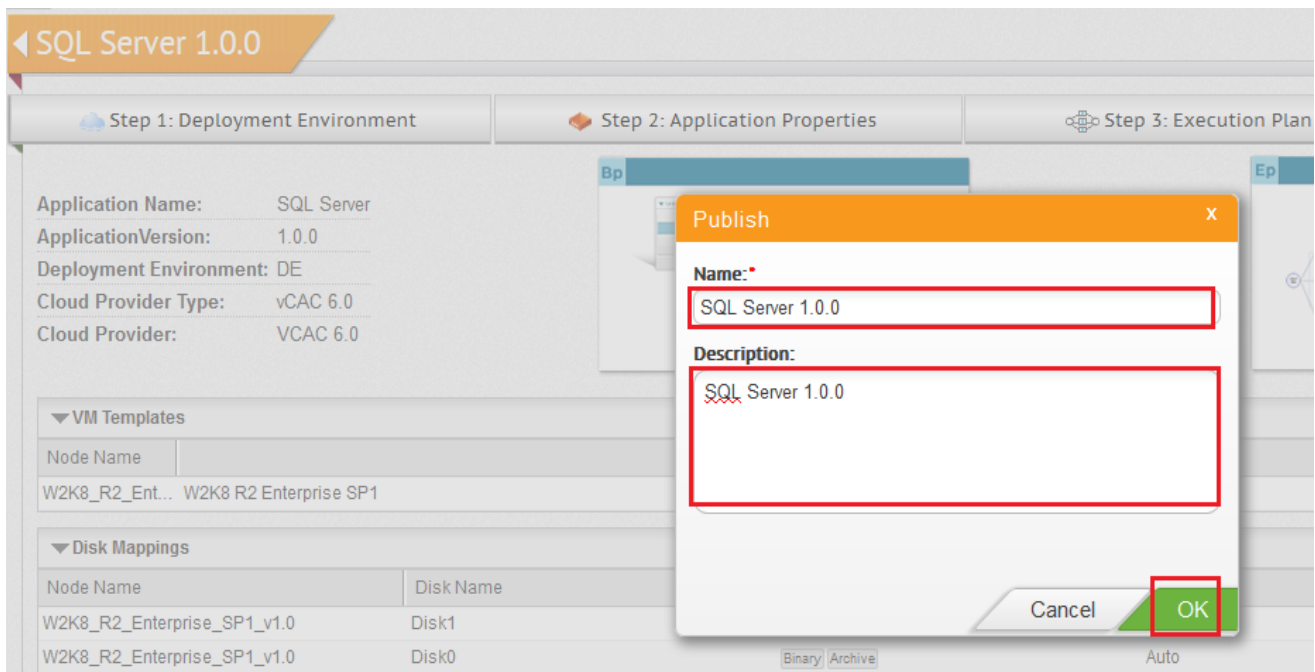
- Review the **Execution Plan**, which provides you with a visualization of all the steps involved in provisioning the VM's as well as installing, configuring, and starting the software services. You can add custom Tasks on this view as well. Click **Next**.



9. Review the last page that summarizes all the information for this application deployment. Click on **Publish** to go ahead and publish this Deployment Profile to the Service Catalog into vCAC

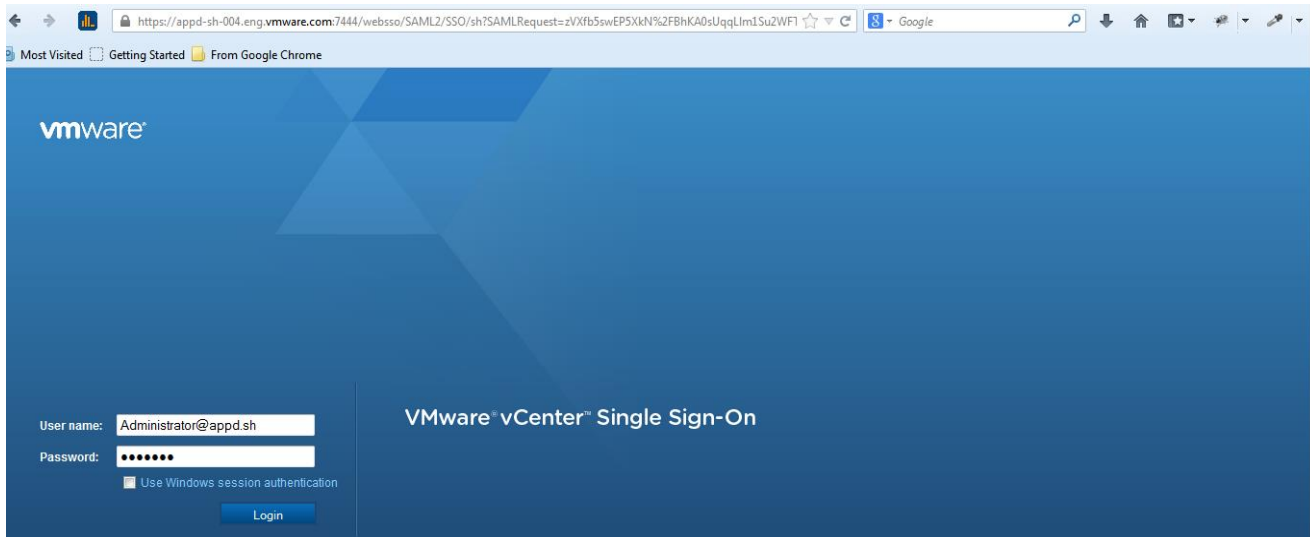


10. Provide a name and description and then click **OK** to publish

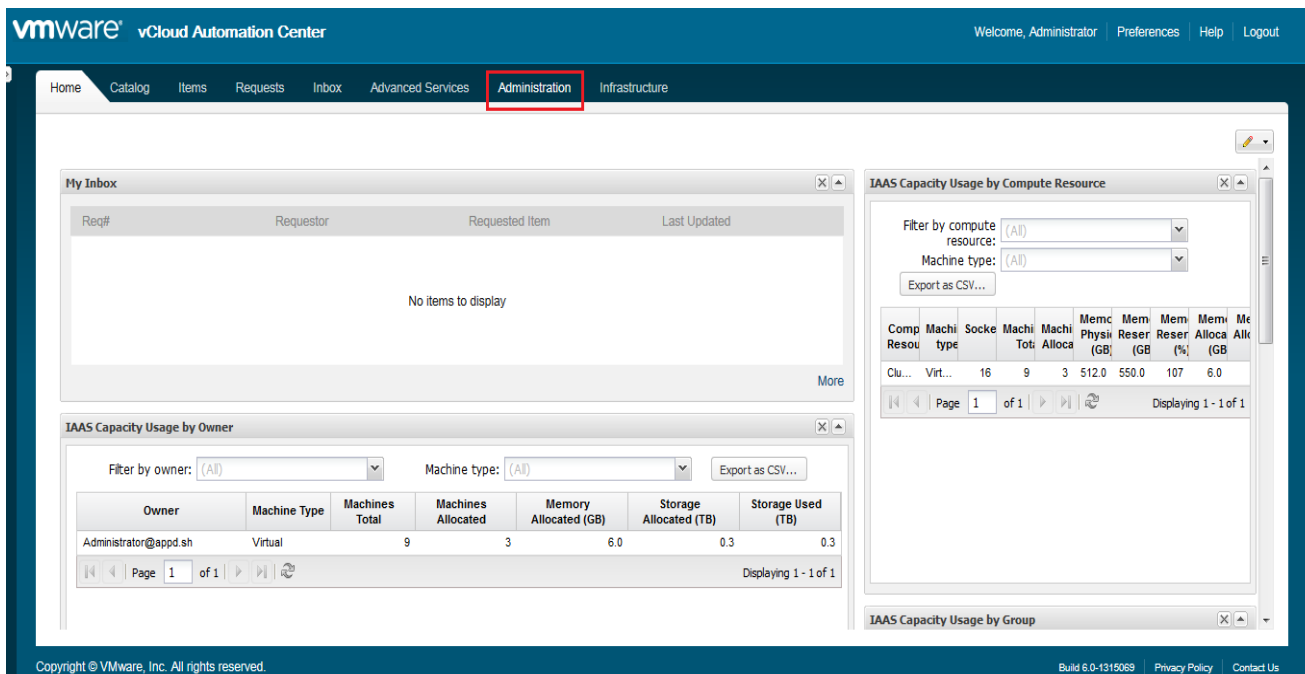


3.2 Managing Entitlements of the Newly Published Application

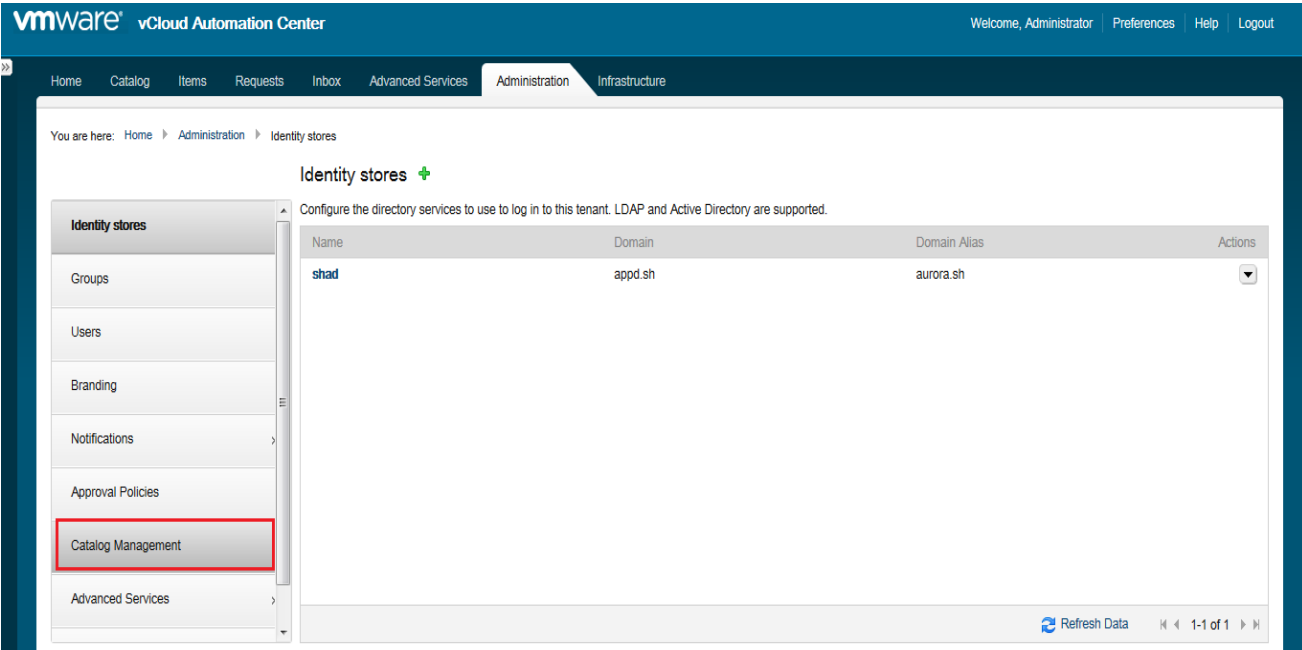
1. Login to the vCAC v6.0 <https://appd-sh-006.eng.vmware.com/shell-ui-app/org/sh> as Administrator@appd.sh using SSO



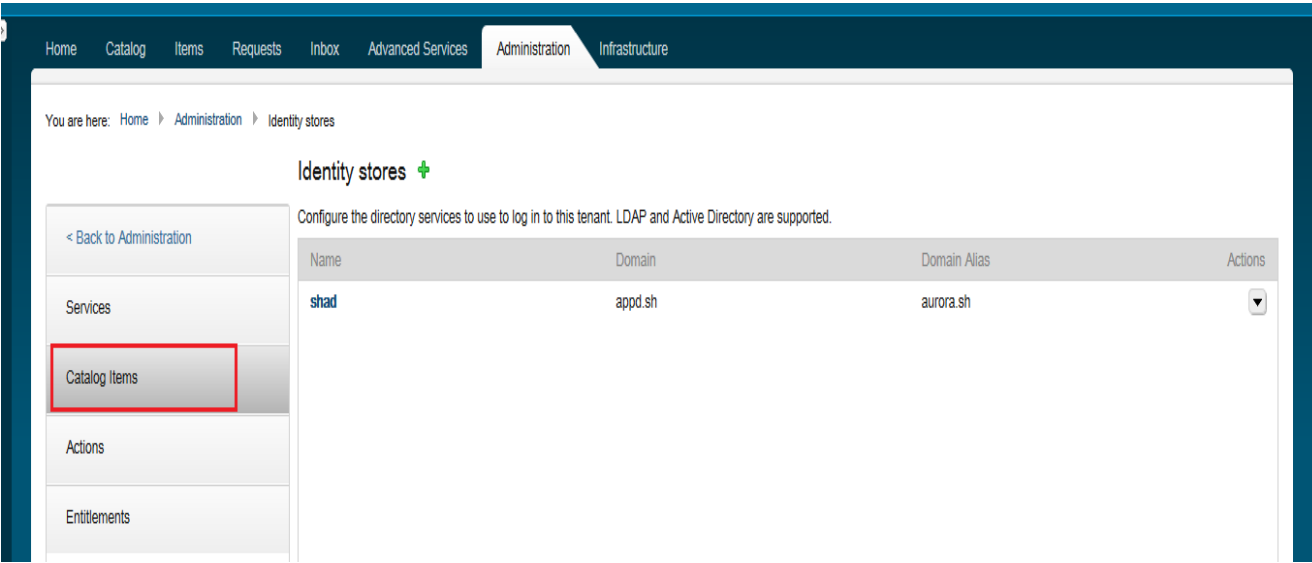
2. Click on the **Administration** tab



3. Select **Catalog Management**



4. Click on to **Catalog Items**



5. Select the published **SQL Server 1.0.0** application

The screenshot shows the VMware vCloud Automation Center interface. The top navigation bar includes 'Home', 'Catalog', 'Items', 'Requests', 'Inbox', 'Advanced Services', 'Administration', and 'Infrastructure'. The 'Administration' tab is selected, and the 'Catalog Items' sub-tab is active. The left sidebar shows a navigation menu with 'Services', 'Catalog Items', 'Actions', and 'Entitlements'. The main content area is titled 'Catalog Items' and contains a table of published items. The 'SQL Server 1.0.0' item is highlighted with a red box.

Item Name	Status	Provider	Default	Category	Published
oob-oracle-publish	Active	Application Director	Default		[Published: Thu S...]
oob-oracle-publish	Active	Application Director	Default	o1	[Published: Thu S...]
t2	Active	Application Director	Default		[Published: Mon ...]
c63x32-mysql0.9.0	Active	Application Director	DEV	puppet-test	[Published: Tue S...]
dppacman	Active	Application Director	Default	lsf	[Published: Tu...]
dp	Active	Application Director	Default	ora	[Published: Wed ...]
test	Active	Application Director	Default	sqlserver	
testSpecialchar	Active	Application Director	Default		
db_triggering	Active	Application Director	Default	sqlserver	db_triggering
testdb_oracle_j	Active	Application Director	Default	ora	
SQL Server 1.0.0	Active	Application Director	Default		SQL Server 1.0.0

6. From the **Service** drop-down, select **sqlserver** to assign this Catalog Item to the sqlserver Service Category. Finally click **Update**

The screenshot shows the 'Configure Catalog Item' page in the VMware vCloud Automation Center. The 'Details' tab is selected, and the 'Service' dropdown menu is open, showing a list of services. The 'sqlserver' service is highlighted with a red box. The 'Update' button is also highlighted with a red box.

Icon: No file selected.
Recommended size 200 x 200 pixels.

Preview:

Status:

Service:

7. Click on **Entitlements** and select the “sqlserver” Provisioning Group

The screenshot shows the VMware vCloud Automation Center interface. The top navigation bar includes 'Home', 'Catalog', 'Items', 'Requests', 'Inbox', 'Advanced Services', 'Administration', and 'Infrastructure'. The 'Administration' tab is selected. The breadcrumb trail is 'You are here: Home > Administration > Catalog Management > Catalog Items'. The main content area is titled 'Catalog Items' and contains a table of catalog items. The left sidebar has a red box around the 'Entitlements' link.

Name	Status	Source	Resource Type	Scope	Service	Description	Actions
test	Active	Application Director		Default	test	[Published: Thu S...]	
Dev Profile	Active	Application Director		Default	Dev Daniel	Dev Profile Conte...	
oob-oracle-publish	Active	Application Director		Default		[Published: Thu S...]	
oob-oracle-publish	Active	Application Director		Default	o1	[Published: Thu S...]	
t2	Active	Application Director		Default		[Published: Mon ...]	
c63c32-mysql0.9.0	Active	Application Director		DEV	puppet-test	[Published: Tue S...]	
dppacman	Active	Application Director		Default	lsf	lsf [Published: Tu...]	
dp	Active	Application Director		Default	ora	[Published: Wed ...]	
test	Active	Application Director		Default	sqlserver		
testSpecialchar	Active	Application Director		Default			

The screenshot shows the VMware vCloud Automation Center interface. The top navigation bar includes 'Home', 'Catalog', 'Items', 'Requests', 'Inbox', 'Advanced Services', 'Administration', and 'Infrastructure'. The 'Administration' tab is selected. The breadcrumb trail is 'You are here: Home > Administration > Catalog Management > Entitlements'. The main content area is titled 'Entitlements' and contains a table of entitlements. The left sidebar has a red box around the 'Entitlements' link.

Name	Provisioning Group	Order	Description	Status	Expires On	Last Updated By	Last Updated	Actions
test	Default	1		Active		Administrator@ap...	09/12/2013 08:53...	
daniel	Default	2		Active		Administrator@ap...	09/12/2013 09:04...	
o1	Default	3		Active		Administrator@ap...	09/12/2013 12:42...	
lsf	Default	4		Active		Administrator@ap...	09/17/2013 02:45...	
ora	Default	5		Active		Administrator@ap...	09/26/2013 02:32...	
sqlserver	Default	6		Active		Administrator@ap...	09/26/2013 02:07...	
puppet-test	DEV	1		Active		Administrator@ap...	09/17/2013 01:09...	

8. Click on the **Items & Approvals** tab. Ensure that Applications are listed under Entitled Services

The screenshot shows the VMware vCloud Automation Center interface. The top navigation bar includes 'Home', 'Catalog', 'Items', 'Requests', 'Inbox', 'Advanced Services', 'Administration', and 'Infrastructure'. The 'Administration' tab is selected. The breadcrumb trail is 'You are here: Home > Administration > Catalog Management > Entitlements'. The main content area is titled 'Edit Entitlement' and contains a form. The left sidebar has a red box around the 'Entitlements' link.

Edit Entitlement

Details **Items & Approvals**

***Name:** sqlserver

Description:

Expiration Date:

***Status:** Active

Last Updated By: Administrator@apdd.sh

Last Updated On: 09/26/2013 02:07 PM

***Users & Groups:**

Search

Name

Administrator@apdd.sh

< Back Next > Update Cancel

9. Search for the published SQL Server 1.0.0 application under **Entitled Catalog Items** and click **Update** to save these changes

The screenshot shows the 'Edit Entitlement' page in the vCloud Automation Center. The page has a sidebar with navigation links: Home, Catalog, Items, Requests, Inbox, Advanced Services, Administration, and Infrastructure. The main content area is titled 'Edit Entitlement' and has two tabs: 'Details' and 'Items & Approvals'. The 'Items & Approvals' tab is active. It contains three sections: 'Entitled Services', 'Entitled Catalog Items', and 'Entitled Resource Actions'. The 'Entitled Catalog Items' section is highlighted with a red box. It has a search bar with the text 'sql' and a table with the following items:

Name	Approval Policy
sqlserver	(none)
SQL Server 1.0.0	(none)
db_triggering	(none)
test	(none)

The 'Update' button at the bottom right of the page is also highlighted with a red box.

3.4 Request the Application as a Catalog Consumer

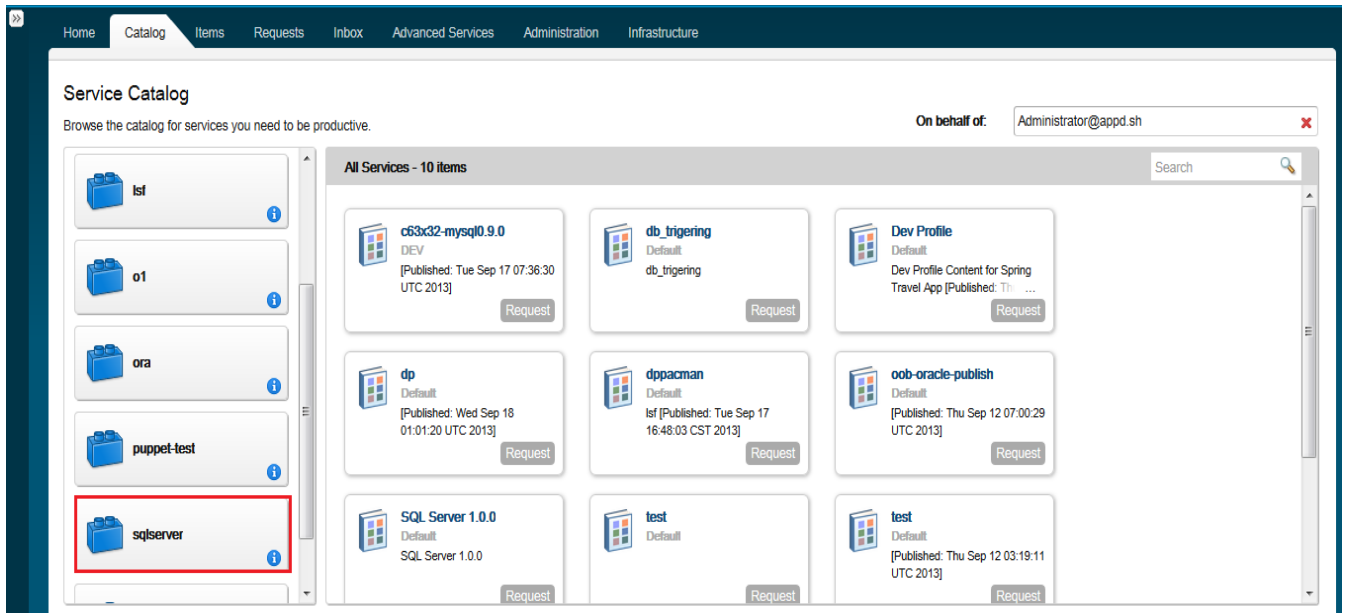
1. Log into vCAC Service Catalog using SSO as a Catalog Consumer

The screenshot shows the VMware vCenter Single Sign-On login page. The page has a blue background with the VMware logo and the text 'VMware vCenter Single Sign-On'. There are input fields for 'User name' (Administrator@appd.sh) and 'Password' (masked with dots). A 'Login' button is at the bottom.

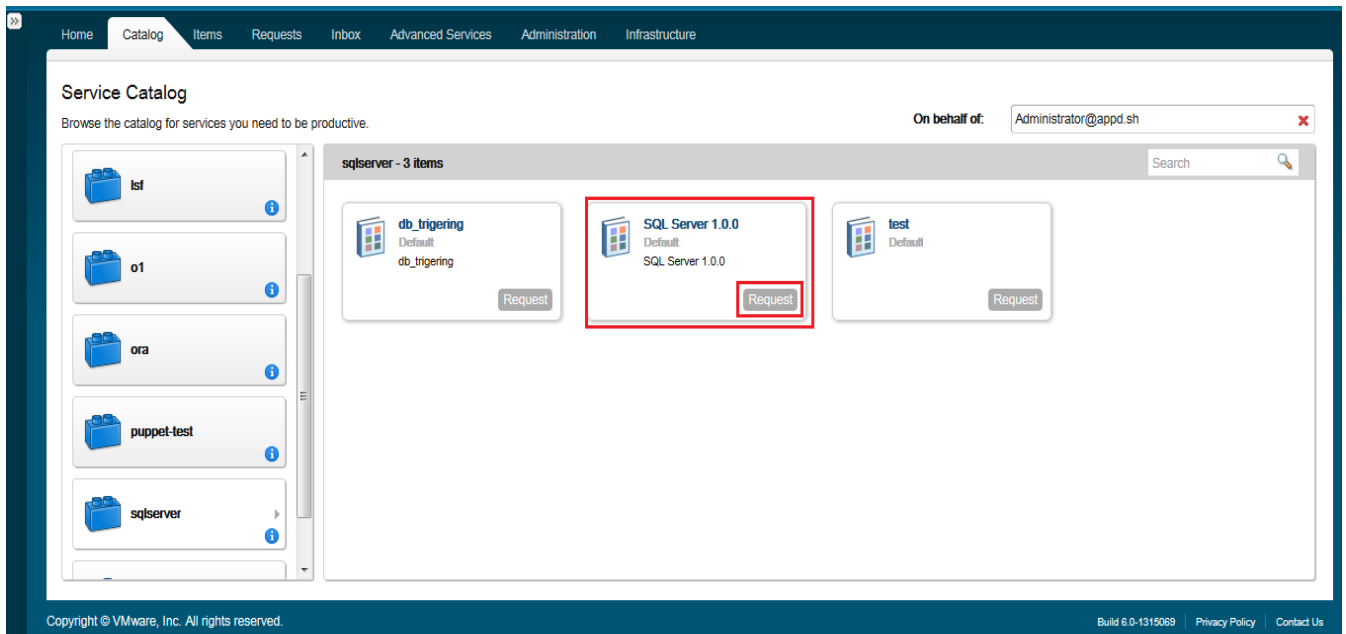
2. Click on the **Catalog** tab

The screenshot shows the vCloud Automation Center 'Catalog' tab. The page has a blue header with the VMware logo and the text 'vCloud Automation Center'. The 'Catalog' tab is highlighted with a red box. The page also shows a navigation bar with links: Home, Catalog, Items, Requests, Inbox, Advanced Services, Administration, and Infrastructure.

3. Select SQL Server



4. Click on the **Request** Button for published SQL Server 1.0.0 application



5. Provide Description & Details and click **Next**.

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

New Request

SQL Server 1.0.0
SQL Server 1.0.0

Request Information Properties

* Description: SQL Server 1.0.0

* Reasons: SQL Server 1.0.0

< Back Next > Save Cancel

6. Review all the application **properties**. Click **Submit** to provision this application.

vmware vCloud Automation Center Welcome, Administrator Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

New Request

SQL Server 1.0.0
SQL Server 1.0.0

Request Information Properties

Microsoft_SQL_Server_2012_Enterprise_Edition_v1.0

* MSSQL_SETUP_LOCATION: \\10.110.173.66\exchange\binary\sqlserver\2012\en_sql_server_2012_en

* MSSQL_SETUP_LOCATION_ACCESS_USER: csp

* MSSQL_SETUP_LOCATION_ACCESS_PASSWORD:

* INSTANCE_NAME: mssqldb

* SQL_SYSADMIN_ACCOUNTS: Administrator

* SA_PWD:

* RECOVERY_INTERVAL: 0

* USER_CONNECTIONS: 0

< Back Submit Save Cancel

vmware vCloud Automation Center Welcome, Administrator Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

Request

✓ The request has been submitted successfully.

OK

3.5 View the status of the application deployment

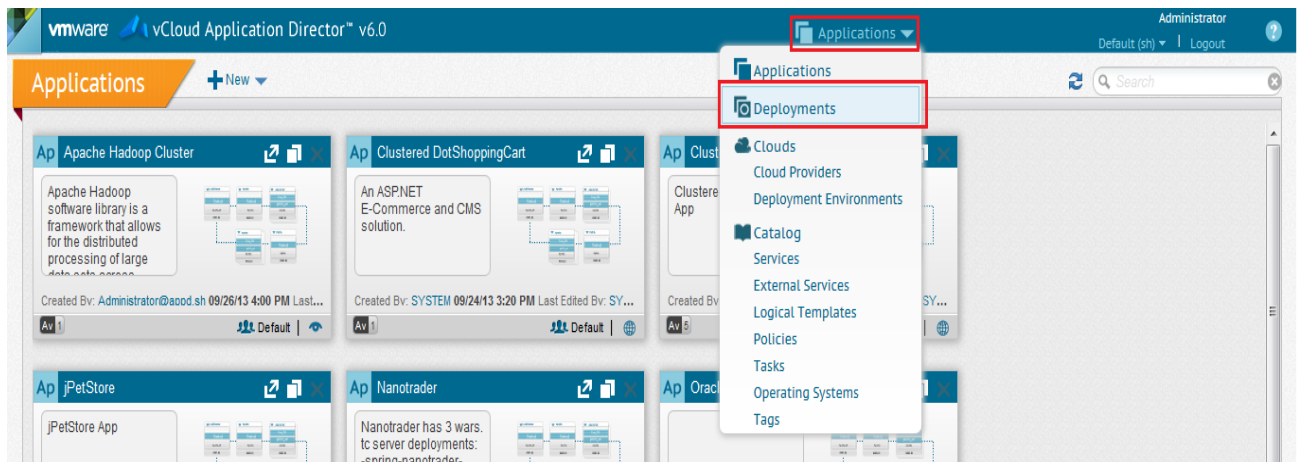
After completion of the deployment, we can check the status by following two methods

Method -1: From Application Director

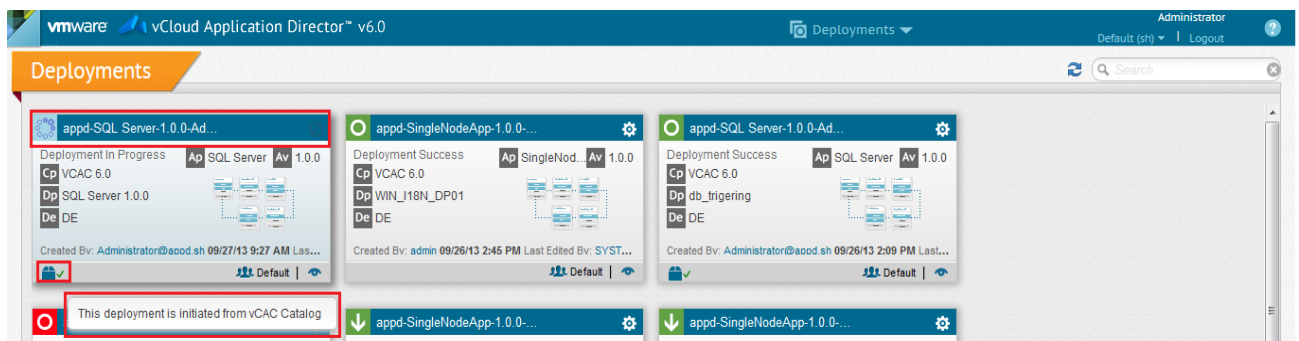
1. Login to the Application Director v6.0 instance



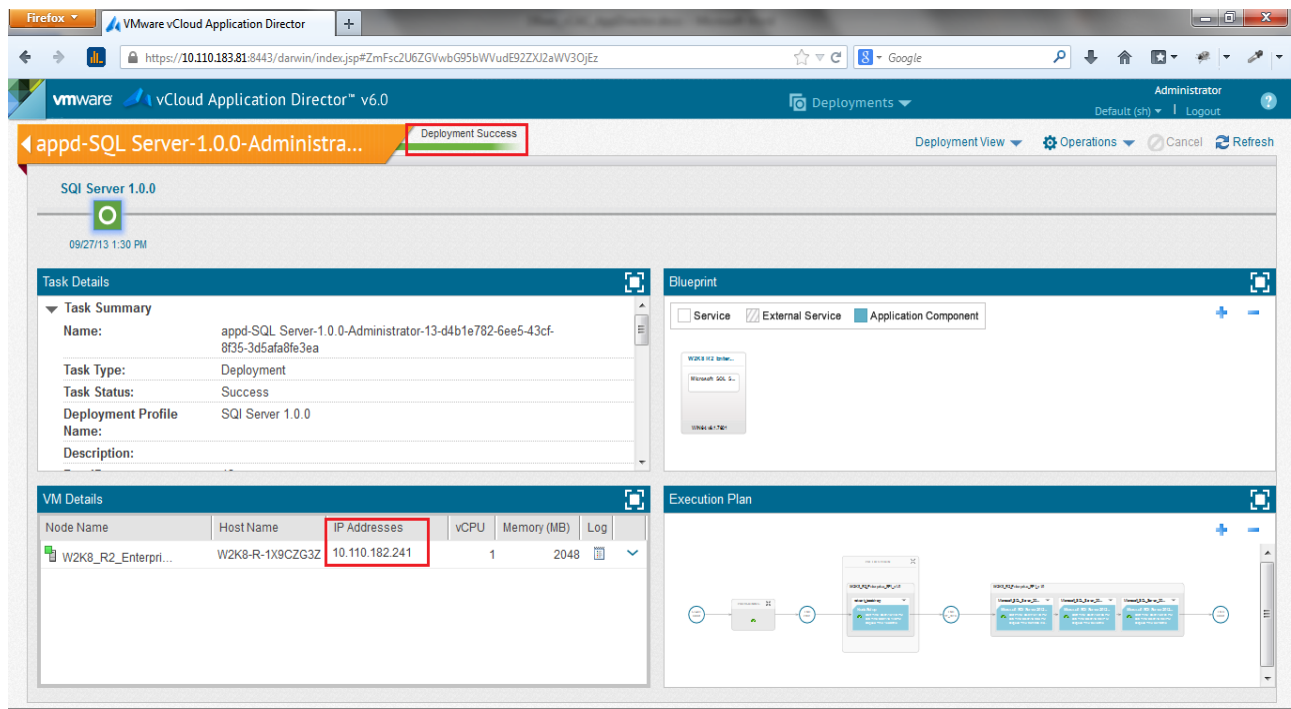
2. Review the deployment status from the Deployments page by selecting **Deployments** from the main menu.



3. Hover mouse on the below box to see where this deployment is initiated from. Click on this deployment

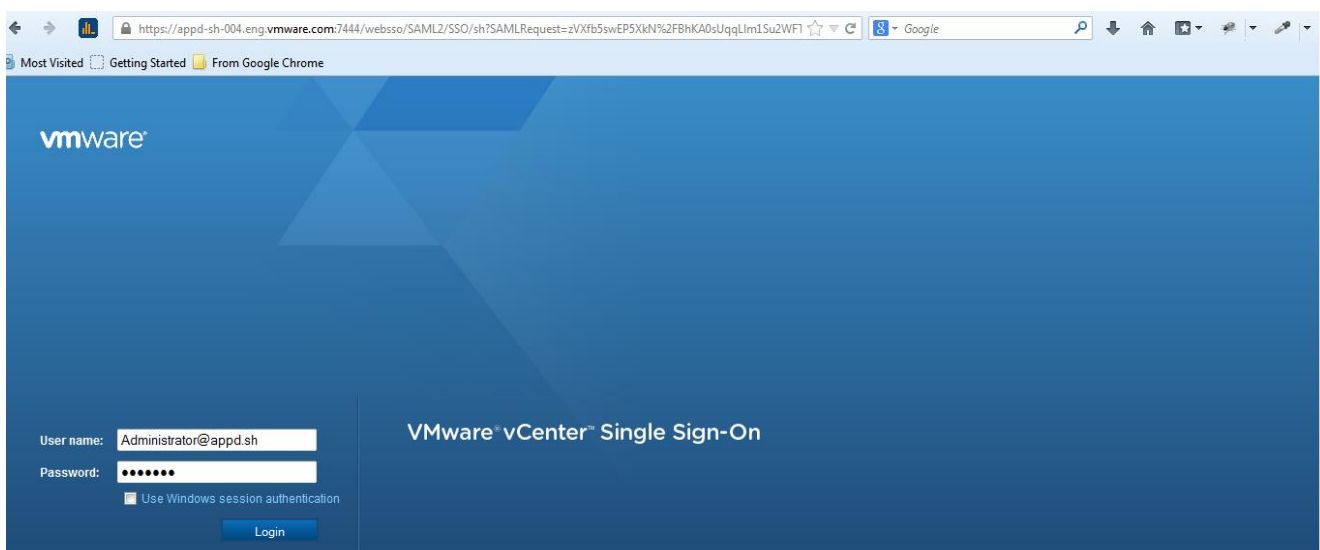


4. Check the success/failure of the deployment



Method -2: From vCAC

1. Log into vCAC Service Catalog using SSO as a Catalog Consumer



2. Click on the **Items** tab

vmware vCloud Automation Center

Welcome, Administrator | Preferences | Help | Logout

Home Catalog **Items** Requests Inbox Advanced Services Administration Infrastructure

My Inbox

Req#	Requestor	Requested Item	Last Updated
No items to display			

IAAS Capacity Usage by Owner

Filter by owner: (All) Machine type: (All) Export as CSV...

Owner	Machine Type	Machines Total	Machines Allocated	Memory Allocated (GB)	Storage Allocated (TB)	Storage Used (TB)
Administrator@appd.sh	Virtual	9	4	8.0	0.3	0.3

IAAS Capacity Usage by Compute Resource

Filter by compute resource: (All) Machine type: (All) Export as CSV...

Comp Resou	Machi type	Socke	Machi Totl	Machi Alloca	Memc Physic (GB)	Mem Reser (GB)	Mem Reser (%)	Mem Alloca (GB)	Mem Alk
Clu...	Virt...	16	9	4	512.0	550.0	107	8.0	

Page 1 of 1 Displaying 1 - 1 of 1

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3. Select the appd-SQL_Server item

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Home Catalog **Items** Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Items > My Items

My Items Owned by: Me

Select an item type from the menu on the left to view your provisioned items. Use the Actions menu to manage your items.

Application	Machine	Item Name	Item ID	Item Type	Created	Actions
		appd-oob-oracle-publish-1.0.0-Administrator-13-925eac87-bf46-46ec-90df-ec430ea3425	13-925eac87-bf46-46ec-90df-ec430ea3425	oob-oracle-publish-oob-oracle-publish	09/12/2013 01:02 PM	
		appd-oob-oracle-publish-1.0.0-Administrator-15-c9b2d8e9-37f6-471d-	15-c9b2d8e9-37f6-471d-	oob-oracle-publish-oob-oracle-publish	09/12/2013 01:19 PM	
		appd-oob-oracle-publish-1.0.0-Administrator-17-da38c18f-6865-4242-8288-62b20ff5e60c	17-da38c18f-6865-4242-8288-62b20ff5e60c	oob-oracle-publish-oob-oracle-publish	09/12/2013 01:38 PM	
		appd-oob-oracle-publish-1.0.0-Administrator-19-19861641-b334-427c-baf4-01495ed107f3	19-19861641-b334-427c-baf4-01495ed107f3	oob-oracle-publish-oob-oracle-publish	09/12/2013 02:01 PM	
		appd-SH vCAC 6.0 Puppet Open Source-1.0.0-Administrator-9-fe08970b-16ff-495d-	9-fe08970b-16ff-495d-	SH vCAC 6.0 Puppet Open Source-c63x32-mysq...	09/17/2013 01:22 PM	
		appd-pacmantest-1.0.0-Administrator-2-a706ee2b-67b6-4f8d-9b48-facd90098fda	2-a706ee2b-67b6-4f8d-9b48-facd90098fda	pacmantest-dp	09/17/2013 02:57 PM	
		appd-Oracle Test-1.0.0-Administrator-16-b5bba83-fb0a-4697-893c-7f0c46c189f6	16-b5bba83-fb0a-4697-893c-7f0c46c189f6	Oracle Test-dp	09/18/2013 07:01 AM	
		appd-Oracle-1.0.0-Administrator-10-a4c59e1f-66ee-4fc2-8185-0e5742b7d78f	10-a4c59e1f-66ee-4fc2-8185-0e5742b7d78f	Oracle-testdb_oracle	09/26/2013 02:41 PM	
		appd-SQL_Server-1.0.0-Administrator-13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea	13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea	SQL Server-SQL Server 1.0.0	09/27/2013 02:04 PM	

Refresh Data 1-11 of 11

4. Check the success/failure of the deployment.


vmware vCloud Automation Center

Welcome, Administrator Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Items > Item Details

Item Details: appd-SQL Server-1.0.0-Administrator-13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea



appd-SQL Server-1.0.0-Administrator-13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea
SQL Server-SQL Server 1.0.0

Owner
Administrator@appd.sh

Provisioned
09/27/2013 02:04 PM

Type
Application

Deployment Details VM Details

Summary

Deployment Status: Deployment Success

Start Time: 09/27/2013 08:00 AM UTC

End Time: 09/27/2013 08:34 AM UTC

Application Details

Application Name: SQL Server

Description: / Unspecified

< Back Next >

Actions:
No actions available

Close

5. Check the machine IP by clicking on the **VM Details** tab.


vmware vCloud Automation Center

Welcome, Administrator Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Items > Item Details

Item Details: appd-SQL Server-1.0.0-Administrator-13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea



appd-SQL Server-1.0.0-Administrator-13-d4b1e782-6ee5-43cf-8f35-3d5afa8fe3ea
SQL Server-SQL Server 1.0.0

Owner
Administrator@appd.sh

Provisioned
09/27/2013 02:04 PM

Type
Application

Deployment Details **VM Details**

Summary

Deployment Status: Deployment Success

Start Time: 09/27/2013 08:00 AM UTC

End Time: 09/27/2013 08:34 AM UTC

Application Details

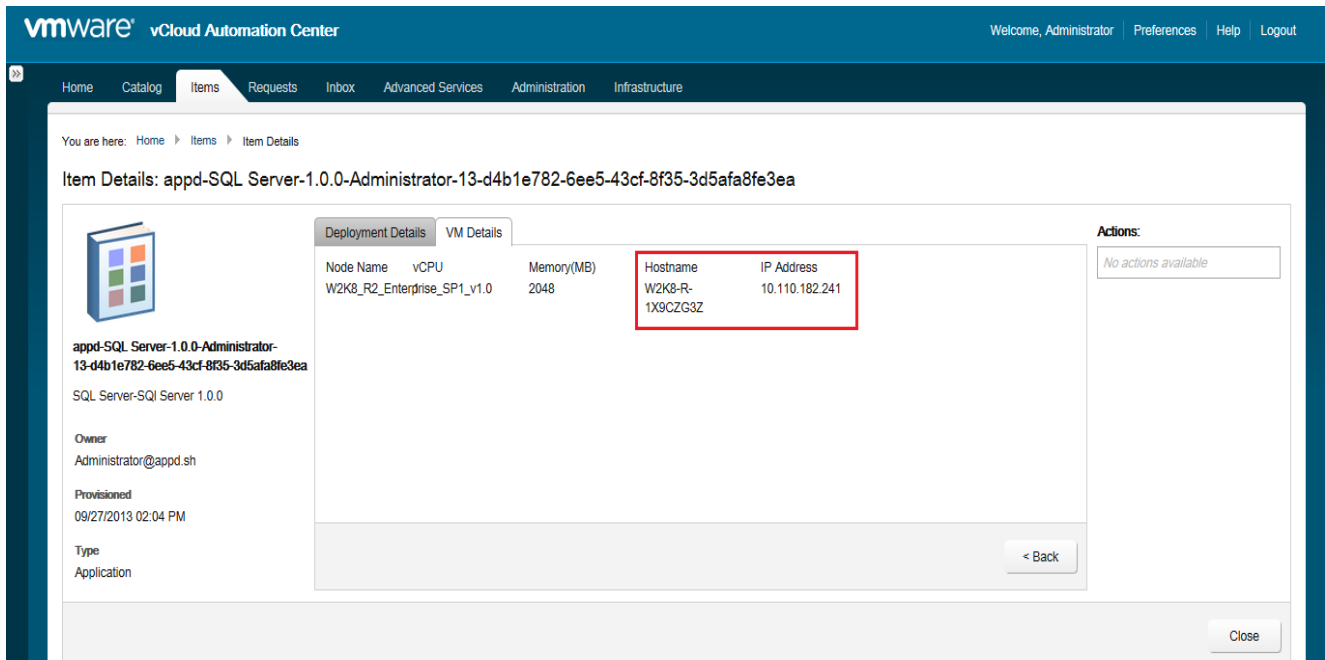
Application Name: SQL Server

Description: / Unspecified

< Back Next >

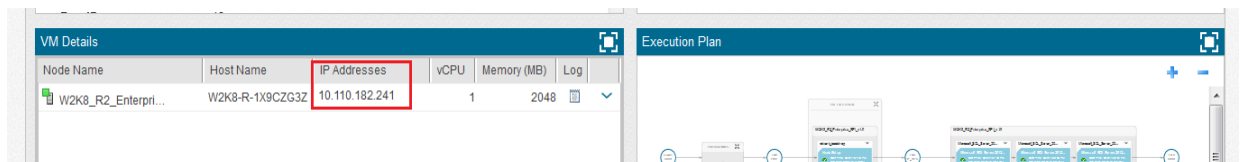
Actions:
No actions available

Close

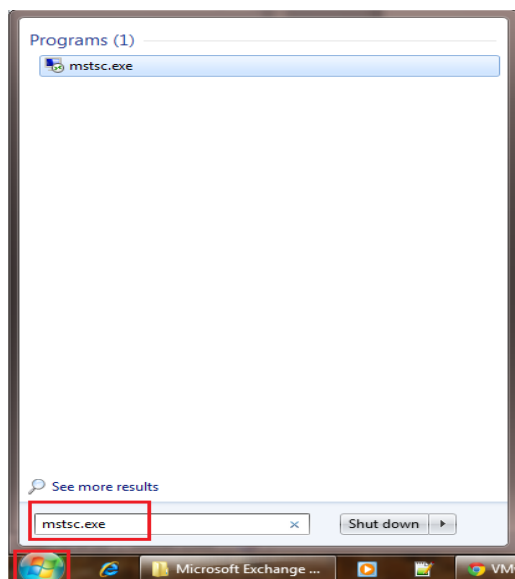


3.6 Launching the Application

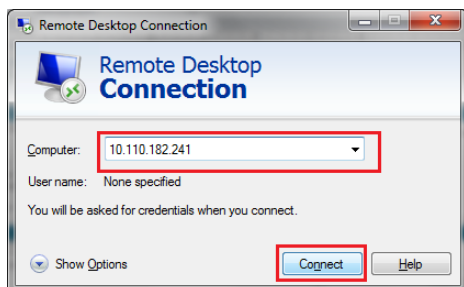
1. Click on the **VM Details** Page to get the IPs of the machines. We will need these IPs to launch the application



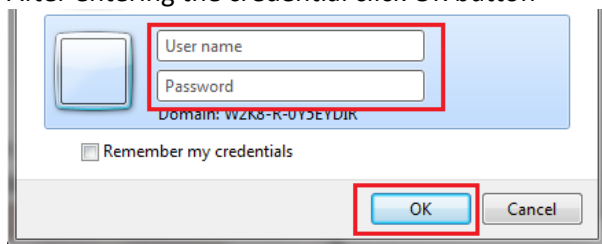
2. RDP into the created machine "10.110.182.241" as Start Menu -> Type mstsc.exe in the "Search programs and files" text box. Press ENTER key



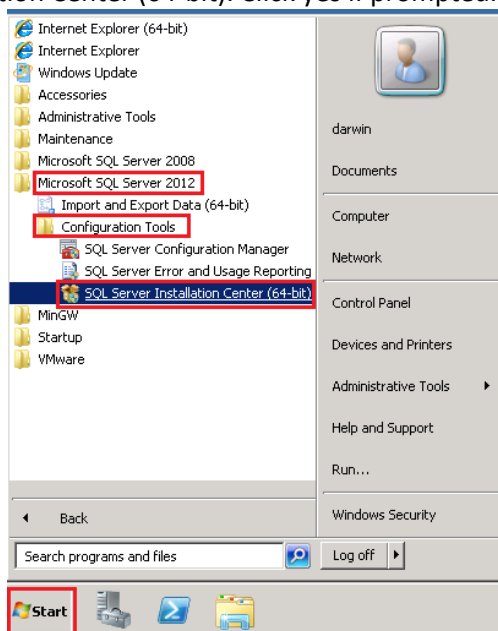
- Now type machine's IP in the **Computer** Filed and click **Connect**



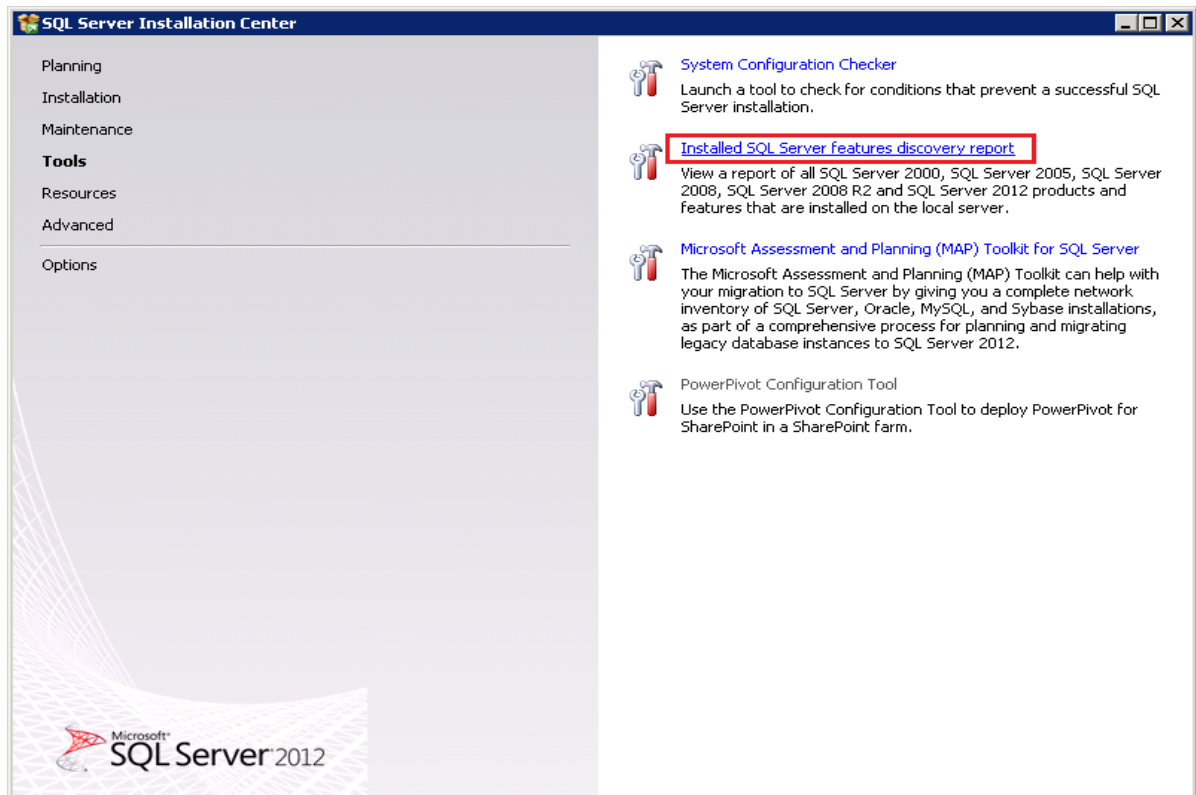
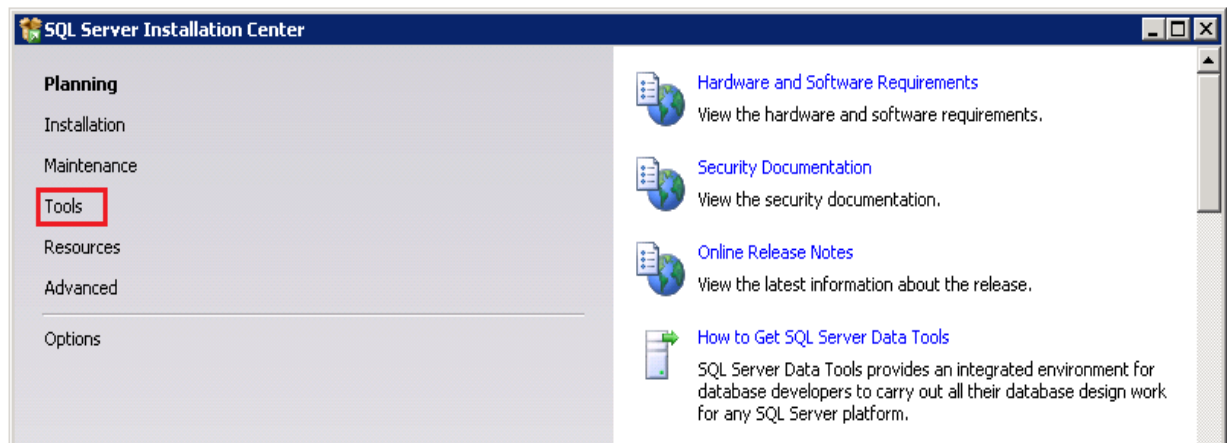
- Now enter the system account credential
After entering the credential click OK button



- Now we are successfully logged into the machine
- Click on Start Menu → All Programs → Microsoft SQL Server 2012 → Configuration Tools → SQL Server Installation Center (64-bit). Click yes if prompted.



- To run the SQL Server features discovery report, click **Tools** in the left-hand navigation area of **SQL Server Installation Center**, and then click **Installed SQL Server features discovery report**



8. The SQL Server discovery report can be used to verify the version of SQL Server and the SQL Server features installed on the computer. The **Installed SQL Server features discovery report** displays a report of all SQL Server 2000, SQL Server 2005, SQL Server 2008, SQL Server 2008 R2 and SQL Server 2012 products and features that are installed on the local server

Product	Instance	Instance ID	Feature	Language	Edition	Version	Clustered
Microsoft SQL Server 2012	MSSQLDB	MSSQL11.MSSQLDB	Database Engine Services	1033	Enterprise Edition	11.0.2100.60	No
Microsoft SQL Server 2012	MSSQLDB	MSSQL11.MSSQLDB	SQL Server Replication	1033	Enterprise Edition	11.0.2100.60	No
Microsoft SQL Server 2012	MSSQLDB	MSSQL11.MSSQLDB	Full-Text and Semantic Extractions for Search	1033	Enterprise Edition	11.0.2100.60	No

4. Summary

This solution provides automated installation and configuration for SQL Server 2012 service as a DB service and utilizes industry's leading Cloud-enabled self-service provisioning solution, VMware vCloud Automation Center 6.0

5. Benefits

DB as a Service can accelerate application development. DB as a Service provisions database resources automatically based on available system resources, allowing application developers, architects, testers, and other consumers of databases to store and retrieve data without having to deal with lower-level database administration functionality.

The key DB as a Service characteristics include:

- **Enables on-demand, self-service-based database provisioning.** DB as a Service allows database consumers such as application developers, testers, and architects to provision databases easily using an on-demand, self-service platform. It allows provisioning databases using an easy-to-use platform that even nontechnical users can securely leverage while being compliant with all corporate IT policies.
- **Delivers an elastic and multitenant database platform.** DB as a Service delivers an elastic database platform that can expand and contract its compute and storage resources dynamically based on resources available, repurposing them as required.
- **Leverages existing servers and storage.** Unlike other clustered platforms, DB as a Service leverages existing servers and storage. It delivers an automated resource management across standalone, clustered, virtualized, and nonvirtualized servers and storage.
- **Supports common security and administration policies across databases.** DB as a Service leverages common policies that can be deployed across a farm of databases running a variety of operating systems and hardware platforms. The policies can enforce uniformity of frequent administration tasks across databases, ensuring compliance, consistency, and security — all at a lower cost.

- **Automates database administration and monitoring.** A key feature of DB as a Service is the ability to automate the administration and monitoring of databases such as backup, recovery, tuning, optimization, patching, upgrading, and creation. Based on the policies that are defined by Database Administrators, database administration tasks can be automated — scheduled or proactively initiated to support various database activities.
- **Meters database usage for chargeback.** DB as a Service platforms offer granular metering of database usage that can be used for chargeback to various consumers. They typically track based on time, space, table, availability, and resource usage and provide an aggregated view per department, group, or individual user.