



INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE
ÎN INFORMATICĂ - ICI BUCUREȘTI

User's Manual for the Cloud infrastructure provided by
the National Institute for Research and Development in
Informatics - ICI Bucharest, via the project "Cloud
Infrastructure for the Romanian Public Institutions –
ICIPRO"



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1 Introduction

The aim of this document is to present and explain to end users the self-service software interface for accessing/managing the virtualized computing resources. ICIPRO is an Internet-level cloud service platform, hosted in ICI data centres, relying on a Windows Azure-based technology.

Through the Self-Service Portal for IaaS the authorized users (representatives of public institutions) will be able to provision and manage infrastructure services made available by ICIPRO. More specifically, through this portal they will be able to define virtual machines, they will be able to manage parameters of these virtual machines, they will be able to define and manage complex services based on several virtual machines and so on.

Currently, there are 3 types of subscriptions available for the virtualization platform, with the following characteristics:

Bronze

- Maximum number of virtual machines 2
- Maximum number of cores 4
- Maximum amount of RAM (MB) 4096
- Maximum storage capacity (GB) 60
- Maximum number of virtual networks 1
- Network traffic unlimited

Silver

- Maximum number of virtual machines 5
- Maximum number of cores 10
- Maximum amount of RAM (MB) 12288
- Maximum storage capacity (GB) 120
- Maximum number of virtual networks 2
- Network traffic unlimited

Platinum

- Maximum number of virtual machines 20
- Maximum number of cores 40
- Maximum amount of RAM (MB) 61440
- Maximum storage capacity (GB) 1024
- Maximum number of virtual networks unlimited
- Network traffic unlimited

In order to access the resources on the ICIPRO platform, we recommend using new-generation browsers with the latest security updates.



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To access the virtual machine console, the operating system must use **Remote Desktop Protocol 8.1**, which is installed by default on Windows 8.1 and Windows 10. For the Windows 7 stations it is recommended to install this client separately. Additional information available at - <https://blogs.msdn.microsoft.com/rds/2013/11/12/remote-desktop-protocol-8-1-update-for-windows-7-sp1-released-to-web/>.

As far as all the other operating systems are concerned, there is currently no possibility to use the console. In order to access virtual machines, it is recommended to create NAT rules. For further information on this subject, see Chapter **3.3 Create NAT rules**.



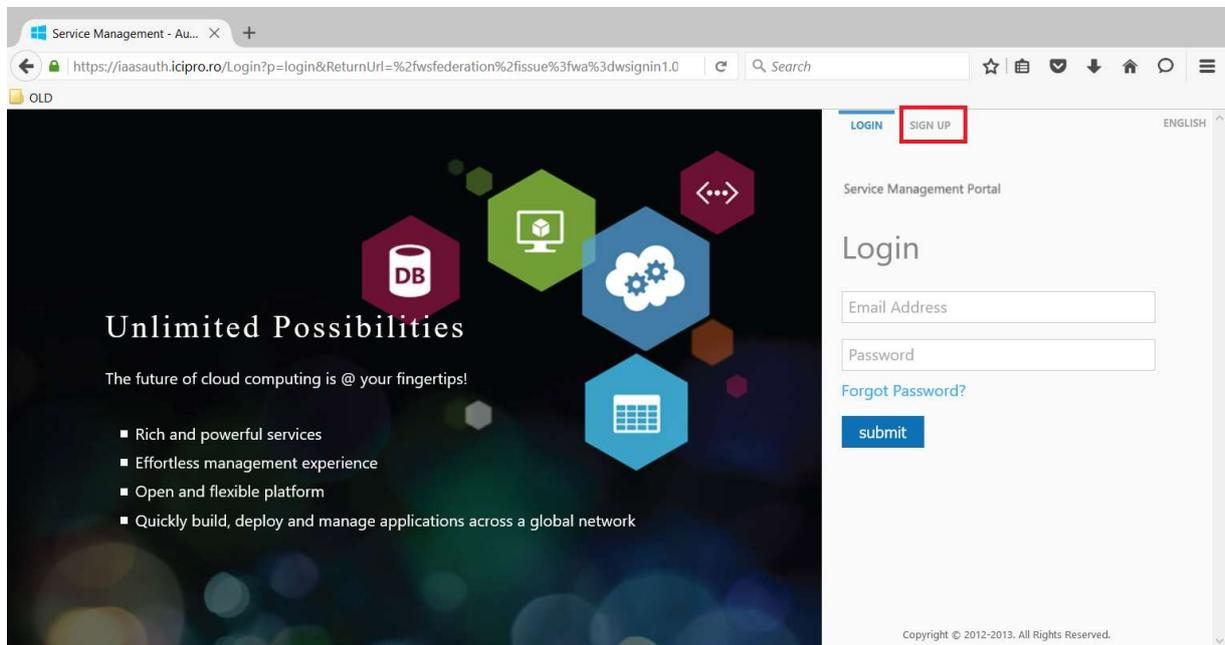
2 Creating subscriptions on the ICI cloud platform

2.1 Create an account

In order to create an account on the ICIPRO platform, you will have to register with a valid e-mail address, accessing the portal <https://iaaspanel.icipro.ro/>; choose the **SIGN UP** option from the top right corner. Please note that as soon as you access the portal, you will be redirected to the authentication portal <https://iaasauth.icipro.ro/>; please do not use this address directly in your Internet browser, as it will not work.

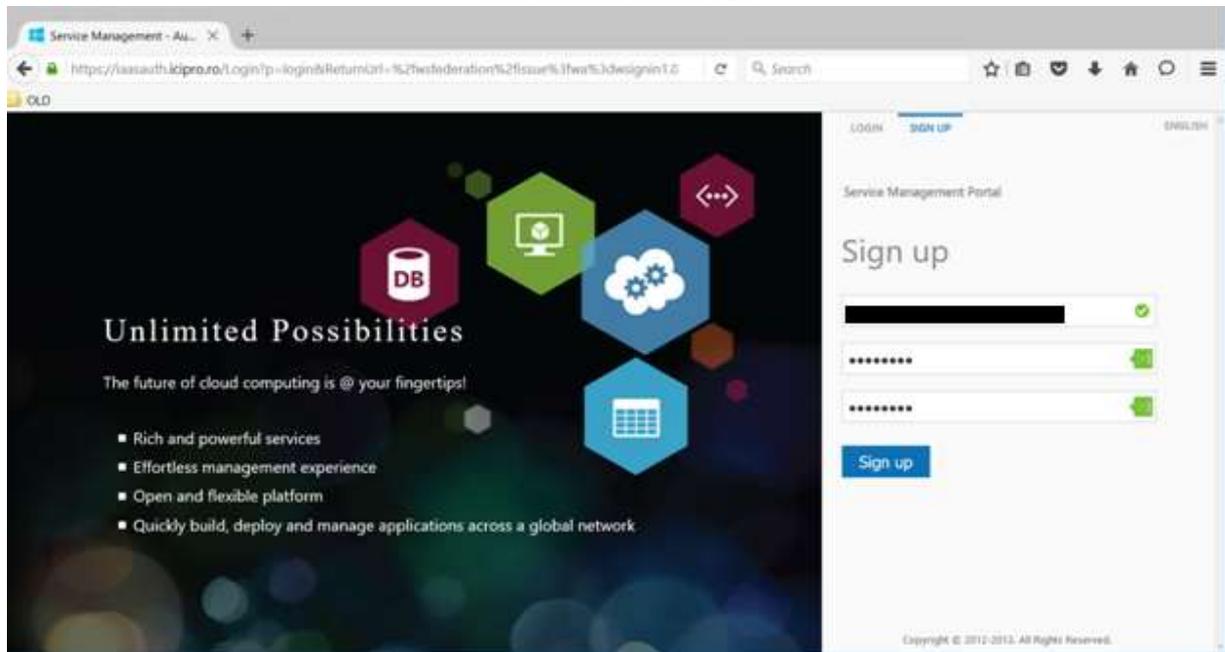
Minimum password requirements:

- It must be at least 8 characters in length
- It must contain capital letters (A - Z)
- It must contain small characters (a - z)
- It must contain numeric characters (0 - 9)
- It must contain special characters, such as %\$@ etc.

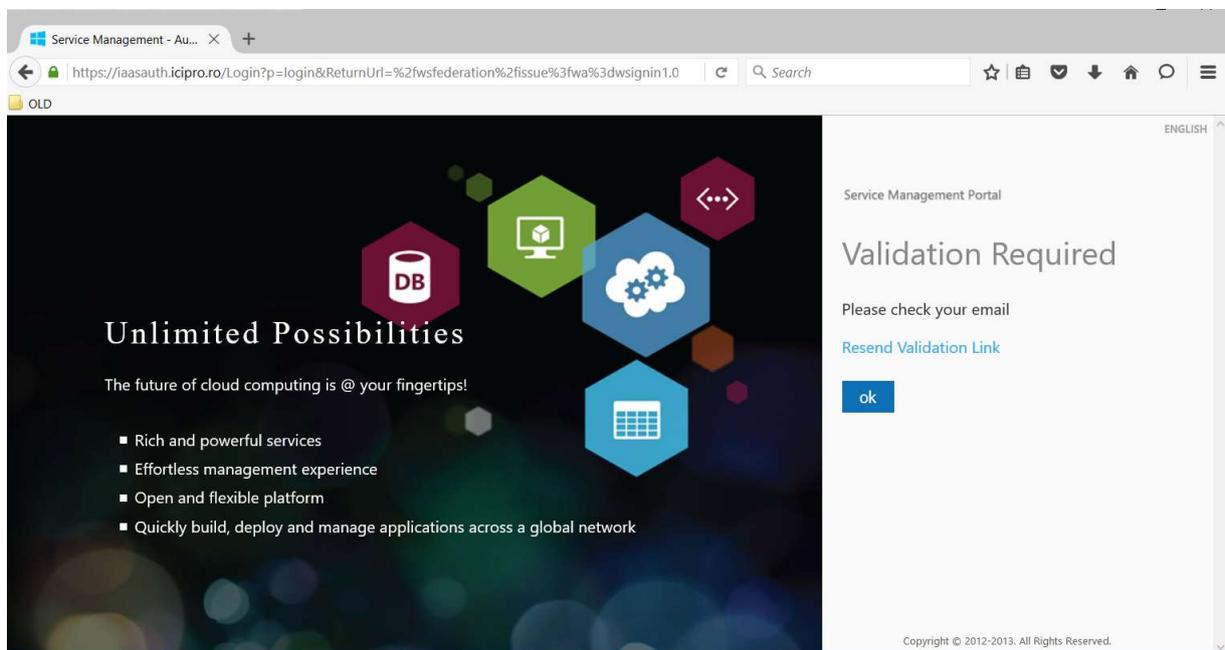




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After entering the login details (e-mail address and password) press the **“Sign up”** button. A message will appear, prompting you to check your e-mail before continuing with the registration process.



You will receive an e-mail from noreply@icipro.ro containing a link which you need to access in order to continue with the registration process.



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2.2 Changing the password

In case you need to change your password, choose the option **“Change password”** at the top of the page.



A new window opens, where you should enter the new password and press the **“Save”** button.



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Account

Change your password

A strong password helps prevent unauthorized access to your account.

Email Address
[REDACTED]

Current password
[REDACTED]

New Password
[REDACTED] ✓

Confirm New Password
[REDACTED] ✓

Your password has just been changed.

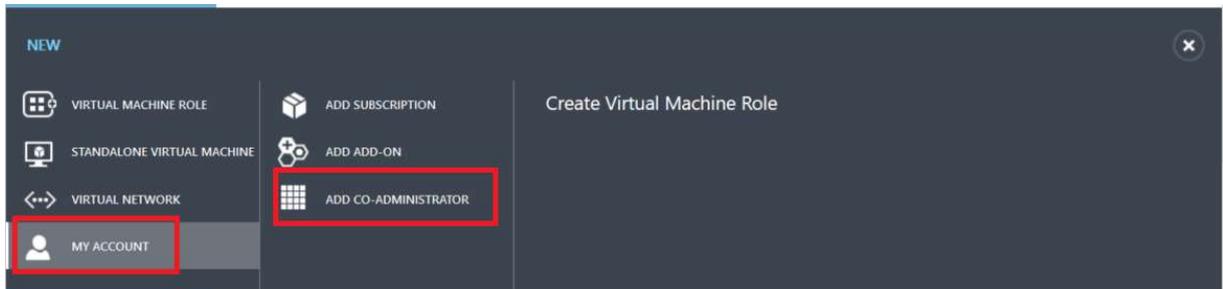
Account

Change your password

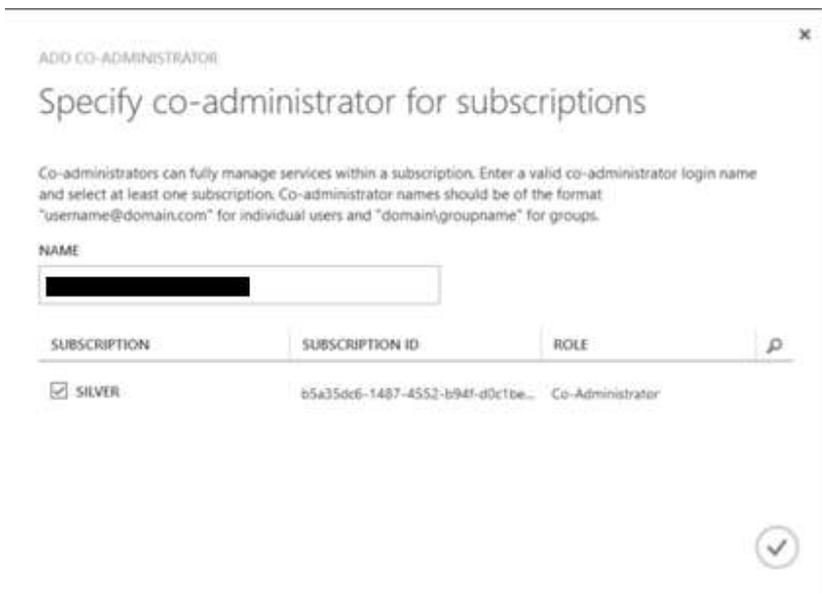
Your password was changed successfully

2.3 Adding a co-administrator

In case you need to share your subscription with another colleague, you will have to add the respective colleague. To do this, please select **New-> My Account – Add co-administrator**.



You will have to enter the co-administrator's e-mail address and then press the "OK" button.



At this point, your colleague has been added to your subscription and can co-administer the resources in the Cloud platform.



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Service Management Portal

my account

SUBSCRIPTIONS ADD-ONS MANAGEMENT CERTIFICATES ADMINISTRATORS

NAME	SUBSCRIPTION	SUBSCRIPTION ID	ROLE
[REDACTED]	live	1547568-1487-4152-654F-0C19A247DE	Cc-Administrator

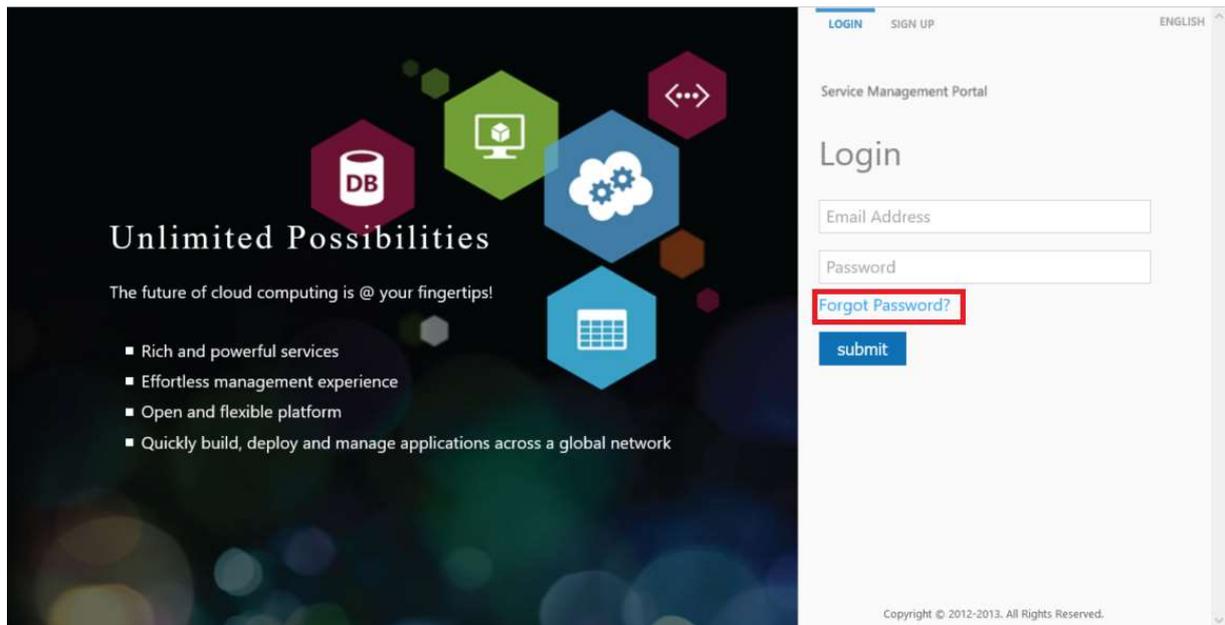
+ NEW + ADD ✎ EDIT 🗑 DELETE



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2.4 Resetting the password

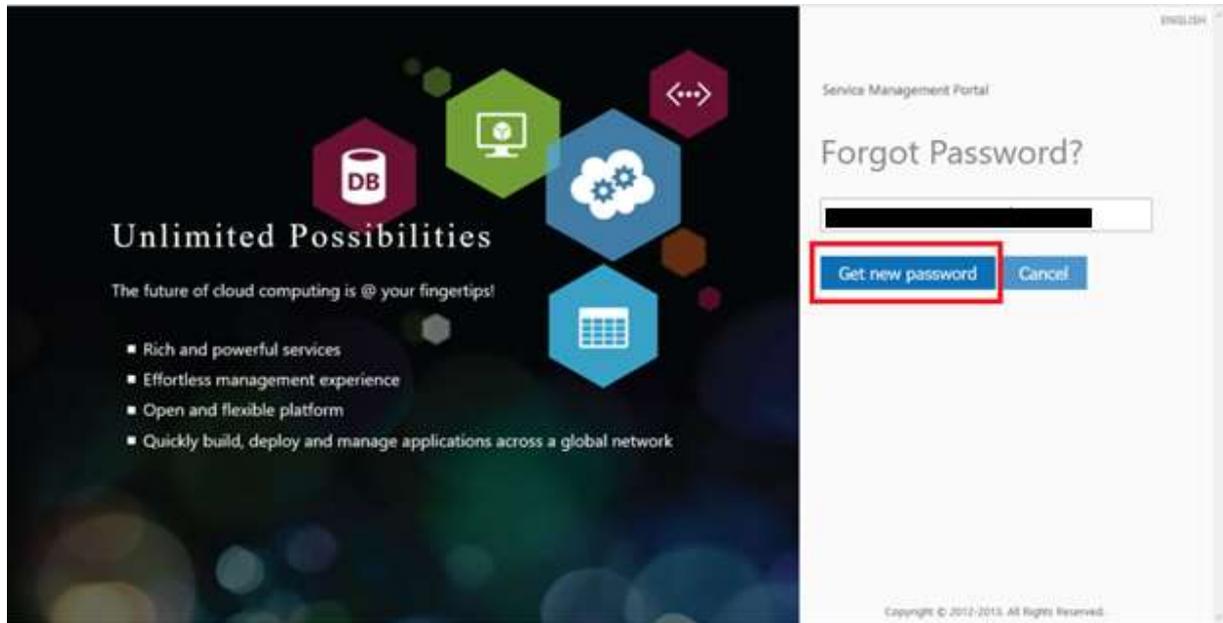
In case you forgot the password you use to log in to your subscription, you can reset it. To do this, you need to choose the option “**Forgot Password**” on the portal login interface.



In the next screen, you will have to enter the e-mail address you have used to create the account on the ICI platform and then press the “**Get new password**” button.



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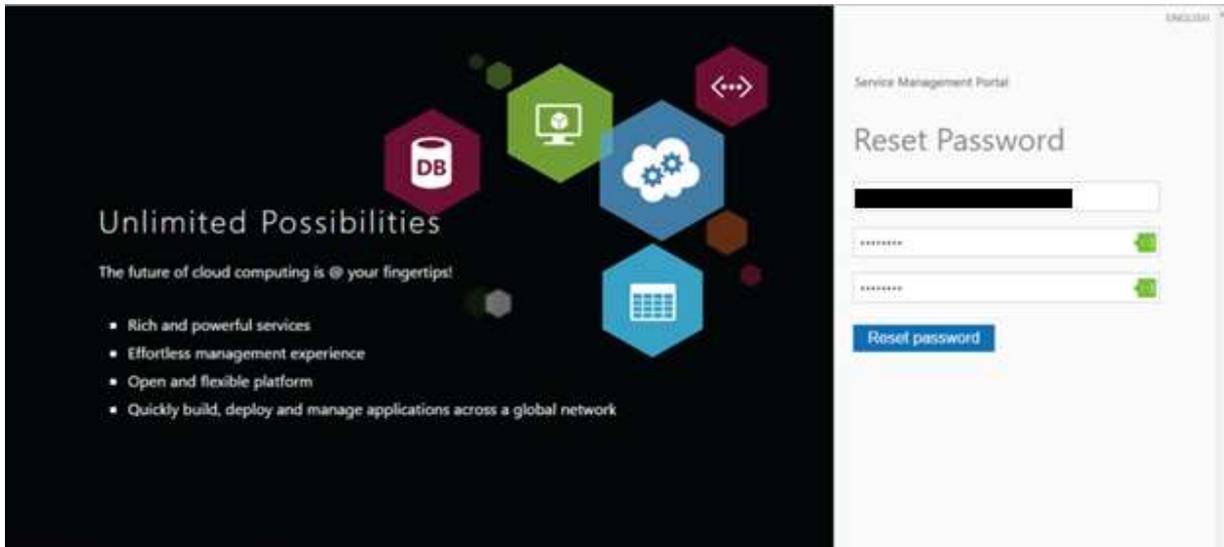
A message will appear mentioning a link that has been sent to your e-mail address to change your password. Click on the link in the e-mail body.



A new web window opens, where you will have to enter the new password, including the password confirmation, and then press the **“Reset password”** button.



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A message appears stating that the password has been reset.



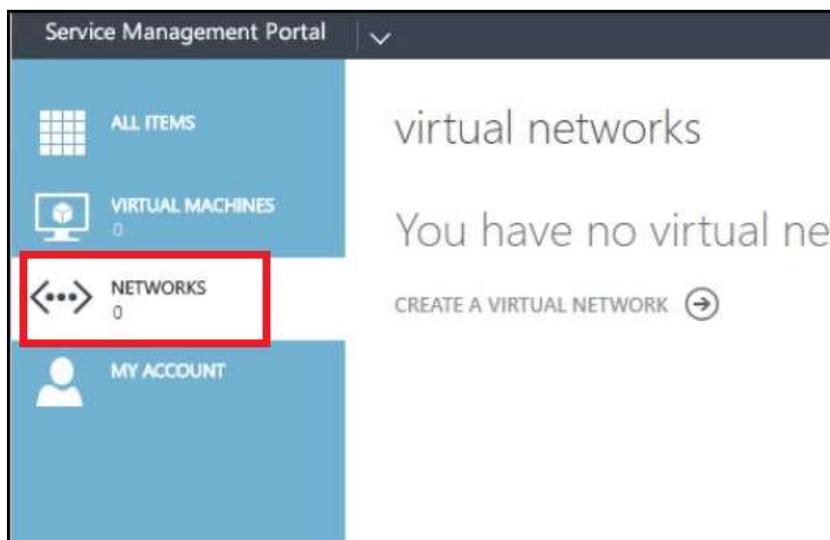


3 Creating virtual networks within subscriptions

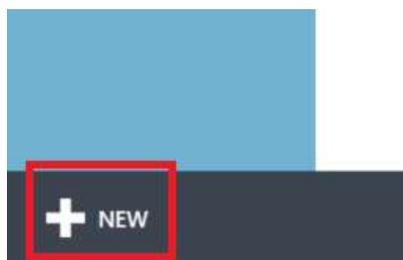
3.1 Create tenant networks

Depending on the subscription, a beneficiary can create one or several virtual networks that will be used to connect the existing virtual machines within a subscription. Each beneficiary can define their own internal addressing plan, since their network is completely isolated from the networks of other beneficiaries.

To create a network, choose the **“Network”** option from the menu.



Choose **“New”** on the left-hand corner.

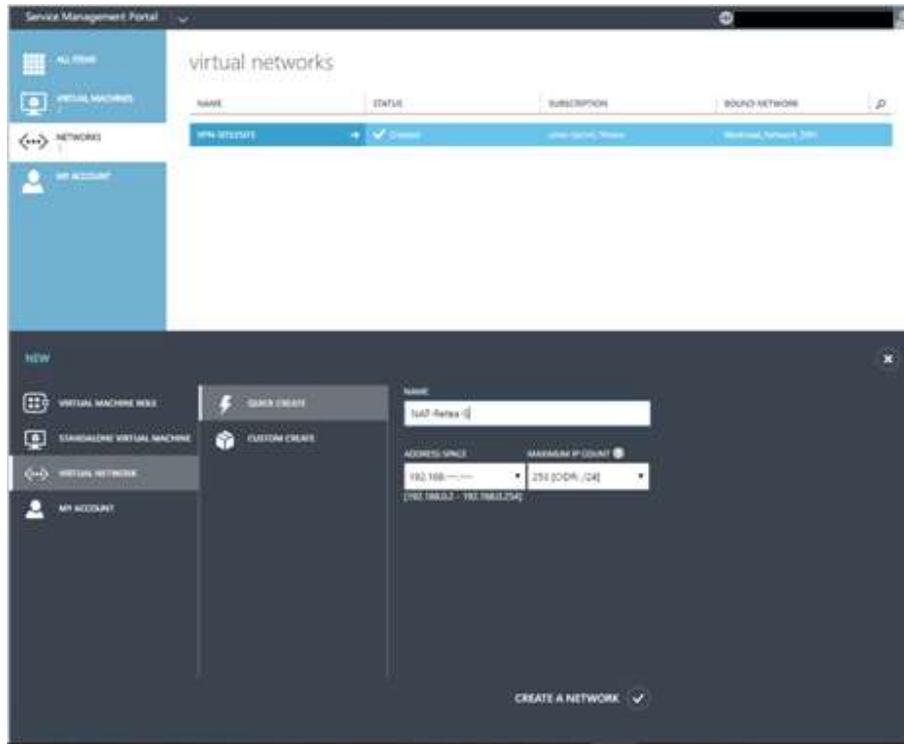


There are 2 options: *“Quick Create”* and *“Custom Create”*. The *“Custom Create”* option is described in Chapter **3.2 Create Site-to-Site VPNs**.

In case *“Virtual Network – Quick Create”* is selected, choose a suggestive name for this virtual network. Under *“Address Space”* choose a class of predefined IPs and press the **“Create a network”** button.



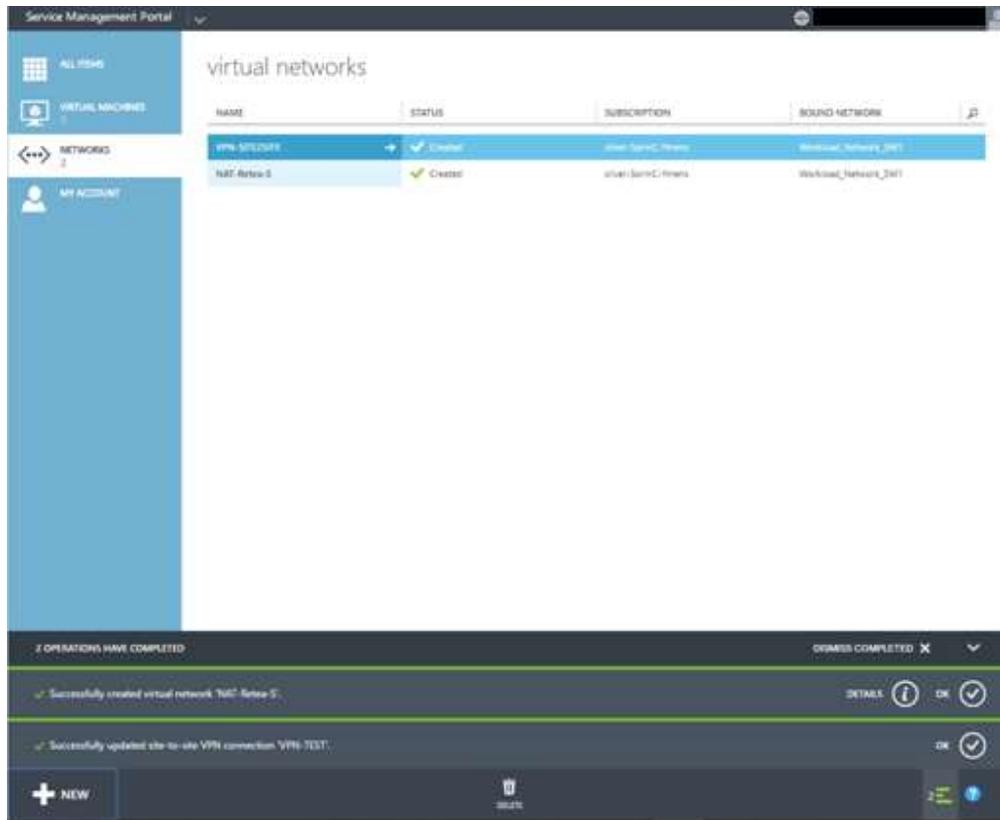
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In the end, a message will appear stating that the virtual network was created successfully.



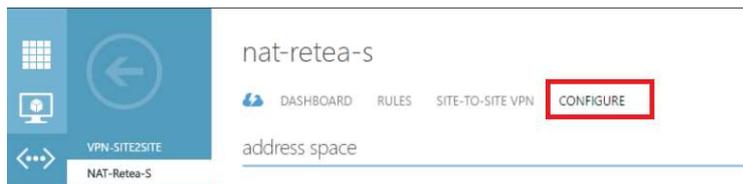
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There is a possibility to modify/fill in information about this virtual network. To do this, select the network and click on the arrow icon.



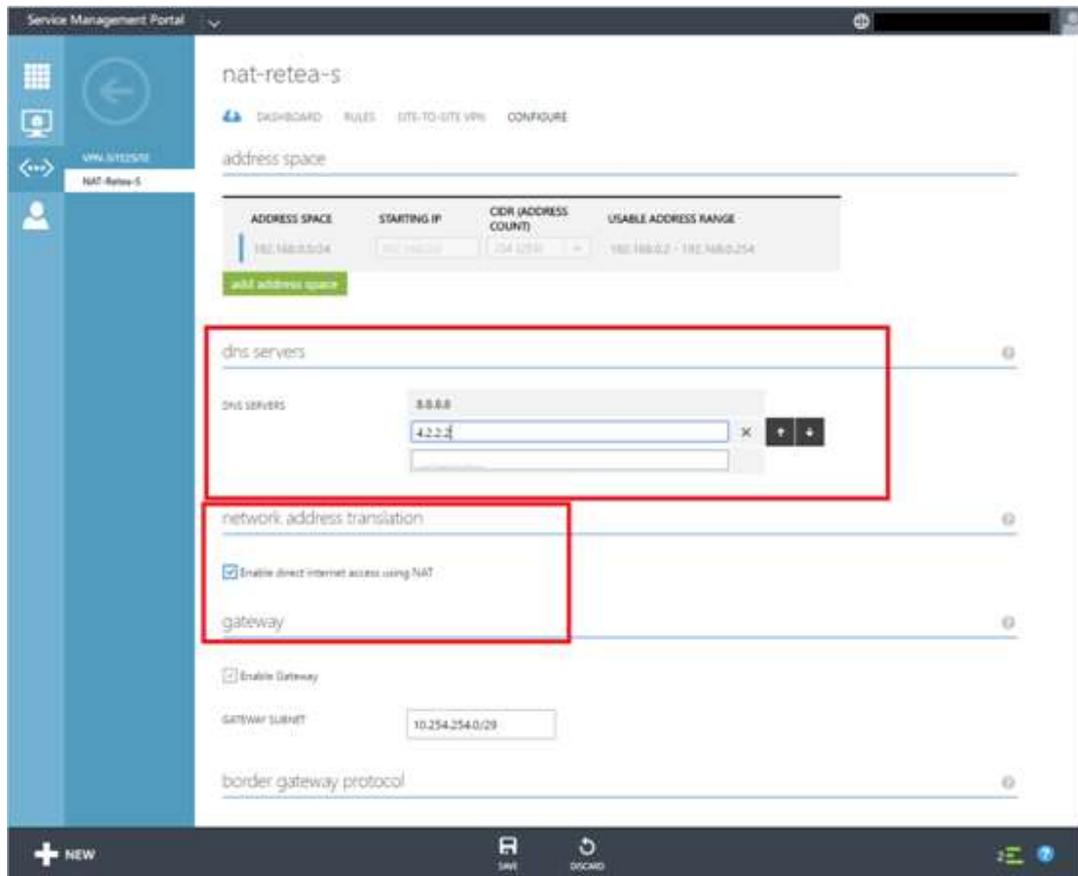
Then choose the “**CONFIGURE**” option.



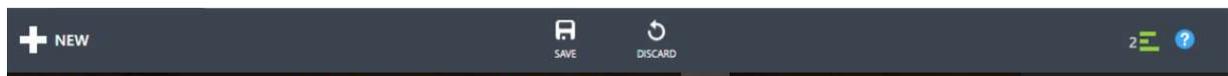


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You can fill in the data about the DNS that will be automatically assigned to the virtual machines connected to this virtual network; you can also add the NAT option. The NAT option will allow access to virtual machines that have private IPs on the Internet.

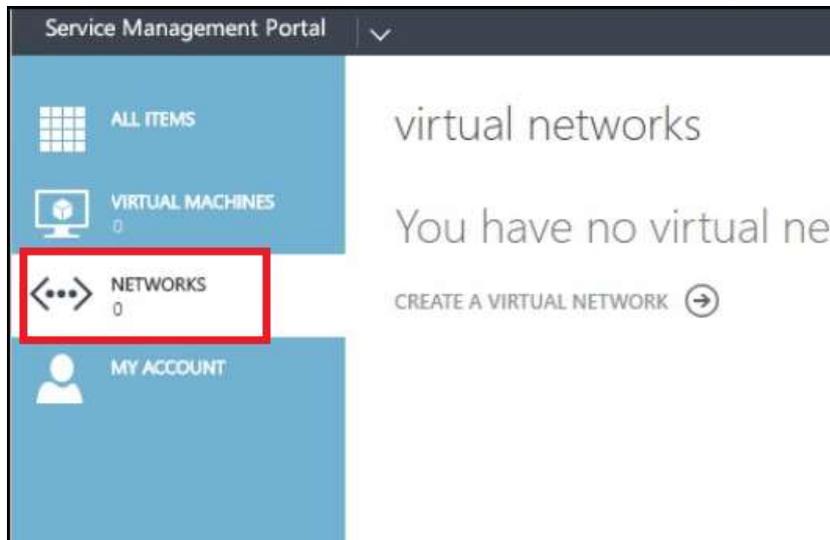


You can save all the changes by pressing the **“Save”** button; or you can cancel these changes by pressing the **“Discard”** button on the command bar.

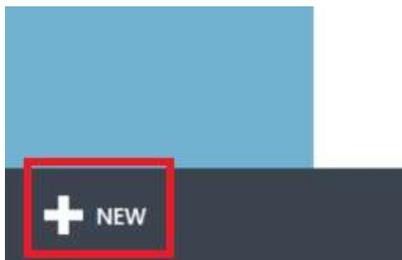


3.2 Create Site-to-Site VPNs

To create a Site-to-Site VPN, choose the **“Networks”** option from the Menu.



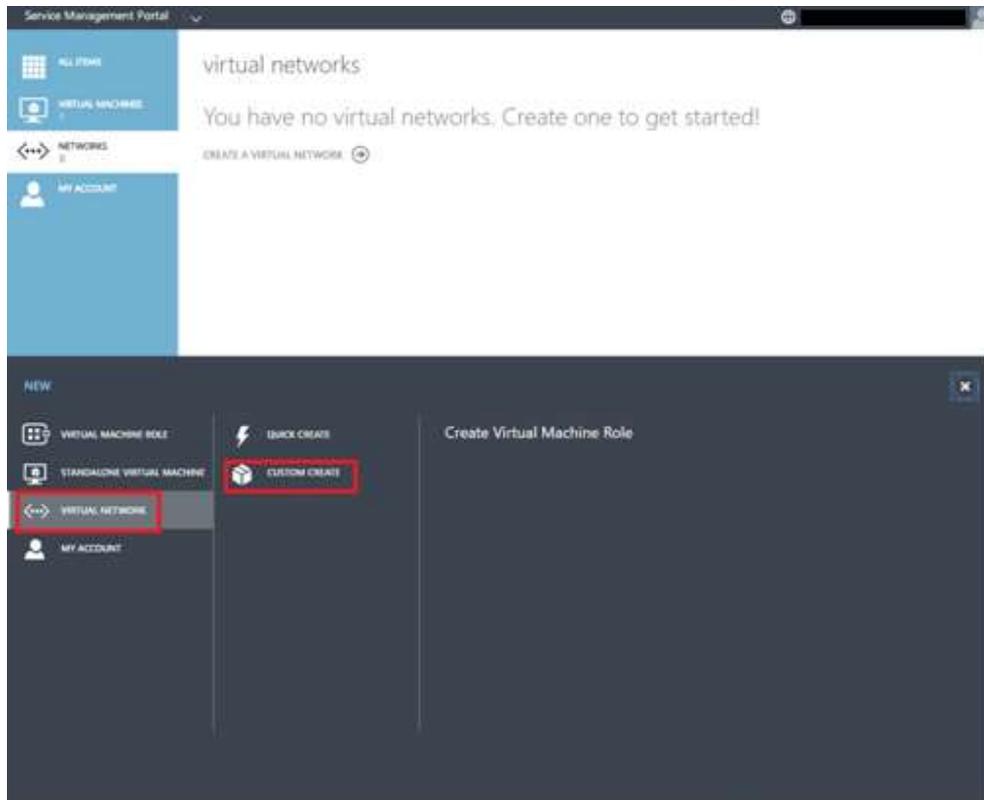
Choose “**New**” on the left-hand corner.



Select “**Virtual network**” and then “**Custom Create**”.



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Choose a suggestive name for the virtual network and opt for the IPV4 IP Address Protocol.



CREATE A VIRTUAL NETWORK

Virtual Network Details

NAME

IP ADDRESS PROTOCOL
 IPV4 IPV6

2 3

Enter the DNS servers that will be assigned to the clients and select the **“Configure site-to-site VPN”** option.

CREATE A VIRTUAL NETWORK

DNS Servers and Connectivity

DNS SERVERS

8.8.8.8
4.2.2.2

NETWORK ADDRESS TRANSLATION

Enable direct internet access using NAT

SITE-TO-SITE CONNECTIVITY

Configure site-to-site VPN

GATEWAY

GATEWAY SUBNET

BORDER GATEWAY PROTOCOL

Enable BGP for automatic address space

1 3 4



Specify the internal IP range used within the subscription.

CREATE A VIRTUAL NETWORK

Address Space

ADDRESS SPACE	STARTING IP	CIDR (ADDRESS COUNT)	USABLE ADDRESS RANGE
10.0.0.0/24	10.0.0.0	/24 (253)	10.0.0.2 - 10.0.0.254

[add address space](#)

1 2 4

On this screen you should specify a suggestive name for this network, enter the public IP at the other end of the tunnel, as well as the internal IP class, and provide the pre-shared key used for authentication.

CREATE A VIRTUAL NETWORK

Specify a New Site-to-Site VPN

NAME: VPN-TEST

VPN DEVICE IP ADDRESS: 195.216.218.10

SHARED KEY: Text1234%^&*

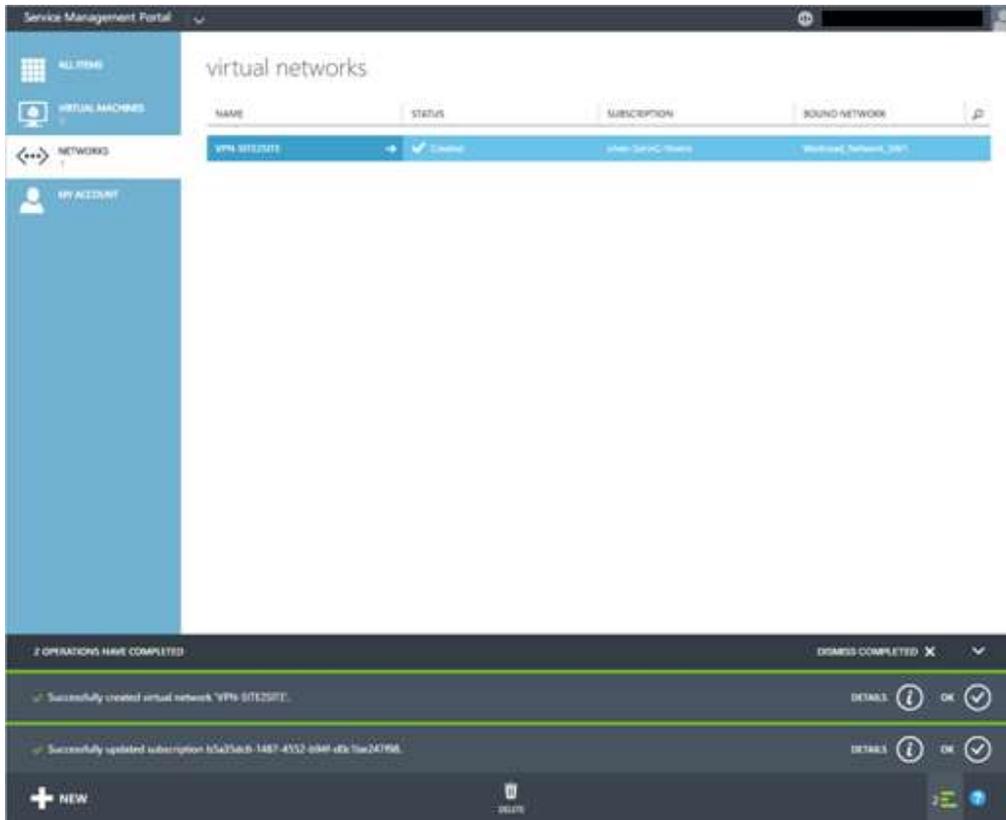
ADDRESS SPACE: 10.6.198.0/24

1 2 3



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At this point, the network was created successfully.



Below you can find the default settings of the end-of-tunnel equipment on the ICIPRO platform. If these settings do not match your device settings, you should contact your cloud platform administrator to help you find the optimal solution for creating the VPN tunnel.



VPN-SITE2SITE Properties

Name

VM Subnets

Connectivity

VPN Connections

Network Address...

Access

Routing Subnet

A subnet is required for routing packets out of the VM network.

Subnet: 10.254.254.0/29

Specify VPN connections:

+ Add - Remove

- VPN-TEST
195.216.218.10
 - Authentication
VPN-TEST-54950b...
 - Routes
1 routes
 - Advanced**
Custom

Use default connection settings

Authentication method: PSKOnly

Encryption method: AES256

Integrity check method: SHA1

Cipher transform constants: AES256

Authentication transform constants: SHA196

PFS group: PFS2048

Diffie-Hellman group: Group2

VPN protocol: IKEv2

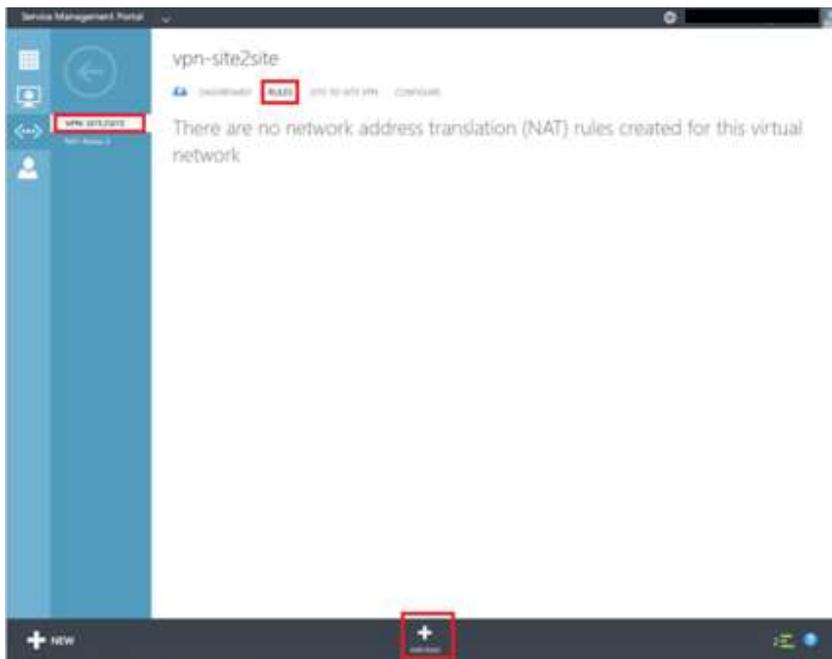
View Script

OK Cancel



3.3 Create NAT rules

In order to publish specific services on the Internet (e.g. a web service) it is necessary to create NAT rules. For this, select the beneficiary's network to which the virtual machine is connected – in our case, VPN-SITE2SITE – then select the “Rules” option and press the “Add Rule” button.



Fill in the rule depending on the needs of the beneficiary and click on the “OK” icon. In the example shown, a NAT rule was created for port 80 to the server with IP address 192.168.254.3 – name WEB.



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ADD NETWORK RULE ✕

Add a rule to the virtual network

Traffic coming to this port will be sent to desination IP/port

NAME

PROTOCOL

SOURCE PORT

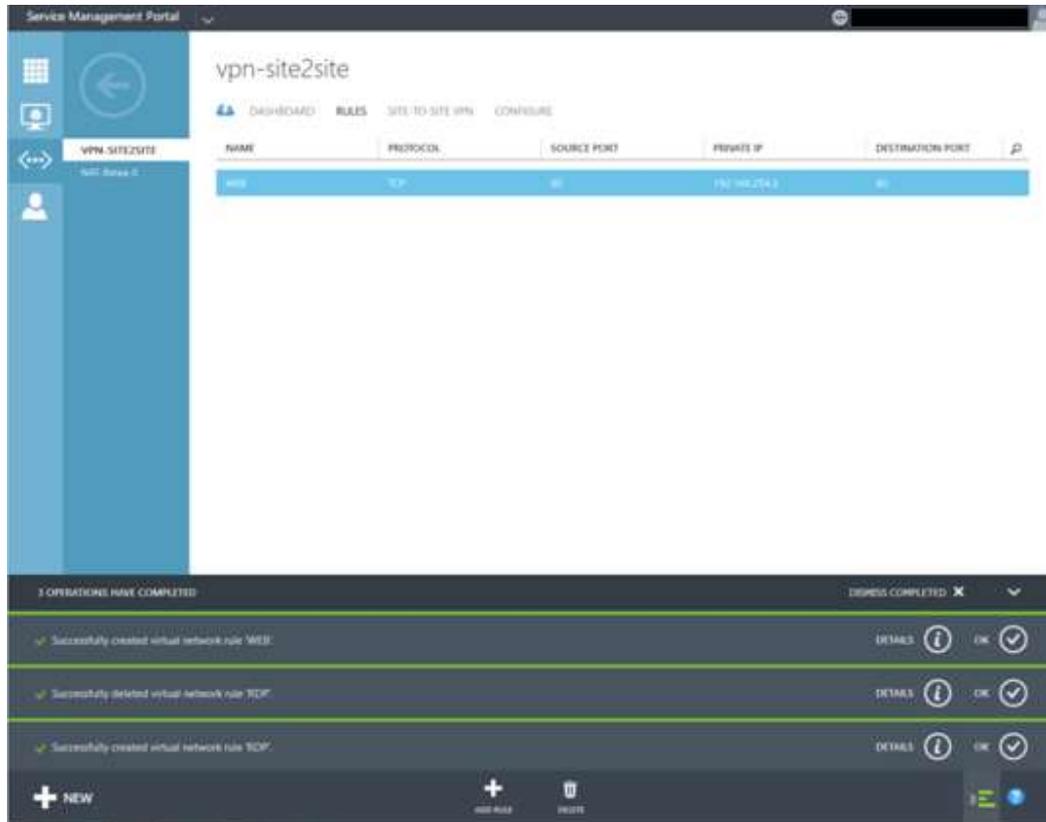
ENTER IP ADDRESS CHOOSE DESTINATION VIRTUAL MACHINE ?

DESTINATION IP ADDRESS

DESTINATION PORT



At this point, the WEB rule was created successfully.



To see the public IP for this publication, see the virtual network Dashboard.



Service Management Portal

nat-retea-s

DASHBOARD RULES SITE-TO-SITE VPN CONFIGURE

virtual machines

NAME	ROLE	IP ADDRESS
S-2012		192.168.0.3
server-7-4		192.168.0.9
del-2012-2		192.168.0.6

quick glance

STATUS
Created

EXTERNAL IP ADDRESS
193.230.4.82

GATEWAY IP ADDRESS
-

VIRTUAL NETWORK ID
6c2ee041-6ff1-4244-a3e6-ad7d3eab0c7b

SUBSCRIPTION NAME
silver-ServC-3mens

SUBSCRIPTION ID
b5a35dc6-1487-4552-b94f-d0c1be247f98

To sum up, the NAT rule is as follows:

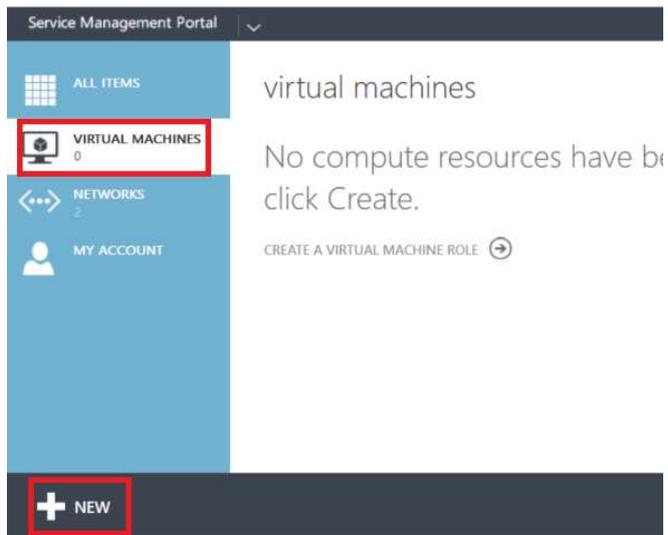
193.230.4.82 port 80 -> 192.168.254.3 port 80. Therefore, the website running on the virtual machine can be accessed on the external IP: 193.230.4.82.



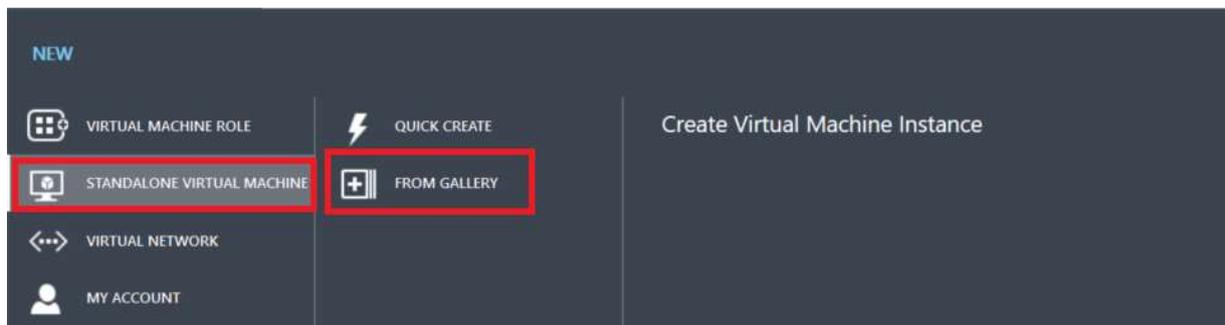
4 Creating tenant virtual machines

4.1 Create a CentOS virtual machine

To create a virtual machine running on the CentOS operating system, choose the “**Virtual Machine**” option and press the “**NEW**” button.



We recommend using the “**Standalone Virtual Machine -> From gallery**” option.



In the next step, we recommend selecting the “**Templates**” option on the left-hand side of the screen. Then, select the appropriate template – in the example shown, the CentOS 7 X64 – 20 GB template was chosen.



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CREATE VIRTUAL MACHINE

Virtual Machine configuration

ALL
TEMPLATES
DISKS

A-Z

- CentOS 6.7 x64 - 20GB
- CentOS 7 x64 - 20GB**
- CentOS 7.2 x64 - 60GB
- Windows 2012 R2 - 60GB

CentOS 7 x64 - 20GB

RELEASE DATE	3/30/2016 3:44:26 PM
OPERATING SYSTEM	CentOS Linux 7 (64 bit)
MEMORY	1 GB
PROCESSORS	2
DISKS	0
NETWORK ADAPTERS	1
GENERATION	1
SUBSCRIPTION	silver-SorinC-Ymens

2 3

Fill in the server name, the root password and continue with the virtual machine creation process.



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CREATE VIRTUAL MACHINE

Provide virtual machine settings

NAME
centos-7-s

ADMINISTRATOR ACCOUNT
root

NEW PASSWORD
••••••

CONFIRM
••••••

ADMINISTRATOR SSH KEY

CentOS 7 x64 - 20GB

RELEASE DATE 3/30/2016 3:44:26 PM
OPERATING SYSTEM CentOS Linux 7 (64 bit)
MEMORY 1 GB
PROCESSORS 2
DISKS 0
NETWORK ADAPTERS 1
GENERATION 1
SUBSCRIPTION silver-SorinC-Ymens

1 3

Choose the network interface to which the virtual machine will be connected – in this particular case, NAT-Retea-S – and click on the “OK” icon.

CREATE VIRTUAL MACHINE

Provide virtual machine hardware information

NETWORK ADAPTER 1 ?
NAT-Retea-S

CentOS 7 x64 - 20GB

RELEASE DATE 3/30/2016 3:44:26 PM
OPERATING SYSTEM CentOS Linux 7 (64 bit)
MEMORY 1 GB
PROCESSORS 2
DISKS 0
NETWORK ADAPTERS 1
GENERATION 1
SUBSCRIPTION silver-SorinC-Ymens

1 2

As you can see, the virtual machine creation process has begun.



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NAME	STATUS	SUBSCRIPTION	TYPE	INSTAN...
S-2012	Running	silver-SorinC-Ymens	Standalone	1
del-2012-2	Running	silver-SorinC-Ymens	Standalone	1
centos-7-s	Creating...	silver-SorinC-Ymens	Standalone	1

1 OPERATION IS CURRENTLY RUNNING, 2 HAVE COMPLETED

The virtual machine creation process based on the CentOS template was completed successfully.

NAME	STATUS	SUBSCRIPTION	TYPE	INSTAN...
S-2012	Running	silver-SorinC-Ymens	Standalone	1
del-2012-2	Running	silver-SorinC-Ymens	Standalone	1
centos-7-s	Running	silver-SorinC-Ymens	Standalone	1

3 OPERATIONS HAVE COMPLETED

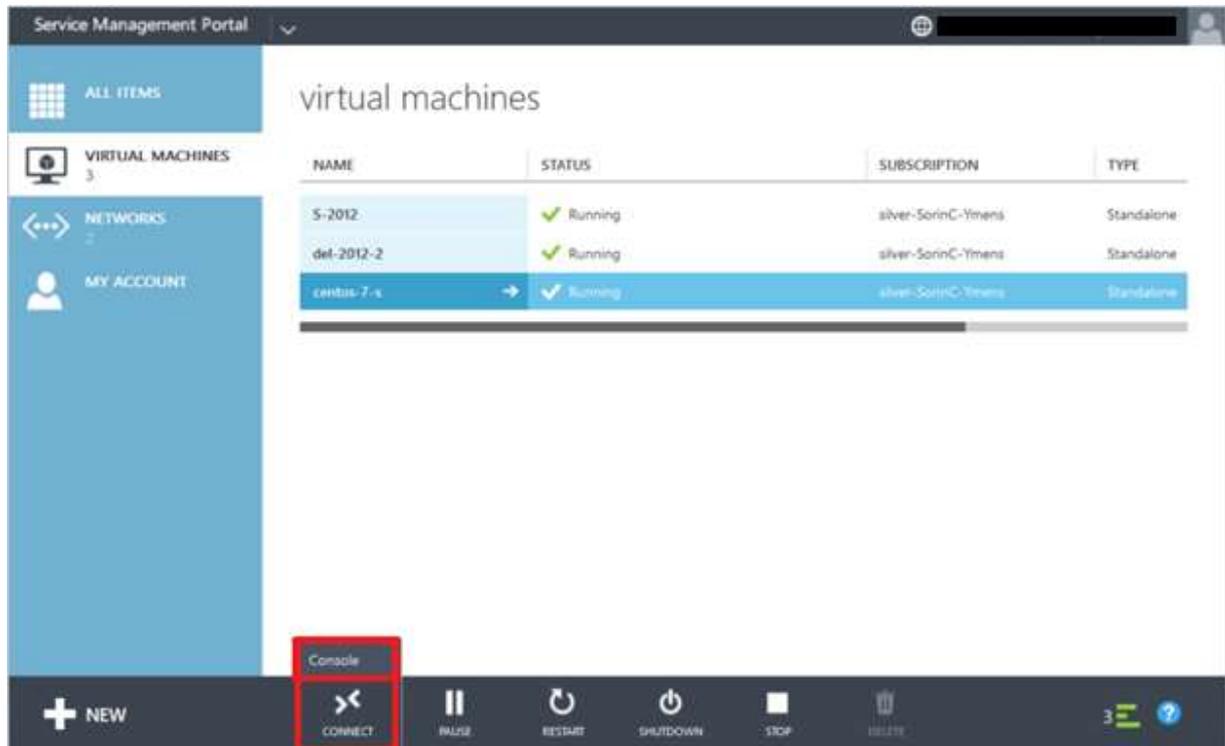
Successfully created virtual machine 'centos-7-s'

To connect on the console, select the virtual machine, and then select “**Connect->Console**” on the command bar.



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Please be aware that your operating system must have a remote desktop client version 8.1 installed.



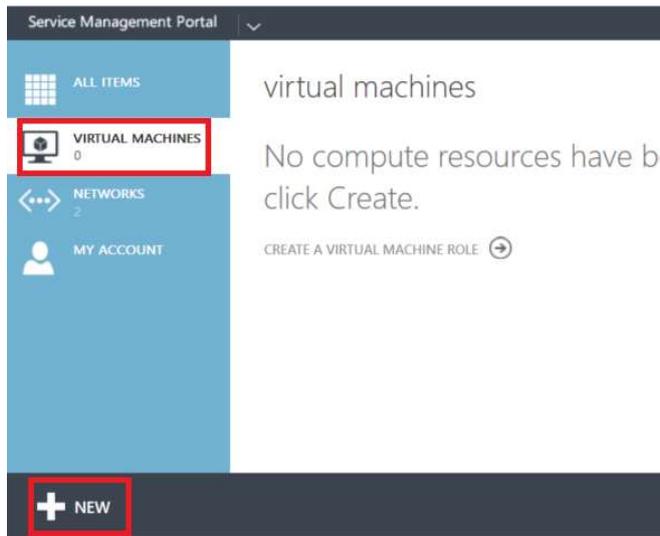
The users who do not have an operating system with a remote desktop client version 8.1 can connect to the virtual machine via ssh, creating a NAT rule on the network to which the virtual machine is connected – the procedure is described in Chapter **3.3 Create NAT rules**.



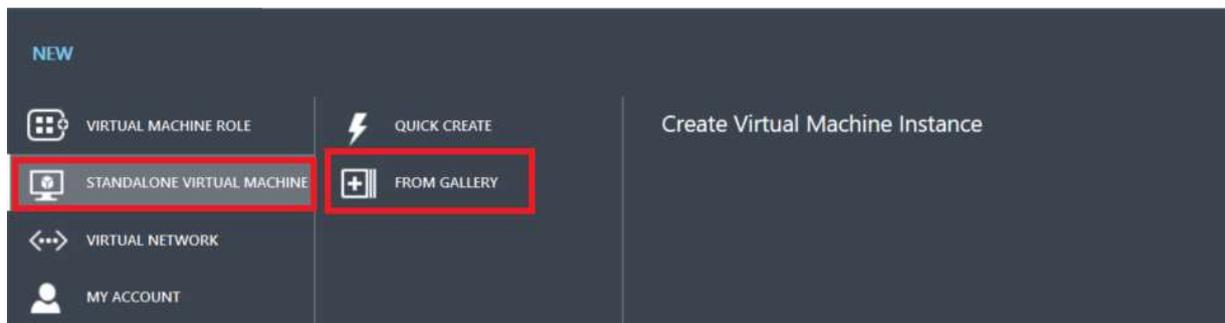
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4.2 Create a Windows 2012 R2 virtual machine

To create a virtual machine running on Windows 2012 R2 operating system, choose the “**Virtual Machine**” option and press the “**NEW**” button.



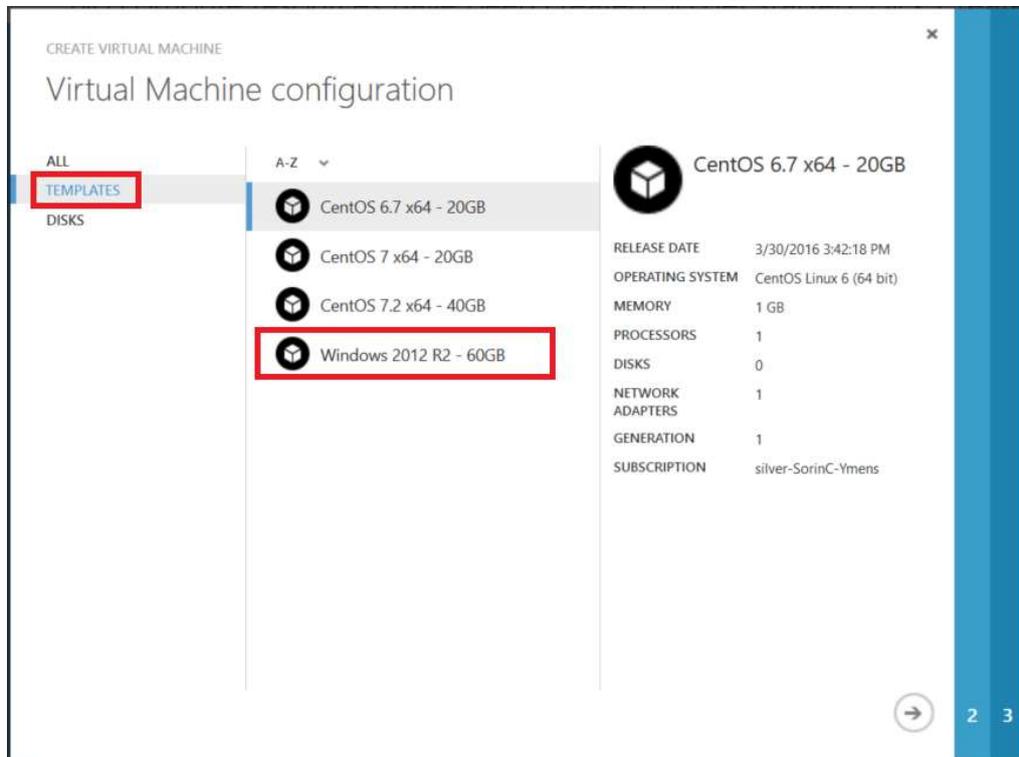
We recommend using the “**Standalone Virtual Machine -> From gallery**” option.



In the next step, we recommend selecting the Templates option on the left-hand side of the screen. Then, select the “**Windows 2012 R2 – 60 GB**” template.



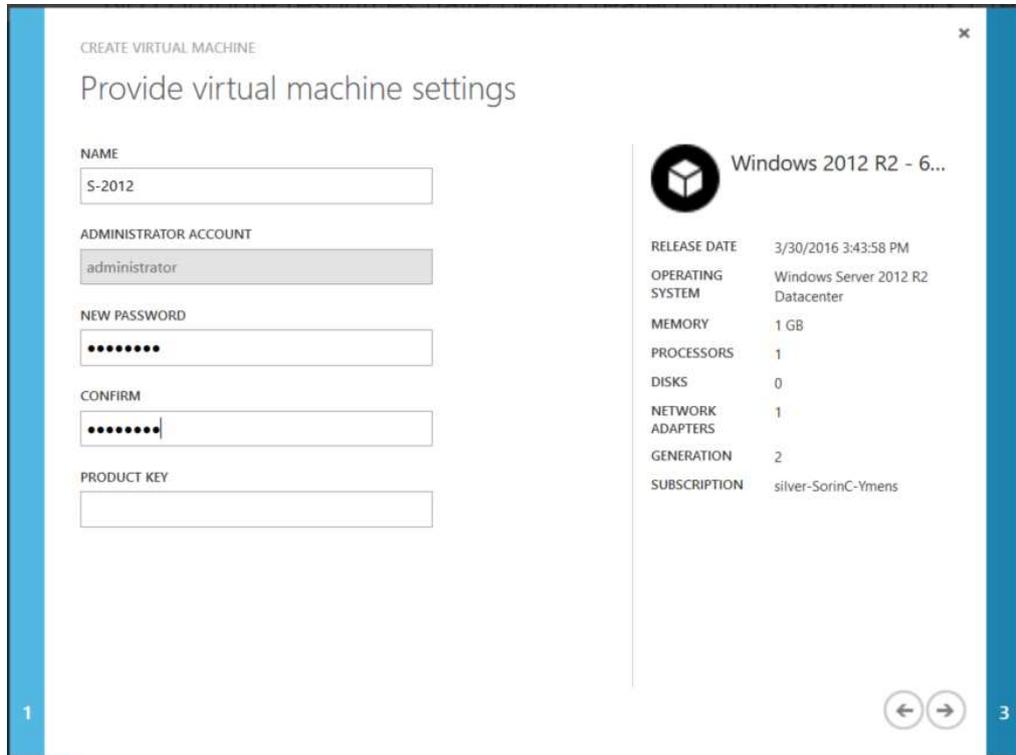
INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE
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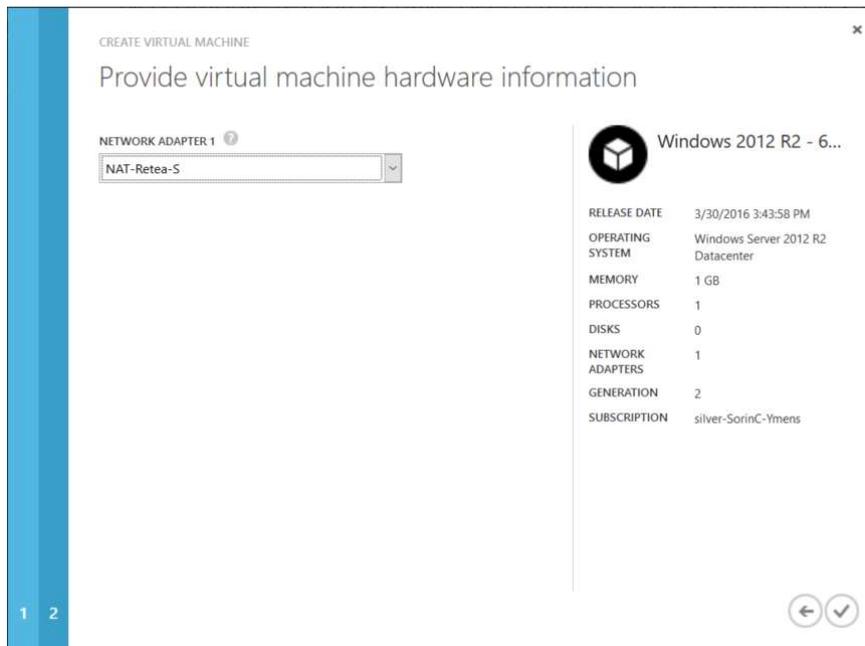
Fill in the name of the server, the administrator password and continue with the virtual machine creation process.



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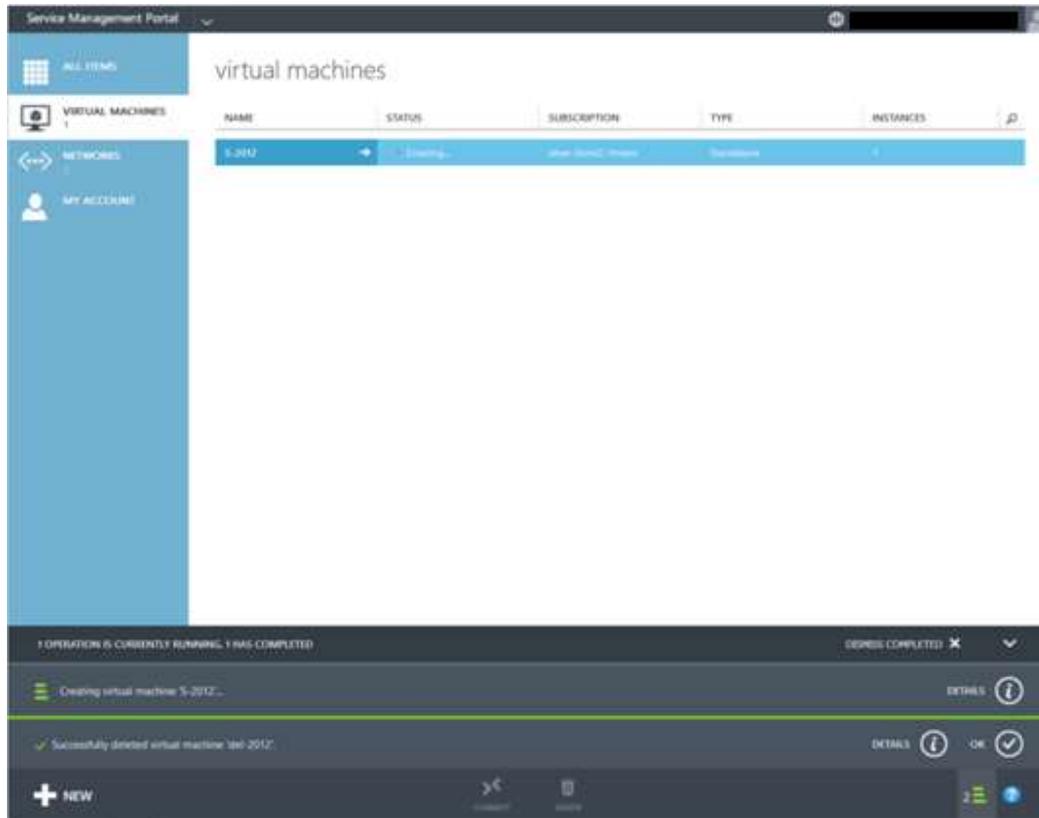
Select the network interface to which you want to connect this virtual machine and click on the “OK” icon to initiate the virtual machine creation process.



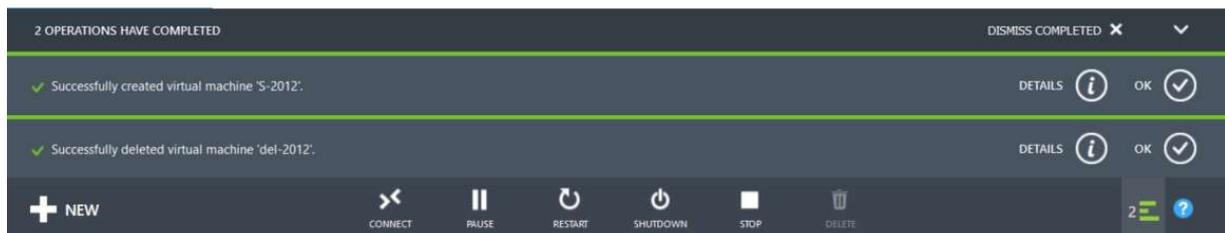
At this point, as you can see, the virtual machine creation process has begun.



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When the virtual machine creation process ends, the following message appears on the screen: **“Successfully created virtual machine”**.



To connect on the console, create the virtual machine and then select **“Connect->Console”** on the command bar.

Please note that your operating system must have a remote desktop client version 8.1 installed.



The screenshot shows the Service Management Portal interface. The main content area displays a table of virtual machines. The first row is highlighted with a red box, showing a VM named 's-2012' with a status of 'Running'. Below the table, a notification bar indicates '2 OPERATIONS HAVE COMPLETED'. The first notification is 'Successfully created virtual machine 's-2012''. The second notification is 'Successfully deleted virtual machine 'del-2012''. Below the notifications, a dialog box is open with a red box around the 'Console' option, which is selected. Other options include 'Desktop' and 'CONNECT'. At the bottom of the dialog, there are icons for 'NEW', 'CONNECT', 'PAUSE', 'RESTART', 'SHUTDOWN', 'LOG', and 'HELP'.

NAME	STATUS	SUBSCRIPTION	TYPE	INSTANCES
s-2012	Running	win-SQLC_Prens	Standard	1

2 OPERATIONS HAVE COMPLETED

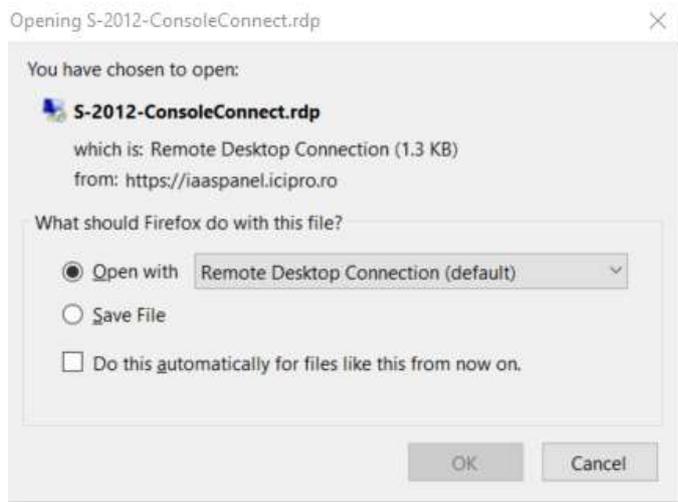
- Successfully created virtual machine 's-2012'. [DETAILS] [OK]
- Successfully deleted virtual machine 'del-2012'. [DETAILS] [OK]

Dialog options: Console, Desktop, CONNECT

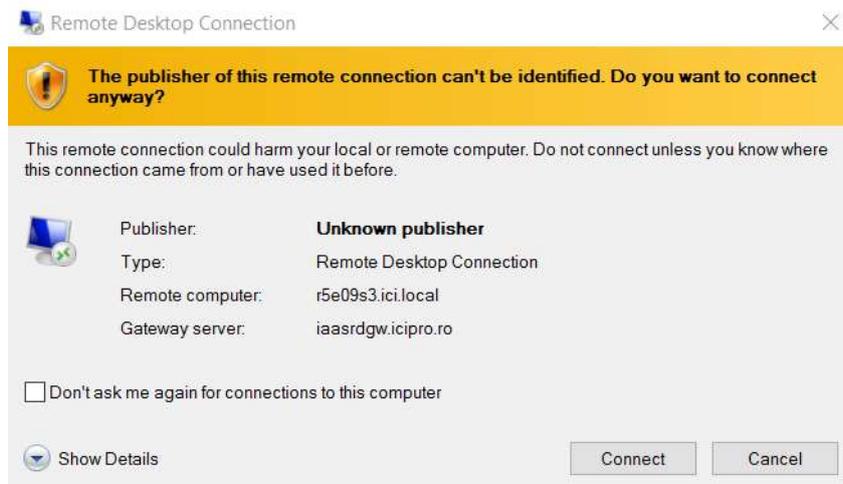
A new window appears – choose the default setting and press “OK”.



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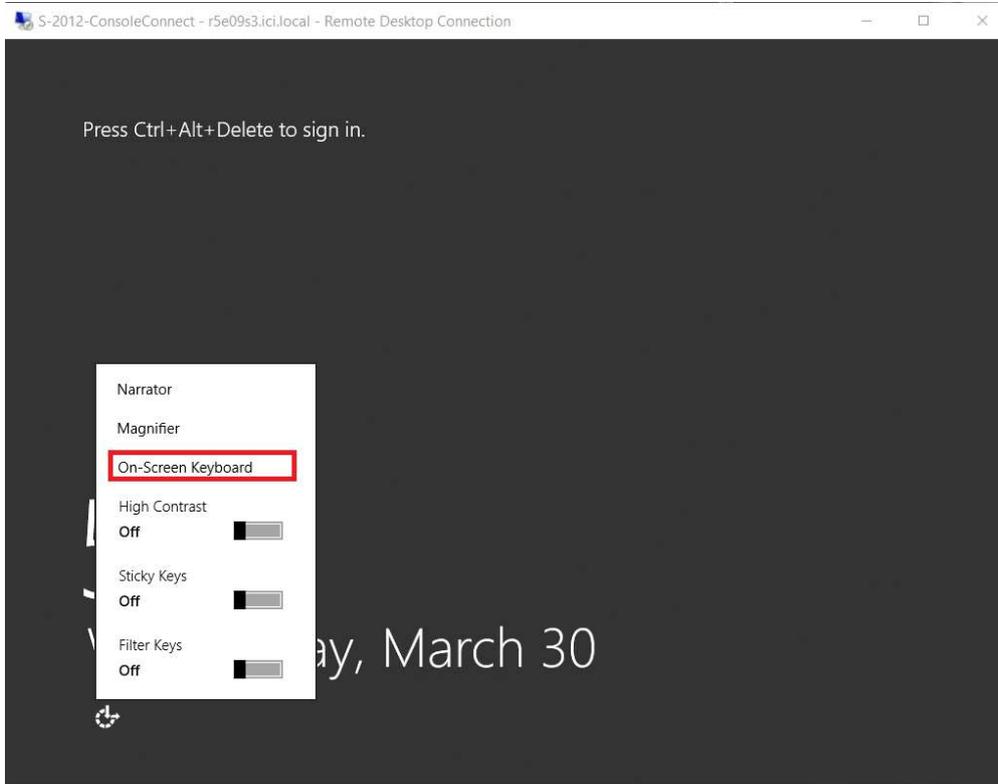
One last window opens. Press the “**Connect**” button.



At this point, the virtual machine console opens. You must press “**CRTL+ALT+DEL**” for the login window to appear on the server running on Windows Server 2012 R2 Datacenter operating system. To do this, use the “**On screen Keyboard**”.



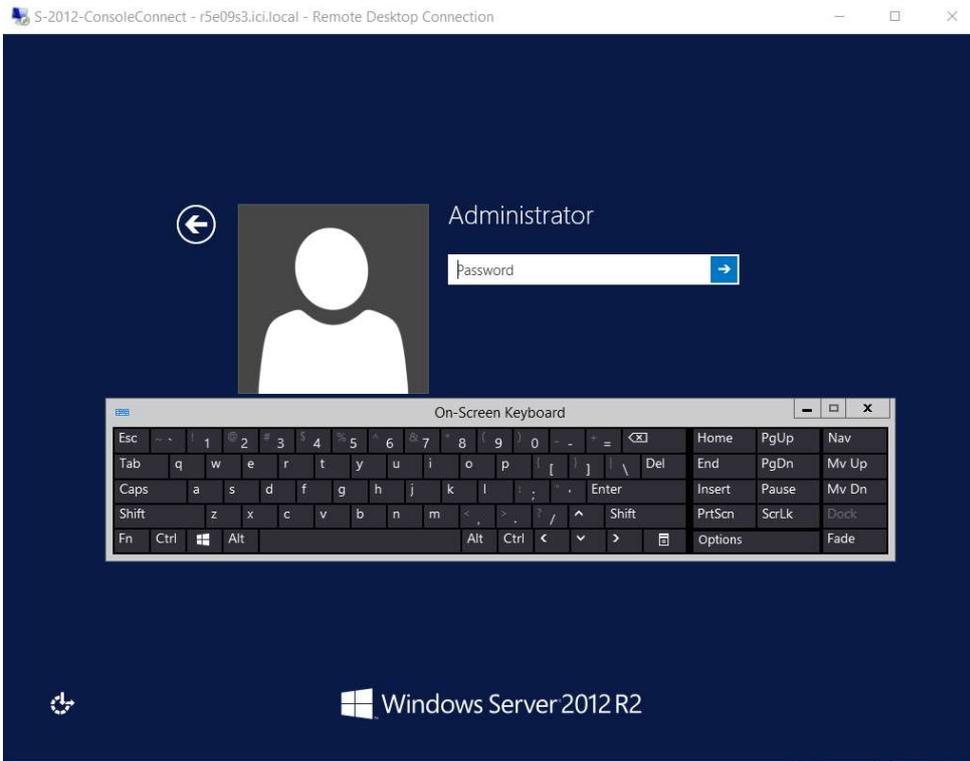
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Enter the password chosen during the virtual machine configuration process and then press **“OK”**.



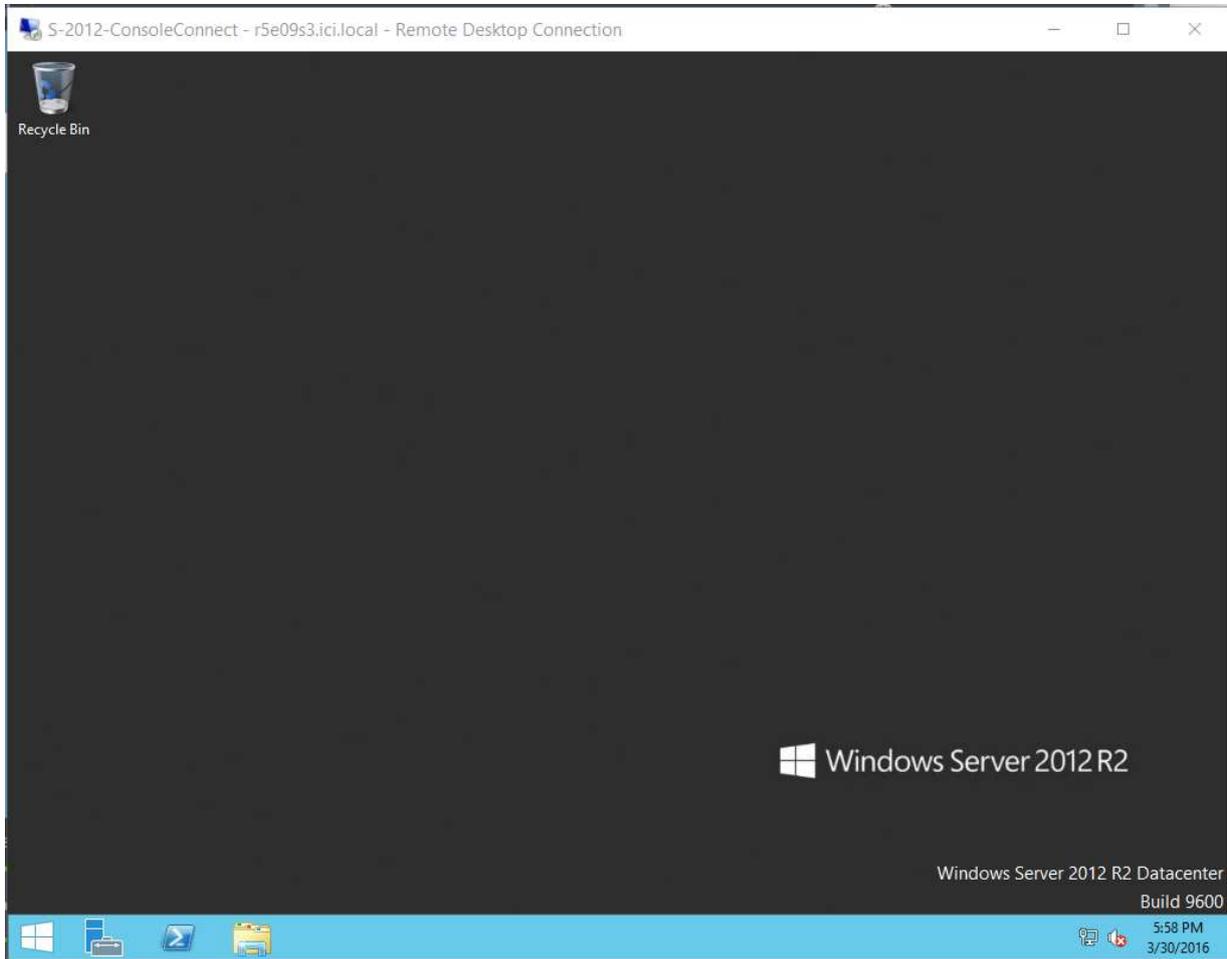
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At this point, you are connected to the virtual machine console and you can manage it. Please be aware that this console does not allow copy/paste commands from the host operating system to the virtual machine.



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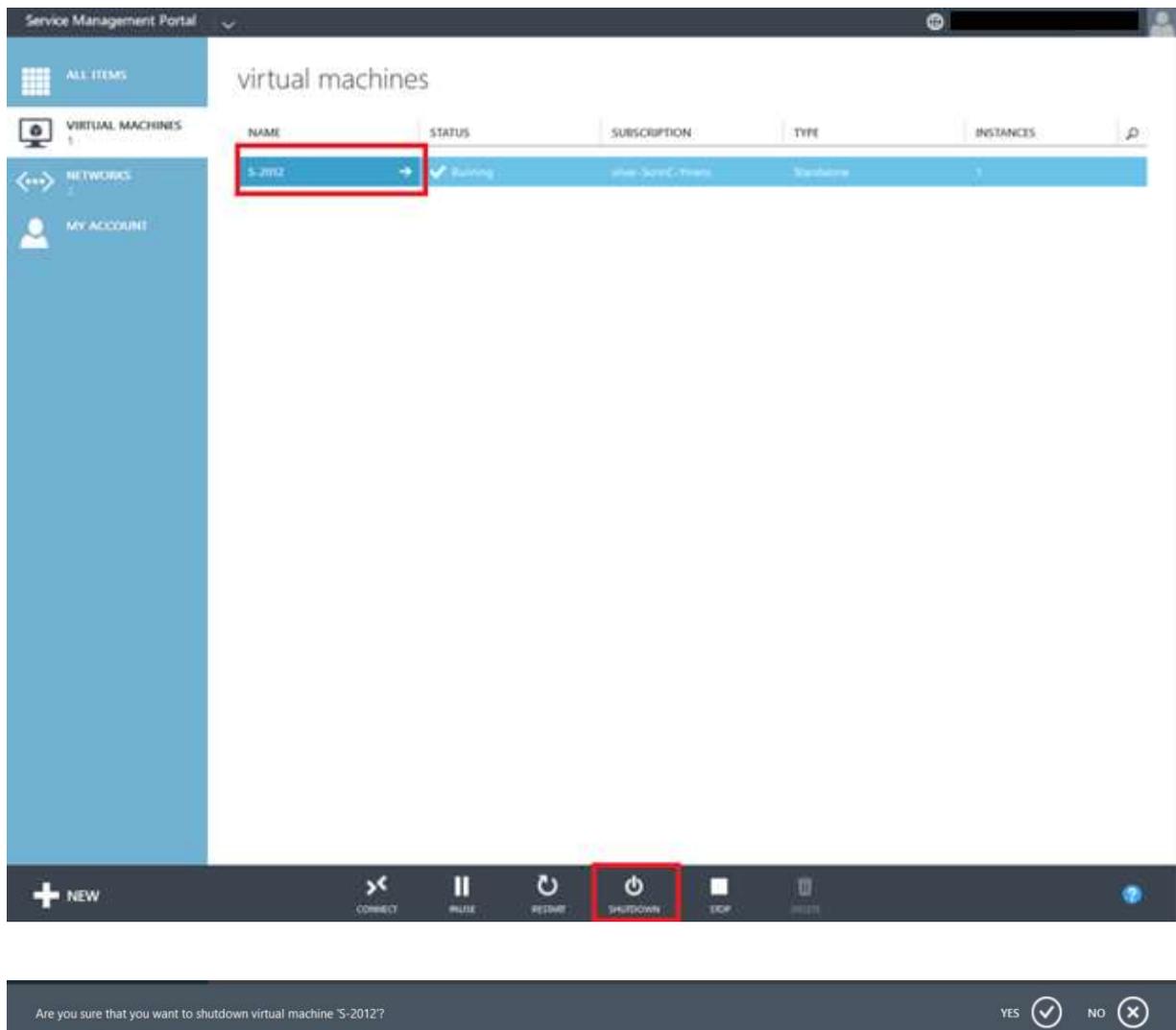




4.3 Adding/modifying additional resources

Once created based on the template, a virtual machine has certain predefined characteristics: number of processors, RAM capacity, number and capacity of HDDs, number of network interfaces. These characteristics can be modified subsequently, taking into account the resource limitations of the subscription.

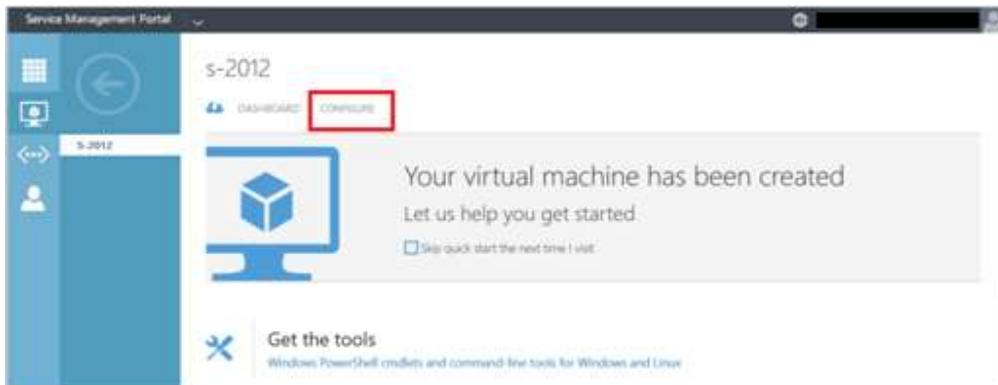
All these changes can only be operated with the virtual machine shut down. To shut down a virtual machine, select the respective virtual machine, choose the “**SHUTDOWN**” option from the command bar and then press “**OK**”.



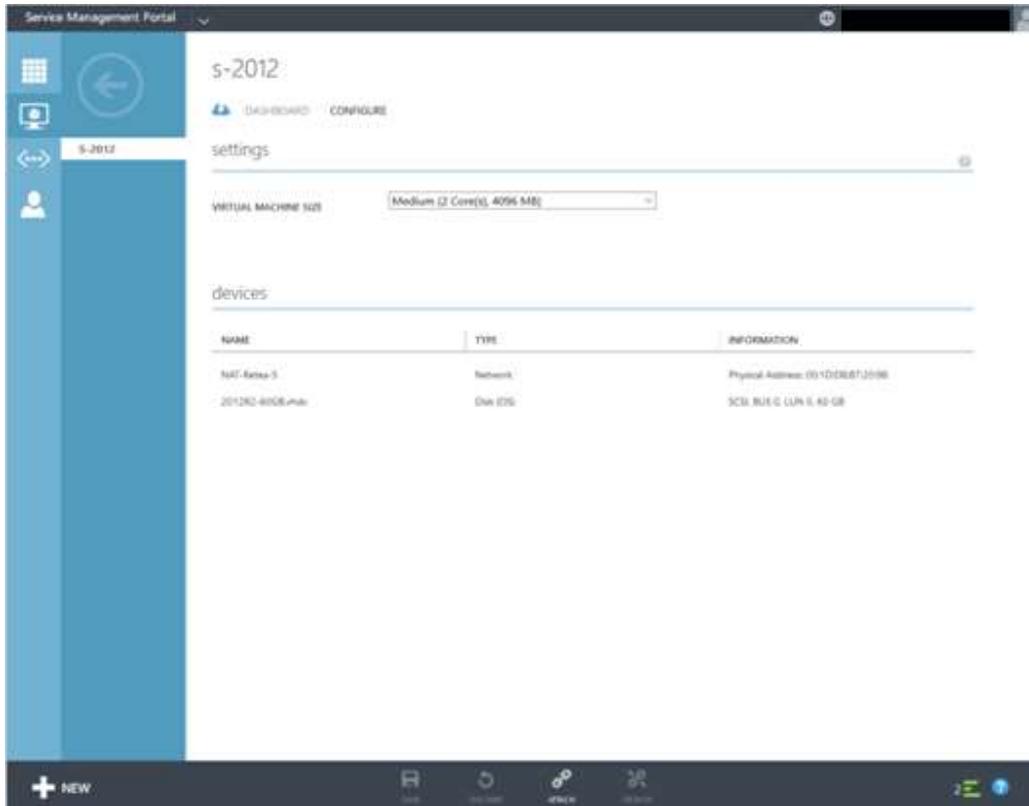
Once the virtual machine is shut down, select the virtual machine and choose “**CONFIGURE**”.



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You can see hardware characteristics of the virtual machine that were defined during the initial configuration of the machine.



To change the number of processors and enlarge the amount of memory allocated to the virtual machine, select the intended profile. For example, the following hardware profiles can be found in this subscription: Small, Medium and Large.

s-2012

[DASHBOARD](#) [CONFIGURE](#)

settings

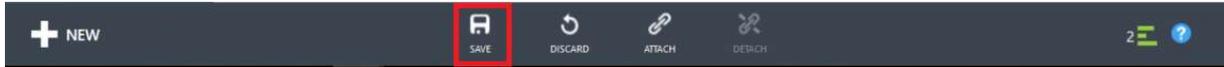
VIRTUAL MACHINE SIZE

Medium (2 Core(s), 4096 MB)
Small (1 Core(s), 2048 MB)
Medium (2 Core(s), 4096 MB)
Large (4 Core(s), 8192 MB)

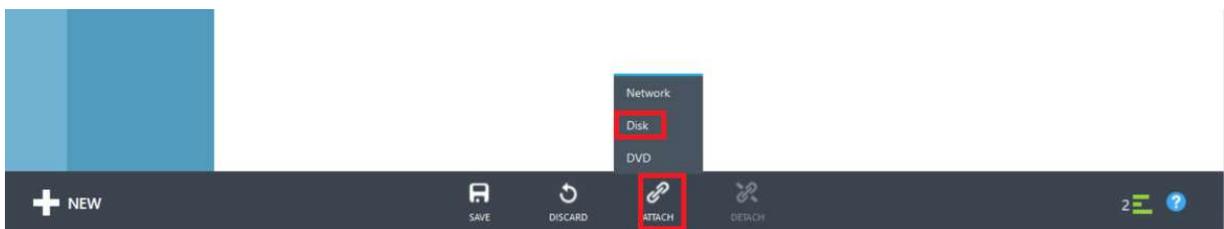


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After selecting the appropriate hardware profile, click on the **“Save”** option on the command bar.



To add a new volume, choose **“Attach – Disk”** on the command bar.



Choose a disk as described and then press **“OK”**. (Do not choose the 2012R2-VMroles-disk).

ATTACH DISK ✕

Attach a disk to the virtual machine

VIRTUAL MACHINE NAME

NAME

AVAILABLE DISK(S)

ADDRESS



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4.4 Creating and restoring checkpoints

End users using virtual machines on the ICIPRO virtualization platform can create and restore virtual machine checkpoints (or snapshots) as needed, without asking the cloud administrators for help.

A checkpoint is a temporary save of a virtual machine and allows a user to easily roll back to this previously created state, undoing the changes made since the creation of that particular checkpoint. If this concept is not very familiar, however, it is possible that the use of checkpoints generates a decrease in the performance of the virtual machine.

To create a checkpoint, choose the intended virtual machine, enter the “**Dashboard**” and select “**Checkpoint**” at the bottom of the screen.



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The screenshot displays the Service Management Portal interface for a virtual machine named 's-2012'. The top navigation bar includes 'DASHBOARD' and 'CONFIGURE' options. A performance graph shows CPU usage at 4.6% and memory usage at 0% over a 1-hour period. The 'usage overview' section provides a summary of resource usage: 2 cores (40% of 30 cores), 4096 MB RAM (41% of 10240 MB), 81 GB storage (9% of 900 GB), and 1 virtual machine (30% of 10 virtual machines). The 'quick glance' section lists key details: Status: Running; Host Name: s-2012001; IP Addresses: NAT-Retea-5 - 192.168.0.3 and NAT-Retea-5 - 192.168.0.12; Operating System: Windows Server 2012 R2 Datacenter; Cores: 2 Cores; Memory: 4096 MB; Disks: 2; Generation: 2; Checkpoint: There is no checkpoint; Type: Standalone; Subscription Name: silver-Sonac-Vineta; Subscription ID: 65a25e16-1487-4952-b84f-6319a24798; and Virtual Machine ID. The 'attached devices' table lists three devices: NAT-Retea-5 (Network), 2012R2-40GB.vhdx (Disk (VHD)), and Smart-C (Disk (VHD)). At the bottom of the interface, a 'CHECKPOINT' button is highlighted with a red box.

A new screen opens where you should enter a suggestive name for this checkpoint and then press "OK".



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CHECKPOINT

Create a checkpoint for your virtual machine

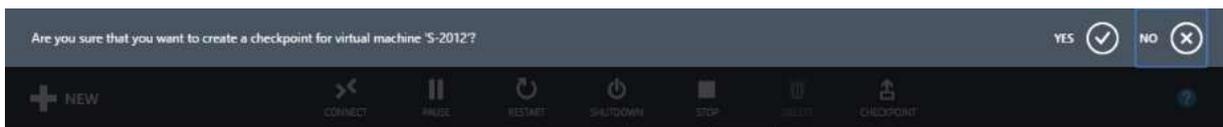
Fill in the details for your virtual machine checkpoint.

FRIENDLY NAME
Checkpoint-1

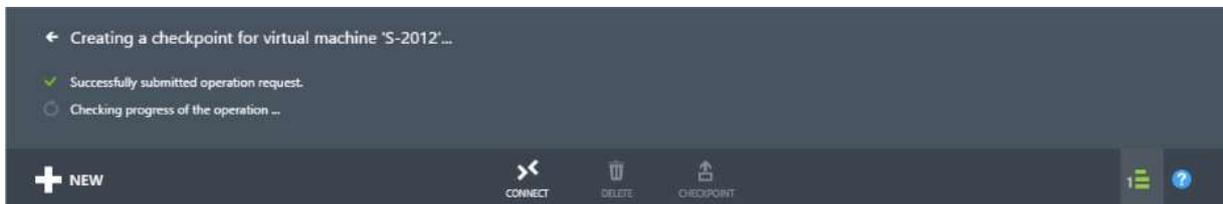
DESCRIPTION
checkpoint de test

✓

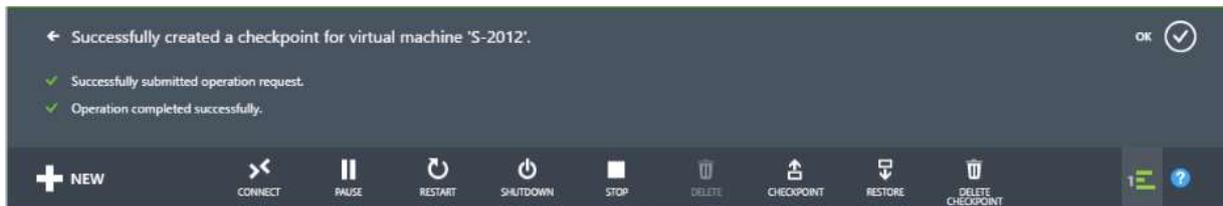
A message appears, asking you to confirm the creation of the checkpoint.



At this point, you can see that the checkpoint creation process has begun.



Now, you can see that the checkpoint creation process has completed successfully.



In case you want to return to a previous situation, click on **“Restore”**.



If you want to delete a previously created checkpoint, click on **“Delete checkpoint”**.

