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 – ICIPIRO”
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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.
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/](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.
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.
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.
Your password has just been changed.

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.
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.
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.
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.
In the end, a message will appear stating that the virtual network was created successfully.
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.
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”.
Choose a suggestive name for the virtual network and opt for the IPV4 IP Address Protocol.
Enter the DNS servers that will be assigned to the clients and select the “Configure site-to-site VPN” option.
Specify the internal IP range used within the subscription.

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.
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.
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.
ADD NETWORK RULE

Add a rule to the virtual network

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

NAME
WEB

PROTOCOL
TCP

SOURCE PORT
80

ENTER IP ADDRESS

DESTINATION IP ADDRESS
192.168.2.10

DESTINATION PORT

80
At this point, the WEB rule was created successfully.

To see the public IP for this publication, see the virtual network Dashboard.
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.
Fill in the server name, the root password and continue with the virtual machine creation process.
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.

As you can see, the virtual machine creation process has begun.
The virtual machine creation process based on the CentOS template was completed successfully.

To connect on the console, select the virtual machine, and then select “Connect->Console” on the command bar.
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.
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.
Fill in the name of the server, the administrator password and continue with the virtual machine creation process.
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.
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.
A new window appears – choose the default setting and press "OK".
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”.
Enter the password chosen during the virtual machine configuration process and then press “OK”.

Press Ctrl+Alt+Delete to sign in.
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.
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”.
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.
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).
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.
A new screen opens where you should enter a suggestive name for this checkpoint and then press “OK”.
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”.

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