

Servisi za otvorenu nauku u jugoistočnoj Evropi

OpenStack FINKI-Cloud

Anastas Mišev

Univerzitet Sv. Kiril i Metodij, Skopje



Agenda

Šta je FINKI-Cloud?

Osnovne karakteristike

Prednosti

Registracija

Kreiranje virtuelnih mašina

Konfiguracija mreže

Povećanje kapaciteta diskova

Šta je FINKI-Cloud?

- ❑ FINKI-Cloud predstavlja IaaS rešenje
 - ❑ IaaS – Infrastructure as a Service, infrastruktura kao servis
 - ❑ Omogućava korišćenje računarskih resursa po potrebi, bilo kada.
 - ❑ Računarski resursi su:
 - ❑ Virtuelne mašine
 - ❑ Disk prostor
 - ❑ Mreža
 - ❑ Dostupno za širu naučno-istraživačku zajednicu.
-

Karakteristike

Brzo

- Podizanje novog resursa traje nekoliko sekundi

Sigurno

- Potpuna izolacija resursa između korisnika

Poznato

- Okoline poznate istraživačima, dostupni najčešće korišćeni operativni sistemi

Lako

- Interakcija sa sistemom odvija se preko grafičkog interfejsa uz pomoć čarobnjaka
-

Prednosti

- ❑ Povećani kvalitet istraživanja – resursu velikog kapaciteta omogućuju obradu većih i kompleksnijih skupova podataka.
 - ❑ Povećani kvantitet istraživanja – resursi su odmah dostupni za korišćenje, bez čekanja; savremeni hardver smanjuje vreme proračuna
 - ❑ Ekonomično – nema dodatnih investicija ili lokalnih infrastrukturnih instalacija
 - ❑ Centralizovano – olakšana saradnja sa ostalim istraživačima i deljenje skupova podataka
-

Preduslovi i proces registracije

- ❑ Servis je dostupan na <https://openstack.finki.ukim.mk/>
 - ❑ Registracija je preko NI4OS AAI korišćenjem akreditiva
 - ❑ Vaše institucije, ako je članica eduGAIN-a
 - ❑ Korišćenjem socijalnih mreža ili trećih servisa (Facebook, Google, GitHub)
 - ❑ Posle inicijalne registracije, potrebno je da vlasnik resursa potvrdi pristup
 - ❑ Brzi povratni odgovor
 - ❑ Obnova pristupa svake godine
 - ❑ Uslovi korišćenja – [FINKI-Cloud Terms of Use](#)
-

Registracija

□ <https://openstack.finki.ukim.mk/>

Authenticate using

NI4OS AAI

If you are not sure which authentication method to use, contact your administrator.

Sign In

Privacy Policy
Acceptable Use Policy
Terms of Use

Home > NI4OS-Europe > Join finki-cloud VO

Join finki-cloud VO

Thank you for your interest in participating in the **finki-cloud** Virtual Organisation (VO). Please, note that you will not be able to use your **NI4OS-Europe ID** to access resources allocated to the finki-cloud VO until your request to join the VO has been approved by an administrator.

BEGIN →

Home > NI4OS-Europe > Join finki-cloud VO

Join finki-cloud VO

Comments
Reason for requesting membership

Membership: finki-cloud

Valid From: 2020-12-18

Valid Through: 2021-12-18

After you click submit, please check your email for the approval notification. Thank you for your patience.

* denotes required field

SUBMIT

Enrollment Flow

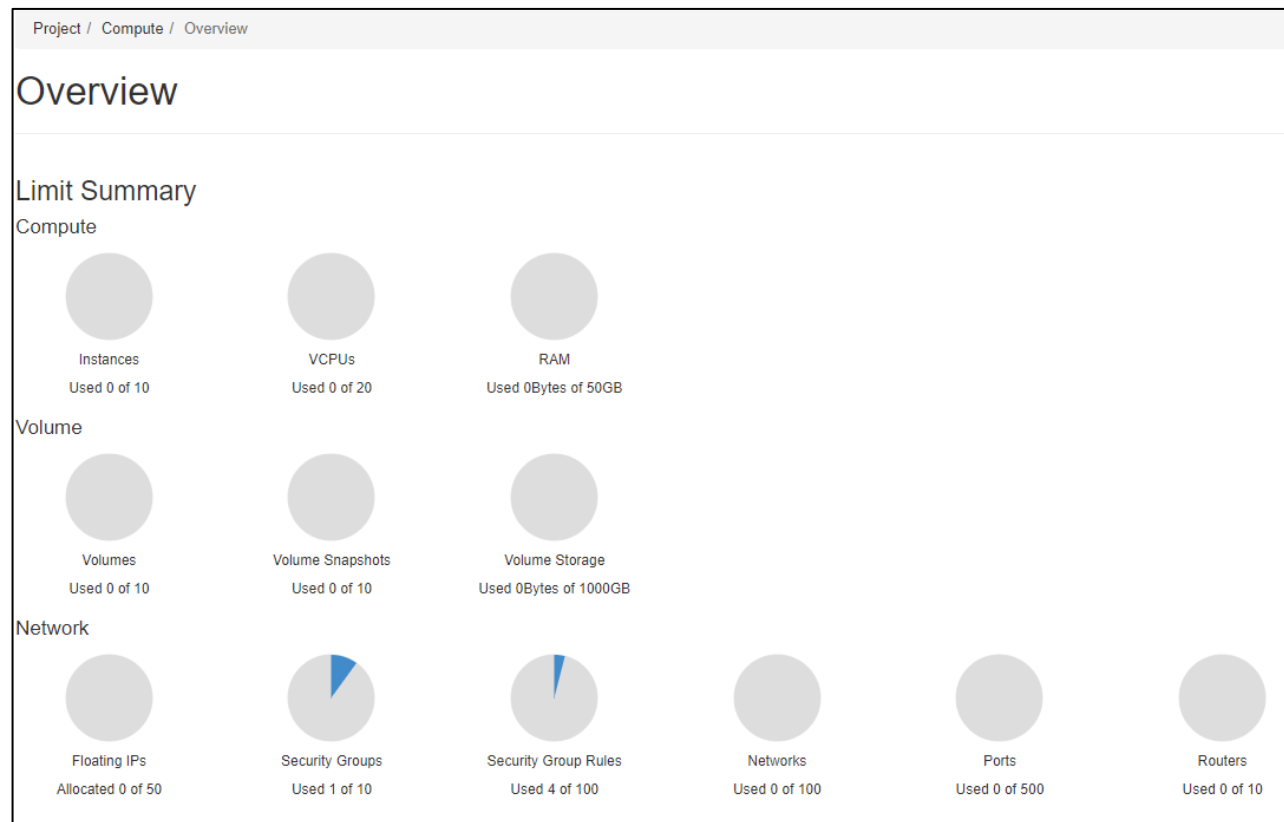
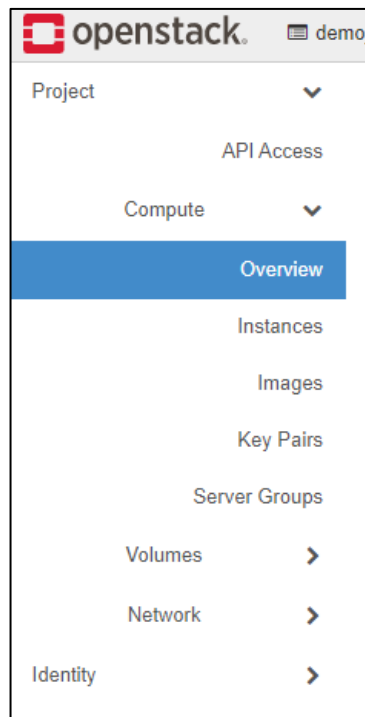
- ✓ Start
- ✓ Select Person
- ➔ Collect Petitioner Attributes
- Request Approval
- Wait For Approval
- Approval
- Approval Notification
- Finalize
- Provision

Your enrollment is being processed, please do not refresh or close and click back button on this window.

18%

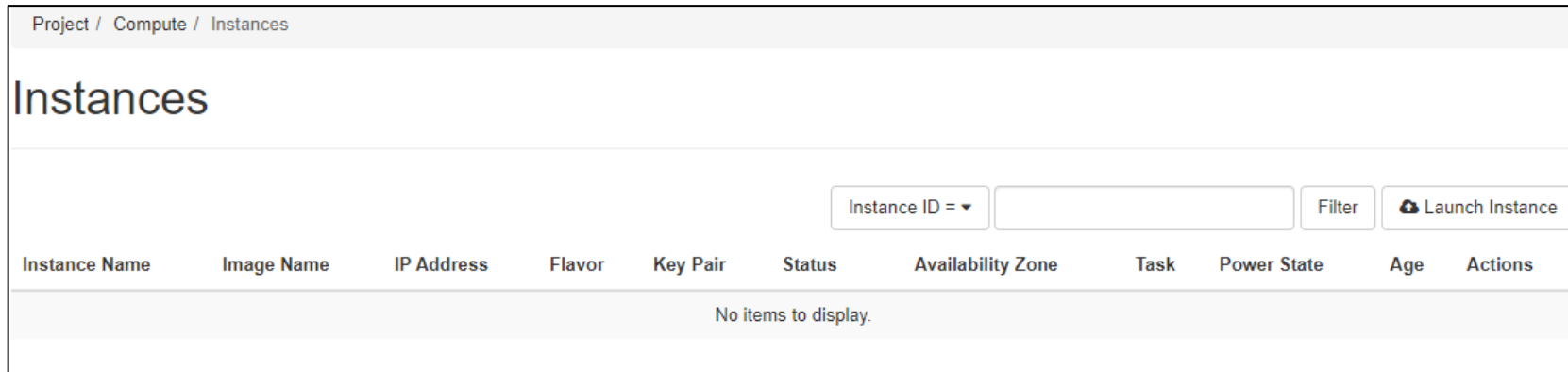
Početna stranica

- Početna stranica – trenutna iskorišćenost resursa



Kreiranje prve virtualne mašine

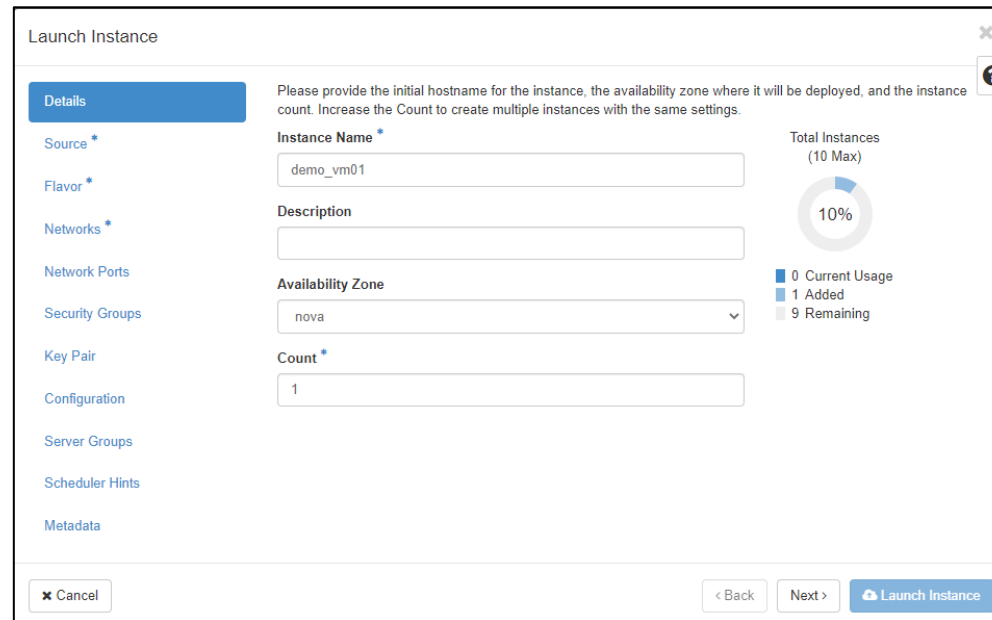
- Navigacija do željene stranice preko menija na levoj strani
 - Project -> Compute -> Instances



- Launch Instance – čarobnjak za podizanje virtuelnih mašina
-

Čarobnjak za kreiranje virtualnih mašina – Details

- Više koraka, ali samo nekoliko suštinski važnih



The screenshot shows the 'Launch Instance' wizard in the 'Details' step. The interface includes a sidebar with navigation options: Details (selected), Source, Flavor, Networks, Network Ports, Security Groups, Key Pair, Configuration, Server Groups, Scheduler Hints, and Metadata. The main content area contains the following fields and information:

- Instance Name:** demo_vm01
- Description:** (empty text field)
- Availability Zone:** nova
- Count:** 1

Additional information on the right side includes a 'Total Instances (10 Max)' gauge showing 10% usage, and a legend for 'Current Usage' (0), 'Added' (1), and 'Remaining' (9). At the bottom, there are buttons for 'Cancel', '< Back', 'Next >', and 'Launch Instance'.

Details

Source

Flavor

Security Groups

Key Pair

Čarobnjak za kreiranje virtuelnih mašina – Source

- ❑ Izbor željenog operativnog sistema
 - ❑ Boot Source -> Image
- ❑ Mogućnost dodavanja dodatnog disk prostora koji je moguće priključiti i drugoj virtuelnoj mašini.
 - ❑ Create New Volume – Yes/No

instance source is the template used to create an instance. You can use an image, a snapshot of an instance (image snapshot), a volume or a volume snapshot (if enabled). You can also choose to use persistent storage by creating a new volume.

Select Boot Source: Image

Create New Volume: Yes No

Allocated

Name	Updated	Size	Type	Visibility
> ubuntu-server-18.04	10/5/19 3:40 PM	328.50 MB	qcow2	Public

Available 1 Select one

Click here for filters or full text search.

Name	Updated	Size	Type	Visibility
> centos7-1907	8/21/19 10:06 AM	898.75 MB	qcow2	Public
> cirros	8/20/19 9:22 AM	12.67 MB	qcow2	Public
> clonezilla-live-2.6.2-15	8/22/19 12:58 PM	271.00 MB	iso	Public
> debian-10	8/21/19 10:01 AM	506.88 MB	qcow2	Public
> debian-10.3.0-openstack-amd64	3/24/20 1:43 PM	512.55 MB	qcow2	Public
> debian-9	8/21/19 11:19 AM	606.82 MB	qcow2	Public
> fedora-30	8/20/19 10:44 PM	316.88 MB	qcow2	Public
> ubuntu-16.04	8/21/19 10:11 AM	282.69 MB	qcow2	Public
> windows10	11/19/20 12:19 PM	10.18 GB	qcow2	Public

Čarobnjak za kreiranje virtuelnih mašina – Flavor

- ❑ Dimenzioniranje virtuelne mašine u zavisnosti od potreba
- ❑ Mogućnost izbora osam predefinisanih konfiguracija
- ❑ Disk prostor se uvek može proširiti dodatnim volumenima
- ❑ U slučaju potrebe može da se izvrši re-dimenzioniranje bez potrebe brisanja i ponovnog kreiranja mašine


Flavors manage the sizing for the compute, memory and storage capacity of the instance.

Allocated						
Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public
> t2.large	2	8 GB	60 GB	60 GB	0 GB	Yes

▼ Available ⁷ Select one

Q Click here for filters or full text search. ✕

Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public
> t2.nano	1	512 MB	20 GB	20 GB	0 GB	Yes
> t2.micro	1	1 GB	20 GB	20 GB	0 GB	Yes
> t2.small	1	2 GB	20 GB	20 GB	0 GB	Yes
> t2.medium	2	4 GB	60 GB	60 GB	0 GB	Yes
> t2.xlarge	4	16 GB	60 GB	60 GB	0 GB	Yes
> c5.4xlarge	16	32 GB	60 GB	60 GB	0 GB	Yes
> t2.2xlarge	8	32 GB	60 GB	60 GB	0 GB	Yes

< Back Next > 

Čarobnjak za kreiranje virtuelnih mašina – Network

- ❑ Izbor mrežne konfiguracije
- ❑ Dostupne su dve mreže, kao i mogućnost definisanja vlastitih
 - ❑ external-3000 – spoljni pristup preko automatski dodeljene javne IP adrese
 - ❑ internet-through-nat – za virtuelne mašine koje ne plasiraju javne sadržaje, dostupne samo interno ili preko druge mašine koja ima i javnu i lokalnu adresu

Networks provide the communication channels for instances in the cloud.

▼ Allocated ¹ Select networks from those listed below.

	Network	Subnets Associated	Shared	Admin State	Status	
↕ 1	> external-3000	vlan-3000	Yes	Up	Active	↓


▼ Available ¹ Select at least one network

🔍 Click here for filters or full text search. ✕


	Network	Subnets Associated	Shared	Admin State	Status	
>	internet-through-nat	internet-subnet	Yes	Up	Active	↑

Čarobnjak za kreiranje virtuelnih mašina – Security Groups



- ❑ Pravila za dolazni i izlazni saobraćaj ka i od virtuelne mašine
- ❑ Jedna predefinisana polisa – spoljašnji pristup nije dozvoljen
- ❑ Potrebno je definisati vlastitu (kasnije..)
- ❑ Mogućnost promene u realnom vremenu, bez potrebe restartovanja virtuelne mašine

Select the security groups to launch the instance in. 

▼ Allocated **1**

Name	Description	
> default	Default security group	

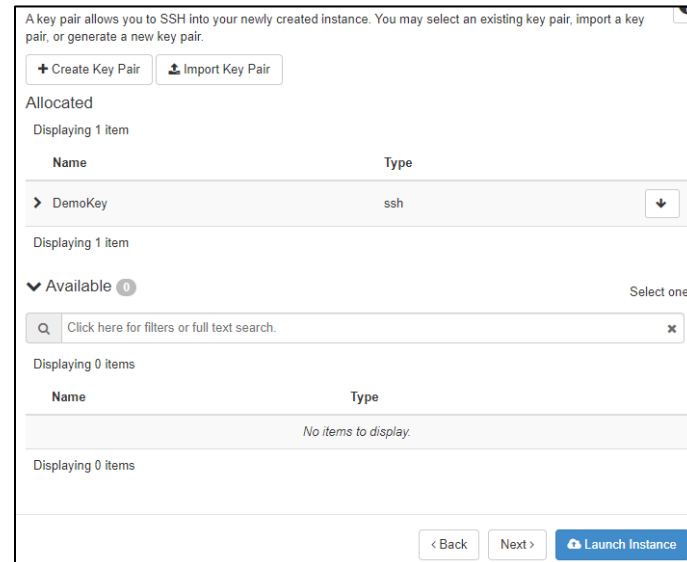
▼ Available **0** Select one or more

Name	Description
No available items	

Čarobnjak za kreiranje virtuelnih mašina – Key Pair

- ❑ Izbor javnog SSH ključa za pristup mašini
- ❑ Mogućnost dodavanja novog, direktno iz čarobnjaka
- ❑ Jednom dodani ključ može se koristiti neograničeni broj puta kasnije
- ❑ Važno i za Microsoft Windows mašine, učestvuje u definisanju inicijalne lozinke



A key pair allows you to SSH into your newly created instance. You may select an existing key pair, import a key pair, or generate a new key pair.

[+ Create Key Pair](#) [Import Key Pair](#)

Allocated

Displaying 1 item

Name	Type
> DemoKey	ssh

Displaying 1 item

Available 1 Select one

Click here for filters or full text search.

Displaying 0 items

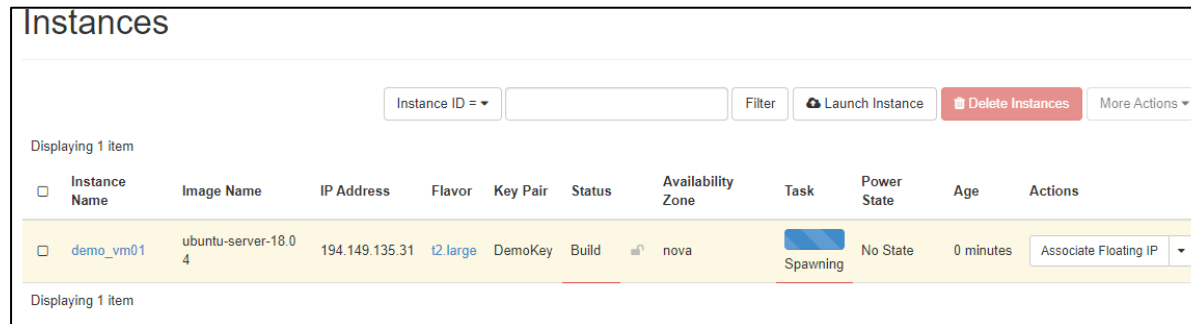
Name	Type
No items to display.	

Displaying 0 items

[< Back](#) [Next >](#) [Launch Instance](#)

Pregled kreirane virtualne mašine

- ❑ Posle završetka zadnjeg koraka, virtualna mašina se pokreće dugmetom „Launch Instance“



The screenshot shows the 'Instances' page in the AWS Management Console. At the top, there are controls for filtering and actions: 'Instance ID =', 'Filter', 'Launch Instance', 'Delete Instances', and 'More Actions'. Below this, it says 'Displaying 1 item'. The main table has the following columns: Instance Name, Image Name, IP Address, Flavor, Key Pair, Status, Availability Zone, Task, Power State, Age, and Actions. One instance is listed: 'demo_vm01' with image 'ubuntu-server-18.04', IP '194.149.135.31', flavor 't2.large', key pair 'DemoKey', status 'Build', availability zone 'nova', task 'Spawning', power state 'No State', and age '0 minutes'. An 'Associate Floating IP' button is visible in the Actions column.

Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions
demo_vm01	ubuntu-server-18.04	194.149.135.31	t2.large	DemoKey	Build	nova	Spawning	No State	0 minutes	Associate Floating IP

- ❑ Ukoliko je izabrana predefinisana sigurnosna grupa, potrebno je napraviti promenu da bi se moglo pristupiti iz spoljašnje mreže
- ❑ Pristup konzoli je preko:
 - ❑ Actions -> Console

Omogućavanje spoljašnjeg pristupa (1)

- ❑ Potrebno je omogućiti javni pristup željenim portovima preko
 - ❑ Promene predefinisane sigurnosne polise
 - ❑ Preko definisanja nove sigurnosne polise
- ❑ Project -> Network -> Security Groups

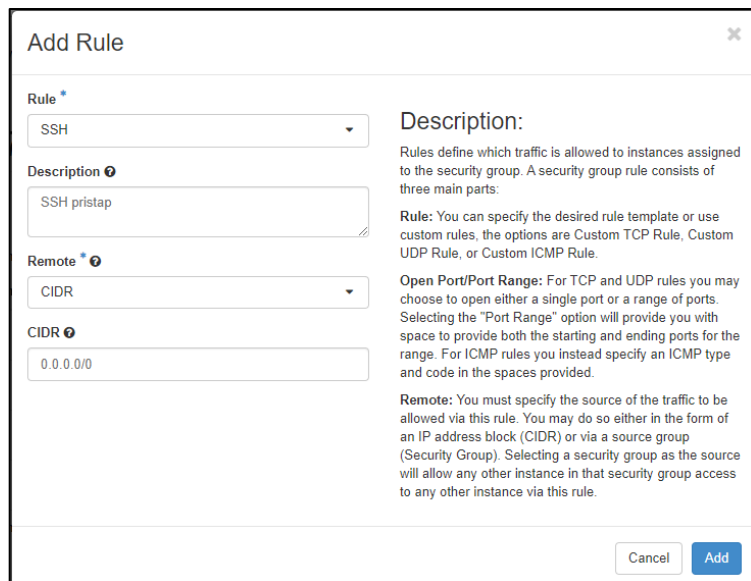
Displaying 1 item

<input type="checkbox"/>	Name	Security Group ID	Description	Actions
<input type="checkbox"/>	default	44547bd6-6bfd-4f64-87d9-3948049bb014	Default security group	Manage Rules

Displaying 1 item

Omogućavanje spoljašnjeg pristupa (2)

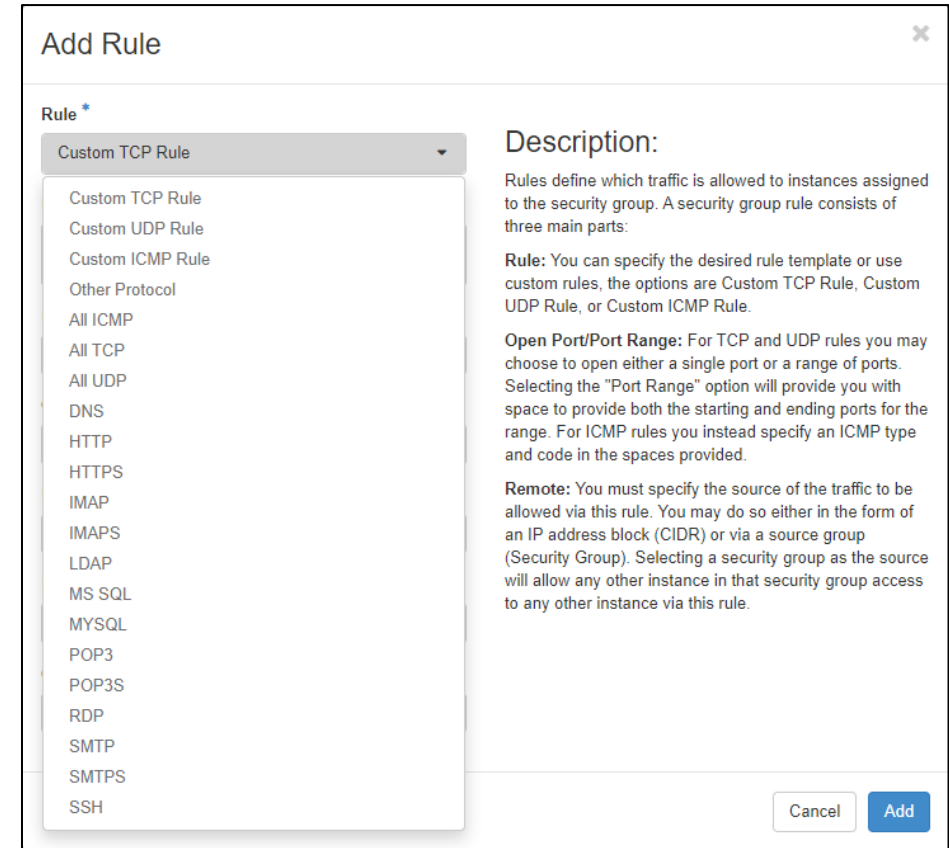
- ❑ Manage Rules -> Add Rule
- ❑ Mogućnost izbora iz liste najčešće korišćenih protokola ili definisanje vlastitih pravila



The screenshot shows the 'Add Rule' dialog box with the following fields and options:

- Rule:** SSH
- Description:** SSH pristap
- Remote:** CIDR
- CIDR:** 0.0.0.0/0

The description text reads: "Rules define which traffic is allowed to instances assigned to the security group. A security group rule consists of three main parts: Rule: You can specify the desired rule template or use custom rules, the options are Custom TCP Rule, Custom UDP Rule, or Custom ICMP Rule. Open Port/Port Range: For TCP and UDP rules you may choose to open either a single port or a range of ports. Selecting the 'Port Range' option will provide you with space to provide both the starting and ending ports for the range. For ICMP rules you instead specify an ICMP type and code in the spaces provided. Remote: You must specify the source of the traffic to be allowed via this rule. You may do so either in the form of an IP address block (CIDR) or via a source group (Security Group). Selecting a security group as the source will allow any other instance in that security group access to any other instance via this rule."



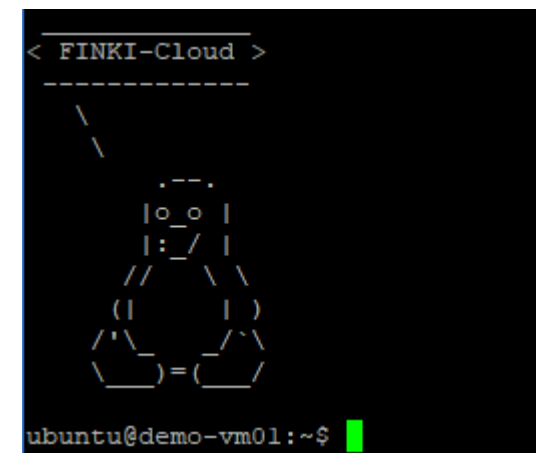
The screenshot shows the 'Add Rule' dialog box with the following fields and options:

- Rule:** Custom TCP Rule (selected from a dropdown menu)
- Description:** Rules define which traffic is allowed to instances assigned to the security group. A security group rule consists of three main parts: Rule: You can specify the desired rule template or use custom rules, the options are Custom TCP Rule, Custom UDP Rule, or Custom ICMP Rule. Open Port/Port Range: For TCP and UDP rules you may choose to open either a single port or a range of ports. Selecting the 'Port Range' option will provide you with space to provide both the starting and ending ports for the range. For ICMP rules you instead specify an ICMP type and code in the spaces provided. Remote: You must specify the source of the traffic to be allowed via this rule. You may do so either in the form of an IP address block (CIDR) or via a source group (Security Group). Selecting a security group as the source will allow any other instance in that security group access to any other instance via this rule.

The dropdown menu for 'Rule' contains the following options: Custom TCP Rule, Custom UDP Rule, Custom ICMP Rule, Other Protocol, All ICMP, All TCP, All UDP, DNS, HTTP, HTTPS, IMAP, IMAPS, LDAP, MS SQL, MYSQL, POP3, POP3S, RDP, SMTP, SMTPS, SSH.

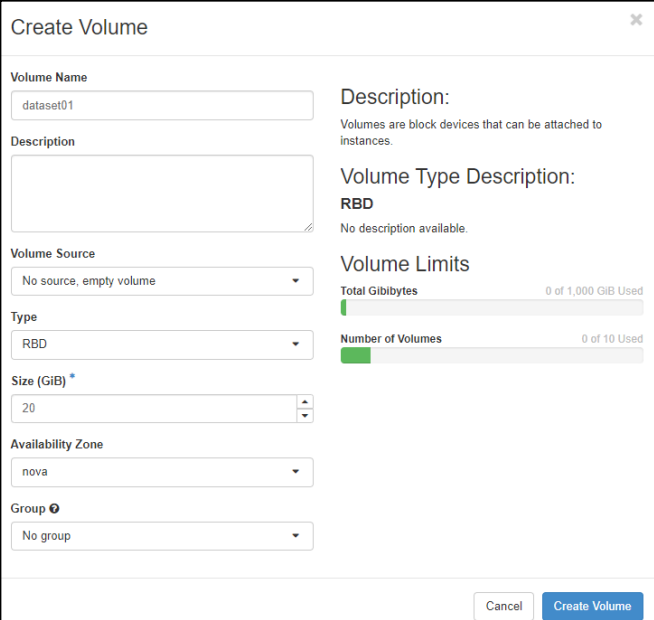
Pristup virtuelnoj mašini

- ❑ Nakon dodavanja neophodnog pravila, omogućen je pristup mašini preko javne, spoljašnje mreže
- ❑ Inicijalna najava vrši se prek pred-definisanog korisničkog imena koje zavisi od operativnog sistema
 - ❑ Ubuntu -> ubuntu
 - ❑ Debian -> debian
 - ❑ ...
- ❑ IP adresu mašine možete videti u delu za prikaz svih vaših mašina
 - ❑ Project -> Compute -> Instances



Povećanje disk prostora (1)

- ❑ Dopunski disk prostor može da se kreira i doda i bilo kad svakoj virtuelnoj mašini.
- ❑ Project -> Volumes -> Volumes -> Create Volume
- ❑ Izbor tipa diska (SSD ili mehanički) preko *Type*
 - ❑ RBDFAST – SSD diskovi
 - ❑ RBD – mehanički diskovi



The screenshot shows the 'Create Volume' dialog box with the following fields and values:

- Volume Name:** dataset01
- Description:** (empty text area)
- Volume Source:** No source, empty volume
- Type:** RBD
- Size (GiB):** 20
- Availability Zone:** nova
- Group:** No group
- Description:** Volumes are block devices that can be attached to instances.
- Volume Type Description:** RBD
No description available.
- Volume Limits:**
 - Total Gibibytes: 0 of 1,000 GiB Used
 - Number of Volumes: 0 of 10 Used

Buttons: Cancel, Create Volume

Povećanje disk prostora (2)

- ❑ Povezivanje kreiranog volumena
 - ❑ Project -> Compute -> Instances -> Attach Volume
- ❑ Disk postaje odmah dostupan, nije potrebno restartovanje

Displaying 1 item

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions
<input type="checkbox"/>	demo_vm01	ubuntu-server-18.04		t2.large	DemoKey	Active	nova	None	Running	20 minutes	Create Snapshot

Displaying 1 item

- Associate Floating IP
- Attach Interface
- Detach Interface
- Edit Instance
- Attach Volume



Attach Volume

Volume ID * ⓘ

dataset01 (37932818-4961-45c5-b3b8-0581bf64...)

Description:
Attach Volume to Running Instance.

Cancel Attach Volume

```
Disk /dev/vdb: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
ubuntu@demo-vm01:~$
```

Hvala na pažnji
Pitanja?

