Cloud Computing Survey January 2018

IUCC Cloud Services
CloudSupport@iucc.ac.il

Overview

- Date:
  January 2018

- Population:
  Representatives of IT departments from 6 Israeli institutions

- Objective:
  Evaluate how and to what extend cloud computing is used in academic institutions in Israel.

- Next Steps:
  Align IUCC's offering to the areas indicated that require more effort in order to take the institutions to the next level in cloud usage.
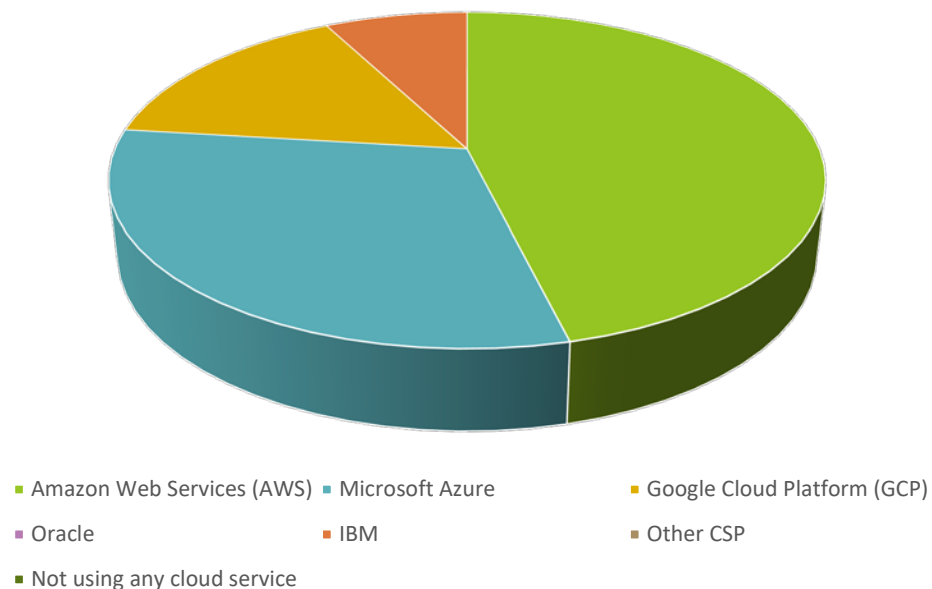
Cloud Service Providers

46% - Amazon Web Services (AWS)

31% - Microsoft Azure

15% - Google Cloud Platform

Which cloud service provider(s) are your university or researchers currently using?

- Amazon Web Services (AWS)
- Microsoft Azure
- Google Cloud Platform (GCP)
- Oracle
- IBM
- Other CSP
- Not using any cloud service
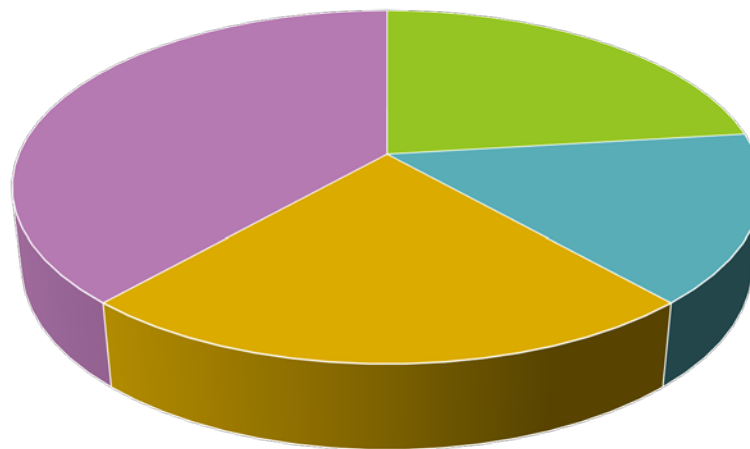
Training and Education

38% - Self-study / hands-on experience

23% - Classroom-based training

23% - Official cloud vendor documentation

15% - Online courses

How did you learned to work with the cloud?

- Classroom-based training
- Official cloud vendors documentation
- Online course (Udemy, ACloud Guru, Cloud Academy, etc.)
- Self-study / hands on experience

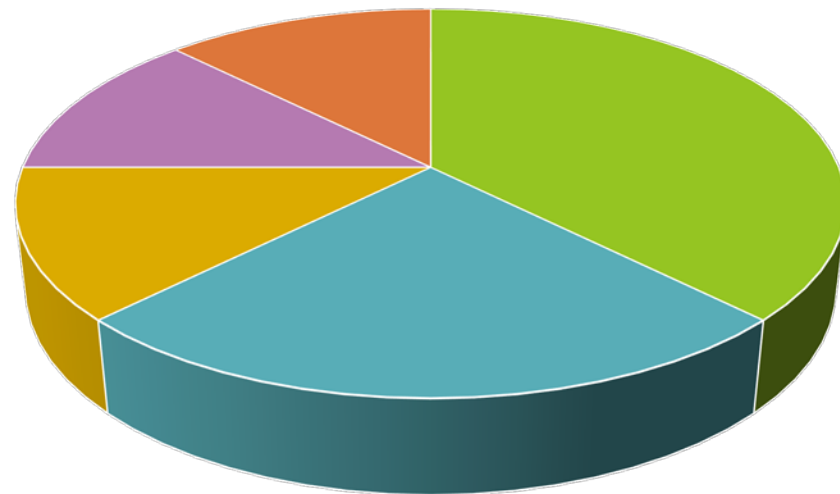# Environment Deployment and Management

37% - Windows

25% - RedHat / CentOS

12% - Ubuntu

12% - SUSE Linux

12% - Amazon Linux

What operating systems are you currently deploying in the cloud?

■ Windows ■ RedHat / CentOS ■ Ubuntu ■ SUSE Linux ■ Amazon Linux ■ Other operating system

Environment Deployment and Management (cont.)

42% - Environments deployed by faculty IT departments

28% - Environments deployed by

   university IT departments

28% - Environments deployed directly by researchers

Who deploy and maintain environments in the cloud?

■ The university IT department   ■ The faculty IT department   ■ The researchers themselves
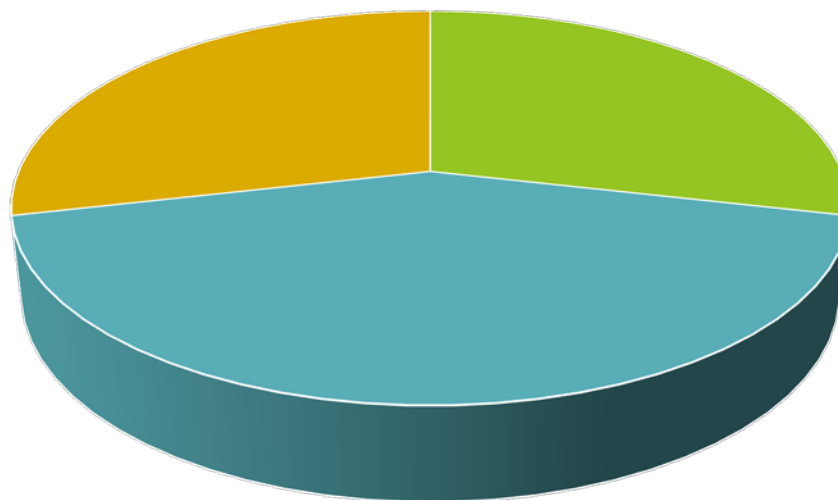
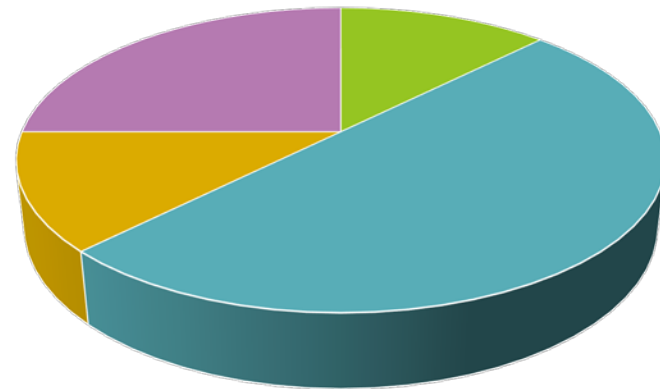# Environment Deployment and Management (cont.)

50% - Deploy new machines manually

25% - Use cloud built-in automation tools

13% - Deploy new virtual machines on premise and

   import into the cloud

13% - Have no virtual machines in

   the cloud

How do you deploy new environments in the cloud?

- I don't have any virtual machine in the cloud
- Manual deployments of new virtual machines in the cloud
- Install virtual machines on premise and import the VM's into the cloud
- Use cloud built-in automation tools (AWS CloudFormation, Azure Resource Manager, etc.)
- Use configuration management tools (Chef, Puppet, Ansible)
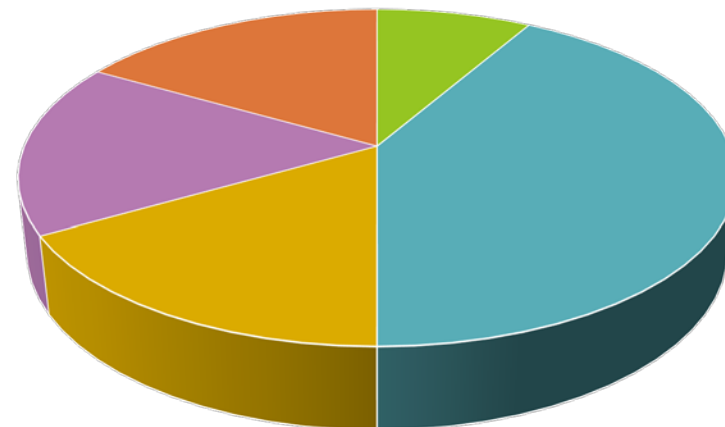
Use of Automation Tools

42% - Use web management console

17% - Use PowerShell or Bash scripts

17% - Use cloud vendor CLI tools

17% - Use other scripting languages

How do you manage your environments in the cloud?

- I don't have any virtual machine in the cloud
- Using the cloud providers web management console
- Using PowerShell or Bash scripts
- Using cloud vendor built-in CLI tools (AWS CLI, Azure CLI, gcloud CLI)
- Other scripting language

Use of Automation Tools (cont.)

80% - Not using any automation tools

20% - Azure Resource Manager

What automation tools / cloud deployment templates are you currently using (or planning to use in the next 12 months)?
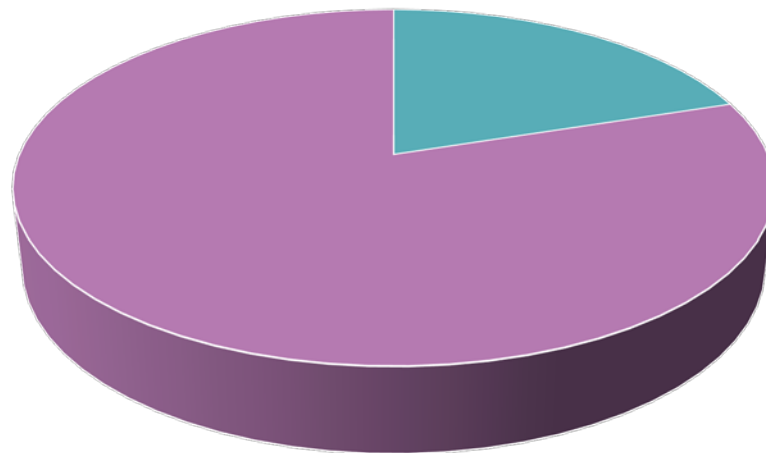
- AWS CloudFormation
- Azure Resource Manager
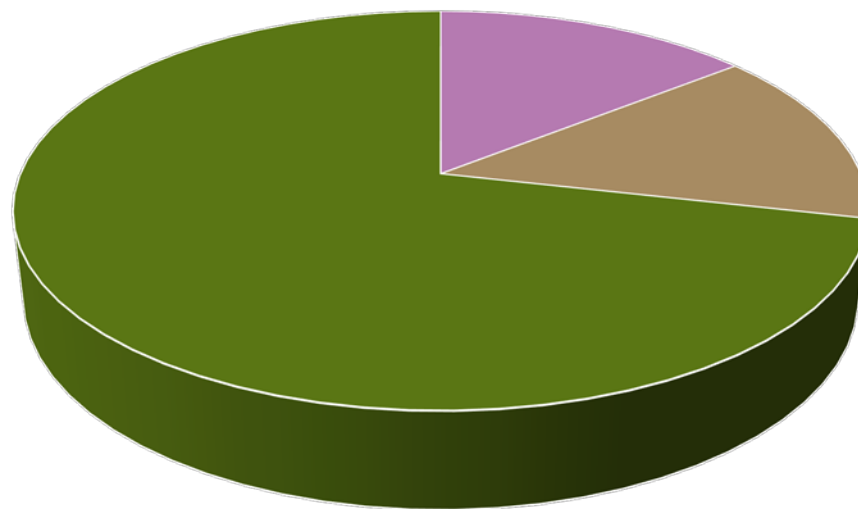- Google Cloud Resource Manager
- None of the above

Use of Automation Tools (cont.)

71% - Not using any configuration management tools

14% - Azure Automation

14% - Saltstack

What configuration management tools are you currently using (or planning to use in the next 12 months)?

■ Chef ■ Puppet ■ Ansible ■ Saltstack ■ AWS OpsWorks ■ Azure Automation ■ None of the above
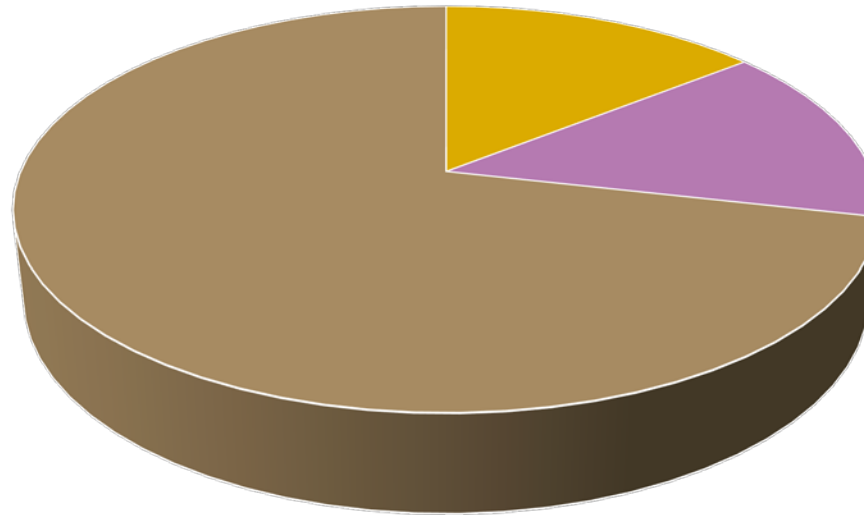
Use of Databases in the Cloud

71% - Not using any relational database in the cloud

14% - Using MySQL

14% - Using PostgreSQL

What relational database are you currently using in the cloud?

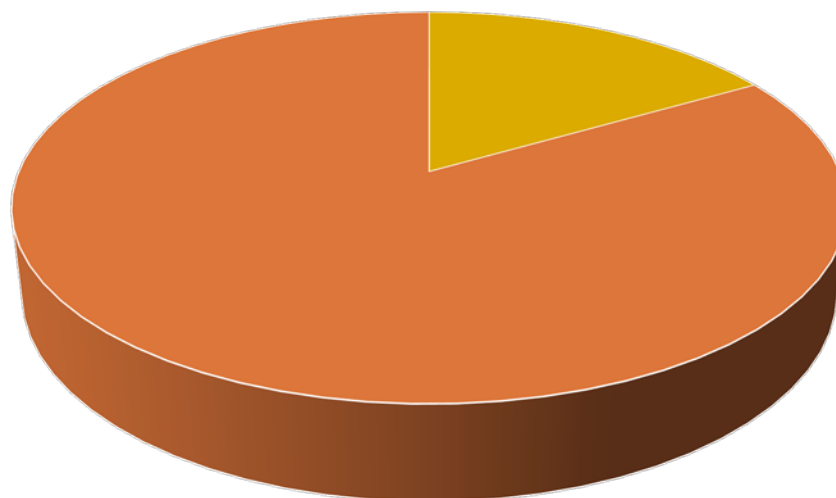■ Microsoft SQL Server   ■ Oracle   ■ MySQL   ■ PostgreSQL   ■ MariaDB   ■ None of the above

Use of Databases in the Cloud (cont.)

83% - Not using any managed database service

17% - Using Azure SQL

How do you deploy relational databases?

- I am installing a database server inside a virtual machine
- Amazon RDS
- Azure SQL or Azure Database (for PostgreSQL, MySQL, MariaDB)
- Google Cloud SQL (for PostgreSQL and MySQL)
- None of the above

Use of Databases in the Cloud (cont.)

83% - Not using any NoSQL database in the cloud

17% - Using MongoDB

What NoSQL database are you currently using in the cloud?

■ MongoDB   ■ Cassandra   ■ Amazon DynamoDB   ■ Azure CosmosDB   ■ Google Cloud Datastore   ■ None of the above
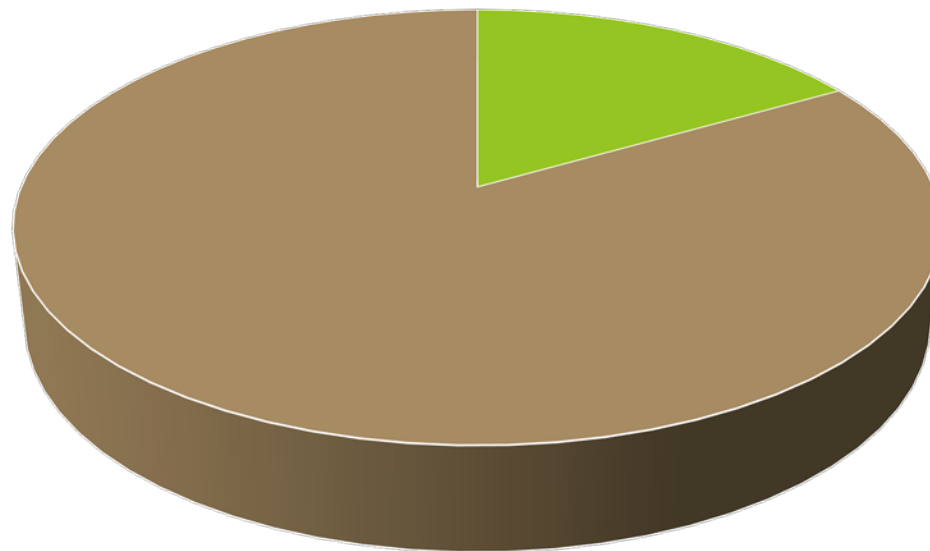
Use of Container Technology

50% - planning to use containers in the next 12-24 months

33% - Currently using virtual machines instead of containers

17% - Don't have any environments in the cloud

Are you currently using containers?
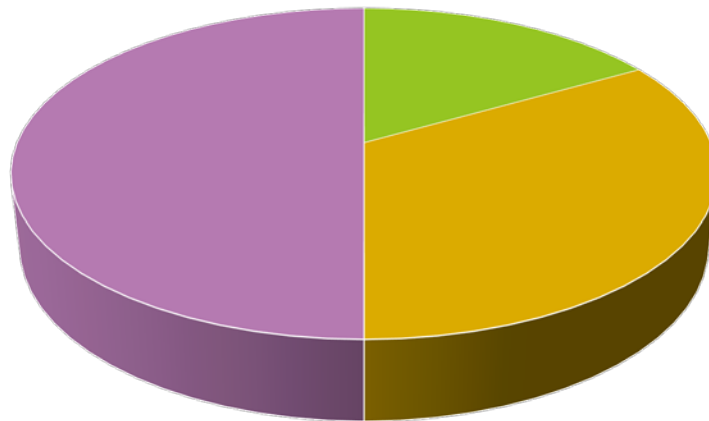
- I don't have any environment in the cloud
- Yes
- No, I am currently using virtual machines
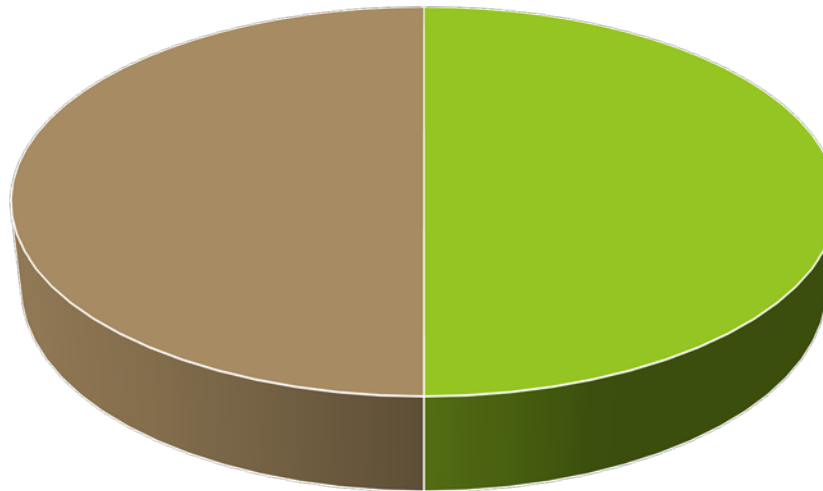- I am planning on using containers in the next 12-24 months

Use of Containers Technology (cont.)

50% - Using or learning to use Docker containers

50% - Not using container technology at all

What container platform are you currently using?

- Docker
- CoreOS
- LXC
- LXD
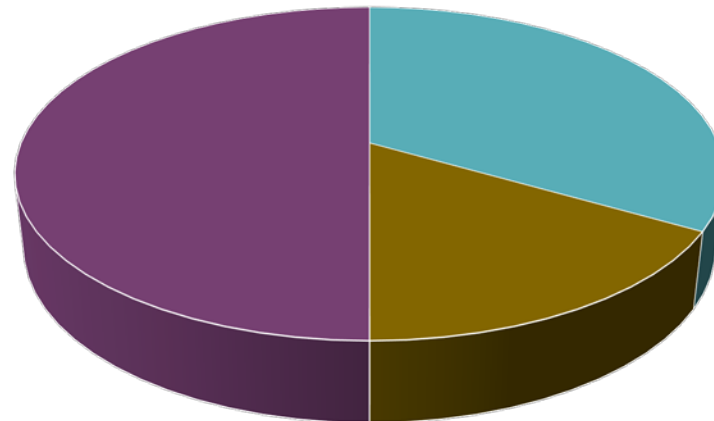- Other container platform
- I am not using containers

Use of Containers Technology (cont.)

50% - Not using container technology at all

33% - Using Kubernetes (or planning to use it in the next 12-24 months)

17% - Planning to use other container orchestration technology

What container orchestration platform are you currently using?

- Docker Swarm
- Kubernetes
- Mesos
- Amazon ECS
- Amazon EKS
- Azure Container Instances
- Azure Container Service (AKS)
- Google Container Engine
- Other orchestration platform
- I am not using containers

Use of Serverless Technology

83% - Currently not using any Serverless technology

16% - Using Azure Functions

Are you currently using Serverless computing (or planning to use in the next 12-24 months)?
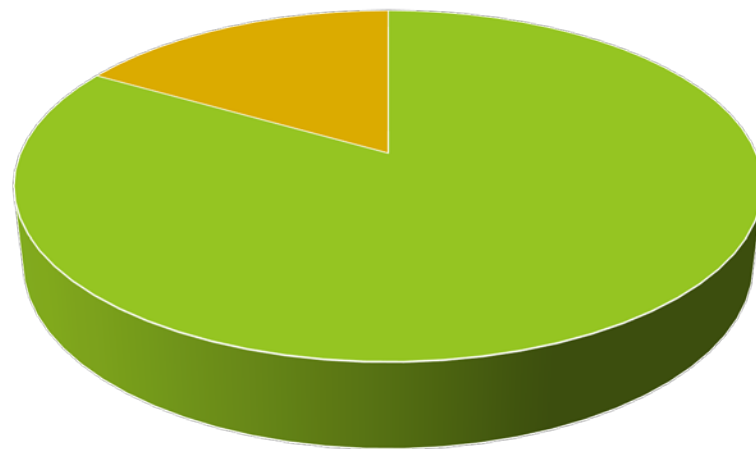
■ No ■ AWS Lambda ■ Azure Functions ■ Google Cloud Functions ■ Other Serverless technology
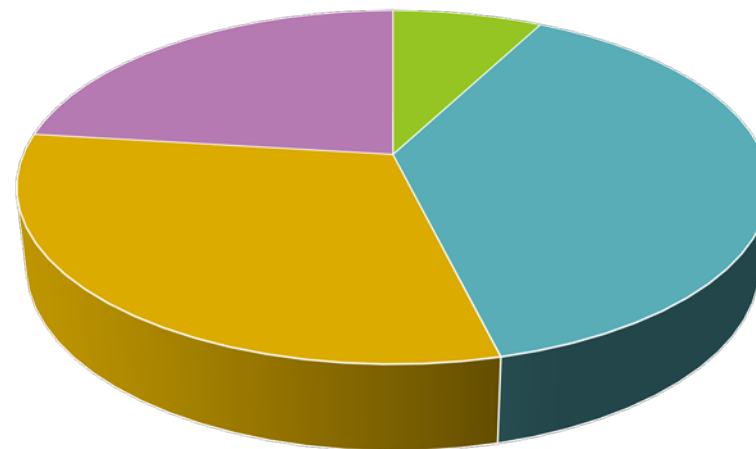
Use of Cloud Storage

38% - Using Dropbox

31% - Using Google Drive

23% - Using Microsoft OneDrive

8% - Using Box

What free file storage services are you using?

■ Box ■ Dropbox ■ Google Drive ■ Microsoft OneDrive ■ pCloud ■ Other file storage service
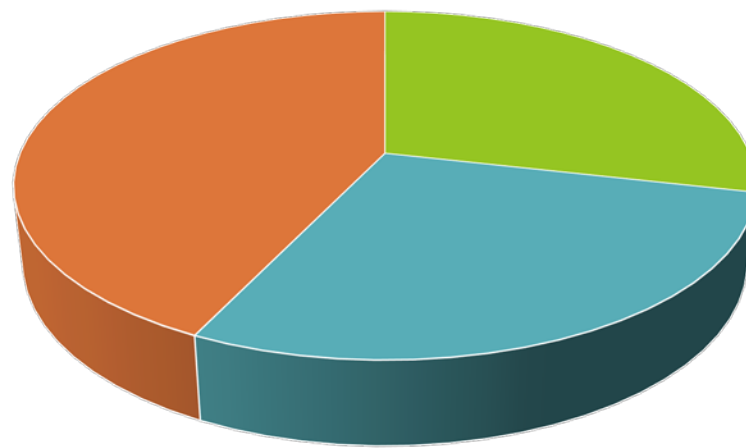
Use of Cloud Storage (cont.)

43% - Not using any cloud managed storage service

29% - Using Amazon S3

29% - Using Azure Blob storage

What cloud storage services are you using?

■ Amazon S3 ■ Azure Blob Storage ■ Google Cloud Storage ■ Other cloud storage service ■ None of the above
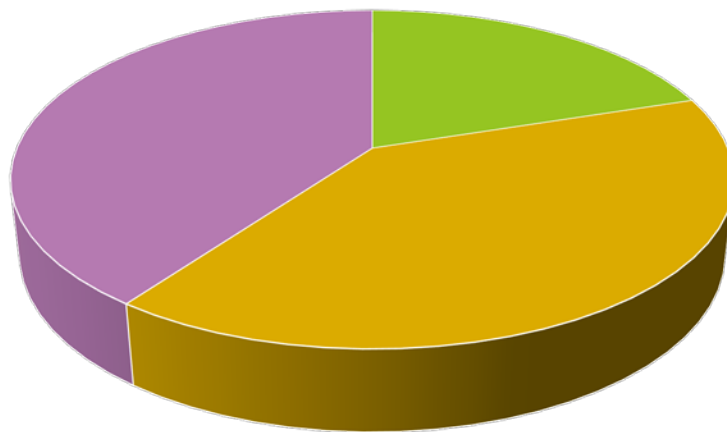
Use of Messaging and Collaboration Services

40% - Using Microsoft Office 365 (Mostly for University usage)

40% - Using Google G Suite (Mostly for the students)

20% - Using on-premises Exchange server

What messaging platform are you currently using?

■ On premise Microsoft Exchange   ■ Amazon WorkMail   ■ Microsoft Office 365   ■ Google G Suite   ■ Other messaging platform
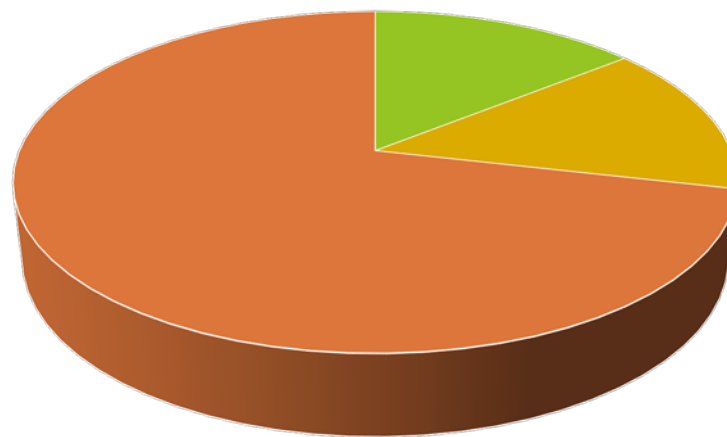
Use of Identity and Authentication Services

71% - Authentication based on NetIQ Identity Manager

14% - Authentication based on Azure Active Directory

14% - Authentication based on local username and passwords

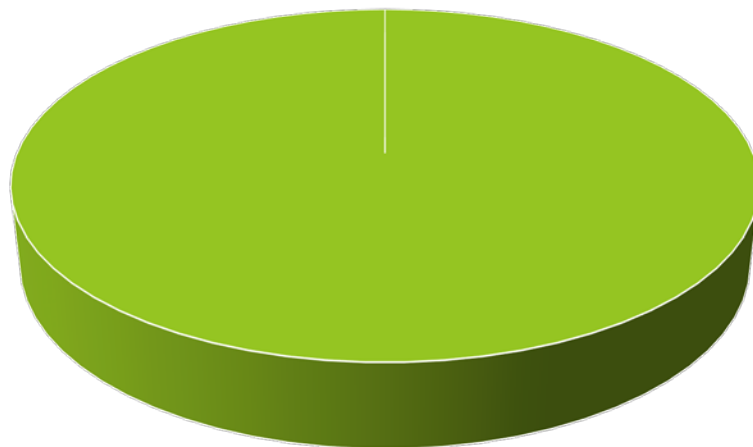What identity and authentication service are you using?

- Local username and password
- AWS IAM
- Azure Active Directory
- Google Cloud IAM
- NetIQ Identity Manager
- Other federation service

Demands for High Availability and Fail-over:

100% - Currently there are no requirements for high availability

How do you handle high availability?

- I have no requirement for high availability
- Currently I do not have any solution for high availability
- I am deploying multiple servers in multiple regions/availability zones/availability sets

Demands for High Availability and Fail-over (cont.)

100% - Currently there are no requirements for fail-over

How do you handle failover?
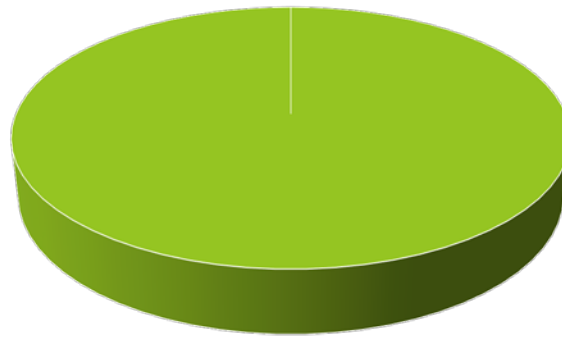
- I have no requirement for failover
- Currently I do not have any solution for failover
- Amazon Elastic Load Balancing
- Azure Load Balancer
- Google Cloud Load Balancing
- I am depending on built-in application load-balancing capabilities
- I have developed my own application load-balancer
- I am using 3rd party load-balance solution (such as F5 BIG-IP)
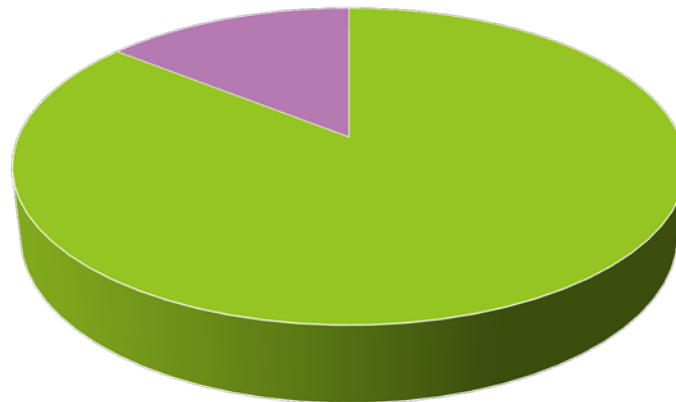- Other load-balancing solution

Monitoring of Cloud Environments

85% - Not monitoring the environments in the cloud

14% - Using built-in cloud monitoring tools

Are you currently monitoring your cloud environment resources?

- No
- I am using open source monitoring tools (such as Nagios, etc.)
- I am using 3rd party monitoring tools (HP OpenView, Microsoft SCOM, CA Nimsoft, etc.)
- I am using the built-in cloud monitoring tools (Amazon CloudWatch, Azure Monitor, Google StackDriver, etc.)

Monitoring of Cloud Environments (cont.)

100% - Not monitoring the cloud environments for security incidents

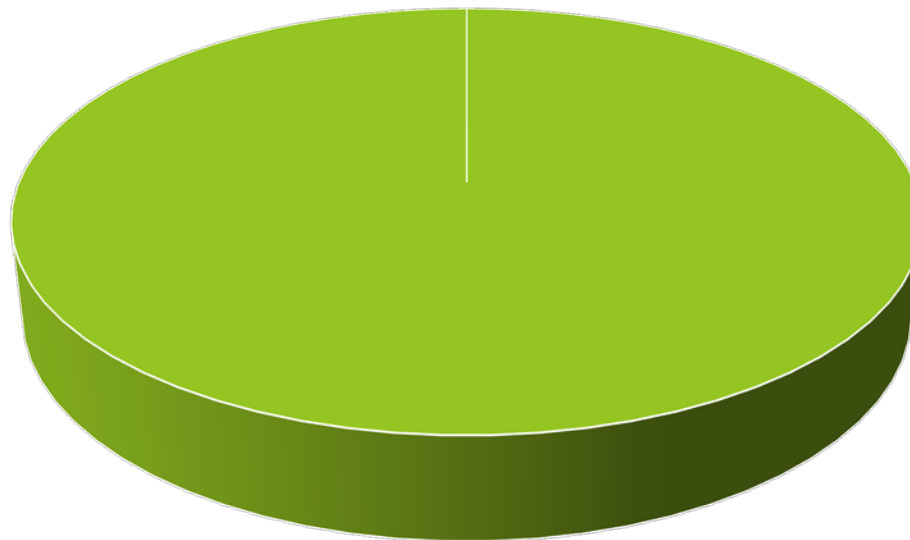Are you currently monitoring your cloud environments for security incidents?
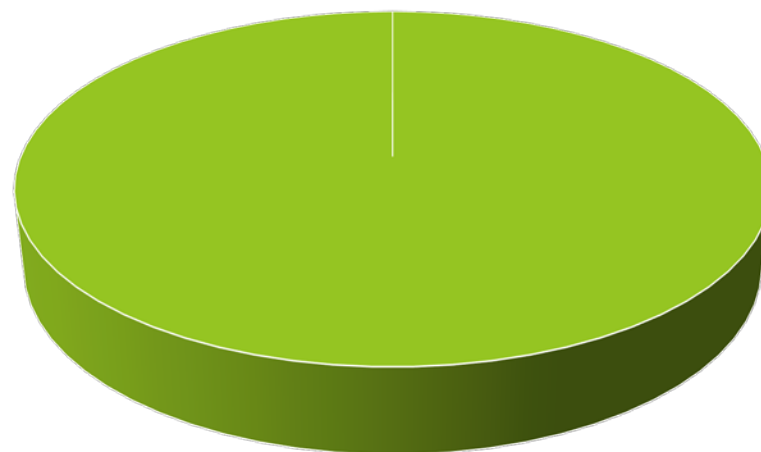
- No
- I am currently using open source tools (such as Syslog, etc.)
- I am using the built-in cloud monitoring tools (Amazon CloudTrail, Azure Operational Insights)

Management of DNS Services

100% - Are managing their DNS services by themselves

How do you manage your DNS services?

- I manage my own DNS servers
- My ISP is managing my DNS servers
- Amazon Route53
- Azure DNS
- Google Cloud DNS

Conclusions

- In most of the cases, cloud environments are deployed and maintained by the University IT departments or by the faculty IT personnel.

- Technical workshops on the necessary tools and knowledge on working, deploying and maintaining cloud environments are crucial to enable IT departments/personnel to support the Universities and researchers demands

- Both Microsoft and AWS agreed to support and fund workshops in all the Universities.

- Currently, most of IaaS cloud environments are deployed manually, and IT personnel lack knowledge in cloud automation tools.

- Almost none of the Universities use advanced technologies such as containers and Serverless.

Conclusions (cont.)

- Almost none of the Universities are using managed-services (such as database, authentication, DNS, etc.)

- Most of the Universities are using cloud storage services (such as Dropbox, Google Drive, OneDrive, etc.) due to previous agreements with the cloud vendors.

- Most of the Universities are using managed messaging services (such as Office 365 and Google G Suite), due to agreements with the cloud vendors.

- None of the Universities are using cloud environments for production use, and as a result, currently there are no demands for high availability, fail-over and monitoring (either infrastructure or security).

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