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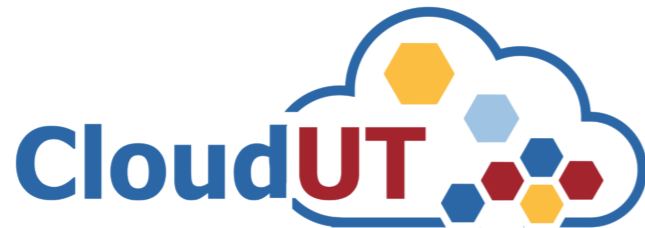


Instrumente Structurale
2014-2020

Developing and Migrating Applications and Services to CLOUDUT



UNIVERSITATEA TEHNICĂ
DIN CLUJ-NAPOCA



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CloudUT Project

Titlu: Cloud Cercetare UTCN – CLOUDUT

(<http://cloudut.utcluj.ro>)

MySMIS ID: 124493

Contract nr: 235/ 21.04.2020

Tip Proiect: Program Operațional Competitivitate 2014-2020 (POC)

Axa prioritara 1: Cercetare, dezvoltare tehnologică și inovare (CDI) în sprijinul competitivității economice și dezvoltării afacerilor

Acțiunea 1.1.2: Dezvoltarea unor rețele de centre CD, coordonate la nivel național și racordate la rețele europene și internaționale de profil și asigurarea accesului cercetătorilor la publicații științifice și baze de date europene și internaționale

Finanțare: Fonduri Europene pentru Dezvoltare Regională, Valoarea totală: 4.955.000 RON, din care 4.950.000 RON din fonduri Europene.



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Outline

Motivation - why?

Requirements - what?

Assessment - applicable?

Migration - how?

Motivation

Improve the quality of research activities

Improve the quantity of research activities

Improve the cost-effectiveness



Requirements

Determine CPU, memory, disk and network requirements

Understand how usage affects requirements

Determine if other software would be appropriate



Assessment

What happens if there are any problems in the cloud?

Are backups done and how frequently?

Are you allowed to put your data on the cloud?

Does the licencing of the application allow you to deploy and use it on the cloud?

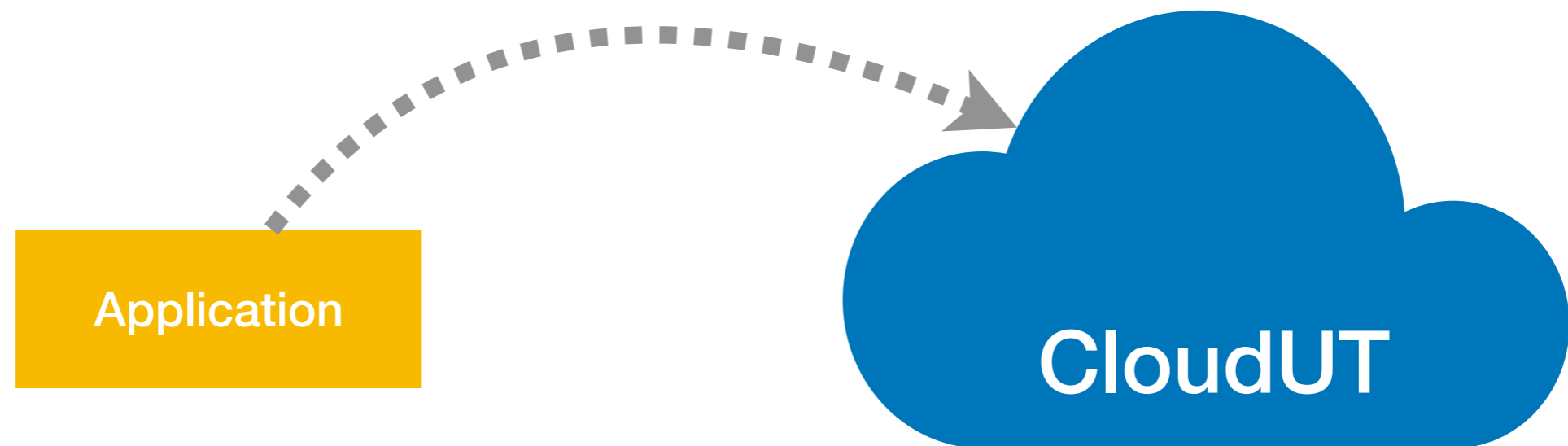


Migration strategies

Rehost

Replatform

Refactoring / Re-architecting



Rehost

Lift and shift approach

Replicate in the cloud as a Virtual Machine (move the application as-is)

Advantages:

- no code or architecture changes

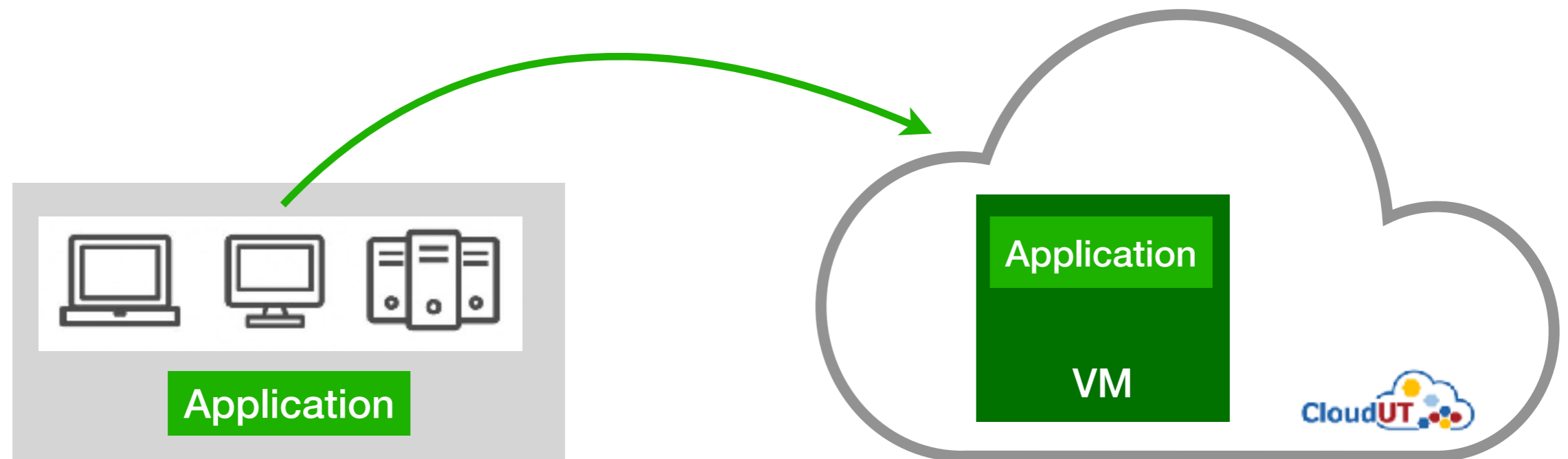
- the quickest way to migrate to the cloud

Disadvantages:

- doesn't maximize the advantages of cloud

- third-party software license could prohibit the use of a VM

Rehost



Replatform

Lift, tinker and shift

Integrates some cloud services at the application level

Advantages:

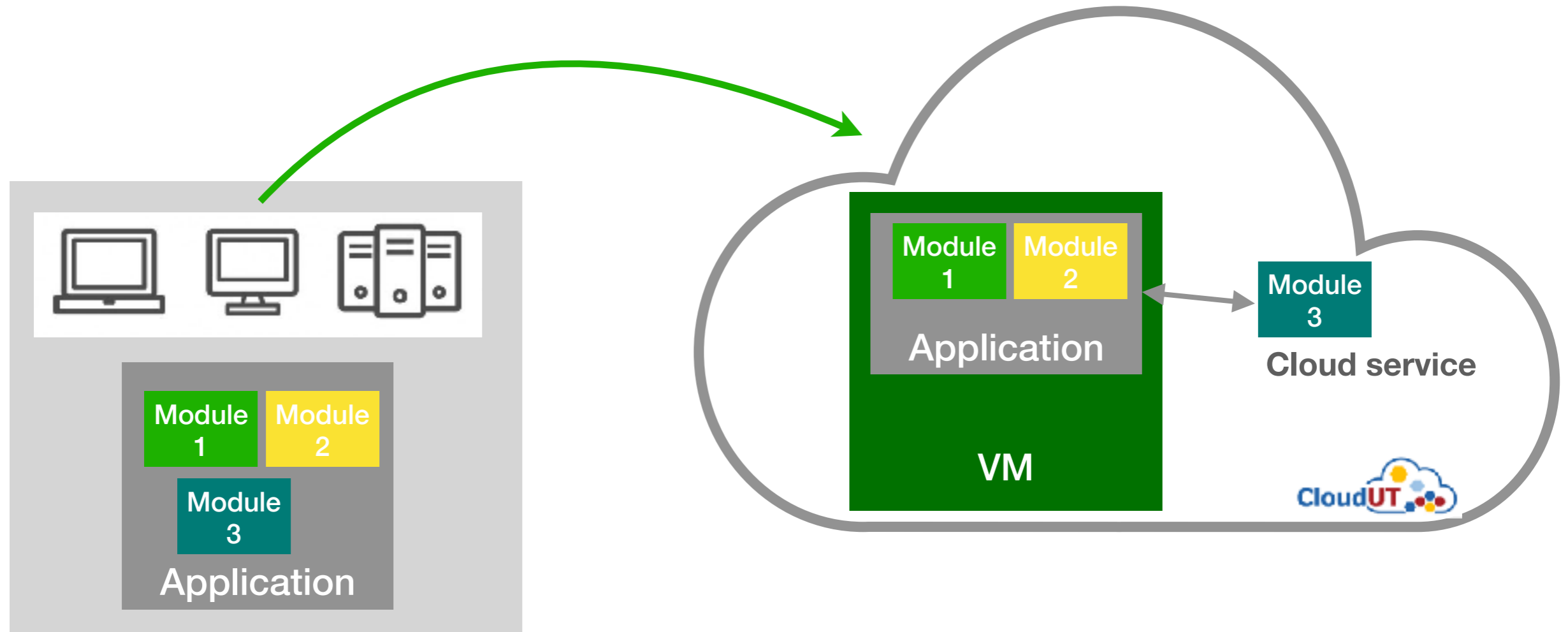
- start small and scale as needed

- cloud-native functionality

Disadvantages:

- longer migration process

Replatform



Refactoring / Re-architecting

Redesign the application to take advantage of cloud-based features

Advantages:

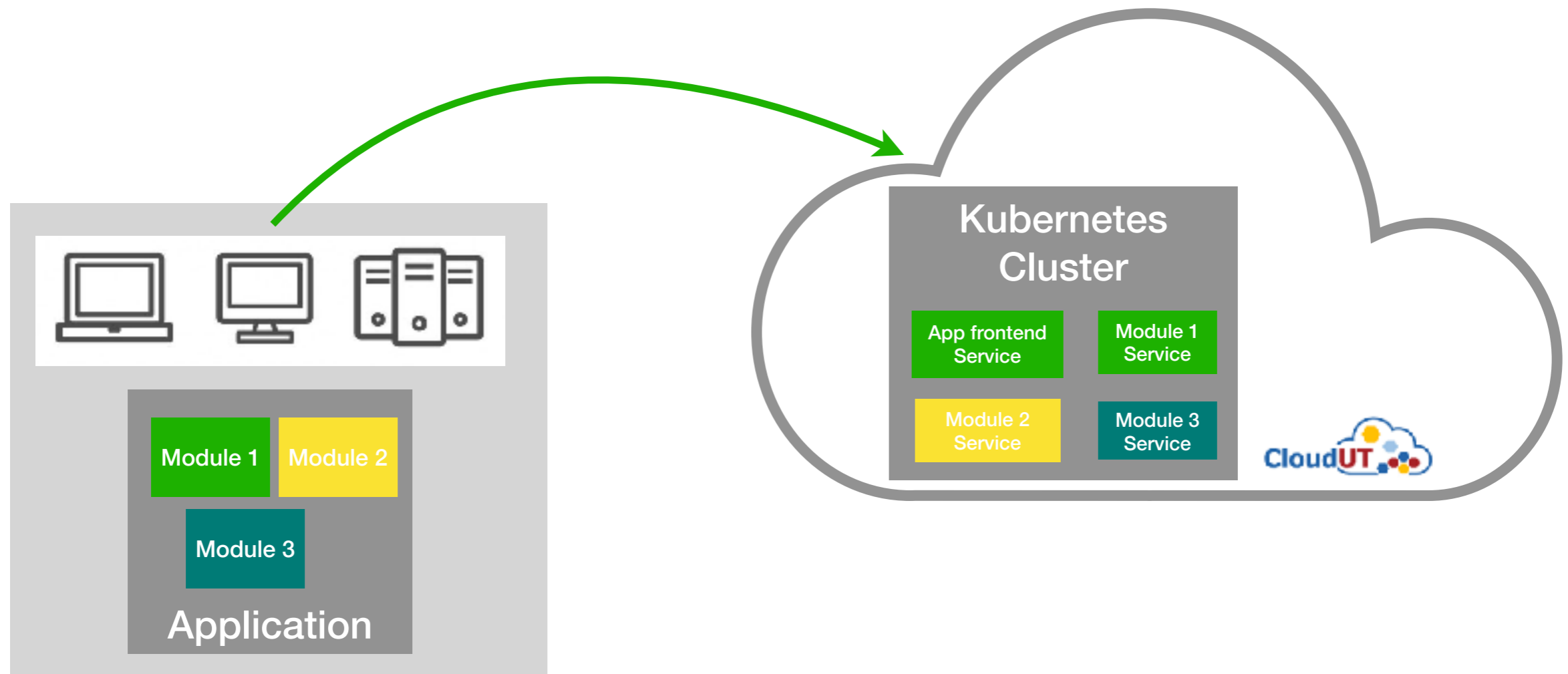
- improve scalability, agility, and overall performance

Disadvantages:

- the most time-consuming way to migrate an application to the cloud

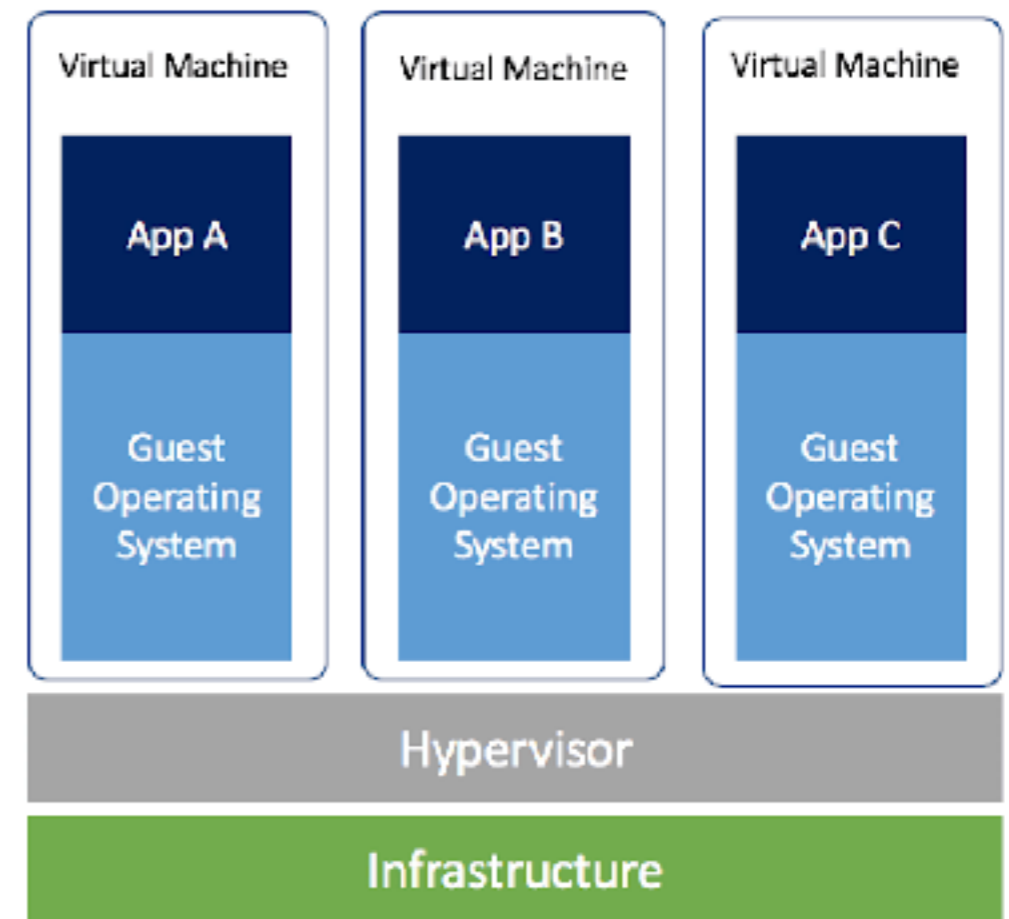
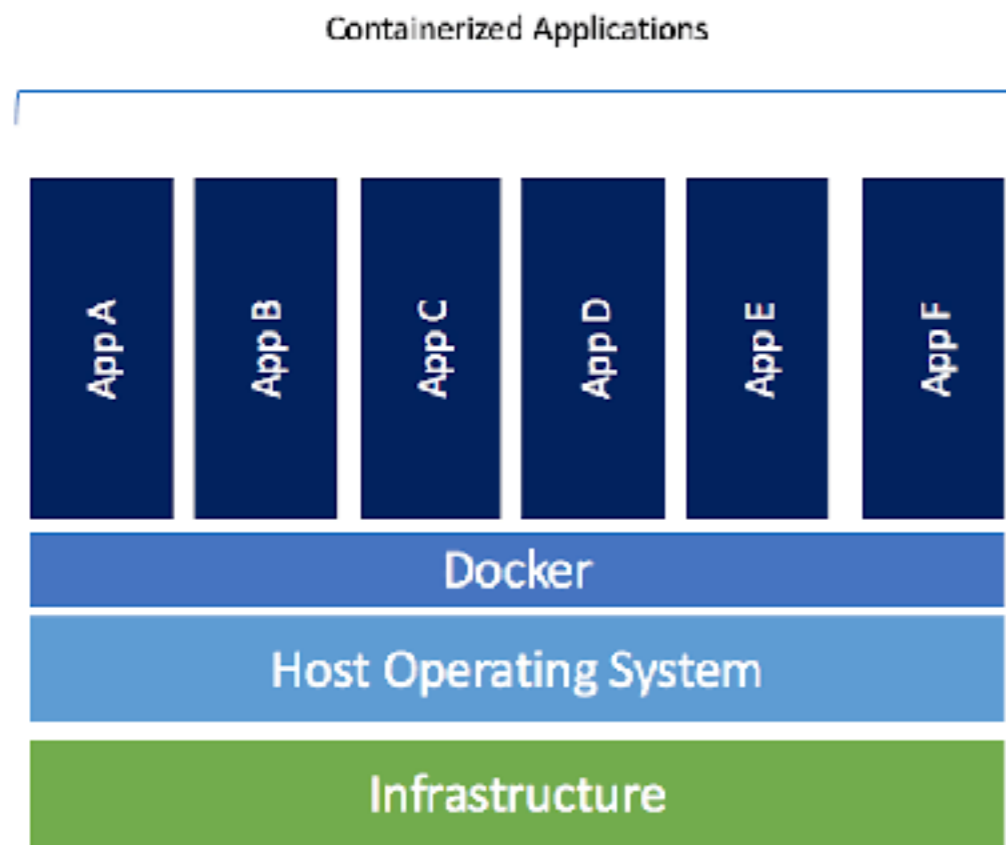
- skills

Refactoring / Re-architecting



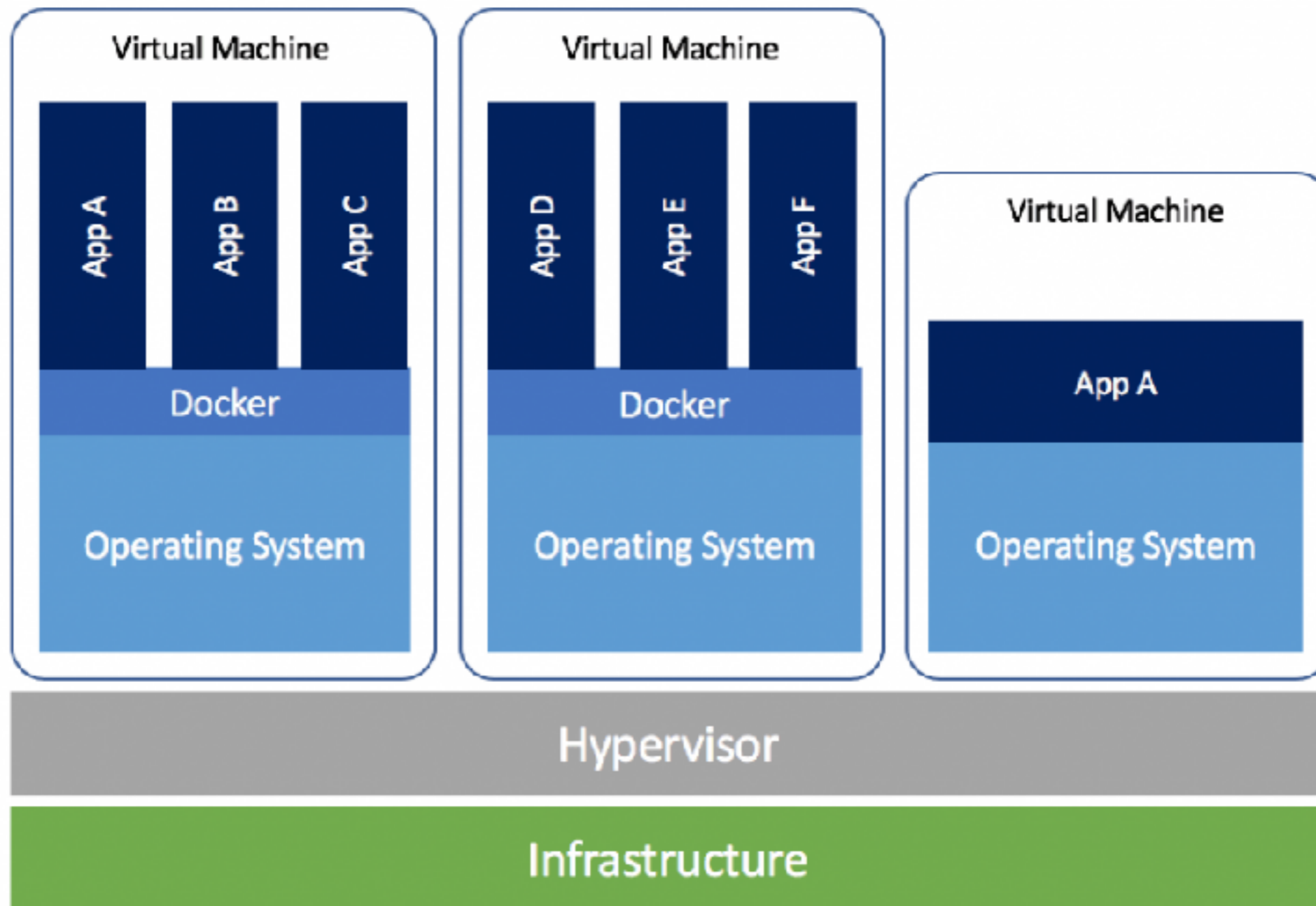
Docker

- Encapsulate an application inside a container
- Lightweight / Secure



source: www.docker.com

Docker inside VMs



source: www.docker.com

Container orchestration

Kubernetes

Deploy microservice-based applications

Effortless deploying and managing

Higher scalability

Constant availability and redundancy



kubernetes

Conclusions

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Thanks! Questions?



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