Advanced Software Engineering Course

Software as a Service (SaaS)

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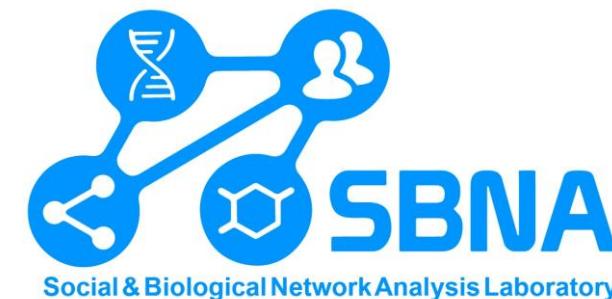
Initial assessment

1. What scale-out & scale-up means in software engineering?
2. What are the differences between mobile first and native apps?

Agenda

- SaaS
- Cloud Computing
- Front-end of SaaS

SaaS & Agile

Summary: *Software as a Service (SaaS)* is attractive to both customers and providers because the universal client (the Web browser) makes it easier for customers to use the service and the single version of the software at a centralized site makes it easier for the provider to deliver and improve the service. Given the ability and desire to frequently upgrade SaaS, the Agile software development process is popular for SaaS, and so there are many frameworks to support Agile and SaaS. This book uses Ruby on Rails.

SaaS Review

Self-Check 1.6.1. *Some of Google's most popular SaaS apps are Search, Maps, Gmail, Calendar, and Documents. For each of these apps, give one advantage of delivering the app as SaaS rather than SaaP.*

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Self-Check 1.6.2. *True or False: If you are using the Agile development process to develop SaaS apps, you could use Python and Django or languages based on the Microsoft's .NET framework and ASP.NET instead of Ruby and Rails.*

Deploying SaaS

John McCarthy (1927–2011) received the Turing Award in 1971 and was the inventor of Lisp and a pioneer of timesharing large computers. Clusters of commodity hardware and the spread of fast networking have helped make his vision of timeshared "utility computing" a reality.

If computers of the kind I have advocated become the computers of the future, then computing may someday be organized as a public utility just as the telephone system is a public utility ... The computer utility could become the basis of a new and important industry.

—John McCarthy, at MIT centennial celebration in 1961

Deploying SaaS

1. Communication
   – Infrastructure

2. Scalability
   – Fluctuations in demand based on time

3. Availability
   – 24×7

SaaS demands
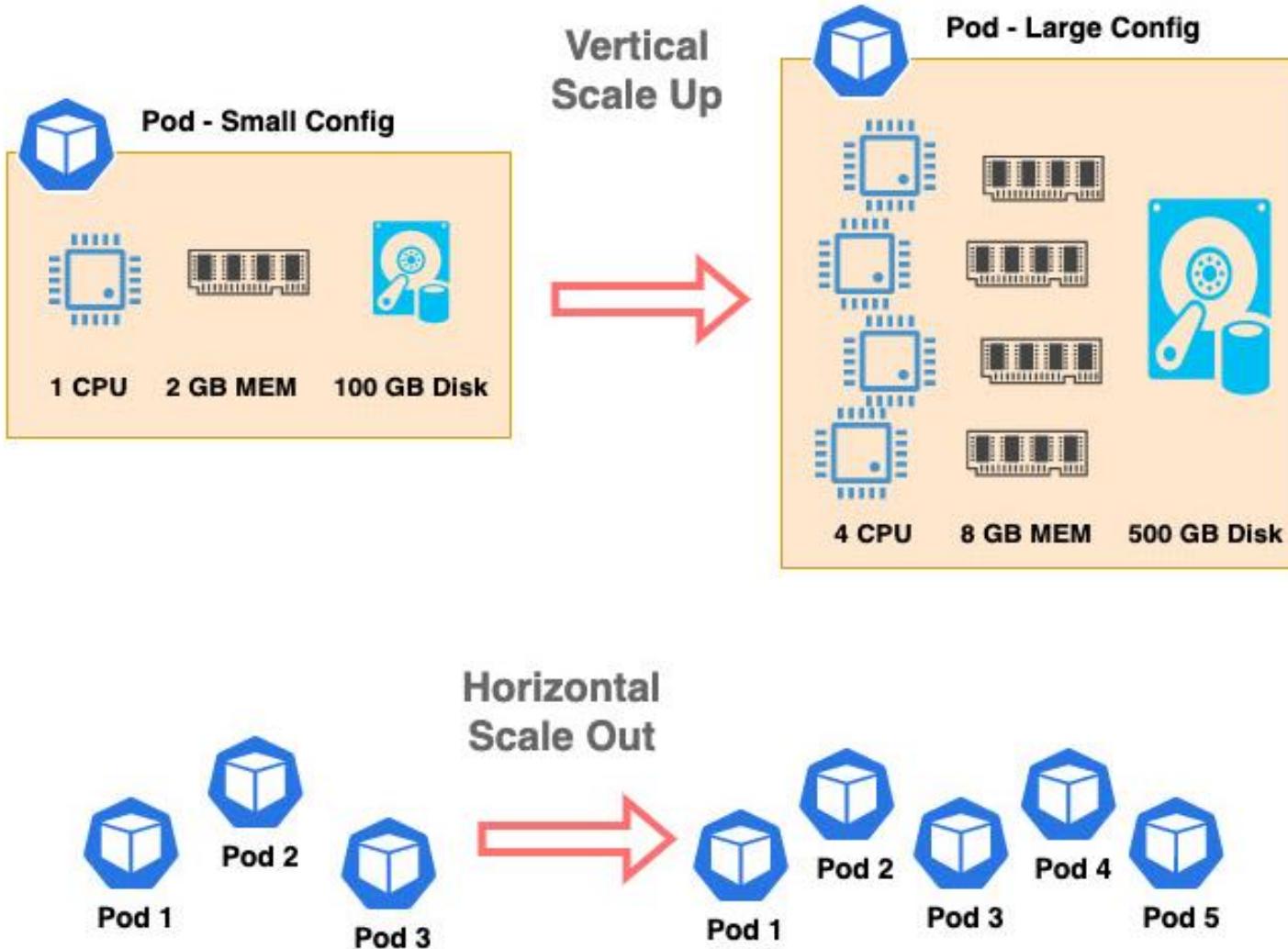
Toward cloud computing

› Clustering

› Virtual Machine

› More fault tolerancy
  – Geographical distribution
    › Low cost
    › Higher utilization
    › Pay-as-go basis

by the US public
system is 99.999
availability ("five r
about 5 minutes o
per year. Amazor
for four nines.

Deploying SaaS: Browsers & Mobile

› Browser
- – Universal client
- – HTML -> HTML5
  - › A type of XML doc

- – CSS
  - › Separating logical structure from appearance
  - › *div & span* emblements
  - › How CSS works

  - › Bootstrap framework

Implementing mobile clients

Advantages	Disadvantages
Mobile-first/responsive Web site (HTML, CSS, JavaScript)	
Use same languages, tools, and framework as desktop SaaS	
Portable across devices, so no need to develop/maintain multiple versions	
User never needs to install updates	
Can be made to work even when disconnected from the Internet[7]	
Icon placement on user's home screen (via Web bookmark)	
"Wrapped" app	
Same benefits as mobile website approach except for zero-install updates	
Can be listed in app stores	
Platform app for Android (Java) or iOS (Objective-C)	
Best performance	
Can be listed in app stores	
Guaranteed access to all platform hardware features	

Conclusion

› SaaS is the dominant form of software hosting!

› Agile process models matches with SaaS

› Mobile-first apps are more suitable for SaaS

› Frameworks are necessary for easy, efficient and fast development

Question?

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