University of South Australia

Big Data in the Cloud

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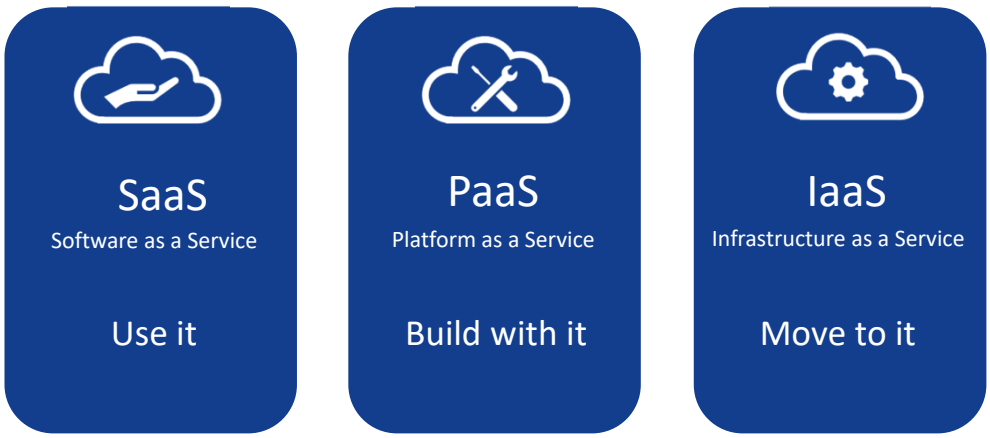
Cloud service models



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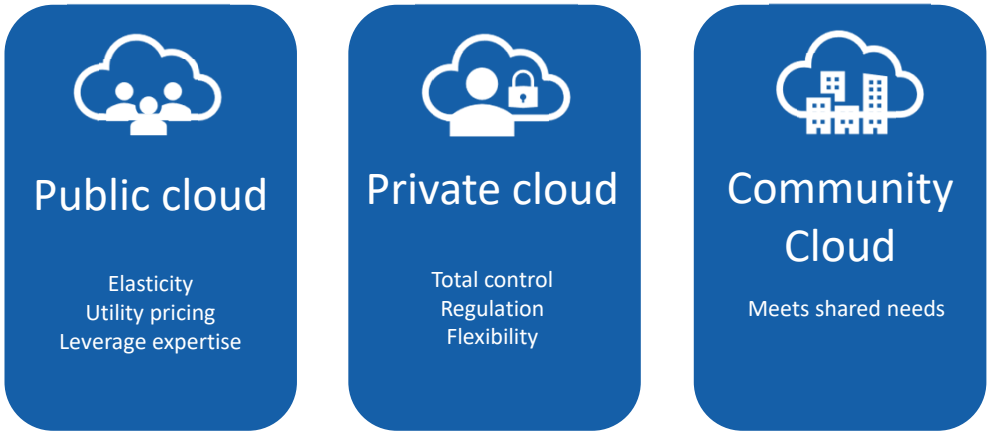
PaaS deployment types



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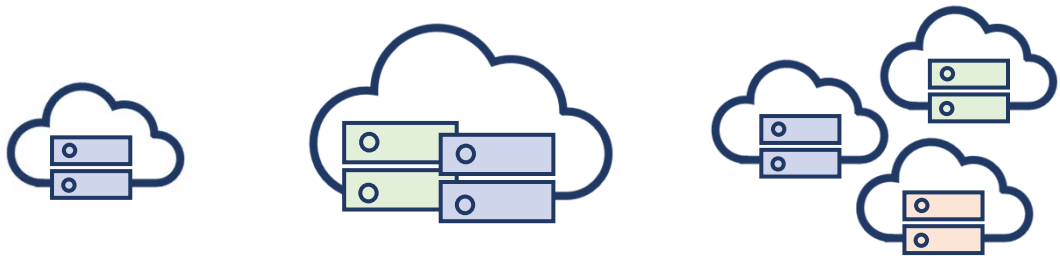
Deployment options



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Cloud in the enterprise

81% of enterprises have at least one application in the cloud, or a portion of their computing infrastructure already in the cloud

2020 IDG Cloud Computing study

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Why public cloud?

Many advantages compared to traditional on-premises data centres:

- Removes many of the barriers
- Eliminates many of the hardware and labour costs
- Enables complete flexibility, agility and scalability

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Some hard lessons for early adopters

Without a well defined 'Enterprise Data Strategy':

- New data and analytics silos can get created
- Harder to manage
- Costly to operate

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More than a ploy to reduce IT costs

60%	Increased business agility
51%	Cost reduction or flexibility
38%	Accelerated innovation
37%	Ability to access, analyse and act on data
35%	Better system reliability

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Ongoing challenges to realising these goals

- **40%** Integration complexity
- **37%** Diverse skill sets required
- **36%** Service integration and management
- **26%** Regulatory compliance
- **27%** Lack of standarisation

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Which platform do Data Scientists use?

48.2% amazon web services

35.3% Azure

29.4% Google Cloud

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Clear leaders

Gartner report, ID: G00441742
1 September 2020

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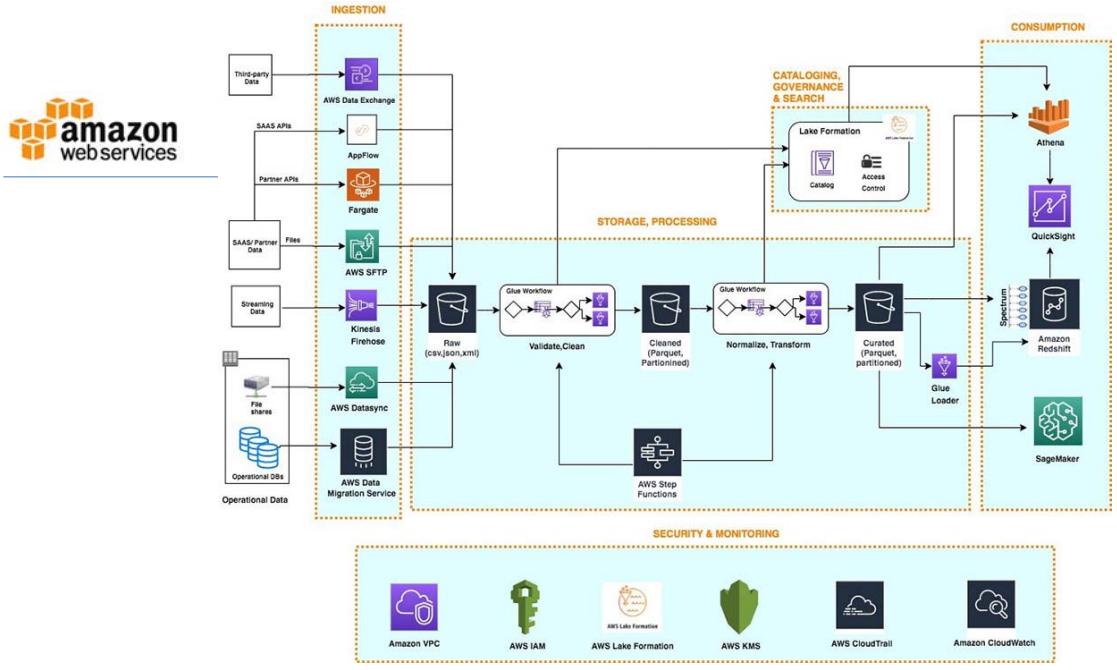

https://aws.amazon.com/blogs/big-data/aws-serverless-data-analytics-pipeline-reference-architecture/

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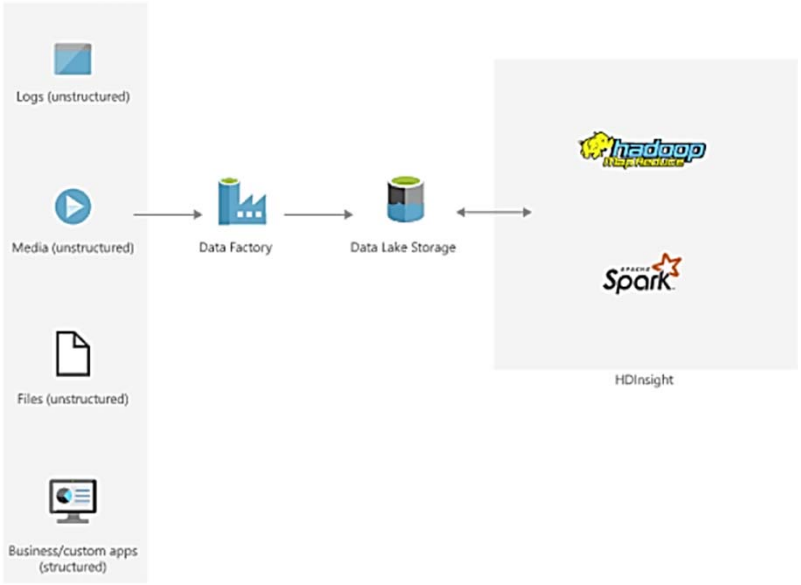
Microsoft Azure

HDInsight

Customizable service for open-source analytics



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Microsoft Azure

Connectors

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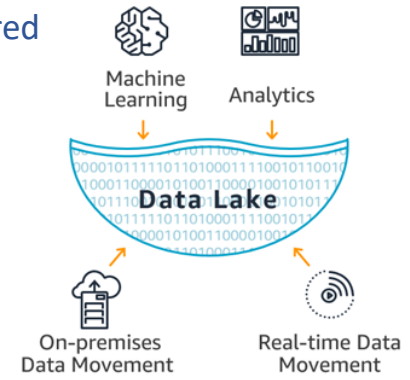
Data stored in a data lake

- Centralized repository for storing structured and unstructured data at any scale
- Data is stored as-is (schema-on-read)
- Different types of analytics:
  - Dashboards and visualizations
  - Big Data processing
  - Real-time analytics
  - Machine learning



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Serverless lambda architecture

- A large-scale, distributed data processing system:
  - Flexible and extensible
  - Fault-tolerant against hardware failures and human mistakes

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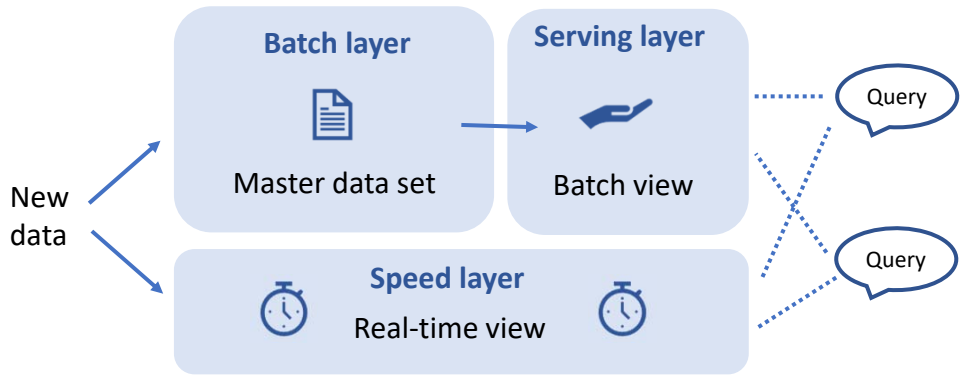
Lambda architecture has three layers



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Benefits of lambda architectures

No server management

Flexible scaling

Automated high availability

Business agility

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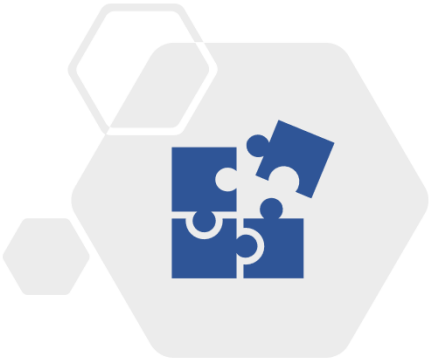
Challenges with lambda architectures

Complexity:

- Typically, two separate code bases for batch and streaming layers



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