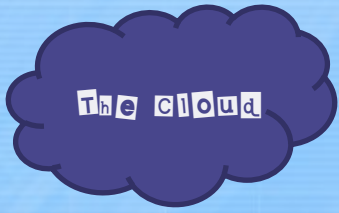


What is it?

What's in it for us?



What is “the cloud”?

What do you think the “cloud” is?



How the cloud works

- The cloud lets users contract for services at three levels:
 - **Infrastructure as a Service** : Grids of virtualized servers, storage & networks. Examples include *Amazon's Elastic Compute Cloud* and *Simple Storage Service*.
 - **Platform-as-a-service**: The abstraction of applications from traditional limits of hardware allowing developers to focus on application development and not worry about operating systems, infrastructure scaling, load balancing and so on. Examples include *Microsoft's Azure*.
 - **Software-as-a-service**: Applications with a Web-based interface accessed via Web Services and Web 2.0. Examples include *Google Apps* and social network applications such as *FaceBook*



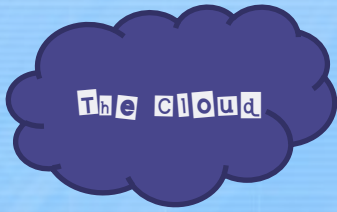
IaaS – Infrastructure as a Service

Infrastructure as a Service (IaaS), also known as cloud infrastructure services, deliver computer infrastructure – typically a platform virtualization environment – as a service. Rather than purchasing servers, software, data-center space or network equipment, clients instead buy those resources as a fully outsourced service. Suppliers typically bill such services on a utility computing basis; the amount of resources consumed (and therefore the cost) will typically reflect the level of activity.



SaaS – Software as a Service

Software as a service (SaaS) sometimes referred to as "on-demand software," is a software delivery model in which software and its associated data are hosted centrally (typically in the (Internet) cloud) and are typically accessed by users using a thin client, normally using a web browser over the Internet.



What we'll cover today

The three most popular cloud service companies....

- **Amazon.com** cloud services
- **Microsoft** cloud services
- **Google** cloud services



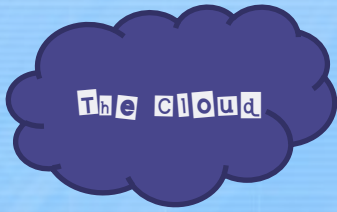
Amazon Elastic Compute Cloud (EC²)

- Amazon EC2 presents a true virtual computing environment, allowing you to use web service interfaces to launch instances with a variety of operating systems, load them with your custom application environment, manage your network's access permissions, and run your image using as many or few systems as you desire.
- To use Amazon EC2, you simply:
 - Select a pre-configured, templated image to get up and running immediately. Or create an Amazon Machine Image (AMI) containing your applications, libraries, data, and associated configuration settings.
 - Configure security and network access on your Amazon EC2 instance.
 - Choose which instance type(s) and operating system you want, then start, terminate, and monitor as many instances of your AMI as needed, using the web service APIs or the variety of management tools provided.
 - Determine whether you want to run in multiple locations, utilize static IP endpoints, or attach persistent block storage to your instances.
 - Pay only for the resources that you actually consume, like instance-hours or data transfer.



Amazon EC² Free Tier

- As part of AWS's Free Usage Tier, new AWS customers can get started with Amazon EC2 for free. Upon sign-up, new AWS customers receive the following EC2 services each month for one year:
 - 750 hours of EC2 running Linux/Unix Micro instance usage
 - 750 hours of Elastic Load Balancing plus 15 GB data processing
 - 10 GB of Amazon Elastic Block Storage (EBS) plus 1 million IOs, 1 GB snapshot storage, 10,000
 - snapshot Get Requests and 1,000 snapshot Put Requests
 - 15 GB of bandwidth out aggregated across all AWS services



Amazon EC² Configurations

Let's take a look at
Amazon EC² options and pricing



Amazon Simple Storage Service (Amazon S3)

- Intentionally built with a minimal feature set.
- Write, read, and delete objects containing from 1 byte to 5 terabytes of data each. The number of objects you can store is unlimited.
- Each object is stored in a bucket and retrieved via a unique, developer-assigned key.
- A bucket can be stored in one of several Regions. You can choose a Region to optimize for latency, minimize costs, or address regulatory requirements. Amazon S3 is currently available in the US Standard, EU (Ireland), US West (Northern California), Asia Pacific (Singapore), and Asia Pacific (Tokyo) Regions. The US Standard Region automatically routes requests to facilities in Northern Virginia or the Pacific Northwest using network maps.
- Objects stored in a Region never leave the Region unless you transfer them out. For example, objects stored in the EU (Ireland) Region never leave the EU.
- Authentication mechanisms are provided to ensure that data is kept secure from unauthorized access. Objects can be made private or public, and rights can be granted to specific users.
- Uses standards-based REST and SOAP interfaces designed to work with any Internet-development toolkit.
- Built to be flexible so that protocol or functional layers can easily be added. The default download protocol is HTTP. A BitTorrent™ protocol interface is provided to lower costs for high-scale distribution.



Amazon Relational Database Service (Amazon RDS)

- Amazon RDS is designed for developers or businesses who require the full features and capabilities of a relational database, or who wish to migrate existing applications and tools that utilize a relational database. It gives you access to the capabilities of a MySQL or Oracle database running on your own Amazon RDS database instance.
- To use Amazon RDS, you simply:
 - Use the AWS Management Console or Amazon RDS APIs to launch a Database Instance (**DB Instance**), selecting the DB Engine (MySQL or Oracle), License Type, DB Instance class and storage capacity that best meets your needs.
 - Connect to your DB Instance using your favorite database tool or programming language. Since you have direct access to a familiar MySQL or Oracle database, most tools designed for these engines should work unmodified with Amazon RDS.
 - Monitor the compute and storage resource utilization of your DB Instance, for no additional charge, via **Amazon CloudWatch** metrics available using the AWS Management Console “DB Instances” tab or Amazon CloudWatch APIs. If at any point you need additional capacity, you can scale the compute and storage resources associated with your DB Instance with a few clicks of the console or a simple API call.
 - Pay only for the resources you actually consume, based on your DB Instance hours consumed, database storage, backup storage, and data transfer.



Amazon Simple DB

- Amazon SimpleDB provides a simple web services interface to create and store multiple data sets, query your data easily, and return the results. Your data is automatically indexed, making it easy to quickly find the information that you need. There is no need to pre-define a schema or change a schema if new data is added later. And scale-out is as simple as creating new domains, rather than building out new servers.
- To use Amazon SimpleDB you:
 - **Build your data set**
 - Choose a Region for your Domain(s) to optimize for latency, minimize costs, or address regulatory requirements. Amazon SimpleDB is currently available in the US East (Northern Virginia), US West (Northern California), EU (Ireland), Asia Pacific (Singapore), and Asia Pacific (Tokyo) Regions.
 - Use **CreateDomain**, **DeleteDomain**, **ListDomains**, **DomainMetadata** to create and manage query domains
 - Use **Put**, **Batch Put**, & **Delete** to create and manage the data set within each query domain
 - **Retrieve your data**
 - Use **GetAttributes** to retrieve a specific item
 - Use **Select** to query your data set for items that meet specified criteria



Amazon Simple Queue Service (Amazon SQS)

Amazon Simple Queue Service (Amazon SQS) offers a reliable, highly scalable, hosted queue for storing messages as they travel between computers. By using Amazon SQS, developers can simply move data between distributed components of their applications that perform different tasks, without losing messages or requiring each component to be always available. Amazon SQS makes it easy to build an automated workflow, working in close conjunction with the Amazon Elastic Compute Cloud (Amazon EC2) and the other AWS infrastructure web services.

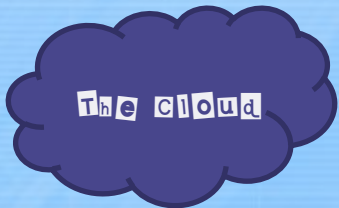
Amazon SQS works by exposing Amazon's web-scale messaging infrastructure as a web service. Any computer on the Internet can add or read messages without any installed software or special firewall configurations. Components of applications using Amazon SQS can run independently, and do not need to be on the same network, developed with the same technologies, or running at the same time.



Microsoft Cloud Services

- Office 365
- Azure
- Windows Intune
- Dynamics CRM Online

Microsoft's target market for cloud services is the small business. Companies for whom building out their own data center would be prohibitively expensive.



Windows Azure & SQL Azure



The location of the data centers are:

North America

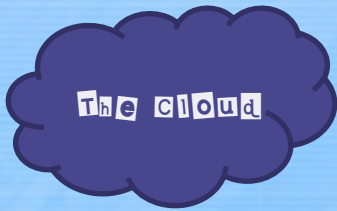
- North-central US - Chicago, IL
- South-central US - San Antonio, TX

Asia

- East Asia - Hong Kong, China
- South East Asia - Singapore

Europe

- West Europe - Amsterdam, Netherlands
- North Europe - Dublin, Ireland



Windows Azure Sizing

Compute Instance Size	CPU	Memory	Instance Storage	I/O Performance	Cost Per Hour
Extra Small	1.0 GHz	768 MB	20 GB	Low	\$0.05
Small	1.6 GHz	1.75 GB	225 GB	Moderate	\$0.12
Medium	2 x 1.6 GHz	3.5 GB	490 GB	High	\$0.24
Large	4 x 1.6 GHz	7 GB	1,000 GB	High	\$0.48
Extra Large	8 x 1.6 GHz	14 GB	2,040 GB	High	\$0.96



Features of SQL Azure Database

- **Relational Database Management Services (RDBMS)**
 - Create, access, and manipulate tables, views, indexes, roles, stored procedures, triggers, and functions
 - Execute complex queries and joins across multiple tables
 - Insert, Update, and Delete
 - Constraints
 - Transactions
 - Temp tables
 - Basic functions (aggregates, math, string, date/time)
 - A subset of the existing SQL Server built-in stored procedures and system views
 - Support for tracking billable metrics in real time and for historical analysis
- **Programmability**
 - Managed ADO.NET data access
 - Native ODBC
 - Support for PHP
 - JDBC Support



Windows Azure Storage

- **Binary Large Object (BLOB) Service**, the simplest way to store text or binary data with Windows Azure.
- **Table Service** is better for large amounts of data that need additional structure, which works exceptionally well with applications that need to work with data in a very detailed manner via queries.
- **Queue Service** for reliable, persistent messaging between Web and Worker role instances.
- **Windows Azure Drive** allows Windows Azure applications to mount a Page Blob, which is a single volume NTFS VHD. This allows applications to upload/download VHDs via blob.



Windows Azure Storage

- All your content stored on Windows Azure is **replicated three times**. No matter which storage service you use, your data will be replicated on different fault domains thereby making it much more fault tolerant.
- Windows Azure Content Delivery Network (CDN) offers 1-click integration with their Storage services. The CDN dramatically boosts performance by automatically storing content near where it is most frequently accessed.
- **REST and managed APIs**
 - You can use Windows Azure with applications running on-premises or on a different cloud platform. **Download the SDK** to get both the REST API and a managed API for working with the storage services.



Windows Azure FREE Tier

- **Compute:**750 hours of an Extra Small Compute Instance
 - 25 hours of a Small Compute Instance
- **Storage:**20GB
 - 50k Storage transactions
- **Data Transfers (worldwide):**20GB out / Unlimited inbound data transfer
- **Relational Database:**1G Web Edition SQL Azure database
- **AppFabric Access Control transactions:**100k
- **AppFabric Service Bus connections:**2
- **AppFabric Caching:**128MB cache

Free for 90 days with subscription



Office365 Features

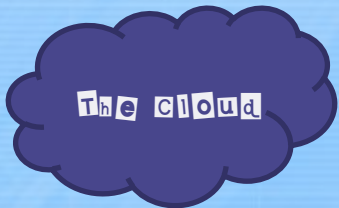
- **Microsoft Exchange Online** is an email, calendar and contacts solution delivered as a cloud service, hosted by Microsoft. The service is based on Microsoft Exchange server and offers 25 GB of email storage per licensed product. In addition, Exchange online offers users personalized calendars and contacts with sharing capability and 99.9% reliability in online secure back-up. Exchange ActiveSync provides mobile connectivity to Exchange services and mobile email applications.
- **Microsoft SharePoint Online** is a collaboration, sharing, and document editing service using internal and external sites. It can also be used to create public-facing Web sites.
- **Microsoft Lync Online** provides communications features including presence information, instant messaging, PC-to-PC audio/video calling and online meetings that can include PC audio, video and web conferencing with application sharing, whiteboards, and other collaboration tools. Lync Online is accessed through the Lync client. Lync Online also supports presence information and click-to-communicate features inside Microsoft Office applications.
- **Microsoft Office Professional Plus in Office 365** provides the same client software as the Office Professional Plus product available through Microsoft Volume Licensing.
- **Office Professional Plus in Office 365** has month-to-month, per-user licensing. It can be installed by users from Microsoft Online Services. It is activated using the same Microsoft Online Services ID that users employ to sign in to Office 365 and the license is renewed on a 30-day cycle.
- **Office Web Apps** are browser-based versions of Microsoft Excel, Word, and PowerPoint that enable viewing and lightweight editing of Office documents in Web browsers while preserving the formatting of the original documents.



Office365 Tiers

Office 365 is available in a number of different plans^[9] aimed at different needs and market segments, providing different sets of features at different price points. These include:

- **Office 365 for enterprise:** For businesses with internal or partner-supported IT staff and resources. Add on plans are available for information workers with dedicated PCs and kiosk workers (such as baristas or physicians) who share a PC and need only Web-based access.
- **Office 365 for small business:** Designed for businesses without dedicated IT staff or resources.
- **Office 365 for education:** Designed for schools and a replacement for the Office [Live@edu](#) service.
- Microsoft has said that Office 365 will receive updates on a 90-day cycle.



Office365 Sample Tiering

For Information Workers – Plan E Family

Components

Suites





Other MS Cloud Services

- **Microsoft Dynamics** is a line of ERP (enterprise resource planning) and CRM (customer relationship management) applications developed by the Microsoft Business Solutions group within Microsoft.
- **Microsoft InTune** is an end-to-end Microsoft solution that brings together Windows cloud services for PC management and endpoint protection with a Windows 7 Enterprise upgrade subscription. With the easy-to-use web-based console, you get immediate insight into your PC environment and can view update and malware status, alerts, security policies, and more. You just need an Internet connection and the Windows Intune client installed on each PC you wish to manage.



Microsoft's Marketing Strategy

Microsoft uses partner companies to act as resellers to their customers. Microsoft makes 95 percent of its revenue through partner companies that resell, build on and provide services based on Microsoft products.

Microsoft says it has 640,000 partners, 41,000 of which are playing purely in the cloud. Jon Roskill, corporate vice president for partners at Microsoft, describes the new breed of cloud service providers as small, with about 10 to 40 employees.

"Most of these partners are thinking about the transition for most companies is going to be three to five years, moving what they've got to the cloud," said Jon. "These new guys are coming in and saying, 'You know what? I'm going to be specialized and this is all I'm going to do and I think I'm going to have a competitive advantage.' "



Google Apps

Feature	Google Apps FREE	Google Apps Business
User accounts allowed per organization	10	Unlimited
Messaging: Gmail & Google Calendar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Google Docs & Google Sites	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Google Reader, Blogger, Picasa Web Albums, AdWords and more	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Google Video for Business and Google Groups for Business		<input checked="" type="checkbox"/>
25GB email storage per user, BlackBerry and Microsoft Outlook interoperability		<input checked="" type="checkbox"/>
SSO, forced SSL, custom password strength requirements and more		<input checked="" type="checkbox"/>
99.9% uptime guarantee SLA and 24/7 support		<input checked="" type="checkbox"/>



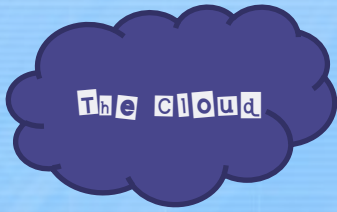
Google Cloud Connect for Microsoft Office

- With this plugin, you can now share, backup and simultaneously edit Microsoft Word, PowerPoint, and Excel documents with co-workers without the need for sending attachments back and forth.
- Features:
 - Simultaneous editing for Word, PowerPoint and Excel files when using Microsoft Office.
 - Google Docs sharing URLs for each Microsoft Office file.
 - Revision history for Microsoft Office files, stored in Google Docs.
 - Offline editing with smart synchronization of offline changes.
 - No Microsoft Office upgrade or SharePoint deployment required.
 - No MAC version



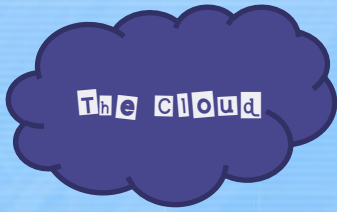
Google App Engine Tier

- Google App Engine enables developers to build their web apps on the same infrastructure that powers Google's own applications.
- Free quota to get started: 500MB storage and enough CPU and bandwidth for about 5 million pageviews per month
- \$0.10 – \$0.12 per CPU core-hour
- \$0.15 – \$0.18 per GB-month of storage
- \$0.11 – \$0.13 per GB outgoing bandwidth
- \$0.09 – \$0.11 per GB incoming bandwidth



Google Cloud Services

- Google has partner companies reselling Google Apps through Google's online Apps Marketplace.
- Intro to [App Marketplace](#)
- App Marketplace – [Document Management](#)



Impediments to the cloud

- Security
- Availability
- Lack of standards
- Vendor lock-in
- Guaranteed performance contracts
- SLA compliance
- Spotty support



Cloud controversy

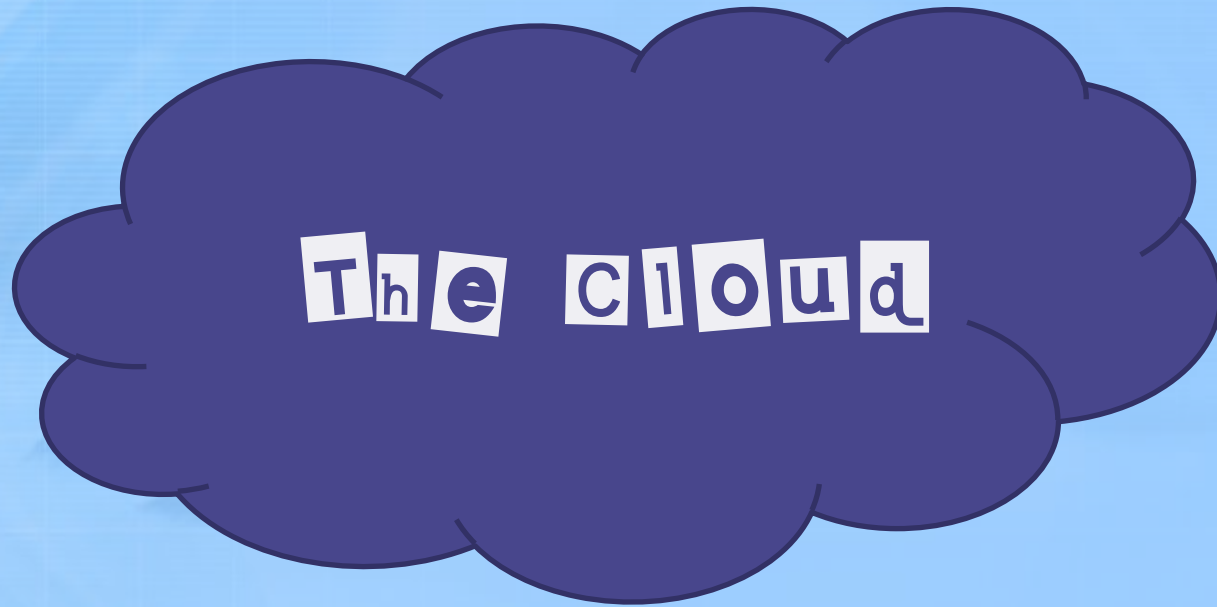
From the Dropbox.com terms and conditions....

We sometimes need your permission to do what you ask us to do with your stuff (for example, hosting, making public, or sharing your files). **By submitting your stuff to the Services, you grant us (and those we work with to provide the Services) worldwide, non-exclusive, royalty-free, sublicenseable rights to use, copy, distribute, prepare derivative works (such as translations or format conversions) of, perform, or publicly display that stuff to the extent reasonably necessary for the Service.** This license is solely to enable us to technically administer, display, and operate the Services. You must ensure you have the rights you need to grant us that permission.



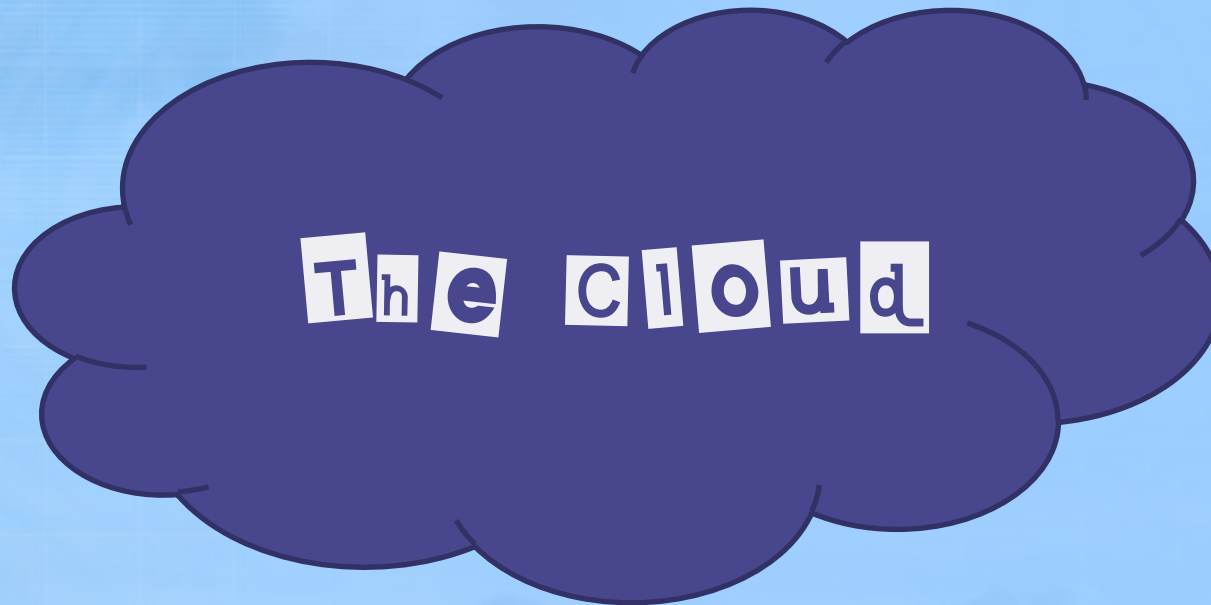
Getting into the cloud

- Choose your cloud offering based on your business needs
 - SaaS
 - PaaS
 - IaaS
- Make sure that you know and understand
 - Pricing
 - Policies
 - Support



Questions?

Thank you for attending today's presentation on.....



- Dennis Courtney, CPCUG President
- dennisc@cpcug.net