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## DataArt: Cloud Computing Expertise

Cloud computing is a relatively novel software development concept in which services and storage are provided over the Internet (or "cloud"). This enables businesses to avoid significant capital expenditure on infrastructure and software development services.

DataArt was one of the first providers to explore the potential of the emerging Cloud Computing technology and has completed several customers' projects across a range of industries. DataArt has substantial experience and capabilities in implementing projects using Amazon EC2, Windows Azure and Salesforce.com platforms.

## Amazon Elastic Compute Cloud (Amazon EC2)

Amazon Elastic Compute Cloud commonly referred to as Amazon EC2 is the core of the Amazon Web Service (AWS), the most advanced and popular cloud computing platform. The platform allows users to rent virtual machines hosted in Amazon data centers and scale the number of instances on demand. Another part of the platform is a variety of web services supporting hosted applications (storage, database, cache, management and many others), which are also available to external applications.

DataArt gained experience in developing Java and LAMP applications designed to run on Amazon EC2 cloud platform through a series of successfully delivered projects.

Our technical capabilities include:

- **Storage**
  - Simple Storage Service (S3)
  - Elastic Block Store (EBS)
  - AWS Import/Export
- **Database**
  - Relational Database Service (RDS)
  - ElastiCache
- **Messaging**
  - Simple Queue Service (SQS)
  - Simple Notification Service (SNS)
  - Simple Email Service (SES)
- **Networking**
  - CloudFront
- **Management, Deployment, Monitoring**
  - Virtual Image Library
  - CloudWatch
  - Auto Scaling
  - Using RightScale to build server templates



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## Windows Azure

Windows Azure is a Microsoft cloud computing platform which enables building and hosting applications in a cloud environment. DataArt considers Windows Azure a prominent emerging technology and has invested in building the expertise after the first publicly available release in November 2009. Since then DataArt has accumulated significant experience in designing and implementing highly scalable cloud-based applications through a series of successfully delivered enterprise-level projects.

Our technical capabilities include:

- **Application Roles**
  - Web role
  - Worker role
  - VM role
- **Storage API**
  - Blob storage
  - Table storage
  - Queue storage
  - SQL Azure
- **Management API**
  - Deploying applications
  - Monitoring application state
  - Controlling number of instances
- **Cache API**
  - Web session storage
  - Caching frequently accessed data
- **Enterprise Features**
  - Multi-tenancy
  - Automated deployment
  - Worker role instances synchronization
  - Authentication by certificate (WCF services)



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## Salesforce.com Platform

DataArt is a Salesforce.com Cloud Alliance partner and has an in-house team of certified Force.com developers.

**Force.com** is a “**Platform as a Service**” (PaaS) for creating and deploying applications for the social enterprise. Because there are no servers or software to buy or manage, users can focus solely on building apps that include built-in social and mobile functionality, business processes, reporting, and search. The applications run on a secure, proven service that scales, tunes, and backs up data automatically.

Development on the Force.com platform is fast because it requires minimal coding. The platform offers a number of open APIs, easily customizable via WYSIWYG interface and Visualforce UI framework. Business logic is implemented with Force.com’s visual tools and library of components, while complex logic uses Apex. In addition Force.com provides advanced report generating capabilities, such as various types of reports, dashboards and analytical reports on historical data.

DataArt offers a full range of development services on Salesforce.com platform, including:

- Integration of Salesforce.com products with existing business applications;
- Custom configuration of Salesforce.com CRM to meet client’s business needs;
- Rapid development on Force.com ;
- Full-scale custom development on Force.com using Apex;
- Development of clients’ custom user interfaces using Visualforce;
- Public websites and web services powered by Force.com;
- Deployment of Ruby and Java applications to Heroku.com;
- Custom software development using the multi-tenant cloud database service Database.com.

The list below represents some typical use cases of building applications on Force.com:

- **Business Process Applications**

A number of companies use Force.com for faster and more flexible automation of core business processes at a lower cost. Some firms have eliminated on-premises servers and data centers and run their businesses entirely on Force.com.

- **Lotus Notes Applications**



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Customers with legacy Lotus Notes deployments often struggle to manage the proliferation of their disparate applications and databases, but lack the time and resources to migrate them to a modern platform.

- **Data-Driven Web Sites**

Force.com is a great fit for websites that need to be integrated with a database to capture or publish business data such as products, events, or leads. . Customers can build web applications in record time, be it ecommerce, a medical directory or student registration site.



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## Sample Cloud Computing Projects

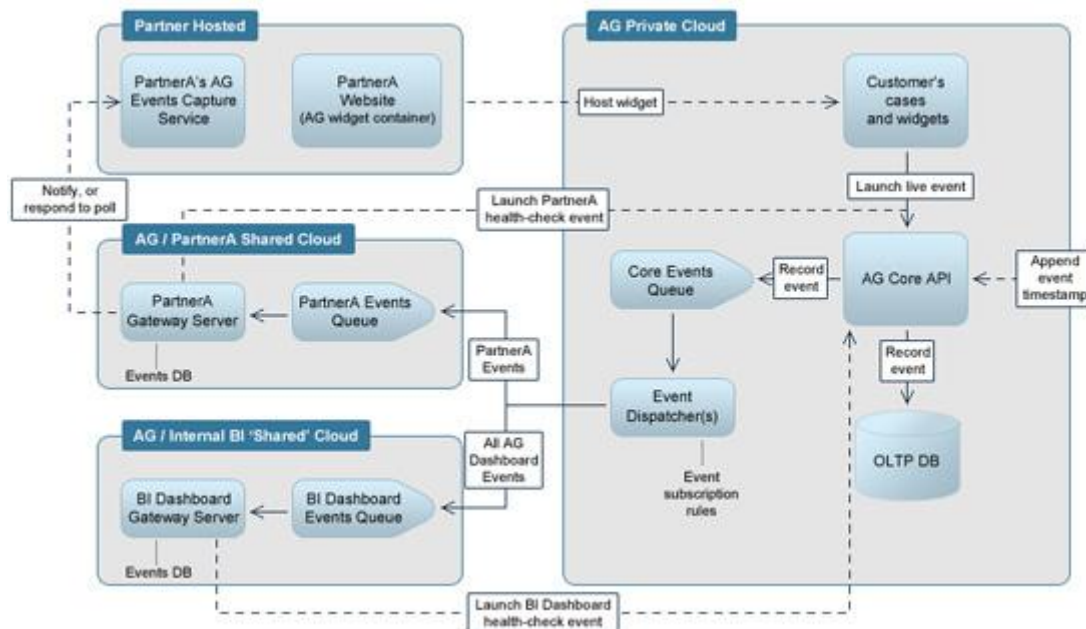
### Web-Based System for Targeted Advertising

DataArt helped a client to enhance a processing power of an advertising portal with the help of Amazon EC2 cloud-computing technology.

A U.S.-based customer, whose mission is to enable advertisers to deliver branded content to their target audience with more efficiency, engaged DataArt to redesign and expand the existing advertising portal. To optimize the related expenditures, the client requested that DataArt implements the project using Cloud Computing.

The portal is instrumental for the customer as it provides a wide range of unique and highly innovative advertising services, allowing advertisers to present videos and other branded content to a carefully selected audience, thus establishing a desired connection between brands and consumers.

The portal users watch entertaining branded content and video ads they love and are rewarded for their time and attention with special offers of rewards and discounts. The rewards system is implemented using special numerical codes displayed during the content's presentation. The user can then enter the displayed code into the system to become entitled to a reward, or to gain discounted access to a product from the advertised brand.





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### Enterprise-level document migration and consolidation system

DataArt helped a customer to introduce an enterprise-level document migration and consolidation system based on the Windows Azure platform to reduce migration costs for the users.

DataArt's customer is a provider of solutions for document migration and consolidation between enterprise-level storage systems. Document storage migration and consolidation systems of this type operate using data amounts ranging from gigabytes to terabytes, and transferring the data and its processing can be very time-consuming. Normally, it is not recommended or even possible to stop the system while the migration is in progress.

Since the intermediate data storage during the migration process may require significant infrastructure only while the migration is in progress, DataArt proposed a Windows Azure solution to reduce migration costs. The intermediate storage computing infrastructure is rented using Windows Azure BLOB Storage, and this infrastructure is paid for only when it is actually used.

The additional software infrastructure required for the migration and consolidation process consists of:

- A set of connectors that transfer data from a source system(s) to a cloud
- Those connectors that transfer the converted data from the cloud to a destination repository
- A data conversion application in the cloud storage

In addition to being directly responsible for the circulation of documents between the systems, the connectors also synchronize the modified data.

### Application for previewing and quick access to Microsoft SharePoint-based documents

DataArt helped minimize a customer's computing resources with the Windows Azure-based external service.

DataArt's customer is a provider of Microsoft SharePoint 2010-based solutions for storage and retrieval of enterprise-level documents. One of the requirements for the system's functionality was to allow for quick previewing of relevant pages in a located document without downloading the whole document from a server. This capability is especially important for accessing search results when the user needs to locate a document within a retrieved batch of documents, as it saves significant amounts of time.

The Windows Azure-based external service and data storage can be used as one of the possible configurations of the system to minimize the customer's own computing resources. The purpose of the service is mass document processing, their conversion into a platform-independent preview format, and access to the processed documents' previews.



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The following Windows Azure features have been used during the project's development:

- BLOB storage
- Table storage
- Queues
- Workers
- Web roles
- Multi tenancy for data storage and processing
- On-demand scalability for both the processing units and the storage

**A Cloud application for organizing corporate events, conducting surveys and managing routine HR- tasks:**

DataArt developed an easy-to-use, scalable application on Force.com to help minimize IT expenditures for the client.

DataArt's customer was searching for a solution to help HR-managers with their every-day tasks, such as notifying personnel about new vacancies, conducting surveys and gathering feedback from the staff. The application had to be easy to modify and have minimal administering. The following **Force.com platform components** were used on the project:

- Visualforce to prepare a set of compelling templates for different kinds of surveys
- Apex for implementing non-trivial business logic and data processing
- Different data sharing mechanisms

**Functionality:**

- Trigger e-mail notifications for newly opened vacancies
- Reminders
- Generate reports and dashboards