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Dr. R.K. Tandon

Cloud Computing With Amazon Web Services

Ritika Kapoor

The expression “*Being in the Clouds*” brings us comfort and a sense of superiority. Cloud computing or **Cloud hosting** is moving to a destination with no return. It is an essential tool for the existence of the internet world. Cloud Computing has been one of the hottest buzzwords in the corporate over a decade. The cloud helps us to access all information over the internet without having any detailed knowledge of the infrastructure used to enable it. The cloud is still evolving and the latest innovations in cloud computing are making business applications even more mobile and collaborative. Cloud computing provides a simple way to access servers, storage, databases and a set of application services over the Internet. Cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services. Through these web services we can and use what is needed by a web application. Amazon Web Services (AWS) is a comprehensive that evolves around cloud computing platform provided by Amazon.com. Cloud Computing can transform the Organization in many ways:

- **Flexibility** – Data can be scaled up and down to meet organization’s requirements. In today’s economy, this flexibility is key. We can adjust IT expenditures to meet organization’s immediate needs.
- **Security** – Data in the cloud is much more secure than your small unsecured server room.

- **Capacity** – In the past large no. of people managed software. With cloud computing, we can focus on solution to the problem.
- **Cost** – Cloud technology reduces maintenance costs. No more servers, software, and update fees are required. Many of the hidden costs associated with software implementation, customization, hardware, maintenance, and training are paid through a transparent subscription fee.
- **It’s open** – Since all the information is centralized and can be accessed from anywhere in the world, from any computer or mobile device any time.

Amazon Web Services (AWS) is a secure cloud services platform, offering compute power, database storage, content delivery and other functionality to help businesses grow. The technology allows users to have at disposal a virtual cluster of computers, available all the time, through the internet. AWS’ version of virtual computers have all the attributes of a real computer including hardware such as CPU’s, local/RAM memory, hard-disk/SSD storage; a choice of operating systems; networking; and pre-loaded application software such as web servers, databases, CRM, etc. Each AWS system also virtualizes its console I/O (keyboard, monitor, and mouse), allowing AWS

subscribers to connect to their AWS system using a modern browser. The browser acts as a gateway into the virtual computer, letting subscribers log-in, configure and use their virtual systems just like they would access a real physical computer. To minimize the impact of outages and ensure robustness of the system, AWS is geographically diversified into regions. Amazon Web Services (AWS) is a bundled remote computing service that provides cloud computing infrastructure over the Internet with storage, bandwidth and customized support for application programming interfaces (API).

AWS services:

Various Services Provided by AWS are:

- **Cloud Drive:** This allows users to upload and access music, videos, documents, and photos from Web-connected devices. The service also enables users to stream music to their devices.
- **Elastic Compute Cloud:** This allows users to run application programs and can serve as an unlimited set of virtual machines (VMs).
- **Elastic Cache:** It is a fully managed caching service that is protocol compatible with Memcached. It is an open source, high-performance, distributed memory object caching system for speeding up dynamic Web applications by decreasing the load of database.
- **RedShift:** It is a data warehouse service designed for analytical tasks connecting to

standard SQL-based clients and business analysis tools.

- **Simple Storage Service (S3):** It is a scalable, high-speed, low-cost service designed for online backup and archiving of data and application programs.

Solutions by Application:

- **Web Hosting:**
Amazon Web Services offers cloud web hosting solutions that provide businesses, non-profits, and governmental organizations with a flexible, highly scalable, and low-cost way to deliver their websites and web applications.
- **Backup and Recovery**
Amazon Web Services (AWS) storage solutions are designed to deliver secured, scalable, and durable storage for businesses looking for efficiency. AWS storage solutions deliver highly scalable, durable, and reliable cloud storage for backup, and are designed to support mission-critical databases, including Oracle and SAP.
- **Data Archive**

Amazon Web Services offers a complete set of cloud storage services for archiving. You can choose Amazon Glacier for affordable, non-time sensitive cloud storage, or Amazon Simple Storage Service (S3) for faster storage, depending on your needs. With AWS Storage Gateway and our solution provider ecosystem, you can build a comprehensive, storage solution.
- **Big Data on AWS**

Amazon Web Services provides a broad range of services to build big data analytics applications quickly. AWS gives fast access to flexible and low cost IT resources, so that any big data application including data warehousing, clickstream analytics, fraud detection, event-driven ETL, serverless computing, and internet-of-things processing can rapidly be scaled.

- **Cloud Databases**

AWS offers a wide range of database services to fit your application requirements. These database services are fully managed and can be launched in minutes with just a few clicks. AWS database services include Amazon Relational Database Service (Amazon RDS), with support for six commonly used database engines.

Green Computing : Boon for IT Industry

Charanpreet Kaur

There is a lot of hue and cry about economic recession in various countries. Recession simply means slowdown in the economy of a country. The debt bubble which built up over the nineties caused this recession in America and as the cliché goes whenever the US sneezes, the world catches a cold. Weakening of the American economy was a bad news, not just for India, but for the rest of the world too. Now it's very interesting to observe that mainstream media always talk about recession in the context of developed countries like America, Australia and Canada. They hardly talk about the impact of the recession on the developing countries like India because India braved the recession better than many other countries. India had some higher immunity to resist the global meltdown which started in USA in 2007, Thanks to the IT sector and its technologies that helped India surviving the global problem.

One of such technology is Green computing, the study and practice of efficient and eco-friendly computing resources. "Green computing" seems to be the up and coming thing. IT specialists say environmentally-driven computing initiatives do provide genuine benefits, both in terms of cost cutting and in reducing CO2 emissions. Software maintenance costs and IT infrastructure along with cost of IT systems works up to 75% and 60% of the total ownership costs. Fortunately, green computing has been able to promote itself as a way of reducing business costs and, by persuading purchasers to consider their investment as a means of saving energy costs over time, the concept is becoming increasingly associated with financial savings and economic efficiency by following four complementary paths.

- Green use-reducing the energy consumption of computers and other information system as well.
- Green Disposal-Reusing old computes and probably recycling unwanted computers to minimize E-waste.
- Green Design-designing energy efficient and environmentally Sound components.
- Green manufacturing-manufacturing electronic components, computers and

other associated subsystems with minimal impact on environment

It is not an exaggeration to say that the recession boosted green computing because it allows to cut company expenses.

Keyword: E-waste, Eco-Friendly, Green Computing.

Digital Image Watermarking: Introduction and Applications

Roopal Kalra, Priyanka Attri

1. Introduction

The development and growth of the internet has created new challenges to protect digital data from piracy. Digital watermarking technique provides a superior and robust solution for ownership problem. It becomes much important to maintain the copyright of the digital data which is a form of intellectual properties. Digital watermarking technique embeds copyright information or watermark in to original host image. The embedded information should be imperceptible. These watermarks are difficult to remove by altering or damaging the original host image. The digital audio watermarking is a process of embedding watermark in to audio signal to show authenticity and ownership proof. The watermark is permanently embedded in to the digital image and embeddings should not

degrade the quality of digital image. Various categories of information hiding are described in the following diagram.

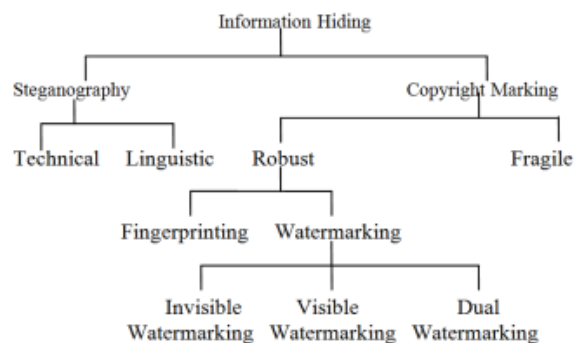


Figure 1: Various Categories of Information Hiding

2. REQUIREMENTS OF IMAGE WATERMARKING

To devise an optimal image watermarking system, some design features need to be taken into consideration. Some key features are as follows:

A. Perceptual Transparency The main requirement of watermarking is perceptual transparency. The watermark which has embedded as the owner's information should not degrade the quality of the host signal. The watermark cannot be seen by human eye. It can be detected by special processing or dedicated algorithms.

B. Robustness The embedded watermark should not be removed from the host image even after exploring the watermarked information to several types of attack. Robustness is one of the major design issues for all watermarking applications. The watermark should be robust against various signal processing attacks includes D/A & A/D conversion, linear & non-linear filtering, compression and geometric transformation of host image.

C. Security The security of the watermarking system is dependent on the use of private or secret key. The watermarking must be strongly resistant against unauthorized detection. It is also desirable that watermark should resist against an unwanted agent to pirate the information.

D. Data Rate The number of watermark that is embedded within a host signal is termed as data payload. For audio, data payload refers to the number of watermark bits that may be reliably embedded within a host signal per unit

time, usually measured using bits per second (bps).

E. Verification and reliability Watermark should be able to provide complete & reliable information for proving ownership of copyright products. The watermarking technique should be giving the reliability of recovery of watermark. The robustness of the watermarking technique is dependent upon how securely and intelligently the watermark is embedded into the host signal without any noticeable change. Robustness of the algorithm to attacks and quality of the watermarked image are related properties that are indispensable. All applications presupposing protection and use in verification of the watermarking systems require this type of marking to survive any kind of alterations or intentional removal introduced by standard or malicious processing and attacks.

3. APPLICATIONS OF WATERMARKING

There are various applications of digital image watermarking. In this section, some application areas for digital watermarking are discussed:

A. Copy Control Watermark may contain information required by the content owner that decided the policy of copying the digital content. The information contained by the watermark may specify „content may not be copied“ or „only one copy“ etc. subsequently, the devices used for copying the content may be required by law to contain watermark detector, which follows directives given by the content owner.

B. Digital Signatures Watermarks may be used to identify the owner of the content. By having this information, the user may contact the owner for acquiring the legal rights to copy or using the content.

C. Authentication Watermark is used to provide authentication. Providing an incorrect watermarked image can either destroy the watermark or leads to incorrect watermark after extraction.

D. Broadcast Monitoring Automatic identification of owners of data may be required to be done and used in systems responsible for monitoring the broadcasts. This may help in deciding the royalty payments. It also helps in ensuring that commercials of advertiser are played at right time and for a right duration.

E. Fingerprinting Watermarks may be used to identify the content buyers. This

may help in tracing illegal copies. When a digital media is distributed, it can contain the hidden and imperceptible information about the user, which can be detected by a watermark detector. Thus, a licensed copy belonging to a specific user can be ascertained. This also resolves the possible conflicts about to the ownership of a digital or intellectual property. This thing is referred to as “Fingerprinting”.

F. Secret communication The technique of watermarking is also used in transmitting secretly information from source to destination in a hidden way. Several public domain and shareware programs are available which use watermarking for secret communication. Looking at the important applications of watermarking, it becomes very important to enhance the watermarking techniques for providing better “robustness”, “fidelity”, “payload” while preserving the “authenticity” aspect of watermarking.

Doxing : A new trend in online harassment

Neetu Narang Mahajan

Doxing is the intentional public release onto the Internet of personal information about an individual by a third party, often with the intent to humiliate, threaten, intimidate, or punish the identified individual. Doxing – named for “documents” or “docs” – is the act of release of someone’s personal and/or identifiable

information without their consent. Doxing serves two purposes: it intimidates the people targeted by invading and disrupting their expectations of privacy; and it provides a passage for the endurance of that person’s harassment by distributing information as a resource for future harassers to use. The widespread problem

has affected many people in many industries. In 2015, CIA director John Brennan had his AOL account allegedly hacked, and the hackers “released a list of alleged intelligence community employees, along with their alleged personal emails and social security numbers,” according to website Vice.com. It was eventually determined that no sensitive information was released, but even the threat of released private details should be taken seriously.

We can protect ourselves from these attacks by the following easy :

First: Don't choose a guessable password. Our advice is to generate passwords you have to remember by using either the XKCD scheme or the Schneier scheme and to use

large random passwords stored in a password manager for everything else.

Second, turn on two-factor authentication where you can, like Google's 2-Step Verification. This adds another step besides just entering a password, such as having to type in a one-time code that's sent to your mobile phone.

And **third,** don't reuse the same password on any sites you actually care about.

Penalties for doxing can range from 18 months in prison and a \$10,000 fine for a fourth-degree charge to ten years in prison and a \$150,000 fine for a second-degree charge.

Localization Testing in Software Products

Akhil Kumar

Introduction

Testing Execution Arrangement

For a typical localization testing, we set up Localization Testing is a software testing technique, where the product is checked to assure that it behaves according to the **local culture or settings**. In other words, it is a process of customizing software application as per the targeted language and country. The major area affected by localization testing includes **content and User Interface (UI)**.

It is a process of testing a globalized application for which User Interface, default language, currency, date, time format and

documentation are designed as per the targeted country or region. It ensures that the application is capable enough for using in that particular country.

Example of Localization Testing

1. If the project is designed for Tamil Nadu State in India, The designed project should be in Tamil language, Tamil virtual keyboard should be present, etc.

2. If the project is designed for the USA, then the time format should be changed according to the USA Standard time. Also language and money format should follow USA standards.

Why to do Localization Testing?

The purpose of doing localization testing is to check appropriate linguistic and cultural aspects for a particular locale. It includes a change in user interface or even the initial settings according to the requirements.

In this type of testing, many different testers will repeat the same functions. They verify various things like typographical errors, cultural appropriateness of UI, linguistic errors, etc.

It is also called as "L10N", because there has 10 characters in between L & N in the word localization.

build verification testing, functional testing, and regression testing and final sign-off.

1. Build verification testing is a small subset of functional testing, which is performed before QA starts with any detailed testing.

2. Normal testing is the step to run the normal test cases and find log defects during execution.

3. Regression testing is defect regression process to ensure that the defect is fixed while there is no impact of fixed defects to surrounding areas.

4. Final Sign-off is to perform final checking on the build before delivery to the client.

Automation in Localization Testing

If the project is big and needs to test often, then we go for automation testing.

- Choose automation tool to write scripts.
- Take the scenario to be tested for localization strategy.
- Write scripts according to that.

- Collect the results and update the scenario as Pass/Fail.

Best practices for Localization Testing

- Hire a localization firm with expertise in **i18n** engineering
- Make sure your localization testing strategy enables more time for double-byte languages.
- Ensure that you properly internationalize your code for the DBCS before extracting any text to send for translation

Benefits for Localization Testing

Following are the benefits of localization testing

- Overall testing cost reduce
- Overall support cost reduce
- Helps in reducing the time for testing.
- It has more flexibility and scalability.

Localization Testing Challenges

Following are the challenges of localization testing

- Requires a domain expert
- Hiring local translator often makes the process expensive
- Storage of DBCS characters differ in various country
- Tester may face schedule challenges