Chapter No 7

Common Standards in Cloud Computing

BS.IT 7th Evening

cloud-related working groups

Open Cloud Consortium (OCC)

Distributed Management Task Force (DMTF)

Open Cloud Consortium (OCC)

- The Open Cloud Consortium (OCC) is a not for profit that manages and operates cloud computing and data commons infrastructure to support scientific, medical, health care and environmental research.

- The purpose of the OCC is to support the development of standards for cloud computing and to develop framework for interoperability among various clouds.

- OCC manages a testing platform and a test-bed for cloud computing called the Open Cloud Test-bed.
- Provide On-Demand Computing

- One architecture for clouds that was popularized by a series of Google technical reports describes a
- *storage cloud*

    providing a distributed file system
- *compute cloud*

    supporting MapReduce
- *data cloud*

    supporting table services.

The Distributed Management Task Force (DMTF)

- The **Distributed Management Task Force** (**DMTF**) is a computer software trade group which works to simplify the manageability of network-accessible technologies.

- Enables more effective management of millions of IT systems worldwide by bringing the IT industry together to collaborate on the development, validation and promotion of systems management standards.

- The DMTF started the Virtualization Management Initiative (VMAN).

- **Open Virtualization Format (OVF)**

  Open Virtualization Format (OVF) is an <u>open-source</u> standard for packaging and distributing software <u>applications</u> for virtual machines (<u>VM</u>).

  Open Virtualization Format is an open standard for packaging and distributing virtual appliances or, more generally, software to be run in virtual machines.

Standards :

Standards for Application Developers

Standards for Messaging

Standards for Security

Standards for Application Developers

- **Browsers (Ajax)**
- **Data (XML, JSON)**
- **Solution Stacks (LAMP and LAPP)**

Browsers (Ajax)

- Ajax is a technique , not programming language

- When we used ajax in website there is no need to refresh page

- Small code

XML

- XML stands for extensible Markup Language.
- XML was designed to store and transport data.
- XML was designed to be both human- and machine-readable.

JSON

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate.

Solution Stacks (LAMP and LAPP)

LAMP:

- LAMP is a popular open source solution commonly used to run dynamic web sites and servers. The acronym derives from the fact that it includes
- **L**
- Linux,
- **A**
- Apache,
- **M**
- MySQL, and
- **P**
- PHP (or Perl or Python)
- and is considered by many to be the platform of choice for development and deployment of high-performance web applications which require a solid and reliable foundation.

Standards for Messaging

- **Simple Message Transfer Protocol (SMTP)**
- **Post Office Protocol (POP)**
- **Internet Messaging Access Protocol (IMAP)**
- **Syndication (Atom, Atom Publishing Protocol, and RSS)**
- **Atom and Atom Publishing Protocol (APP)**
- **Web Services (REST)**
- **SOAP**
- **Communications (HTTP, SIMPLE, and XMPP)**

Simple Message Transfer Protocol (SMTP)

- Simple Mail Transfer Protocol (SMTP) is the standard protocol for email services on a TCP/IP network. SMTP provides the ability to send and receive email messages.

- SMTP is an application-layer protocol that enables the transmission and delivery of email over the Internet. SMTP is created and maintained by the Internet Engineering Task Force (IETF).

- Simple Mail Transfer Protocol is also known as RFC 821 and RFC 2821.

Post Office Protocol (POP)

- Post Office Protocol (POP) is a type of computer networking and Internet standard protocol that extracts and retrieves email from a remote mail server for access by the host machine.

- POP is an application layer protocol in the OSI model that provides end users the ability to fetch and receive email.

Internet Messaging Access Protocol (IMAP)

- **Internet Message Access Protocol** (**IMAP**) is a standard **protocol** for **accessing**email on a remote server from a local client. **IMAP** is an application layer **Internet Protocol** using the underlying transport layer **protocols** to establish host-to-host communication services for applications.

Really Simple Syndication (RSS)

- RSS is a family of web feed formats used to publish frequently updated works—such as blog entries, news headlines, audio, and video—in a standardized format.

Example : GEO News Headline Links

Simple Object Access Protocol (SOAP)

- SOAP, originally defined as Simple Object Access Protocol, is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks.

- It relies on XML as its message format and usually relies on other application-layer protocols, most notably Remote Procedure Call (RPC) and HTTP for message negotiation and transmission.

Communications (HTTP, SIMPLE, and XMPP)

- **HTTP** is a request/response communications standard based on a client/server model.

- **SIMPLE**, the Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions, is an instant messaging (IM) and presence protocolsuite based on Session Initiation Protocol (SIP) managed by the Internet Engineering Task Force.

- **XMPP** was built to provide full support for cross-platform messaging so that one proprietary system's users could talk to another's.

Standards for Security

- **Security Assertion Markup Language (SAML)**
- **Open Authentication (OAuth)**
- **OpenID**
- **SSL/TLS**

Security Assertion Markup Language (SAML)

- Security Assertion Markup Language is a language protocol for handling authentication and authorization in a network. It is one of various XML-based markup languages available to help with aspects of web development and use.

Open Authentication (OAuth)

OAuth is an open-standard authorization protocol or framework that describes how unrelated servers and services can safely allow authenticated access to their assets without actually sharing the initial, related, single logon credential. In authentication parlance, this is known as secure, third-party, user-agent, delegated authorization.

OpenID

- OpenID is an open, decentralized standard for user authentication and access control that allows users to log onto many services using the same digital identity. It is a single-sign-on (SSO) methhod of access control. As such, it replaces the common log-in process (i.e., a log-in name and a password) by allowing users to log in once and gain access to resources across participaating systems.

SSL/TLS

- SSL and TLS are both cryptographic protocols used to increase security by encrypting communication over computer networks

- Secure Sockets Layer (SSL) is a standard protocol used for the secure transmission of documents over a network. Developed by Netscape, SSL technology creates a secure link between a Web server and browser to ensure private and integral data transmission. SSL uses Transport Control Protocol (TCP) for communication.

TLS (transport layer security)

- Transport layer security (TLS) is a protocol that provides communication security between client/server applications that communicate with each other over the Internet. It enables privacy, integrity and protection for the data that's transmitted between different nodes on the Internet. TLS is a successor to the secure socket layer (SSL) protocol.