UNIT-5 PLATFORMS FOR IOT DEVELOPMENT

CLOUD COMPUTING PLATFORMS

- CLOUD COMPUTING APPLICATIONS DEVELOPS BY LEVERAGING PLATFORMS AND FRAMEWORKS. VARIOUS TYPES OF SERVICES ARE PROVIDED FROM THE BARE METAL INFRASTRUCTURE TO CUSTOMIZE-ABLE APPLICATIONS SERVING SPECIFIC PURPOSES.

Cloud Computing Top Platforms

AMAZON WEB SERVICES

- AWS PROVIDES DIFFERENT WIDE-RANGING CLOUDS IAAS SERVICES, WHICH RANGES FROM VIRTUAL COMPUTE, STORAGE, AND NETWORKING TO COMPLETE COMPUTING STACKS. AWS IS WELL KNOWN FOR ITS STORAGE AND COMPUTE ON DEMAND SERVICES, NAMED AS ELASTIC COMPUTE CLOUD (EC2) AND SIMPLE STORAGE SERVICE (S3).

- EC2 OFFERS CUSTOMIZABLE VIRTUAL HARDWARE TO THE END USER WHICH CAN BE UTILIZE AS THE BASE INFRASTRUCTURE FOR DEPLOYING COMPUTING SYSTEMS ON THE CLOUD. IT IS LIKELY TO CHOOSE FROM A LARGE VARIETY OF VIRTUAL HARDWARE CONFIGURATIONS INCLUDING GPU AND CLUSTER INSTANCES. EITHER THE AWS CONSOLE, WHICH IS A WIDE-RANGED WEB PORTAL FOR RETRIEVING AWS SERVICES, OR THE WEB SERVICES API AVAILABLE FOR SEVERAL PROGRAMMING LANGUAGE IS USED TO DEPLOY THE EC2 INSTANCES.

- EC2 ALSO OFFERS THE CAPABILITY OF SAVING AN EXPLICIT RUNNING INSTANCE AS IMAGE, THUS ALLOWING USERS TO CREATE THEIR OWN TEMPLATES FOR DEPLOYING SYSTEM. S3 STORES THESE TEMPLATES AND DELIVERS PERSISTENT STORAGE ON DEMAND.

- S3 IS WELL ORDERED INTO BUCKETS WHICH CONTAINS OBJECTS THAT ARE STORED IN BINARY FORM AND CAN BE GROW WITH ATTRIBUTES. END USERS CAN STORE OBJECTS OF ANY SIZE, FROM BASIC FILE TO FULL DISK IMAGES AND HAVE THEM RETRIEVAL FROM ANYWHERE.

- IN ADDITION, EC2 AND S3, A WIDE RANGE OF SERVICES CAN BE LEVERAGED TO BUILD VIRTUAL COMPUTING SYSTEM INCLUDING: NETWORKING SUPPORT, CACHING SYSTEM, DNS, DATABASE SUPPORT, AND OTHERS.

Google App Engine

- GOOGLE APP ENGINE IS A SCALABLE RUNTIME ENVIRONMENT FREQUENTLY DEDICATED TO EXECUTING WEB APPLICATIONS. THESE UTILIZE BENEFITS OF THE LARGE COMPUTING INFRASTRUCTURE OF GOOGLE TO DYNAMICALLY SCALE AS PER THE DEMAND. APP ENGINE OFFERS BOTH A SECURE EXECUTION ENVIRONMENT AND A COLLECTION OF WHICH SIMPLIFIES THE DEVELOPMENT IF SCALABLE AND HIGH-PERFORMANCE WEB APPLICATIONS.

- THESE SERVICES INCLUDE: IN-MEMORY CACHING, SCALABLE DATA STORE, JOB QUEUES, MESSAGING, AND CORN TASKS. DEVELOPERS AND ENGINEERS CAN BUILD AND TEST APPLICATIONS ON THEIR OWN SYSTEMS BY USING THE APP ENGINE SDK, WHICH REPLICATES THE PRODUCTION RUNTIME ENVIRONMENT, AND HELPS TEST AND PROFILE APPLICATIONS.

- ON COMPLETION OF DEVELOPMENT, DEVELOPERS CAN EASILY MOVE THEIR APPLICATIONS TO APP ENGINE, SET QUOTAS TO CONTAINING THE COST GENERATED, AND MAKE IT AVAILABLE TO THE WORLD. CURRENTLY, THE SUPPORTED PROGRAMMING LANGUAGES ARE PYTHON, JAVA, AND GO.

- [MICROSOFT AZURE](#) –

  MICROSOFT AZURE IS A CLOUD OPERATING SYSTEM AND A PLATFORM IN WHICH USER CAN DEVELOP THE APPLICATIONS IN THE CLOUD. GENERALLY, A SCALABLE RUNTIME ENVIRONMENT FOR WEB APPLICATIONS AND DISTRIBUTED APPLICATIONS IS PROVIDED. APPLICATION IN AZURE ARE ORGANIZED AROUND THE FACT OF ROLES, WHICH IDENTIFY A DISTRIBUTION UNIT FOR APPLICATIONS AND EXPRESS THE APPLICATION'S LOGIC. AZURE PROVIDES A SET OF ADDITIONAL SERVICES THAT COMPLEMENT APPLICATION EXECUTION SUCH AS SUPPORT FOR STORAGE, NETWORKING, CACHING, CONTENT DELIVERY, AND OTHERS.

- [HADOOP](#) –

  APACHE HADOOP IS AN OPEN SOURCE FRAMEWORK THAT IS APPROPRIATE FOR PROCESSING LARGE DATA SETS ON COMMODITY HARDWARE. HADOOP IS AN IMPLEMENTATION OF MAPREDUCE, AN APPLICATION PROGRAMMING MODEL WHICH IS DEVELOPED BY GOOGLE. THIS MODEL PROVIDES TWO FUNDAMENTAL OPERATIONS FOR DATA PROCESSING: MAP AND REDUCE. YAHOO! IS THE SPONSOR OF THE APACHE HADOOP PROJECT, AND HAS PUT CONSIDERABLE EFFORT IN TRANSFORMING THE PROJECT TO AN ENTERPRISE-READY CLOUD COMPUTING PLATFORM FOR DATA PROCESSING. HADOOP IS AN INTEGRAL PART OF THE YAHOO! CLOUD INFRASTRUCTURE AND IT SUPPORTS MANY BUSINESS PROCESSES OF THE CORPORATES. CURRENTLY, YAHOO! MANGES THE WORLD'S LARGEST HADOOP CLUSTER, WHICH IS ALSO AVAILABLE TO ACADEMIC INSTITUTIONS.

- **FORCE.COM AND SALESFORCE.COM –**

  FORCE.COM IS A CLOUD COMPUTING PLATFORM AT WHICH USER CAN DEVELOP SOCIAL ENTERPRISE

  APPLICATIONS. THE PLATFORM IS THE BASIS OF SALESFORCE.COM – A SOFTWARE-AS-A-SERVICE SOLUTION

  FOR CUSTOMER RELATIONSHIP MANAGEMENT. FORCE.COM ALLOWS CREATING APPLICATIONS BY COMPOSING

  READY-TO-USE BLOCKS: A COMPLETE SET OF COMPONENTS SUPPORTING ALL THE ACTIVITIES OF AN

  ENTERPRISE ARE AVAILABLE. FROM THE DESIGN OF THE DATA LAYOUT TO THE DEFINITION OF BUSINESS

  RULES AND USER INTERFACE IS PROVIDED BY FORCE.COM AS A SUPPORT. THIS PLATFORM IS COMPLETELY

  HOSTEL IN THE CLOUD, AND PROVIDES COMPLETE ACCESS TO ITS FUNCTIONALITIES, AND THOSE

  IMPLEMENTED IN THE HOSTED APPLICATIONS THROUGH WEB SERVICES TECHNOLOGIES.