Set 1

Software Defined Networks.

TY B.Tech, ESE (NOV, 2021).

Subject Name - Software Defined Networks.

Course Code - 201CSL305

Q.1. (a) Explain the factors responsible for evolution of Switches and control planes. - 5 M. [Text Book No.1. page No. 21]

1. Simple forwarding & routing using software
2. Independance & autonomy in Early devices
3. - Introduction of Spanning tree protocol
4. - Need of shortest path algorithm.
5. Routing protocol examples.
6. Moving control off the device
7. Growing Need of simplification
8. Hardware forwarding and control is Software.

* Explaination of any (5) attributes - 1 mark for each.

Q.1. (b) Explain concept of FORCES [Text Book No.1 page No. 44]

- Diagram - 2 M.
- Explanation - 3 M.

(c) Explain software and hardware switch anatomy in detail.

- Diagram of software switch - 1 1/2 M
- Diagram of hardware switch - 1 1/2 M
- Explanation of both - (1M) + (1 M).

(d) Explain the concept of packet matching in open flow switch in detail

- List of 12 match fields - (1 M)
- process of matching - (1 M)
- Full conformance - (1M)
- Layer 2 conformance - (1M)

- Layer 3 conformance - (1M).

Q.2 (a) Concept of multitenant data center - 5M.
- Diagram - (2M)
Explanation - (3M)
(Access control, Resource mgmt, How to separate thousand of tenants)
- Public cloud - customer
- Private cloud - department.
- Degree of multitenancy.

OR

(a) Concept of data center orchestration. 5M.
- Diagram - (2M)
Explanation - (3M)

(b) Concept of encapsulation in VxLAN. - 5M
- Diagram of VxLAN packet format - (2M)
Explanation - 3M.
- Packet field information, Virtual tunnelling.

OR

(b) Concept of encapsulation in NVGRE - 5M
- Diggram of NVGRE packet format - 2M.
- Explanation - 3M.
- GRE (Generic Routing encapsulation)
- Tenant Network Identifier.
- Customer address (CA)
- Provider address (PA).

Q.3 (a) vmware tool. - 5M.
- Diagram - 2M.
- Explanation - 3M.
- virtualization, Details of each component.
- Applications.

OR

(a) Mininet emulator - 5M
- Diagram - 2M
- Explanation - 3M.
- Significance in SDN
- Details of functional modules.
- Application.

(b) various methods of virtualization - 5M.
- Explanation of (5) methods.
- Each method for (1M).

Q.4 (a) Open Day Light controller - 5M.
- Diagram - 2M.
- Significance in SDN implementation - 1M.
- Details of modules - 2M.

OR

(a) Reactive SDN applications - 5M.
(1M) - Definition + Diagram
(2M) - Switch Listener, Device Listener, Message Listener
(1/2M) - Packet specific actions
(1/2M) - Flow specific actions.

(b) NETCONF protocol.
- Diag (4) Layer. NETCONF - 2M.
- Explanation - 3M.
- Operations of NECONF.

OR.

(b) SNMP protocol
- Architecture diagram - 2M
- Agent, manager, operations - 3M.

(c) Proactive SDN applications - (6m)

Derivation + Diagram - 2M.

Native API, Explanation of Functional modules - 3m

Software Defined Networks.

7th B.Tech. ECE (NOV, 2024)

Course code - 20ECSL305

P.1 (a) Factors responsible for evolution of switches & control planes.

(1) Simple forwarding & routing using software
(2) Independance & autonomy in early devices
(3) Introduction of Spanning Tree Protocol.
(4) Shortest path algo. need.
(5) Routing protocol examples
(6) Moving control off the device
(7) Growing need of simplification
(8) Hardware forwarding and control in software.

- Explanation of any 5 attributes, each for (1M).

(b) Explain Ethane system in detail.

- Diagram - 2M
Explanation - 3M.

(c) Explain software and hardware switch anatomy in detail.

- Diagram of SW switch - 1 1/2 M
- Diagram of HW switch - 1 1/2 M
- Explanation - (1) + (1).

(d) Flow table in open flow switch.

- Diagram - 2M.
- Explanation of each field - 3M.

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Q.2 (a) Virtualized multitenant data center 5M

Diagram - 2M.

Explanation - Private access to virtual slices or resources
- 2 Tier, 3 Tier and 1 Tier access.
- Explanation of components in diagram.

OR

Data Center Orchestration. 5M.

- Diagram - 2M
- Explanation - 3M.

(b) VLAN as a SDN solution. 5M

Diagram - 2 M.

Explanation - 3M. (application, database, management).

OR.

(b) NVGRE encapsulation. 5M

Diagram of NVGRE packet format - 2 M.

Explanation - 3 M.

Packet field information, virtual tunnelling.

Q.3. (a) Nicira's Network virtualization Platform (NVP) 5M

Diagram - 2M

Explanation - 3M.

- OVSDB characteristics.

OR

(a) Trema Framework.

Diagram - 2M.

Explanation - 3M.

(b) Floodlight open flow controller

Diagram - 2M.

Explanation of each component - 3M.

Q(4) (a) Open Day light controller. 5M

Diagram - 2M

Explanation - 3M.

OR

(a) Reactive SDN applications 5M.

Diagram - 2M.

Switch listner, Device listener, Message listener - 2M

Packet specific actions - ½ M.

Flow specific actions - ½ M.

(b) NETCONF protocol

4 Layer diagram - 2M

Operations of NETCONF & explanation - 3M.

OR.

SNMP protocol.

Architectural diagram - 2M

Agent, manager, operations - 3M.

(c) Thrift as a SDN programming tool.

- Diagram - 2M.
- Introduction + Advantages. } (3M)
- Cross language platforms }