



CCIE HUB

# CCIE

## SERVICE PROVIDER



**TALK TO US :**

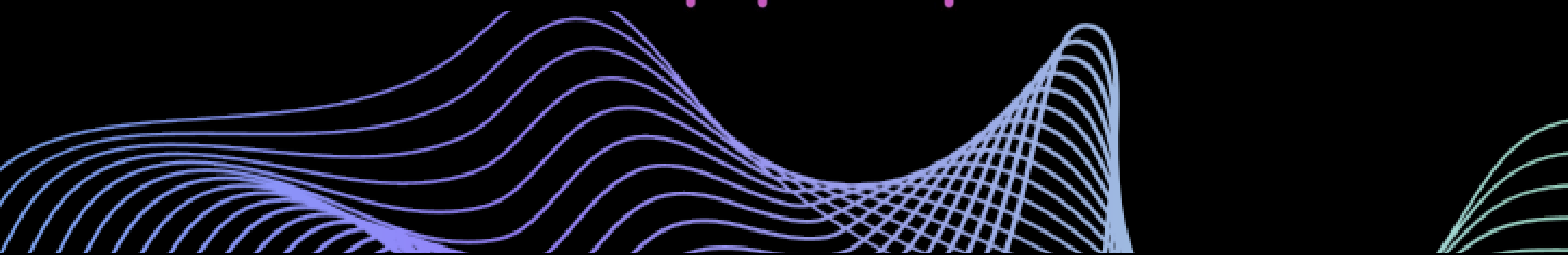
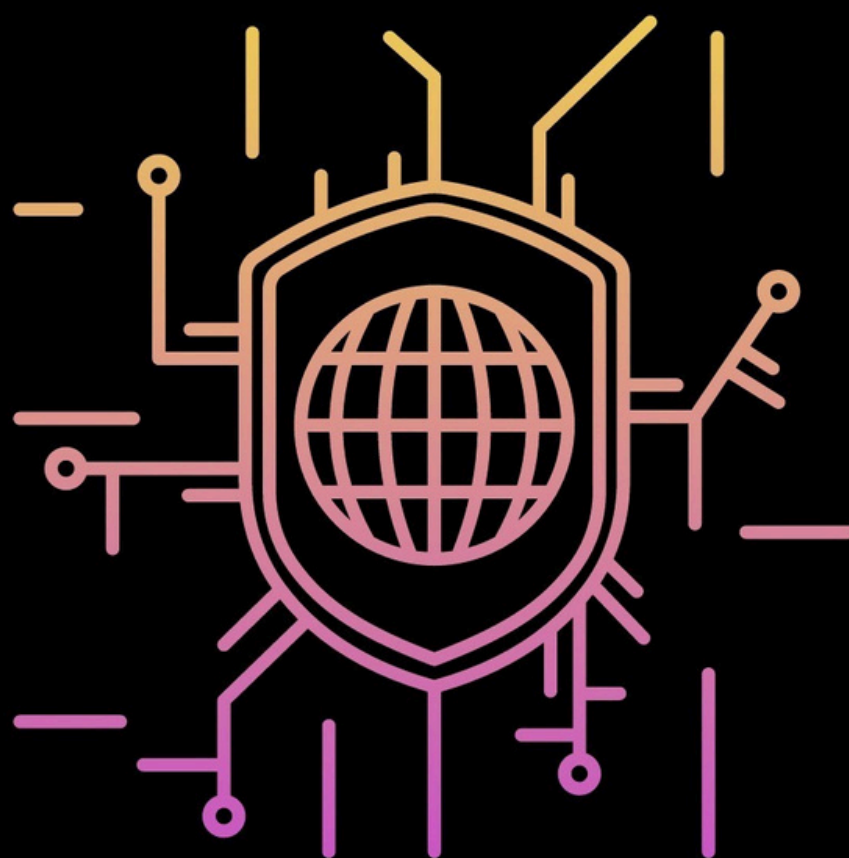
- Call: +91 96502 72078
- Email: [info@cciehub.com](mailto:info@cciehub.com)

# 1. ARCHITECTURE

- 1.1 Describe service provider architectures
  - 1.1.a Core architectures (Metro Ethernet, MPLS, unified MPLS, SR, SRTE, SRv6)
  - 1.1.b Transport technologies (xDSL, DWDM, DOCSIS, TDM, and xPON)
  - 1.1.c Mobility (packet core, RAN xhaul transport for 5G vRAN and ORAN transport)
  - 1.1.d Routed optical network
- 1.2 Describe Cisco network software architecture
  - 1.2.a IOS
  - 1.2.b IOS XE
  - 1.2.c IOS XR
- 1.3 Describe service provider virtualization
  - 1.3.a NFV infrastructure
  - 1.3.b VNF workloads
  - 1.3.c Containers
  - 1.3.d Application hosting
- 1.4 Describe QoS architecture
  - 1.4.a MPLS QoS models (Pipe, Short Pipe, and Uniform)
  - 1.4.b MPLS TE QoS (MAM, RDM, CBTS, PBTS, and DS-TE)
  - 1.4.c DiffServ and IntServ QoS models
  - 1.4.d Trust boundaries between enterprise and SP environments
  - 1.4.e IPv6 flow label

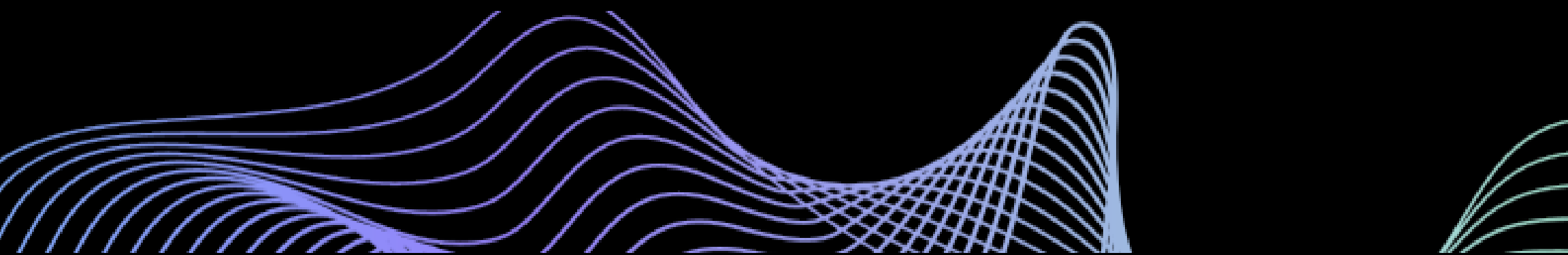
- 1.5 Configure and verify control plane security
  - 1.5.a Control plane protection techniques (LPTS and CoPP)
  - 1.5.b BGP-TTL security and protocol authentication
  - 1.5.c BGP prefix suppression
  - 1.5.d LDP security (authentication and label allocation filtering)
  - 1.5.e BGP sec
  - 1.5.f BGP flowspec
- 1.6 Describe management plane security
  - 1.6.a Traceback
  - 1.6.b AAA and TACACS
  - 1.6.c RestAPI security
  - 1.6.d DdoS
- 1.7 Implement data plane security
  - 1.7.a uRPF
  - 1.7.b ACLs
  - 1.7.c RTBH
  - 1.7.d MACsec

# NETWORK



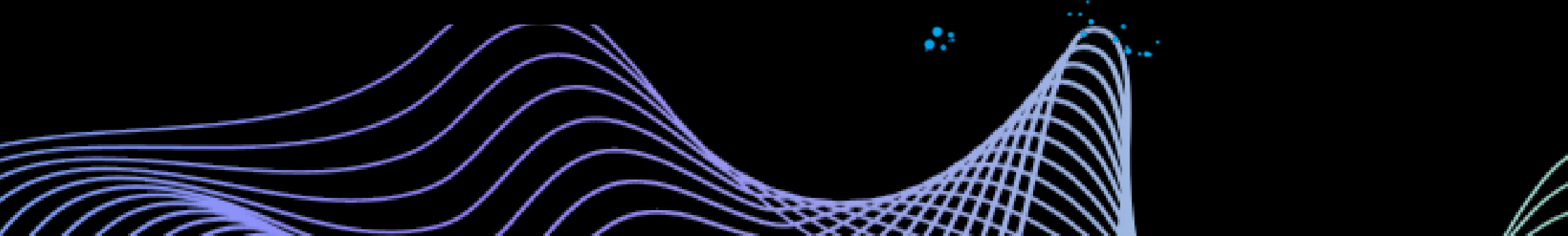
## 2. NETWORKING

- 2.1 Implement IS-IS (IPv4 and IPv6)
  - 2.1.a Route advertisement
  - 2.1.b Area addressing
  - 2.1.c Multitopology
  - 2.1.d Metrics
- 2.2 Implement OSPF (v2 and v3)
  - 2.2.a Neighbor adjacency
  - 2.2.b Route advertisement
  - 2.2.c Multiarea (addressing and types)
  - 2.2.d Metrics
- 2.3 Describe BGP path selection algorithm
- 2.4 Implement BGP (v4 and v6 for IBGP and EBGP)
  - 2.4.a Neighbors
  - 2.4.b Prefix advertisement
  - 2.4.c Address family
  - 2.4.d Path selection
  - 2.4.e Attributes
  - 2.4.f Redistribution
  - 2.4.g Additional Paths
  - 2.4.h PIC
- 2.5 Implement routing policy language and route maps (BGP, OSPF, IS-IS)
- 2.6 Troubleshoot routing protocols
  - 2.6.a Neighbor adjacency (IS-IS, OSPF, BGP)
  - 2.6.b Route advertisement (IS-IS, OSPF, BGP)
- 2.7 Describe IPv6 transition (NAT44, NAT64, CGNAT, MAP-T and DS Lite)
- 2.8 Implement high availability
  - 2.8.a NSF / graceful restart
  - 2.8.b NSR
  - 2.8.c BFD
  - 2.8.d Link aggregation



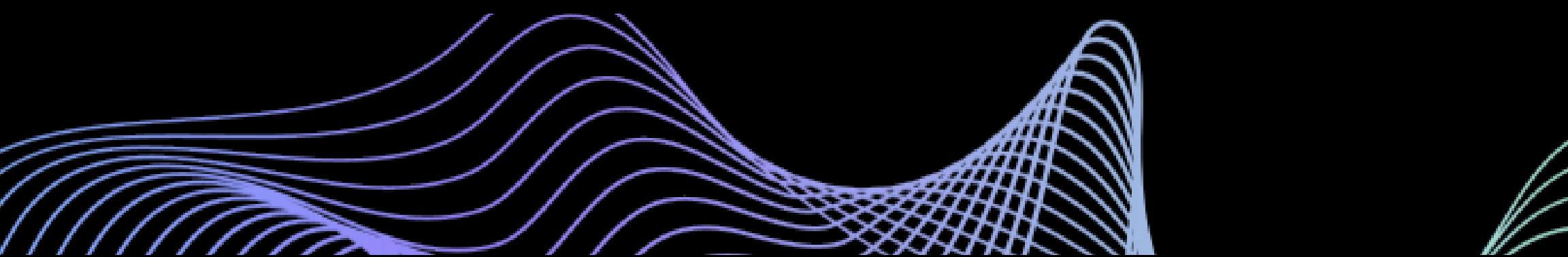
# 3. MPLS AND SEGMENT ROUTING

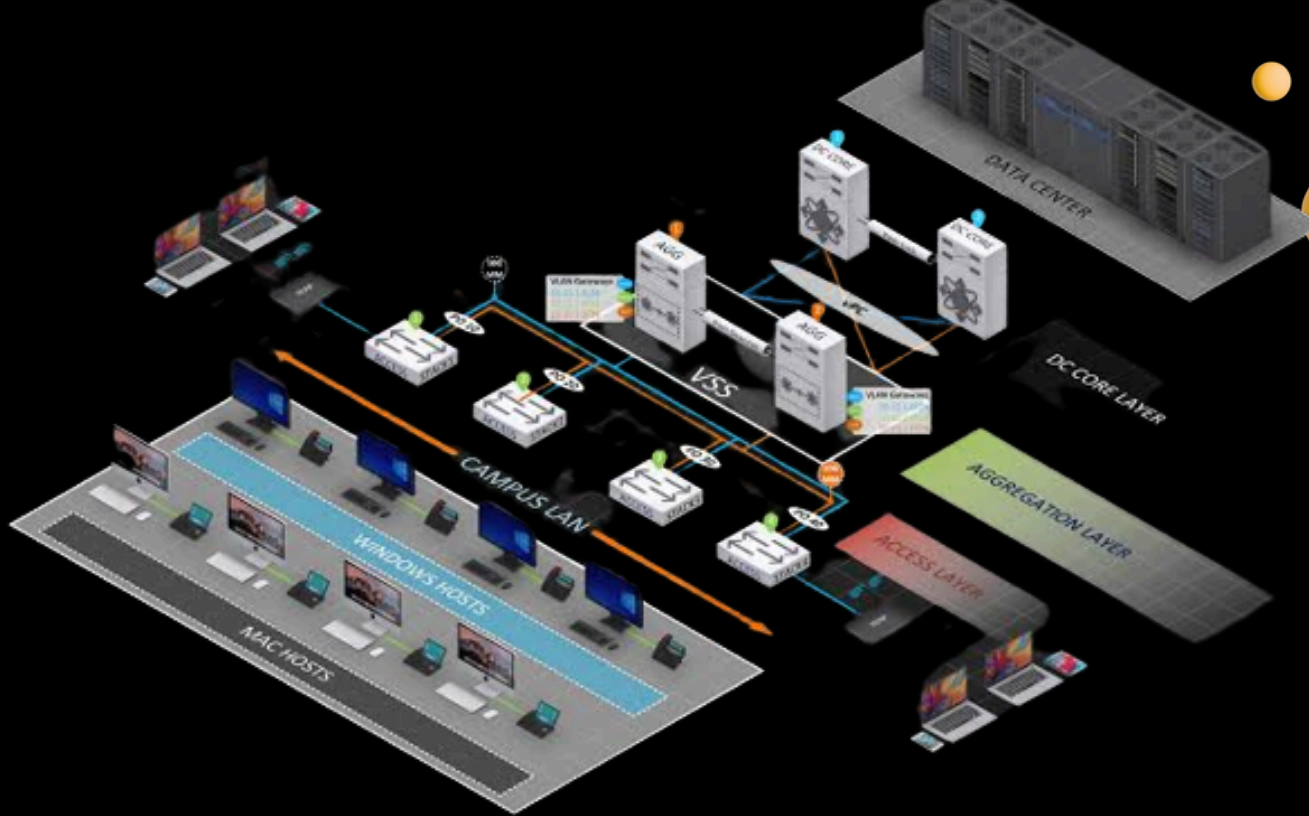
- 3.1 Implement MPLS
  - 3.1.a LDP sync
  - 3.1.b LDP session protection
  - 3.1.c LDP neighbors
  - 3.1.d Unified MPLS
  - 3.1.e MPLS OAM
- 
- 3.2 Describe traffic engineering
  - 3.2.a ISIS and OSPF extensions
  - 3.2.b RSVP functionality
  - 3.2.c FRR
- 
- 3.3 Describe segment routing
  - 3.3.a Segment types
  - 3.3.b SR control plane (BGP, OSPF, IS-IS)
  - 3.3.c Segment routing traffic engineering
  - 3.3.d TI-LFa
  - 3.3.e PCE-PCC architectures
  - 3.3.f Flexible algorithm
  - 3.3.g Locator, micro-segment, encapsulation, interworking gateway



## 4. SERVICES

- 4.1 Describe VPN services
  - 4.1.a EVPN
  - 4.1.b Inter-AS VPN
  - 4.1.c CSC
  - 4.1.d mVPN
- 4.2 Configure L2VPN and Carrier Ethernet
  - 4.2.a Ethernet services (E-Line, E-Tree, E-Access, E-LAN)
  - 4.2.b IEEE 802.1ad, IEEE 802.1ah, and ITU G.8032
  - 4.2.c Ethernet OAM
  - 4.2.d VLAN tag manipulation
- 4.3 Configure L3VPN
  - 4.3.a Intra-AS VPN
  - 4.3.b Shared services (extranet and Internet)
- 4.4 Implement multicast services
  - 4.4.a PIM (PIM-SM, PIM-SSM, and PIM-BIDIR)
  - 4.4.b IGMP v1/v2/v3 and MLD
- 4.5 Implement QoS services
  - 4.5.a Classification and marking
  - 4.5.b Congestion avoidance, traffic policing, and shaping





## 5. AUTOMATION & ASSURANCE

- 5.1 Describe the programmable APIs used to include Cisco devices in network automation
- 5.2 Interpret an external script to configure a Cisco device using a REST API
- 5.3 Describe the role of Network Services Orchestration (NSO)
- 5.4 Describe the high-level principles and benefits of a data modeling language, such as YANG
- 5.5 Describe configuration management tools, such as Ansible and Terraform
- 5.6 Describe Secure ZTP
- 5.7 Configure dial-in/out, TCP, TLS and mTLS certificates using gRPC and gNMI
- 5.8 Configure and verify NetFlow/IPFIX
- 5.9 Configure and verify NETCONF and RESTCONF
- 5.10 Configure and verify SNMP (v2c/v3)



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*Thank You*

**ENROLL NOW**

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