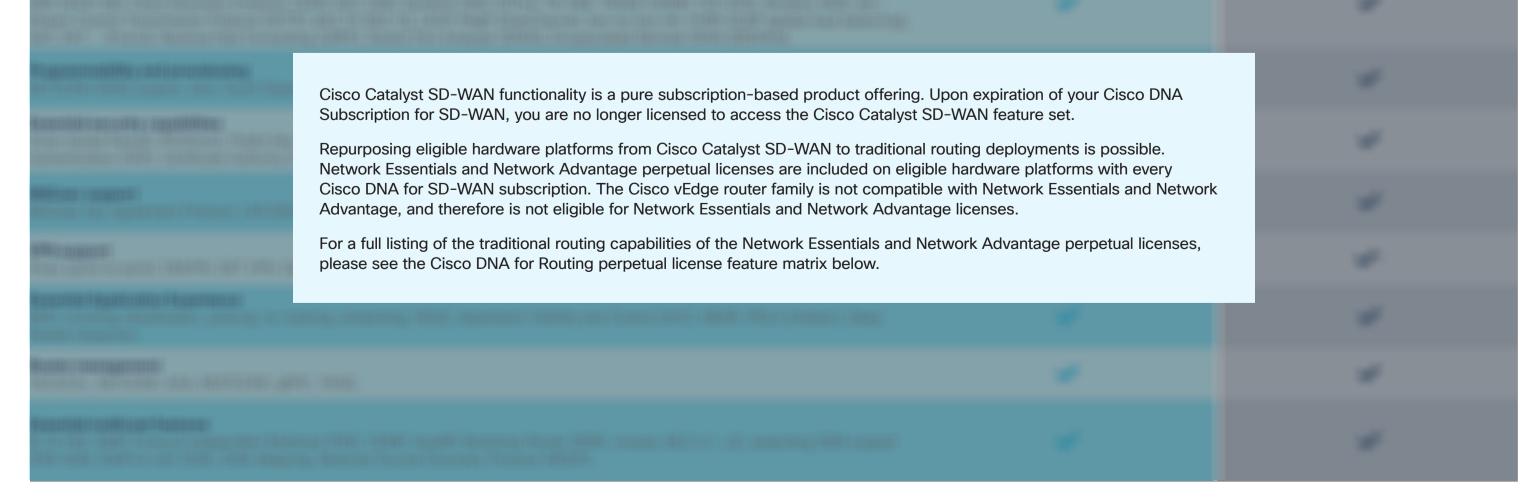# Cisco DNA Software
SD-WAN and Routing Matrices

Cisco DNA Software for SD-WAN Feature Matrix

	Cisco DNA Essentials	Cisco DNA Advantage	Cisco DNA Premier
License type	3-, 5-, or 7-year term subscription	Includes Cisco DNA Essentials 3-, 5-, or 7-year term subscription	Includes Cisco DNA Essentials and Cisco DNA Advantage 3- or 5-year term subscription
Management options	CLI, Web UI Cisco Catalyst SD-WAN Manager[1]	CLI, Web UI Cisco Catalyst SD-WAN Manager[1]	CLI, Web UI Cisco Catalyst SD-WAN Manager[1]

Cisco DNA for SD-WAN subscription features	Cisco DNA Essentials	Cisco DNA Advantage	Cisco DNA Premier
Connectivity and management Cloud or on-premises management, flexible topology including hub/spoke, full mesh and partial mesh, app- and SLA-based routing policy, VNF lifecycle management, DSL, 4G LTE, and multilink router interfaces, NTP client, zero-touch provisioning and onboarding, global and site topology.	✔ VPNs limited to 10 user + 1 mgmt	✔	✔
Cisco Catalyst SD-WAN Layer 2 and Layer 3 routing – general Static and dynamic routing (BGP, OSPF), routing protocol redistribution (EIGRP, OSPF, BGP), EIGRP (service side), route maps, BFD PMTU, CoS marking (802.1P), static and service side NAT, NAT pool support for DIA, NAT using loopback interface address, HQoS, per-tunnel QoS, Ethernet subinterface QoS, WAN loopback support, OMP redistribution, service VPN redistribution, mapping BGP communities to OMP tags, match and set communities during BGP to OMP redistribution (localized and centralized policy), secondary IP address support on SVI (interface VLAN), TLOC extension, DHCP options support, BFD for BGP/OSPF/EIGRP – CLI template, NTP server support, DIA Tracker: Interface tracker for DIA, ability to track static route on service VPN, per-class/DSCP BFD for AAR, ACL matching ICMP, enhanced policy-based routing (CLI template), jumbo frames (1GE interface), custom app support (for application aware routing), SD-AVC, flexible Netflow, EVPN, MACSec Support.	✔	✔	✔
Cisco Catalyst SD-WAN Layer 2 and Layer 3 routing – IPv6 Dual stack support (for transport), inbound and outbound filtering, support for NAT64 devices (DIA), dual-stack service-side interface support (Gigabit, subinterface, SVI, loopback), unicast addressing (link-local, unique-local, and global), anycast addressing, QoS, QoS policer, QoS DSCP rewrite (inbound and outbound), IP name server, ICMP redirects, VRRP, DHCP relay agent, SSH, traceroute, SNMP logging server.	✔	✔	✔
Multicloud and SaaS Cloud OnRamp for Multicloud (GCP, AWS, Azure) – Site to Cloud connectivity, Cloud OnRamp for SaaS, monitoring capabilities for Multicloud and SaaS via Cisco Catalyst SD-WAN Manager, SD-WAN Application Intelligence Engine (SAIE).	✔	✔	✔
Cloud Security 3rd party cloud security providers, Cisco Catalyst SD-WAN auto-register and IPsec auto-tunnel to Cisco Umbrella®, Cisco Umbrella DNS monitoring (visibility only), Cisco Umbrella app discovery.	✔	✔	✔
Embedded security Cisco AMP, geo location-based filtering, interface zone support, high speed logging, URL filtering, TLS/SSL proxy support with Cisco Catalyst SD-WAN, FQDN support, enterprise certificate support, ACL, pairwise key support for IPsec, SSH login with key, syslog over TLS, enterprise firewall with Talos® powered IPS and application controls, RADIUS, Micro and Micro Segmentation (ICE/SGT), Cisco Secure Malware Analytics support[5].	✔	✔	✔
Cisco Catalyst SD-WAN services DNS (including local bypass), basic path optimization with FEC and packet duplication, AppQoE: TCP optimization, ZBFW – multiple prefix list, rule-set support, microtenancy: RBAC by VPN, policy based routing to SIG, weighted load-balancing for multiple SIG tunnels.	✔	✔	✔
Essential Voice/UC features (managed via Cisco Catalyst Manager) CUBE (IP to IP)	✔	✔	✔
Software Support Service (SWSS) Software support services that also offer license portability and ongoing innovation in the subscription software stack, including 24-hour TAC support.	✔[2]	✔[2]	✔[2]
Premium Support Services Success Tracks and/or Solution Support.	Optional[2]	Optional[2]	Optional[2]
Advanced Cisco Catalyst SD-WAN Layer 2 and Layer 3 routing – general Per-VPN QoS, adaptive QOS support, dynamic on-demand tunnel support, Hierarchical Cisco Catalyst SD-WAN.		✔	✔
Cisco Catalyst SD-WAN Layer 2 and Layer 3 Multicast routing – IPv4 IGMPv3, PIM SSM, auto RP, app-aware routing policy support for multicast.		✔	✔
Advanced Cisco Catalyst SD-WAN services Cisco Catalyst SD-WAN Manager (design, deploy, monitor) for virtualized platforms, service insertion - tracker support, AppQoE – multiple service nodes.		✔	✔
Advanced Multicloud and SaaS, Analytics, and Visibility Cloud OnRamp for SaaS with Cisco Catalyst SD-WAN Analytics[3] and telemetry, Cloud OnRamp for Multicloud – Site to Site and Cloud to Cloud connectivity via mid-mile with Cloud Interconnect/Cloud Backbone, M365 Informed Network Routing, automated service stitching, Cloud OnRamp for Colocation, Cisco Catalyst SD-WAN Analytics[3], Predictive Path Recommendations (powered by ThousandEyes WAN Insights).		✔	✔
Cross-domain innovations Integrated border for campus (SD-Access), integration with Cisco ACI® for application SLA.		✔	✔
Advanced Voice/UC features (Managed via Cisco Catalyst Manager) Non-secure TDM/PSTN SIP trunk with digital cards (T1/E1) and analog cards (FXO/FXS), non-secure DSP farm services (media termination point, transcoder and conference bridge), SIP SRST[5].		✔	✔
Advanced Cisco Catalyst SD-WAN services DRE and LZ (including SSL proxy).		✔	✔
Cisco Umbrella SIG Essentials, including[4]			✔
Web content filtering Receive detailed reporting with full URL addresses, user and network identity and ability to allow or block actions, plus the external IP address. Also permits content filtering by category or specific URLs to block destinations.			✔
Cloud app discovery and granular app control Provides app discovery, details, and risk information, plus the ability to block the use of offensive or inappropriate cloud applications in the work environment. Apply granular controls to block specific user activities (e.g., file uploads to Box and Dropbox, attachments to Gmail, posts or shares on Facebook, Twitter, etc.).			✔
File-type controls Prevent the download of specific file types via policy. Block risky files (executables that may cause instability or risk data leaks) or block media and video files (bandwidth hogs, possible copyright issues).			✔
Cisco Advanced Malware Protection (AMP) for Web Security Advanced antivirus and antimalware protection powered by Cisco Talos threat intelligence. Cisco's AMP engine searches billions of events per day and blocks over 20 billion threats each day.			✔
Cisco Secure Malware Analytics sandbox Advanced file sandboxing using static and dynamic threat intelligence to detect and report on malicious files that make it through Cisco's AMP inspection.			✔
Layer 3 and Layer 4 cloud firewall Provides visibility and control for Internet traffic across all ports and protocols, IPsec tunnel support for secure traffic routing to cloud infrastructure, automated reporting logs, and customizable IP, port, and protocol policies displayed in a secure dashboard.			✔
Roaming user protection Cisco AnyConnect® protects your employees even when they are off the VPN. Enjoy seamless protection against malware, phishing, and command-and-control callbacks wherever your users go.			✔

Cisco Catalyst SD-WAN functionality is a pure subscription-based product offering. Upon expiration of your Cisco DNA Subscription for SD-WAN, you are no longer licensed to access the Cisco Catalyst SD-WAN feature set.

Repurposing eligible hardware platforms from Cisco Catalyst SD-WAN to traditional routing deployments is possible. Network Essentials and Network Advantage perpetual licenses are included on eligible hardware platforms with every Cisco DNA for SD-WAN subscription. The Cisco vEdge router family is not compatible with Network Essentials and Network Advantage, and therefore is not eligible for Network Essentials and Network Advantage licenses.

For a full listing of the traditional routing capabilities of the Network Essentials and Network Advantage perpetual licenses, please see the Cisco DNA for Routing perpetual license feature matrix below.

Cisco DNA Software for Routing Feature Matrix

	Cisco DNA Essentials	Cisco DNA Advantage
License type	3-, 5-, or 7-year term subscription	Includes Cisco DNA Essentials 3-, 5-, or 7-year term subscription
Management options	Cisco Catalyst Center, CLI, Web UI	Cisco Catalyst Center, CLI, Web UI

Cisco DNA for Routing subscription features

	Cisco DNA Essentials	Cisco DNA Advantage
Essential Cisco DNA Automation – device management Inventory, discovery, topology, software image management, site management, network settings, credential update, integrity verification, template programmer, predefined reports, Plug and Play application.	✔	✔
Essential Cisco DNA Automation – routing and VNF management Router deployment: day-0 and day-2 changes, NFV provisioning on ENCS and Cisco UCS® E-Series, Cisco VNF – ISRv, vASA, and vWAAS.	✔	✔
Cisco DNA Assurance – management and analytics Dashboards, overall health, network health, client health, topology, pre-canned reports, custom thresholds.	✔	✔
Essential Cisco DNA Assurance – routing and VNF management Basic router monitoring, basic WAAS monitoring, basic ENFV monitoring (ENCS, UCSE, vRouter, vWAAS).	✔	✔
Essential Cisco DNA Assurance Application visibility (name, throughput).	✔	✔
Software Support Service (SWSS) Software support services that also offer license portability and ongoing innovation in the subscription software stack, including 24-hour TAC support.	✔[1]	✔[1]
Advanced Cisco DNA Automation – device management Application policy, software image management (SMU-patching), SD Bonjour, custom reporting, Encrypted Traffic Analytics (ETA), reporting (Tableau).		✔
Advanced Cisco DNA Automation – routing and VNF management IWAN application, security at the edge, VNF management (third party and applications).		✔
Advanced Cisco DNA Assurance – routing and VNF management 360 pages, health score, time travel, targeted insights, neighbor topology, path trace, KPIs, baselining, trends, custom reports (AppX, SD-Access, Wi-Fi KPIs, etc.), compliance, global insights integrations (Cisco® Unified Communications Manager, Skype for Business, ETA/SW, Tableau, etc.), router 360, ENFV 360, router underlay insights, ENFV insights.		✔
Advanced Cisco DNA Assurance – Application App health (router, switch, NAM based), app 360, app performance in client/device 360s (jitter, loss, latency).		✔

Cisco DNA for Routing perpetual features

	Network Essentials Perpetual software with base routing and security capabilities, bundled with Cisco DNA Essentials subscription license	Network Advantage Perpetual software with full routing, security, voice, and AppX capabilities, bundled with Cisco DNA Advantage and Cisco DNA Premier subscription licenses
Layer 2 and Layer 3 routing RIP, OSPF, BGP, EIGRP, IS-IS, IGRP (routing protocols), On-Demand Routing (ODR), NSF awareness, Point-to-Point Protocol (PPP), Multi-Link PPP (MLP), EVPN, Segment Routing.	✔	✔
Essential router capabilities NetFlow, Flexible NetFlow (FnF), IPFIX, performance monitoring, Flexible Packet Matching (FPM), Bidirectional Forwarding (BFD), LLDP, ACL, ARP, DHCP, BDI, Cisco Discovery Protocol, Control Plane Policing (CoPP), NAT, DNS, Dynamic DNS, NTPv4, TR-069, TR069-CWMP, TCP-ECN, Window, MSS, etc., Stream Control Transmission Protocol (SCTP), 802.1P, 802.1Q, LACP, PAgP, EtherChannel, box-to-box HA, FHRP, GLBP (global load balancing), NAT, PAT – IPv4/v6, Reverse Path Forwarding (URPF), Switch Port Analyzer (SPAN), Encapsulated Remote SPAN (ERSPAN), Connectivity Fault Management (CFM-802.1ag), carrier grade NAT[4].	✔	✔
Programmability and device management NETCONF/YANG support, Zero Touch Support (PnP/ZTP), EEM Support, RESTCONF, TACACS+, AAA, GNMI, gRPC.	✔	✔
Essential security capabilities Zone-based firewall, IPS/Snort, Public Key Infrastructure (PKI), ACL, trustworthy system, Challenge Handshake (CHAP) and Password Authentication (PAP), Certificate Authority (CA).	✔	✔
MACsec support MACsec Key Agreement Protocol, LAN MACsec (128-bit), WAN MACSec (125-/256-bit).	✔	✔
VPN support IPsec (point to point), DMVPN, GET VPN, FlexVPN.	✔[2]	✔[2]
Essential Application Experience MQC including classification, policing, re-marking, scheduling; HQoS, Application Visibility and Control (AVC/SD-AVC), NBAR2 (standard protocol packs), IPSLA (Initiator), Deep Packet Inspection, Policy-Based Routing (PBR).	✔	✔
Essential multicast features Bi-Di PIM, IGMP, Protocol Independent Multicast (PIM), mVPN, Multicast Segment Routing, CGMP, AutoRP, Bootstrap Router (BSR), mroute, MLD (v1, v2), extending SSM support (PIM-SSM, IGMPv3 with SSM), SSM-Mapping, Multicast Source Discovery Protocol (MSDP).	✔	✔
Essential Broadband CPE Support PPP over Ethernet (PPPoE), PPPoA (PPP over ATM) for DSL support, L2TPv2.	✔	✔
Essential VRF support Easy Virtual Network (EVN), vRF-Lite, Multi-VRF.	✔	✔
Essential tunneling mechanisms GRE tunnel, IPv6 over v4 and IPv4 over v6 tunnels, per-tunnel QoS.	✔	✔
Network segmentation VRF support, Cisco TrustSec® (SGT, SGACL, SGX).	✔	✔
Essential IP service level analysis IPSLA responder, echo, jitter, path (ICMP, UDP, and multicast), TCP connect, HTTP, FTP, DHCP.	✔	✔
802.1X/ AAA support 802.1X feature support, RADIUS integration, TACACS/ TACACS+ support, SHA-1, SHA-2, MD5.	✔	✔
Essential Voice/UC features (managed via Cisco Catalyst Center) CUBE (IP to IP).	✔	✔
Premium Support Services Success Tracks and/or Solution Support.	Optional[1]	Optional[1]
Operational/management router capabilities Operations and Admin Management (OAM - 802.3ah), Unidirectional Link Routing (UDLR), guest shell support, application hosting (app hosting on containers).		✔
Advanced security capabilities Cisco Umbrella® connector support, URL filtering support.		✔
Advanced application experience Performance Routing (PfR/ OER), Application Layer Gateway (ALG), NBAR2 (standard and custom protocol packs).		✔
Legacy protocol support ISDN BRI, X.25 and XOT support, basic CLNS functionality.		✔
Mobile routing Radio-Aware Routing (RAR, PPPoE based-RFC 5578), mobile IP, Proxy Mobile IP (PMIP), network positioning system.		✔
Advanced multicast features Pragmatic General Multicast (PGM), Router Group Management Protocol (RGMP), multicast service reflection, multicast VPN.		✔
Advanced metro and carrier Ethernet support E-OAM (op, admin, maint), E-CFM (connectivity fault management), Ethernet local management Interface (ELMI), Ethernet Virtual Circuit (EVC), Ethernet flow point.		✔
Advanced MPLS and VRF support MPLS Layer 2 and Layer 3 VPN, Layer 2 VPN Pseudowire (PW), Ethernet over MPLS (EoMPLS), Any Transport over MPLS (AToM), MPLS Traffic Engineering (TE), Label Distribution Protocol (LDP), Virtual Private LAN Services (VPLS, H-VPLS) , EVPN, Segment Routing.		✔
Advanced tunneling mechanisms ISATAP tunnels, 6RD tunnels, Layer 2 Tunnel Protocol v3 (L2TPv3)[4], LAC[4], LNS[4], Layer 2 Protocol Tunneling (L2PT), Virtual Private Data Networks (VPDN)[4], Layer 2 forwarding, Ethernet over GRE (EoGRE)[4].		✔
Advanced IP service-level analysis VoIP (UDP jitter, RTP, H323, MOS), video ops, TWAMP, monitor, schedule, disc (for LSP), Y.1731, MPLS OAM.		✔
Content routing Web Cache Routing Protocol (WCCP), object tracking.		✔
Data center interconnect features Overlay Transport Virtualization (OTV), VRF-Aware Software Infrastructure (VASI), VXLAN.		✔
Advanced Voice/UC features (managed via Cisco Catalyst Center) Analog cards (FXO/FXS/BRI/E&M) and digital cards (E1/T1), call control (SIP, SIP line "WxC and CUCM", STCAPP, MGCP), DSP farm services (media termination point, transcoder and conference), SRST[3], CME[3].		✔
Cisco innovation Encrypted Traffic Analytics (ETA), Cisco SD Bonjour (mDNS), Embedded Packet Capture (EPC), Cisco In-Service Software Upgrade (ISSU), Software Maintenance Upgrade (SMU), Locator ID Separator ID (LISP).		✔