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- or 5-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 vManage	CLI, Web UI vManage	CLI, Web UI vManage

Cisco DNA for SD-WAN subscription features	CIsco DNA Essentials	CIsco DNA Advantage	Cisco DNA Premier
Connectivity and management – unlimited overlays and VPNs 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.	✔ VPNs limited to 4 user + 1 mgmt	✔	✔
SD-WAN Layer 2 and Layer 3 routing – general Static routing, dynamic routing (BGP, OSPF), route maps, BFD PMTU, CoS marking (802.1P), HQoS, static NAT, Ethernet subinterface QoS, WAN loopback support, EIGRP (service side), routing protocol redistribution (EIGRP, OSPF, BGP), OMP redistribution, service VPN redistribution, secondary IP address support on SVI (interface VLAN), TLOC extension, DHCP options support, service side NAT, BFD for BGP/OSPF/EIGRP - CLI Template, BGP Community propagation in OMP, 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), local-policy support: match and set communities during BGP to OMP redistribution, jumbo frames (1GE interface).	✔	✔	✔
SD-WAN Layer 2 and Layer 3 routing – IPv6 Dual stack support (for transport), inbound filtering, outbound filtering, OMP redistribution, service VPN redistribution, 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.	✔	✔	✔
Cloud, Analytics, and Visibility Cloud OnRamp for Multicloud (GCP, AWS, Azure) and SaaS (all applications, M365, Webex), monitoring capabilities for Multicloud and SaaS via vManage, site to cloud connectivity (SD-WAN to AWS, Azure, GCP).	✔	✔	✔
Cloud Security Umbrella connectors (auto registration only), 3rd party cloud security providers.	✔	✔	✔
Embedded security Cisco AMP and SSL proxy, URL filtering, TLS/SSL proxy support with SD-WAN, FQDN support, Cisco Umbrella app discovery, 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, per-tunnel QoS, SD-WAN auto-register and IPsec auto-tunnel to Cisco Umbrella®, Cisco Umbrella DNS monitoring (visibility only), RADIUS.	✔	✔	✔
SD-WAN services DNS (including local bypass), basic path optimization with FEC and packet duplication, multicast support for SD-WAN, AppQoE: TCP optimization, NBAR2 (standard protocol packs), ZBFW – multiple prefix list, rule-set support, policy based routing to SIG, weighted load-balancing for multiple SIG tunnels.	✔	✔	✔
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]	✔[1]
Smart Net Total Care® (STNC) 24-hour hardware and network software stack support provided by TAC.	Optional[1]	Optional[1]	Optional[1]
Advanced SD-WAN Layer 2 and Layer 3 routing – general MPLS BGP support (service side), map multiple BGP communities to OMP tags, multiple BGP community tags, NAT pool support for DIA, NAT using loopback interface address, adaptive QOS support, dynamic on-demand tunnel support.		✔	✔
SD-WAN Layer 2 and Layer 3 Multicast routing – IPv4 IGMPv3, PIM SSM, auto RP, app-aware routing policy support for multicast.		✔	✔
Advanced SD-WAN services Microtenancy: RBAC by VPN, SD-WAN per-tunnel QoS, vManage support for virtualization, custom App support (NBAR2 with standard and custom protocol packs), Service insertion - Tracker Support, AppQoE - Multiple Service Nodes.		✔	✔
Advanced Cloud, Analytics, and Visibility Advanced Cloud OnRamp for Multicloud and SaaS (all applications, including all telemetry), advanced monitoring capabilities for Multicloud and SaaS via vManage, Cloud Dock, Colocation, Site to Site (via Mid-Mile - Cloud Interconnect/Cloud Backbone), Cloud to Cloud connectivity, CloudExpress, automated service stitching, encrypted traffic analytics, SD-WAN Application Intelligence Engine (SAIE, formally known as DPI), vAnalytics, AWS GovCloud support, Azure vWAN Integration, Azure GovCloud support, O365 Application Infused Telemetry, C8kv upgrade/downgrade support, cloud based or on-prem deep packet inspection.		✔	✔
Cross-domain innovations Integrated border for campus (SD-Access), integration with Cisco ACI® for application SLA.		✔	✔
Advanced voice features FXO, FXS, and FXS/DID interface support, SIP trunk to Cisco® Unified Communications Manager support, voice module and SRST integration support, voice configuration and policy definition, support for T1/E1 PRI for UC, DSP farm support.		✔	✔
Advanced SD-WAN services Web caching, DRE (including SSL proxy), per-tunnel QoS.		✔	✔
Optimized Multicloud Access and Security Cloud OnRamp for Colocation.		✔	✔
Cisco Umbrella SIG Essentials, including[2]			✔
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 Threat Grid 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 DNA for SD-WAN 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

Cisco 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 SD-WAN feature set.

Repurposing eligible hardware platforms from 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.

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[1] With Cisco DNA software licenses, customers receive embedded SWSS, which covers 24x7x365 Cisco Technical Assistance Center (TAC) support and software release updates. This is valid only for the Cisco DNA software subscription stacks (Cisco DNA Essentials, Advantage, and Premier).

For full hardware support, including the network stack (Network Essentials/Advantage), customers will require Smart Net Total Care for 24x7x365 Cisco TAC support, proactive security and product alerts, and product lifecycle management. An additional option for hardware support is Solution Support for your multivendor Cisco solution environment.

[2] For quantities of Cisco Umbrella SIG Essentials and Cisco Threat Grid licenses included with the Cisco DNA Premier subscription, please see https://www.cisco.com/c/en/us/products/collateral/software/dna-subscription-routing/nb-06-dna-sw-rout-sub-aag-ctp-en.html.

	Cisco DNA Essentials	Cisco DNA Advantage
License type	3- or 5-year term subscription	Includes Cisco DNA Essentials 3-, 5-, or 7-year term subscription
Management options	Cisco DNA Center, CLI, Web UI	Cisco DNA 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), SD-AVC.		✓

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 subscription license
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).	✓	✓
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), 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.	✓[3]	✓[3]
Essential Application Experience MQC including classification, policing, re-marking, scheduling; HQoS, Application Visibility and Control (AVC), NBAR2 (standard protocol packs), IPSLA (Initiator), Deep Packet Inspection.	✓	✓
Essential multicast features Bi-Di PIM, IGMP, Protocol Independent Multicast (PIM), 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.	✓	✓
Optional features Cisco Unified Border Element (CUBE)/Session Border Controller (SBC) support.	✓[2]	✓[2]
Smart Net Total Care® (STNC) 24-hour hardware and network software stack support provided by TAC.	Optional[1]	Optional[1]
Operational/management router capabilities Connectivity Fault Management (CFM-802.1ag), 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 Policy-Based Routing (PBR), Performance Routing (PfR/ OER), Application Visibility and Control (SD-AVC), 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 features Call Admission Control (CAC), voice module support (FXO/FXS for T1 and E1/MultiFunction (MFT)), dialer support, RADIUS, RFC4040 based clear channel codec signaling with SIP, Resource Reservation Protocol(RSVP), RTP Control Protocol (RTCP), Service Advertisement Framework (SAF), SIP for VoIP, Secure Real-Time Transport Protocol (SRTP), Voice over Frame Relay (VoFR) (FRF.11)), VoIP, transcoding, V.150, MGCP.		✓
Optional voice features Communications Manager Express (CME), Cisco Unified Communications Manager, Survivable Remote Site Telephony (SRST), Interactive Voice Response (IVR).		✓[2]
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).		✓

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[2] Requires purchase of additional licenses.

[3] No SSL VPN support except on Catalyst 8000V Edge Software

[4] In a BNG or iWAG deployment, these features require a separate and distinct Broadband Feature License apart from the Cisco DNA subscription license