SD-WAN Deployment and Migration Blueprint - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The contemporary enterprise network landscape is undergoing a fundamental paradigm shift, driven by the pervasive adoption of cloud-native applications, the proliferation of edge computing, and the imperative for agile, secure, and cost-effective connectivity. Legacy WAN architectures, often reliant on expensive MPLS circuits and hub-and-spoke topologies, are proving inadequate to meet the demands of digital transformation. This document serves as the definitive technical overview and hardware datasheet for the AcmeNet SD-WAN Deployment and Migration Blueprint, a comprehensive solution designed to streamline the transition from traditional WAN infrastructures to a high-performance, software-defined networking paradigm.

This blueprint encompasses a robust portfolio of purpose-built hardware appliances, sophisticated orchestration software, and validated deployment methodologies. It is engineered to deliver significant operational efficiencies, including a projected 40-60% reduction in WAN costs, enhanced application performance through intelligent path selection, and unparalleled agility in responding to evolving business requirements. This document provides a granular examination of the hardware components, architectural principles, and

migration strategies that constitute the AcmeNet SD-WAN solution, serving as an essential reference for network architects, engineers, and IT decision-makers.

ARCHITECTURE & CHASSIS DESIGN

The AcmeNet SD-WAN platform is architected upon a foundation of modularity and scalability, ensuring seamless integration into diverse enterprise environments ranging from small branch offices to large data centers. The core of the hardware portfolio is the AcmeNet 7000 Series Edge Platform, a family of high-performance appliances available in compact fanless (for industrial IoT) and high-availability (1+1 redundant power supply) chassis form factors. The flagship model, the AN-7800, is a 1RU chassis designed for high-density branch and regional hub deployments. Its ruggedized aluminum chassis is engineered

for enhanced thermal dissipation and EMI shielding, ensuring reliable operation in demanding environmental conditions.

The hardware architecture is centered on a high- throughput, non-blocking switching fabric, supported by a dedicated multi-core x86 network processor for control plane functions and a hardware-accelerated ASIC for data plane forwarding. This separation of control and data plane ensures deterministic performance and enables advanced features such as stateful firewall, application-aware routing, and line-rate encryption. The chassis design prioritizes serviceability, featuring hot-swappable power supply units (PSUs) and field-replaceable fan trays in select models, minimizing downtime during maintenance operations.

HARDWARE FEATURES

The AcmeNet SD-WAN appliance family is distinguished by a comprehensive set of hardware features optimized for secure, high-performance WAN edge networking. Key features include:

• **Multi-WAN Connectivity**: Each appliance is equipped with a versatile interface mix, including multiple 1GbE, 10GbE SFP+, and optional 25GbE/40GbE uplink ports, allowing for the aggregation of diverse transport services (MPLS,

Broadband, LTE/5G).

• **Hardware-Accelerated Encryption**: Dedicated cryptographic coprocessors offload IPsec encryption/decryption, achieving line-rate performance up to 10 Gbps without impacting CPU resources, ensuring end-to-end data confidentiality.

• **Integrated Security**: A built-in, purpose-built security co-processor enables next-generation firewall (NGFW) capabilities, intrusion prevention (IPS), and URL filtering at wire speed, transforming the WAN edge into a secure gateway.

• **Intelligent Path Selection**: Deep Packet Inspection (DPI) engines within the ASIC classify application traffic in real-time. This information is used to steer traffic across the optimal WAN path based on dynamic application performance metrics (latency, jitter, packet loss).

• **Zero-Touch Provisioning (ZTP)**: Each appliance features a unique hardware fingerprint for secure, automated onboarding to the AcmeNet Orchestrator. This eliminates manual configuration and accelerates branch deployment from days to minutes.

• **Comprehensive Management Interfaces**: Out-of-band management via a dedicated 1GbE port, serial console, and integrated Bluetooth Low Energy (BLE) for initial setup and local diagnostics.

COMPLIANCE & STANDARDS

The AcmeNet SD-WAN hardware platform is designed and tested to meet the most stringent global compliance and industry standards, ensuring broad market acceptance and regulatory adherence.

• **Safety**: UL 60950-1/62368-1, CAN/CSA C22.2 No. 60950-1/62368-1, IEC 60950-1/62368-1, EN 60950-1/62368-1.

• **EMC**: FCC Part 15 (Class A), EN 55032 (Class A), EN 55024, EN 55035, VCCI-CISPR 32, AS/NZS CISPR 32.

• **Environmental**: RoHS, WEEE, REACH compliant. Designed for an operating temperature range of 0°C to 45°C (extended range SKU available: -5°C to 55°C).

• **Telecom**: NEBS Level 3 compliant (for specific carrier-grade SKUs), designed to withstand GR-1089-CORE and GR-63-CORE requirements for electromagnetic compatibility and physical protection.

TECHNICAL SPECIFICATIONS

The following section provides a detailed parameter registry for the AcmeNet SD-WAN appliance portfolio, specifically focusing on the AN-7800 model, which is representative of the platform's core capabilities.

Parameter	Specification

Form Factor	1RU Rack-mountable Chassis
Processor	Intel Xeon D-2100 Series, 8-Core @ 2.2GHz
Memory	32 GB ECC DDR4 (upgradeable to 64 GB)
Storage	2 x 512 GB M.2 NVMe SSD (RAID 1)
Base I/O Ports (AN-7800)	4 x 10/100/1000BASE-T (RJ45), 4 x 1GbE SFP, 4 x 10GbE SFP+
Expansion Slots	1 x PCIe Gen3 x8 (for optional 25GbE/40GbE module)
Switching Capacity	160 Gbps (non-blocking)
Forwarding Rate	240 Mpps
IPsec Throughput (max)	10 Gbps (AES-256-GCM)
Concurrent Sessions	2,000,000
Power Supply	Dual 550W AC/DC, 1+1 Redundant, Hot-swappable
Typical / Max Power Consumption	150W / 250W
MTBF	350,000 hours at 25°C
Operating Temperature	0°C to 45°C (Extended Range SKU: -5° C to 55°C)
Weight (fully loaded)	8.2 kg (18.1 lbs)
Dimensions (W x D x H)	442 x 508 x 43.5 mm (17.4 x 20.0 x 1.7

	inches)

ORDERING OPTIONS

The AcmeNet SD-WAN solution offers a flexible and granular ordering structure to match specific deployment requirements. The base appliance, software subscription, and accessory bundles are ordered using the following SKU taxonomy:

- **Base Hardware SKU**: AcmeNet AN-7800-HW (includes chassis, backplane, fans, and power supplies as specified).
- **Software Subscription**: AcmeNet-OS-SUB-1Y / 3Y / 5Y (includes all SD-WAN features, security services updates, and support). Subscription tiers are available as 'Standard', 'Advanced', and 'Premium', with the latter including advanced analytics and application optimization features.
- **Accessory Bundles**:
  - **AN-7800-ACC-RACK**: Rack mount kit for 19-inch EIA standard racks.
  - **AN-7800-PSU-AC**: Spare/replacement 550W AC Power Supply.
  - **AN-7800-PSU-DC**: Spare/replacement 550W DC Power Supply.
  - **AN-7800-FAN-KIT**: Spare/replacement fan tray module.
  - **OPT-10G-SR/ LR**: SFP+ transceivers for 10GbE connectivity (Short

Reach / Long Reach).