DATASHEET

SD-WAN Director

Empowering a multi-tier, multi-tenant software-defined WAN

Introduction

The Director is part of the Ekinops Compose management suite and the corner stone of Ekinops SD-WAN solution. The Director delivers rich customer experience which is key in a context where the SD-WAN market is growing and the Enterprise connectivity needs an application-centric approach rather than a network approach.

The Director empowers the Ekinops SD-WAN solution through a multi-tenant and multi-tier architecture leveraging the latest SDN (Software Defined Networks) developments decoupling the management plane and the control plane.

This architecture makes it possible to:

- "scale as you grow"
- manage multiple customers within a single infrastructure.

The Director comes with a dedicated GUI (Graphical User Interface), and associated APIs for the SD-WAN Xpress solution. It delivers the FCAPS functions (Fault, Configuration, Accounting, Performance and Security) of an NMS solution together with a powerful modelling engine to set the overall network topology and build proper configuration for each elements of the network.

It is complemented by controllers, playing the role of the control plane and hosting some key services.

The Director multi-tier model defines clear role and resource segmentation: the Service Provider manages the Infrastructure elements (Devices, Controllers, Gateways, software, etc.) which are delegated to a Partner managing the SD-WAN services. Each partner can manage multiple customers and operate the SD-WAN as a full managed service or delegate it to its customers on a "per customer" basis.

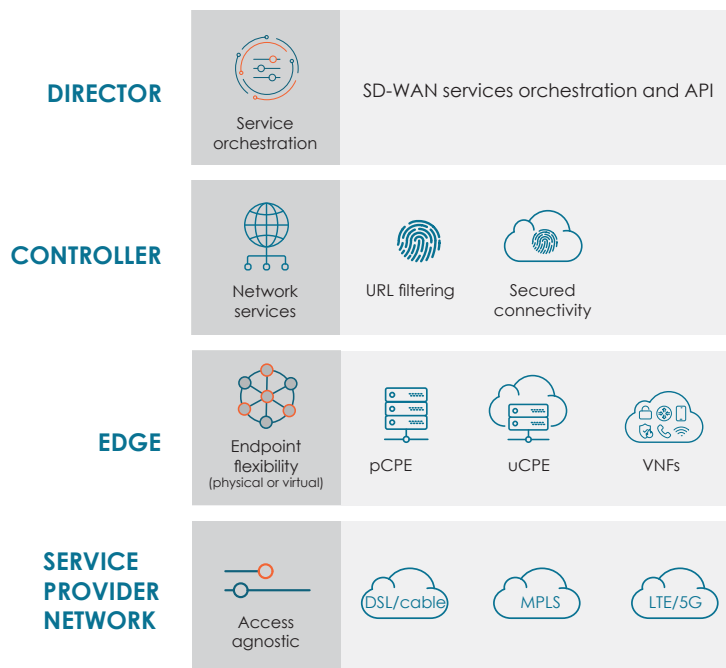|	
DIRECTOR	Service orchestration — SD-WAN services orchestration and API
CONTROLLER	Network services — URL filtering — Secured connectivity
EDGE	Endpoint flexibility (physical or virtual) — pCPE — uCPE — VNFs
SERVICE PROVIDER NETWORK	Access agnostic — DSL/cable — MPLS — LTE/5G

Figure 1 - A multi-tier, multi-tenant model

The multi-tier approach enables Service Providers to easily manage their various SD-WAN go-to-market model: direct touch, indirect, as a managed service or Do It Yourself (OTT mode).

The Service Provider Portal

The portal provides a dedicated interface focusing on SD-WAN infrastructure management for the Service Provider. It comprises of:

- The SD-WAN Edge default configuration and enrolment:
  - Zero-touch enrolment through a secured Call home connection
  - The software upgrade of the SD-WAN Edge alongside the deployment of a default Service Provider configuration (like SP Banner, Security profile, etc.)
  - The assignation of devices to a "partner" which will manage the SD-WAN service deployment.

- The Controllers, which are VMs (virtual machines), are installed at the network border and provide the control plane of the SD-WAN solution. The controllers are deployed in an N+1 mode and can be delegated to partners. As such, each Partner has its own set of controllers which can grow with its installed based.

- The Gateway, is either a virtual machine or an Ekinops CPE (e.g. ONE3540). The Gateway is managed by the Service Provider, which defines the type of services the Gateway are delivering (service, hub, MPLS) and are, like for controller assigned to a Partner. The Partner can as such terminate multiple customer SD-WAN network on the same Gateway or pool of Gateways.

- The monitoring and troubleshooting of a customer, a partner or an edge (with specific service provider privileges)

- The monitoring of the core elements such as the Director itself, the controllers and the Gateway
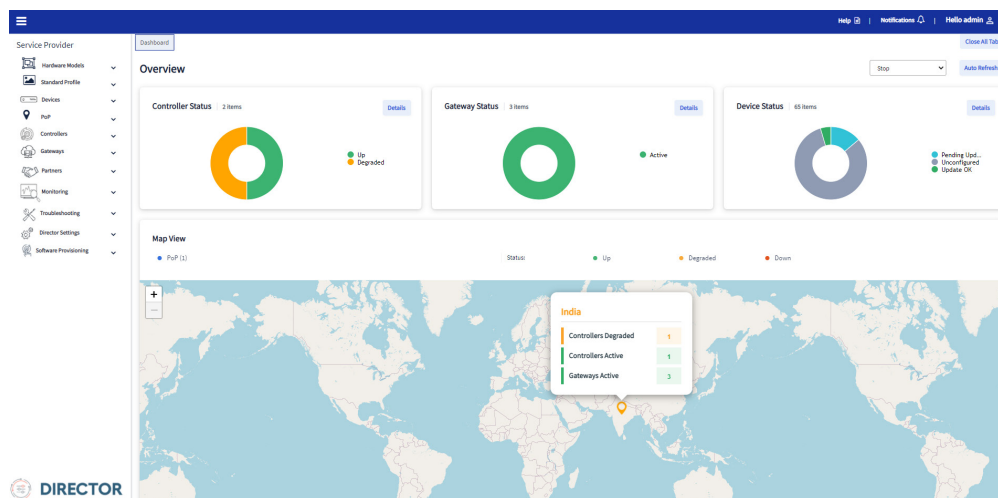

Figure 2 - Service Provider portal

The Partner Portal

This portal provides a dedicated interfaces focusing on the management of end customers and the overall SD-WAN services. The dashboard resumed the main elements for a Partner to monitor its services

The partner will manage all the attributes of the SD-WAN solution:

- Customers administration: creation, IPs, users, delegation model
- Devices / sites
- Policy rules
- Overlays
- Monitoring

The Director is leveraging a template-based approach, in order to simplify multiple customer's deployment and limiting repetitive actions.

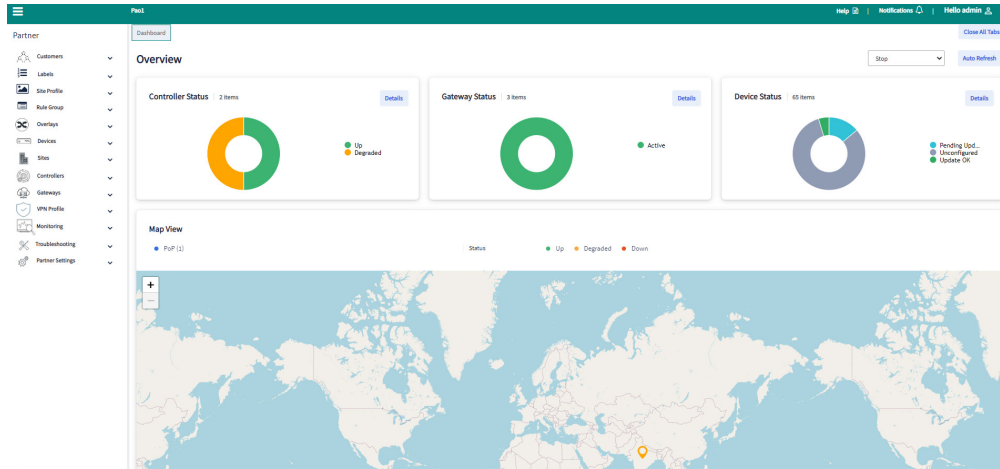Thanks to its portal a Partner can build and operate for its customer an SD-WAN deployment.

COMPOSE

Figure 3 - Partner portal

The Customer Portal

This portal is only focusing on the customer view of its SD-WAN network. The Customer also benefits of a dashboard to monitor the state of its SD-WAN network within a single view and identify potential issue rapidly.

The flexibility provided by the interface allow a customer, based on Partner delegation, to:

- Act as a simple "viewer" of its network
- Have the ability to update Policy rules or Overlays only: to rapidly adapt its business policy
- Manage its LAN and associated services (per site)
- Manage its WAN (per site)

A dedicated monitoring view enable the customer to review network indicators & identify which applications or sites is "consuming" the network.

A simple troubleshooting page allows the customer to guide him through basic steps to identify potential issues and to collect sufficient information to be transfered to its support organization.
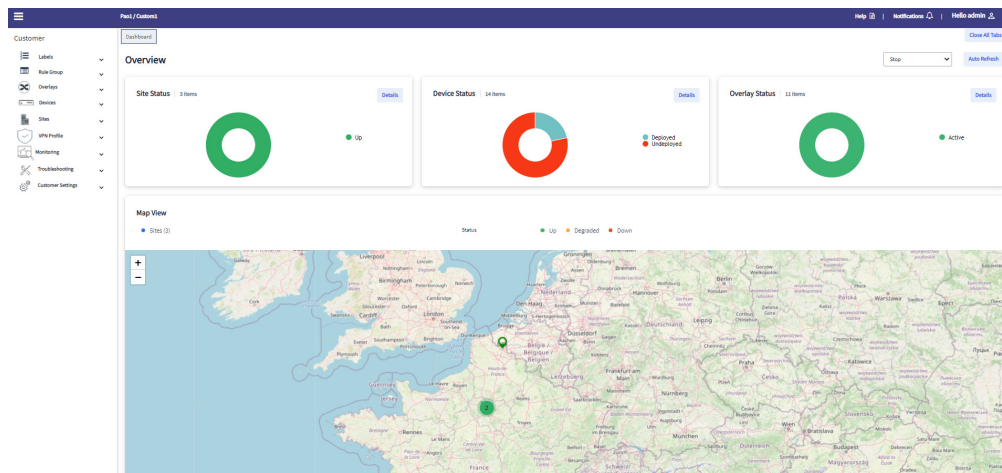

Figure 4 - Customer portal

High Level Description

The Director's design follows a micro-service model. It is split between front end (Director Core) and back-end services (Data storage and persistence). This disaggregation enables various high availability models while granting resilience and scalability.

This architecture also ensures high-availability of all the components and prevents Single Point of Failure (SPOF). The Director is deployed within a datacenter environment with controlled access to the Internet.

Similarly to the Director, the controllers use a micro-service model (containers) and are stateless, simplifying the redundancy mechanism, which, for a CPE, means the use of a different controller if its primary one is not available.

The Director is exposing a REST API for full automation as well as integration into the OSS/BSS of the Service Provider. This REST APIs is also following the same multi-tier model than the Director and, as such, a Partner and Customer also have access to the REST API, yet only for their field of application.

The overall sizing of the solution varies according to several factors, mainly:

- Number of sites
- Number of partners (each partner having its own set of controllers & gateway)
- Metric retention duration

The Director is proposed by default in a standard high-availability mode (HA), preventing SPOF.

General Information

- Minimum VMs quantity: 8 (Director H.A) & 2 (controllers)
- Supported OS: Debian
- Max sizing per Director: 30,000 CPEs

About   ⚛ **EKINOPS**

Ekinops is a leading provider of open and fully interoperable Layer 1, 2 and 3 solutions to service providers around the world. Our programmable and highly scalable solutions enable the fast, flexible and cost-effective deployment of new services for both high-speed, high-capacity optical transport networks and virtualization-enabled managed enterprise services

Our product portfolio consists of three highly complementary product and service sets: Ekinops360, OneAccess and Compose.

- Ekinops360 provides optical transport solutions for metro, regional and long-distance networks with WDM for high-capacity point-to-point, ring and optical mesh architectures, and OTN for improved bandwidth utilization and efficient multi-service aggregation.

- OneAccess offers a wide choice of physical and virtualized deployment options for Layer 2 and Layer 3 access network functions.

- Compose supports service providers in making their networks software-defined with a variety of software management tools and services, including the scalable SD-WAN Xpress.

As service providers embrace SDN and NFV deployment models, Ekinops enables future-proofed deployment today, enabling operators to seamlessly migrate to an open, virtualized delivery model at a time of their choosing.

A global organization, Ekinops (EKI) - a public company traded on the Euronext Paris exchange - operates in 4 continents

EKINOPS360
Dynamic Optical Transport

ONEACCESS
Fast Network Virtualization

COMPOSE

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