Prodapt Chase Extraordinary

Accelerate SD-WAN service delivery to serve the pent-up demand for the enterprise connectivity

Automate and digitize workflows to achieve touchless SD-WAN configuration, provisioning, and activation

Credits

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Managed SD-WAN offerings provide attractive opportunities for DSPs, but an elongated service delivery cycle time impacts the revenue realization

As organizations plan for the **future of their enterprise network** in a post-COVID-19 world, they increasingly realize the **importance of connectivity**, especially the Wide Area Network. IDC believes that **SD-WAN** will be a key technology for enterprises to accelerate their digital transformation journeys in 2021 and beyond.

For DSPs, **Managed SD-WAN Services** provide attractive opportunities to tap into **growing SD-WAN market** and create new revenue streams

As per MarketsandMarkets research, the global SD-WAN market size is expected to grow from USD 1.9 billion in 2020 to USD 8.4 billion by 2025, at a CAGR of 34.5% during the forecast period.

Top Drivers for SD-WAN Adoption

- Increasing bandwidth demand
- Moving more applications to cloud
- Increasing workforce mobility
- IT agility

To seize this opportunity, DSPs must move more aggressively and fast-track SD-WAN service rollouts for their enterprise customers.

However, high network complexities and other operational challenges (in between ordering to downstream provisioning) significantly delays the SD-WAN service delivery cycle time.

This results in delayed revenue realization and impacts Customer Experience (CX).

Key factors that delay SD-WAN service delivery for DSPs

Operational Complexity & Process Challenges

High order rework due to frequent changes in product requirements or process flows

Delay in SD-WAN device logistic management and configuration

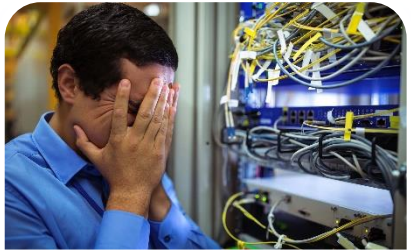
Hand-off delays due to numerous manual follow-ups (on an average, 6-8 distinct roles touch each work order)

Compatibility, Integration & Validation Complexities

Ensuring compatibility with legacy network and platforms is complex and time consuming

Proprietary & complex technology in vendor ecosystem leads to various challenges in integrating it into existing O/BSS stack

Complex validation matrix for SDWAN, uCPE, services & VNFs/Apps



Increasing Network Complexity in Hybrid Ecosystem

Hybrid network operations & management for multi-domain and multi-vendor environment increases the complexity multifold

Multi-vendor options also hinder the introduction of automation and analytics

Top challenge in **SD-WAN** management as identified by Heavy Reading's survey

> **"Complexity in managing a highly distributed service across multiple platforms, networks and cloud domains and integrating it into existing O/BSS Stack"**

These challenges increase the cost and time-to-market of SD-WAN service, which ultimately impacts revenue realization. DSPs must embrace **strategic levers** to eliminate these challenges and accelerate the SD-WAN service delivery process.

Key levers to accelerate SD-WAN service delivery

Eliminate process inefficiencies and embrace automation and digitalization at various levels

Standardization
- Standardize SD-WAN product catalogue
- Standardize process checklist
- Standardize device logistics & configuration

Real-time Order Visibility
- Abstract milestones and set thresholds
- Track sub-interval performance
- Provide Order Visibility dashboard

Automation and Integration
- Touchless SD-WAN configuration, provisioning and activation
- Multi-vendor Unified Activation and Abstraction

Single Pane of Glass
- An integrated portal for Ops team and customers with self-service capability
- E2E service orchestration

01 Process Optimization

Overcome immediate shortcomings

Achieve ~20% reduction in cycle time

02 Automation

03 Digitalization

Create long-term success plan through increased automation and digitalization at various levels

Achieve ~40% reduction in cycle time

The upcoming slides deep dive into each of these key levers and provide proven recommendations for their successful implementation.

Standardize SD-WAN product, processes, and device configuration

Reduce high order rework and fast-track SD-WAN onboarding

1 2 3 4

Standardize SD-WAN product catalogue offerings

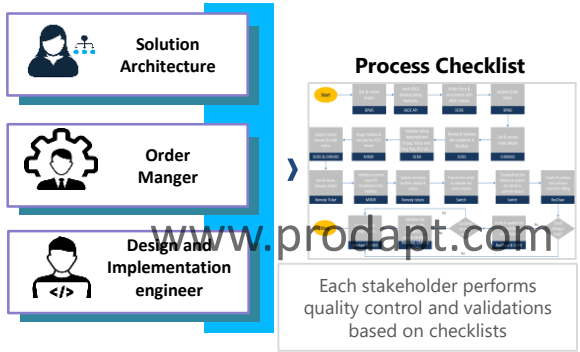
Ensure uniformity and consistency in product offerings that can be held to a certain standard of quality to reduce rework (supplement) to larger extent.

SD-WAN Features	Product Catalogue 1	Product Catalogue 2
CPE	FWA-1010VC	FWA-3260
Router	Y	Y
Firewall	N	Y
Direct Internet Access Support	N	Y
SD-WAN Controller	N	Y
Full Mesh Topology	N	Y
Physical & Virtual Deployment	Y	Y
MP-BGP Route exchange	N	Y
Routing Protocols like OSPF v2,v3 RIPv2, MP-BGP4, Policy based routing	Y	Y
QoS – Adaptive Rate Limiting	Y	Y
IP Address Management Options – DHCP client, server & relay	Y	Y

Fig: Sample product standardization

Standardize process checklist for SD-WAN design and deployment

Ensure compliance with standard operating procedures at various points of failure, mostly in hand-offs between multiple workgroups, to avoid any loss in translation.

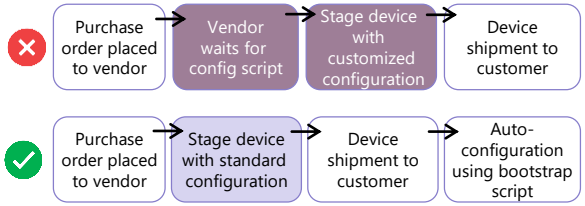


Process checklist should comprise of:

- Approved SD-WAN design architecture & deployment considerations
- Detailed scope of services and strategy
- SD-WAN edge node hardware specifications
- Security, Application experience & QoS
- Management, Orchestration and Operation
- API & Integration

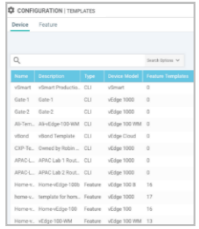
Standardize SD-WAN device logistic management and configuration

Avoid making customized device configurations before shipment as this increases the waiting time for vendors



The device can be auto-configured using a bootstrap script with a pre-loaded public key to connect to the DSP's centralized server

Standardization of device/feature configurations into a template helps users to jump-start the boot configuration and avoid delay in deployment



- **Connectivity templates such as** IGMP,OMP, BFD, and BGP
- **Security templates** such as AAA, SSL and other cryptographic security
- **Link state routing protocols** such as OSPF, VPN, and VPN Interface IPsec
- Template parameters can be fed easily using CSV, JSON, and XML file format

Fig: Pre-built standard configuration template for varied vendor devices

Provide real-time order visibility to track milestone performance

*Milestone **abstraction** and data **aggregation** are vital steps to provide real-time order visibility*

Recommendations

Abstract intermediate milestones in SD-WAN service delivery

- Most telco O/BSS applications fail to perform abstraction, which then often requires system hopping, reading through pages of user remarks, task audits, calling people and validating the fallouts, etc.
- The ability to "**abstract**", the maze of **multiple Start/Stop milestone** within each of the resource facing orders into customer understandable trails is key to solve this problem
- Take a holistic view that combines the SD-WAN process knowledge with IT systems knowledge and their workflows. Identify individual trails and map their dependencies, to create a simpler swimlane view
- **Process mining tools** like **Celonis** or **UI Path** can aid abstraction design

Provide a simplified view of order journey and actionable insights to operations team

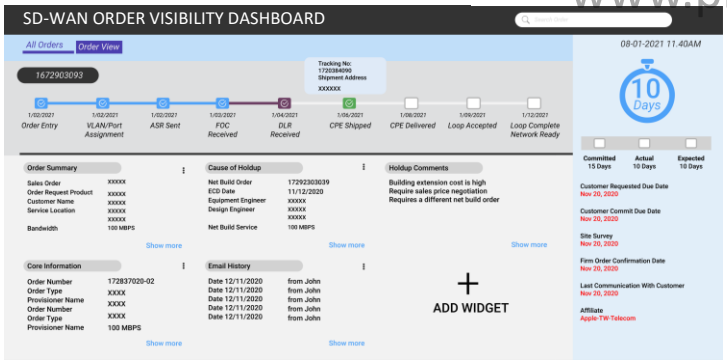


Fig: Sample representations of SD-WAN Order Visibility Dashboard

Aggregate data from every participating functional application in an SD-WAN order journey to track sub-interval milestone performance

Data aggregation to track the Order In/Order Out from within each of the participating applications **is possible by instrumenting code at the database level**. This entails a 3-step process:

1. Identification of the **unit entity** of an order or its component in an application getting created
2. Identification of the **logical completion** of an entity within the application, before it goes into a wait mode for actual completion
3. Storing the **unit entity creation and** (logical & physical) **completion times** within each application into the data sink

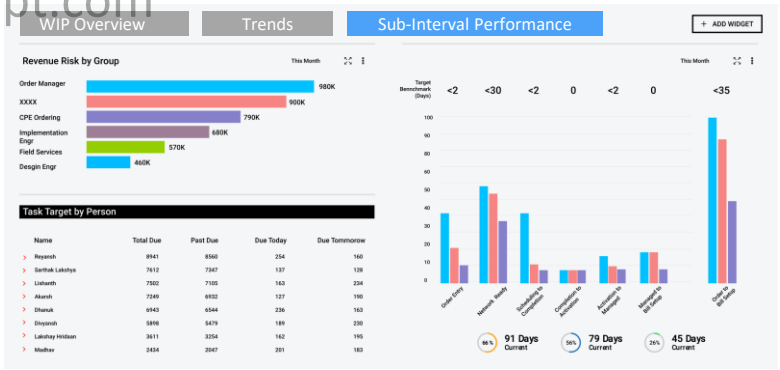


Fig: Sample representations of SD-WAN sub-interval milestone performance

Consolidate and automate workflows to achieve touchless SD-WAN configuration and provisioning

Recommendations

Consolidate the workflows for tasks such as CPE logistics, engineering build, workforce management, activation, last mile provisioning etc. Bring all siloed tasks under one workflow orchestration for e2e visibility and operational efficiencies.

Key candidates to automate in SD-WAN service delivery

- Automated validation of technical data gathered
- SD-WAN Edge configuration
- Service activation and LAN Migration
- Automated tracking of CPE delivery and installation
- Logical MACD (modify, add, change, delete) automation
- E2E testing & onboarding automation

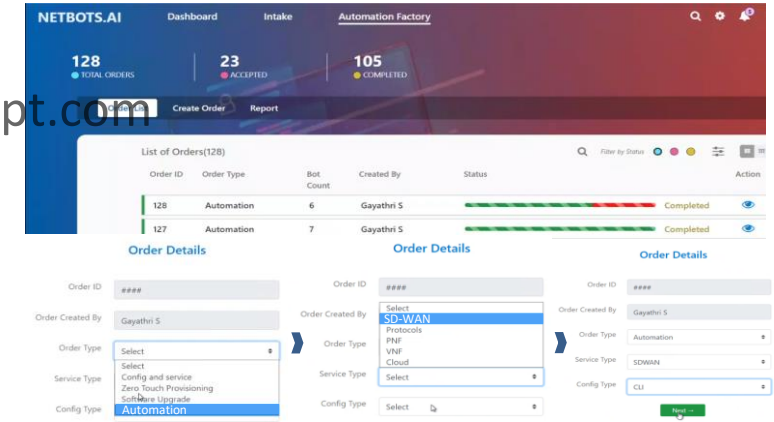
SD-WAN Edge configuration

Automation opportunities in SD-WAN Edge Configuration	SDWAN Accelerators
Check for the **reachability of the network components** like vManage, vBond, vSmart & vEdge	Prebuilt test suits help to run generic reachability check
Check for the **availability of the devices** to be configured in the geographies, hostname and system IP, site ID and mode of configuration CLI or feature template	Maintain and display the list of available and configured devices in the topology map
Check for the **availability of the (pre-built) feature template** for the edge box to be configured and configurability of the features	A master template adaptor can store and manage vendor specific feature-set
Set up a **default DHCP tunnel interface** for vEdge.	Adaptors can be built to accept inputs in CSV format, based on which, the templates are automatically selected and filled
Add **configuration to the router** and set up the overlay management protocols	Create multi-vendor abstraction and orchestration to do bulk provisioning of the devices irrespective of vendor
Perform **connectivity and functionality checks** for the newly deployed site	Prebuilt test suits to jump start with functionality check

DSPs should look beyond tasks, processes and functions to cover the e2e automation of business operations itself.

This requires combinations and orchestration of complementary sets of **tools that can consolidate functional and process silos to automate and augment business processes.**

Tools such as NetBots.AI offer a broad & coherent automation approach to integrate disparate, and complex technologies



- Focus on programmable network & operations
- Cognitive automation
- Line-of-business integrations
- Provide predictive insights
- Zero-touch provisioning

Multi-vendor Unified Activation and Abstraction (MVUA)

Resolve compatibility issues and provide seamless integration with multi-vendor SD-WAN solution

Recommendations

A **Multi-vendor Unified Activation and Abstraction (MVUA)** can be enabled by building **common adaptors** (keyword driven test functions) that resolves compatibility issue with legacy O/BSS systems.

- "Adaptors" can be integral part of "Automation Platform", and serve as a common provisioning and testing platform for any vendor SD-WAN solution

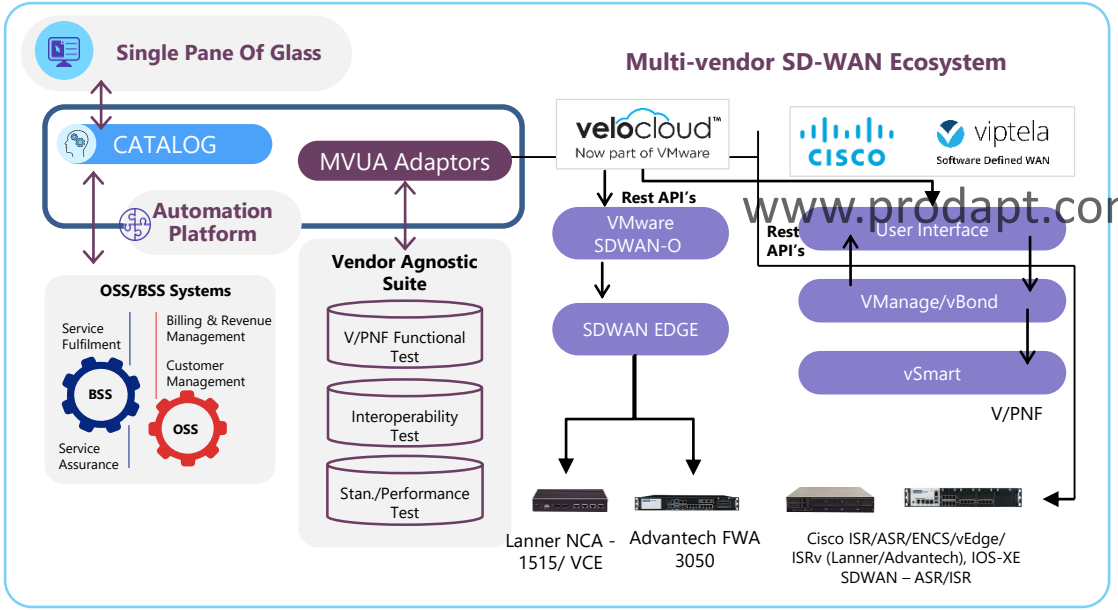


Fig: High-level workflow for MVUA and abstraction

Create vendor agnostic test suite

- Common test suites can be built with higher level of abstraction to withstand portability and adaptability across the network nodes.
- Automation platform can auto-select relevant test case from pre-built test repository and perform functionality, interoperability and integration testing for the network services deployed.

```
NS Creation
  Log   Welcome to prodapt automation framework
  Log   NS Creation on ${ORCHESTRATOR} with given Image:
  Read Test Setup Configuration   ${CONFIGFILE}
  Set Configuration   ${IMAGE}   ${FLAVOR}
  Assert Authenticate To Orchestrator
  Assert VNFD Create
  Assert NSD Create
  Assert NS Create
  Assert NS Instantiate
  Assert NS Validate

*** Keywords ***
Read Test Setup Configuration
  [Arguments]   ${configfile}=
  Read Config   ${configfile}
  Log   Reading test setup configuration successful

Set Configuration
  [Arguments]   ${image}=   ${flavor}=
  Set Config   ${image}   ${flavor}
  Log   Setting configuration is successful

Assert Authenticate To Orchestrator
```

Use **Keyword-driven framework** (Robot IDE) to resolve complexity

- Easy to understand pseudocode
- Results ~40% reduction in lines of code
- Test steps are self evident, portable, extensible, and reusable

Vendor agnostic test suits integrated with MVUA adaptors and Automation platform (such as NetBots.AI), **enable navigating through the complex validation matrix** of network, operations, technology vendors and B2B customer requirements.

Provide a **Single Pane of Glass (SPOG)** for customers, vendors & agents

Enable e2e managed operation and service orchestration with high degree of transparency

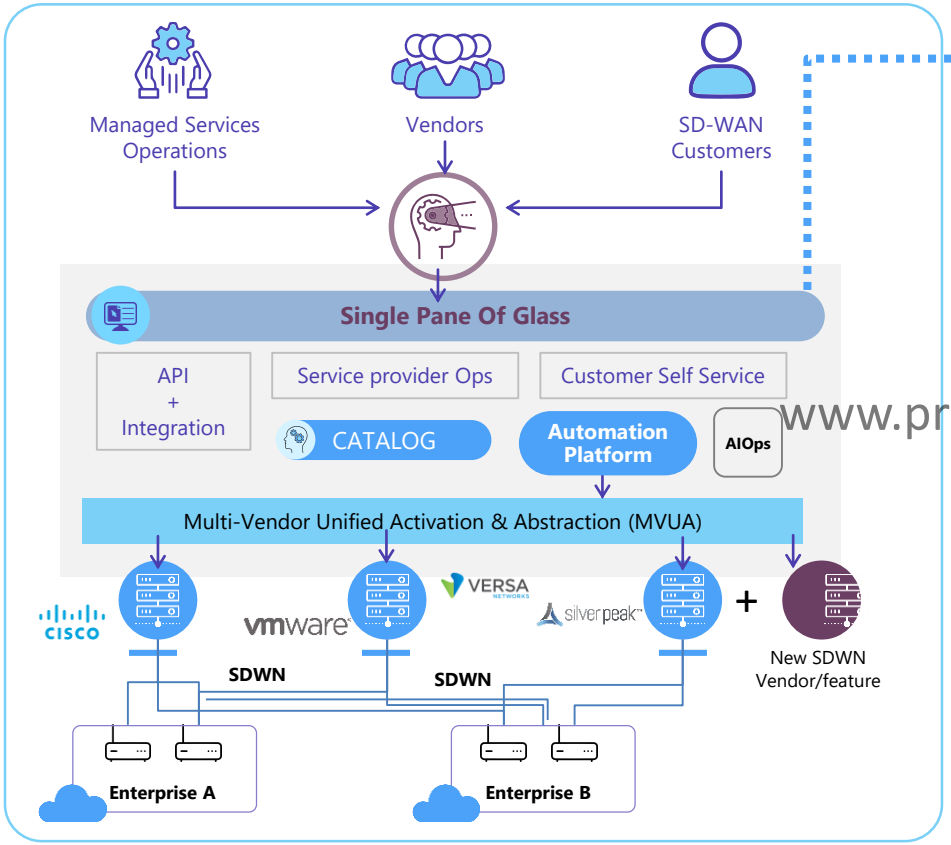


Figure- High-level workflow for Single Pane of Glass (SPOG) application

- An integrated portal for Ops users to enable e2e managed service operations
- Self-service capability for SDWAN customers to be able to view and manage selected attributes of their respective assets

Recommendations

Implement Open API for e-Bonding - Expose everything as APIs to make the services consumable by customers, partners, and vendors. Key areas include CPE logistics and configuration management, customer experience management, and third-party vendor management.

Enable digital order management - Trivial "Record only operations" like changes to contact information could be performed without the need for a supplement pass on the order. Administrative updates to the order should be made possible through an API experience, providing an option in self-care portal.

Implement an integrated Visual Control Room to -

- Get complete status report of the tasks executed, and the test cases conducted
- Deep dive into internal logs of the running application, VM's and containers
- Track the active and inactive tasks, and report their status
- Conduct database health checkups and track occupancy

Embrace advanced analytics and AI/ML in service delivery

- Predict order duration/turnaround time, milestone fallout, possible jeopardy scenarios and detect false alarms in installation & activation
- The service delivery milestone notifications combined with a **predicted milestone completion** date could be made across multiple channels like email/text and Self-care portal. Extend the proactive notification capability into Day 1+(service assurance) scenarios of a managed service operation.

Click here to read the detailed insight on "**AI-powered predictive service delivery**"

Benefits projected to be achieved by a leading DSP in North America by leveraging key strategic levers described in this insight

Implementation of the key levers as discussed in this insights can result in the following benefits.

53% **End-to-end cycle time improvement**

E2E interval reduction through handoff elimination, supplement reduction and tool optimization. Accelerated Day-0 to Day-1 activities and enabled multi-vendor SD-WAN operations.

2x improvement in agent productivity through Single Pane of Glass and Order Visibility Dashboard

30% reduction in workload for SD-WAN service delivery with digitalization and automation

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