



The Challenges of Offering Managed SD-WAN Services

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Who is Ivan Pepelnjak (@ioshints)

Past

- Kernel programmer, network OS and web developer
- Sysadmin, database admin, network engineer, CCIE
- Trainer, course developer, curriculum architect
- Team lead, CTO, business owner



Present

- Network architect, consultant, blogger, webinar and book author

Focus

- SDN and network automation
- Large-scale data centers, clouds and network virtualization
- Scalable application design
- Core IP routing/MPLS, IPv6, VPN





A Managed SD-WAN Service is about to be born....



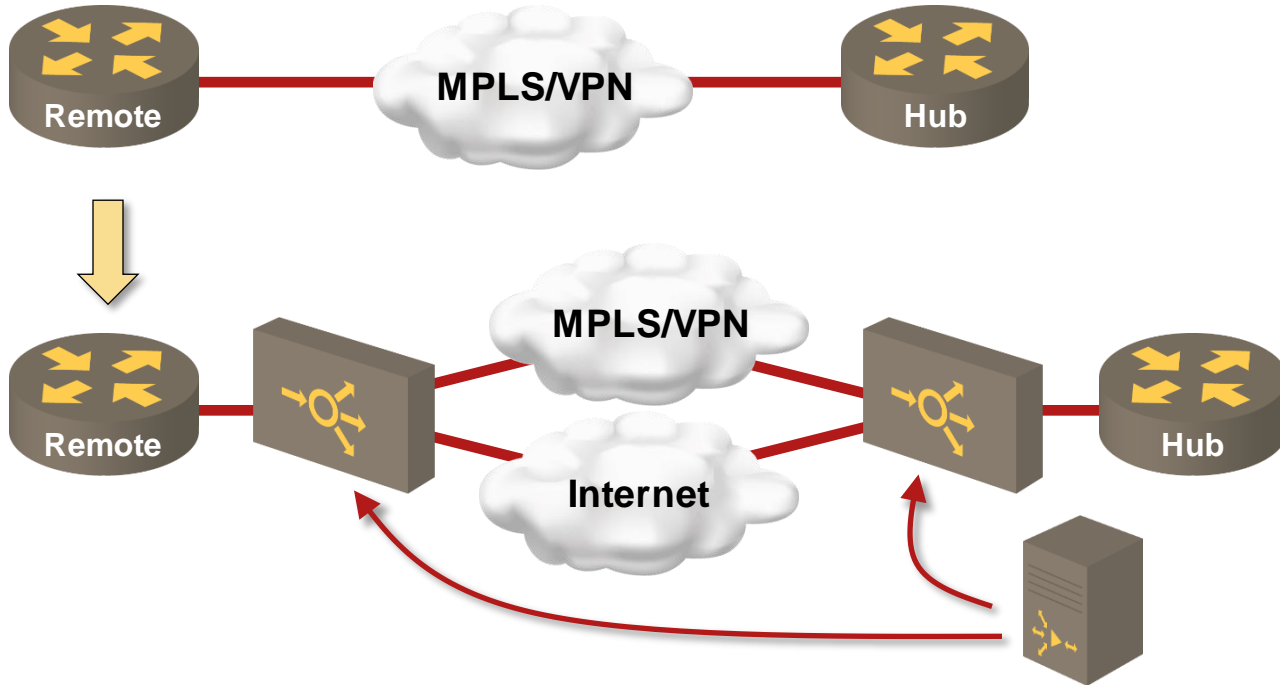
**We're launching a managed SD-WAN service.
We already have the first customer.**

Managed *what*? What SD-WAN? What service?

I don't care. Get it done!

What Is SD-WAN?

SD-WAN Use Case



Jérôme Nicolle
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...

That should be interesting.

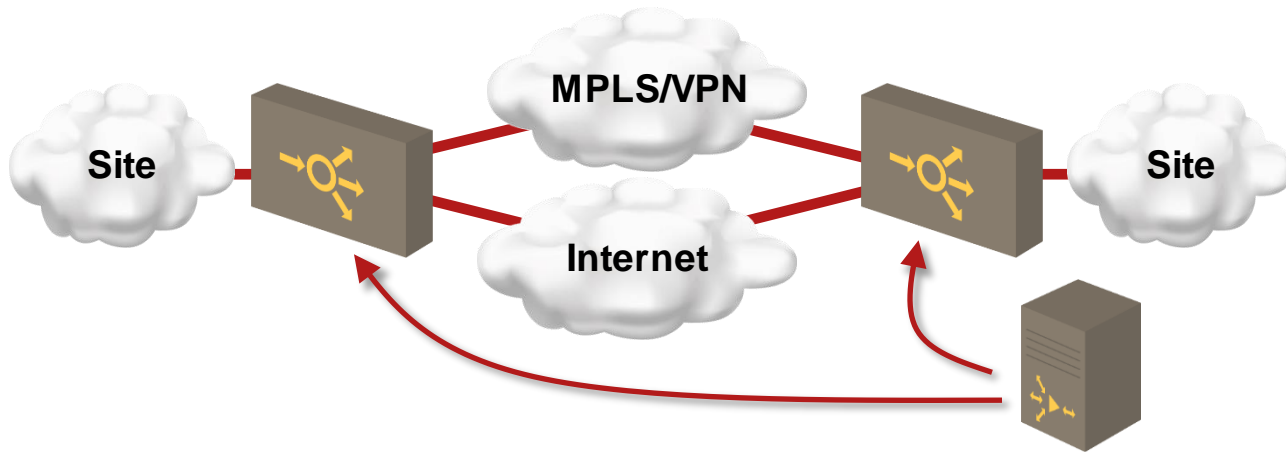
My point has been for years that SD-WAN's sole purpose is to shift value and shackles from ISPs to vendors.

Please prove me wrong ! [@ioshints](#)

- Use case (customer): replace expensive MPLS/VPN with Internet-based transport
- Use case (SP): keep charging for expensive services
- Use case (vendor): create a network-wide lock-in with proprietary high-margin product

Do you see the disconnect?

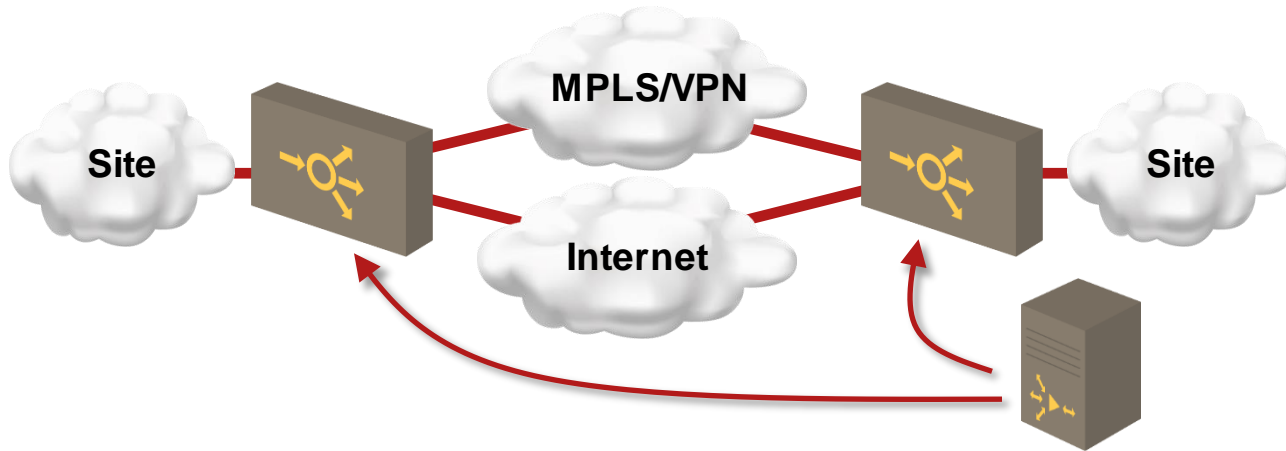
Typical SD-WAN Functionality: Control Plane



- Automatic deployment of new devices (= Autoinstall)
- Support multiple forwarding domains (= VRFs)
- Intra-site topology discovery (= routing protocols)
- Endpoint discovery (= NHRP)
- Exchange of topology information via controller (= BGP RR)
- Download forwarding policies from the controller (= PfR)
- Exchange encryption keys (= IKE)

SD-WAN is not new. It's just a bunch of old stuff rewritten from scratch... or glued from open-source components

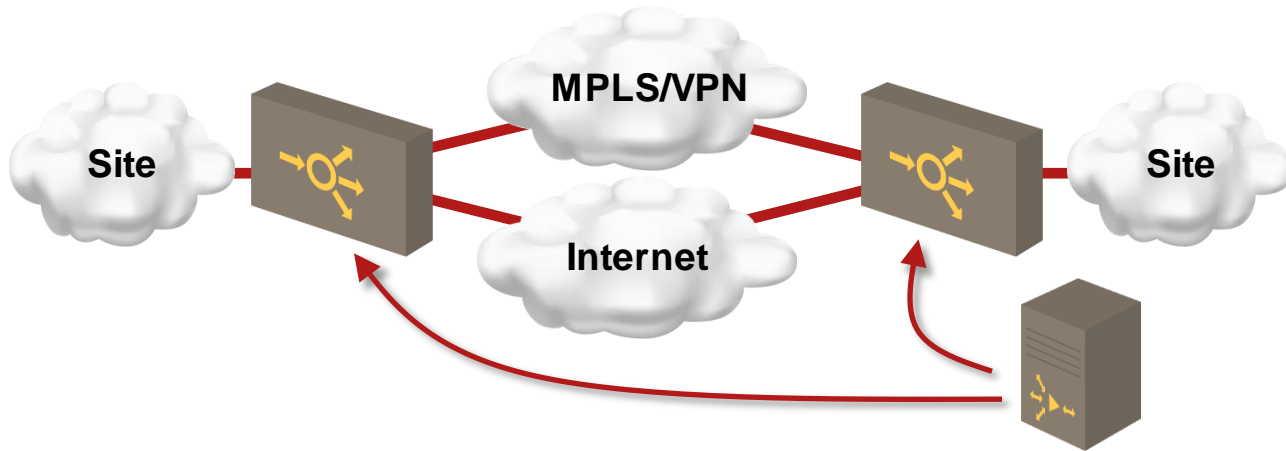
Typical SD-WAN Functionality: Data Plane



- Measure the characteristics of all alternate paths (= IP SLA)
- Classify application traffic (= NBAR)
- Select one of the potential paths (= PBR) based on traffic characteristics and path measurements (= PfR)
- Encapsulate and encrypt the user traffic before sending it over Internet (= GRE + IPsec)

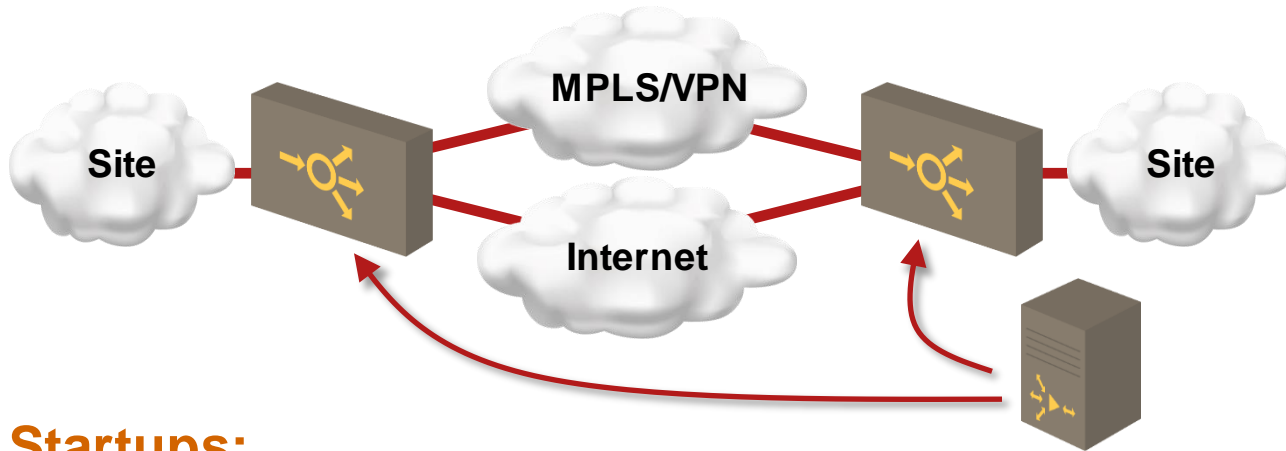
More @ <http://blog.ipSPACE.net/2015/06/software-defined-wanwell-orchestrated.html>

Additional SD-WAN Functionality: Data Plane



- Better application recognition (beyond port-based NBAR)
- Better SLA measurements (including timestamps on every packet)
- Cloud-based exit points and direct access to SaaS providers
- Managed firewalls instead of local Internet exit
- WAN optimization functionality (example: forward error correction)

Sample SD-WAN Products



Startups:

- CloudGenix → Palo Alto
- VeloCloud → VMware
- Viptela → Cisco

Traditional vendors

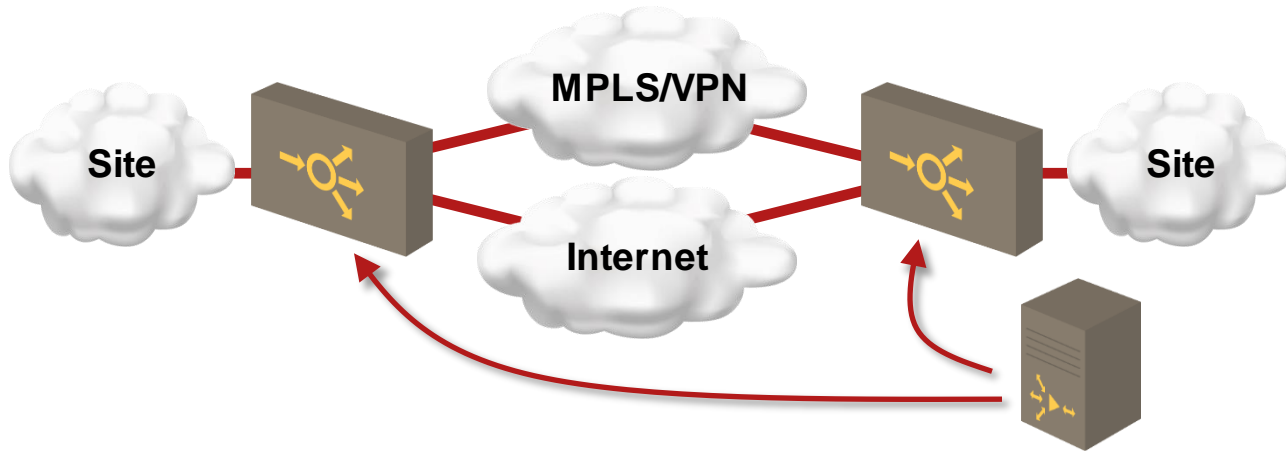
- Router manufacturers: Cisco (IWAN), Huawei
- WAN optimization vendors: Riverbed, Silver Peak, Talari
- Orchestration solutions: Glue Networks (for Cisco IWAN)

Challenges

- There is no SD-WAN standard
- Every product is totally proprietary
- No interoperability
- Interesting to troubleshoot

Challenges of Managed SD-WAN Services

Networking Challenges

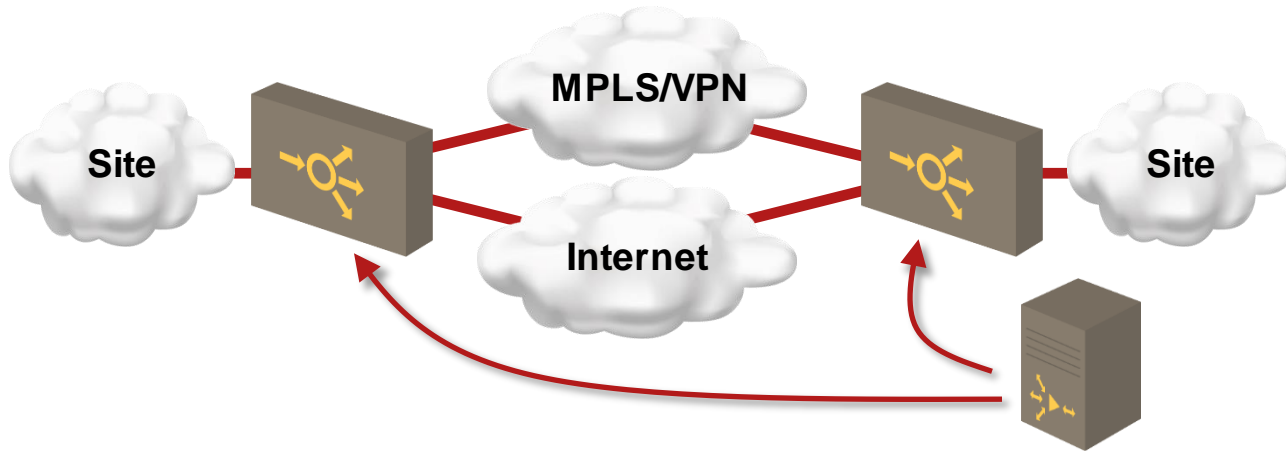


- Installation of on-premises devices
- Integration with customer routing protocol
- Running SD-WAN in parallel with existing customer core (migration process)

Do you have...

- A design team that could interact with every customer?
- A qualified deployment team?
- Project management capabilities?

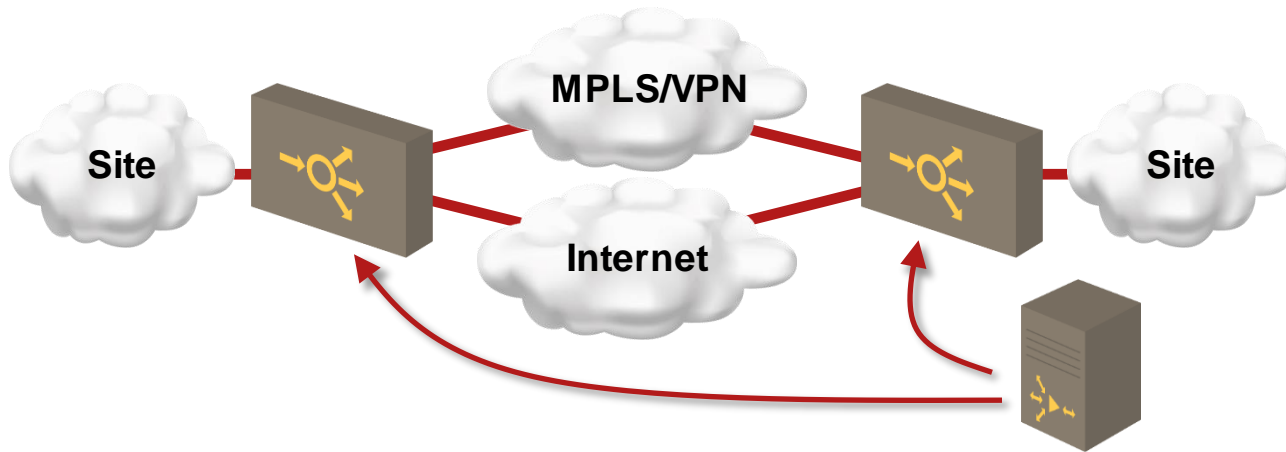
Support Challenges



- Who will support the customer?
- Do you have a team with prerequisite technical knowledge? If not, how will you build it?
- Who will be responsible for the *network down* events?
- Who will interface with the vendor?
- What will you do when the vendor turns out to be clueless?
- How will you recover from this nightmare?

Whoever offers managed SD-WAN services must become a really good system integrator

Orchestration Challenges (and Legal Nightmares)



- Where is the orchestration system? In public cloud, in telco cloud, on-premises? In which jurisdiction?
- Could we run an instance per customer?
- What about security-conscious customers? GDPR anyone?
- How does multi-tenancy work?
- Who has what access to the orchestration system? Who could make changes?

Commercial Challenges



- Will the customers be willing to buy this service from you?
- Are you known for your enterprise design- and implementation prowess... or are you a low-cost bit mover?
- Can your sales team sell the service?
- Why should the customers buy this service from you and not from your competitor? What's your advantage?
- Can you compete with OTT providers?
- How long will the integration with the billing system take?

Is It Worth the Effort?



Have fun breaking things

Questions?

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- Blog: blog.ipSpace.net
- Email: ip@ipSpace.net
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