

Why NFV Orchestration is critical for SD-WAN services



How can NFV enable CSPs to differentiate their SD-WAN offering?

Ofer Farkash


Product Marketing Manager, Amdocs Open Network

March 2018

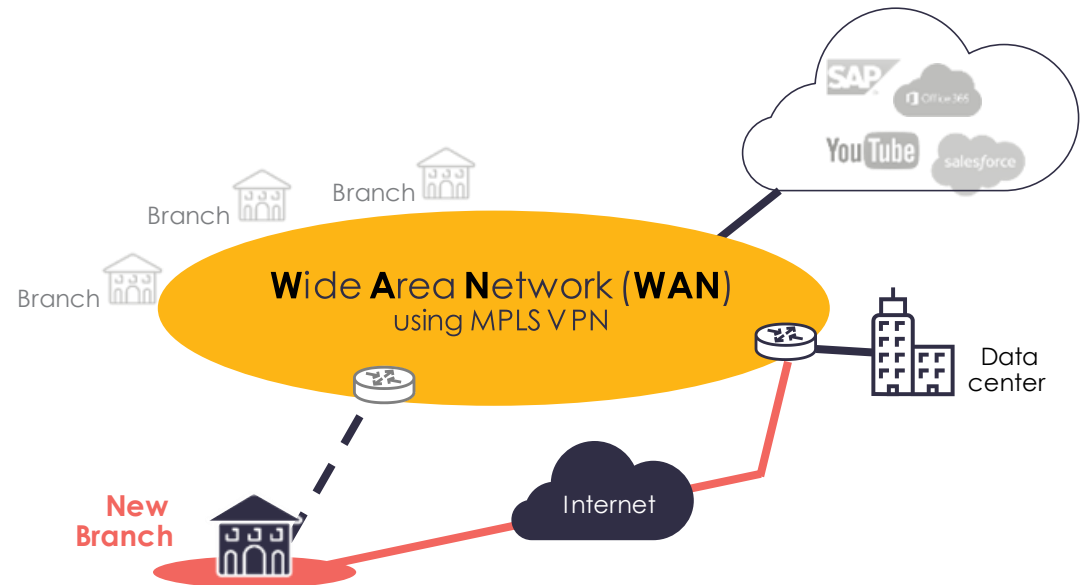
SD-WAN introduction

Software-defined WAN - deploying new enterprise branch connectivity

MPLS Dedicated connectivity	Broadband Public Internet
Expensive High Performance & Security 3 months	Cost efficient Quality & Security Not guaranteed 1 week



Software defined-WAN
Reduced cost per Mbps Secured connection Fast deployment with broadband & automation Ease of configuration Value-added services



SD-WAN a paradigm shift in enterprise connectivity services

SD-WAN deployment models

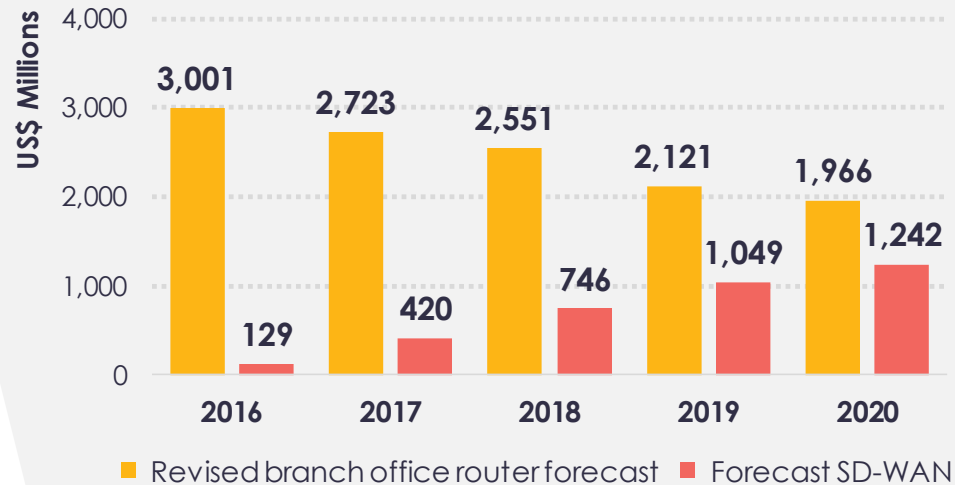
DIY

WAN vendors

Managed service

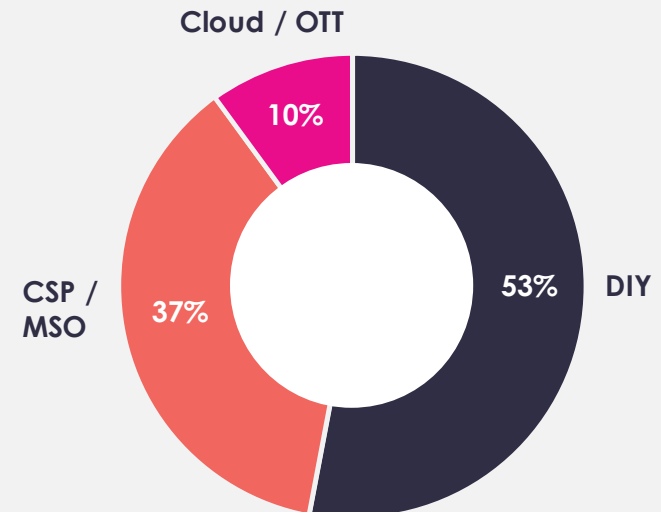


Enterprise connectivity revenue



Favourable SD-WAN delivery model

30% of enterprises will use SD-WAN by 2020 – \$1.2B shift in spend from traditional connectivity



Gartner 2017

Can communications service providers turn the SD-WAN threat into an opportunity?

DYI / WAN Vendors



Price



Flexibility



Time to Deliver

Service Providers' Differentiators



Guaranteed SLA and Mng Service



SD-WAN with MPLS



Bundled services



verizon

Sprint



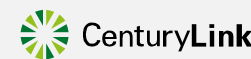
Telefonica



colt



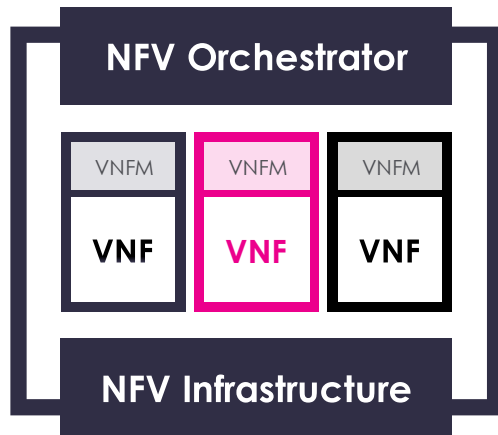
Singtel



Service Providers need to offer **differentiated SD-WAN solution** bundled with value-add services

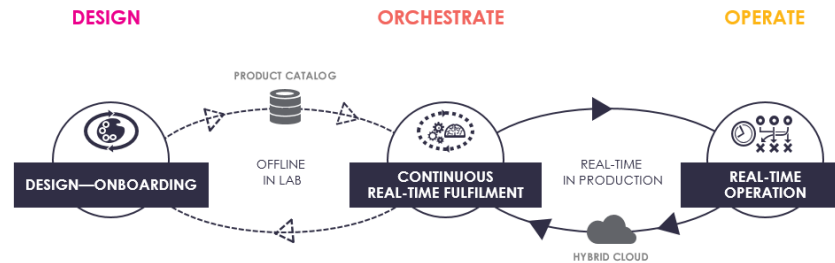
Why NFV Orchestration?

1 Agnostic Service Layer



VNF multi-vendor agnostic
Maximizing resource efficiency

2 E2E Service Lifecycle Management



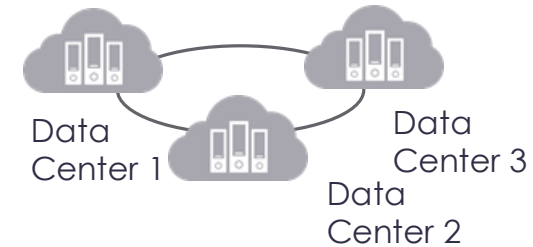
BSS/OSS/CRM Integration
Hybrid E2E Service Deployment
Multi Cross Layer Service Orchestration
Self-Healing

3 Automation vs. Orchestration

VNF-M vs. NFVO

VNFM: Virtual Network Function Manager
NFV-O: Network Function Virtualization Orchestrator

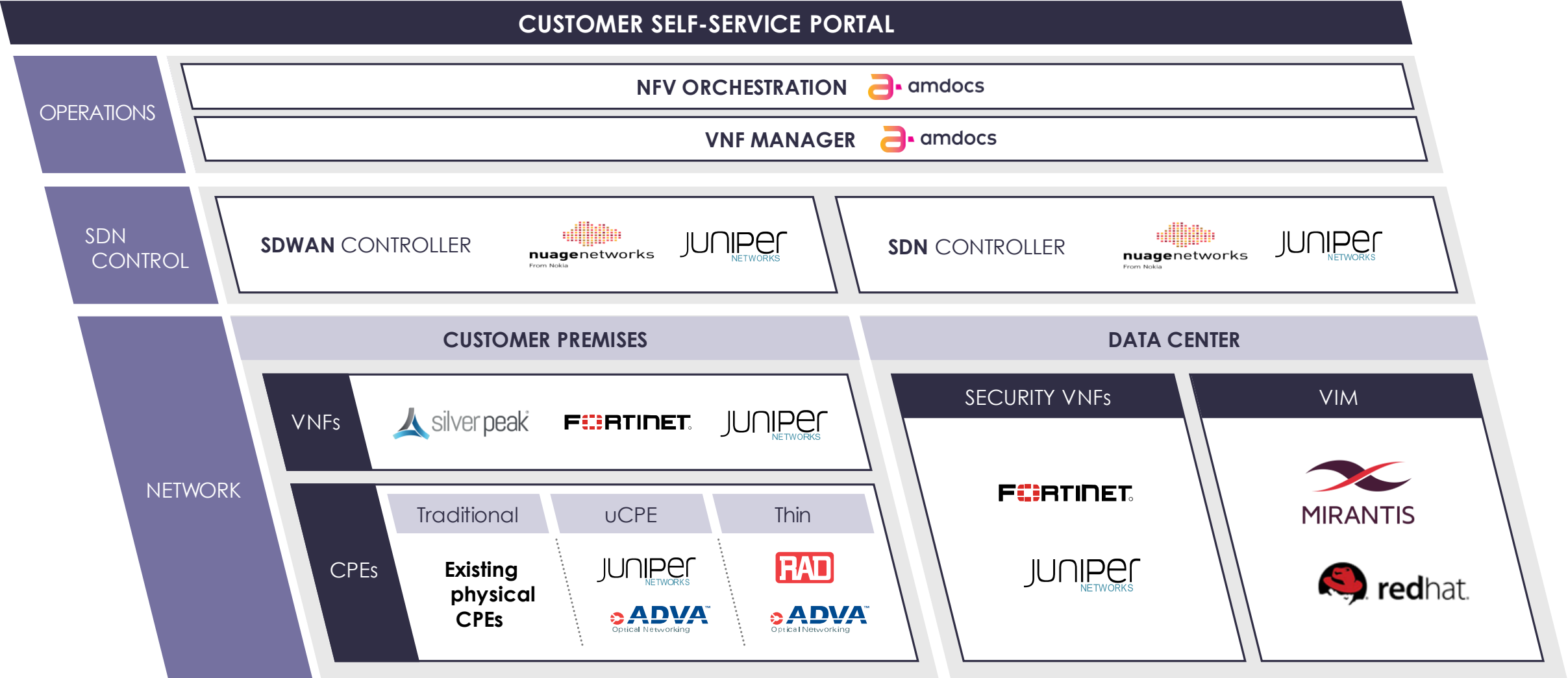
Service orchestration
across Data-Centers



Multi vendor
VNFs
Chaining



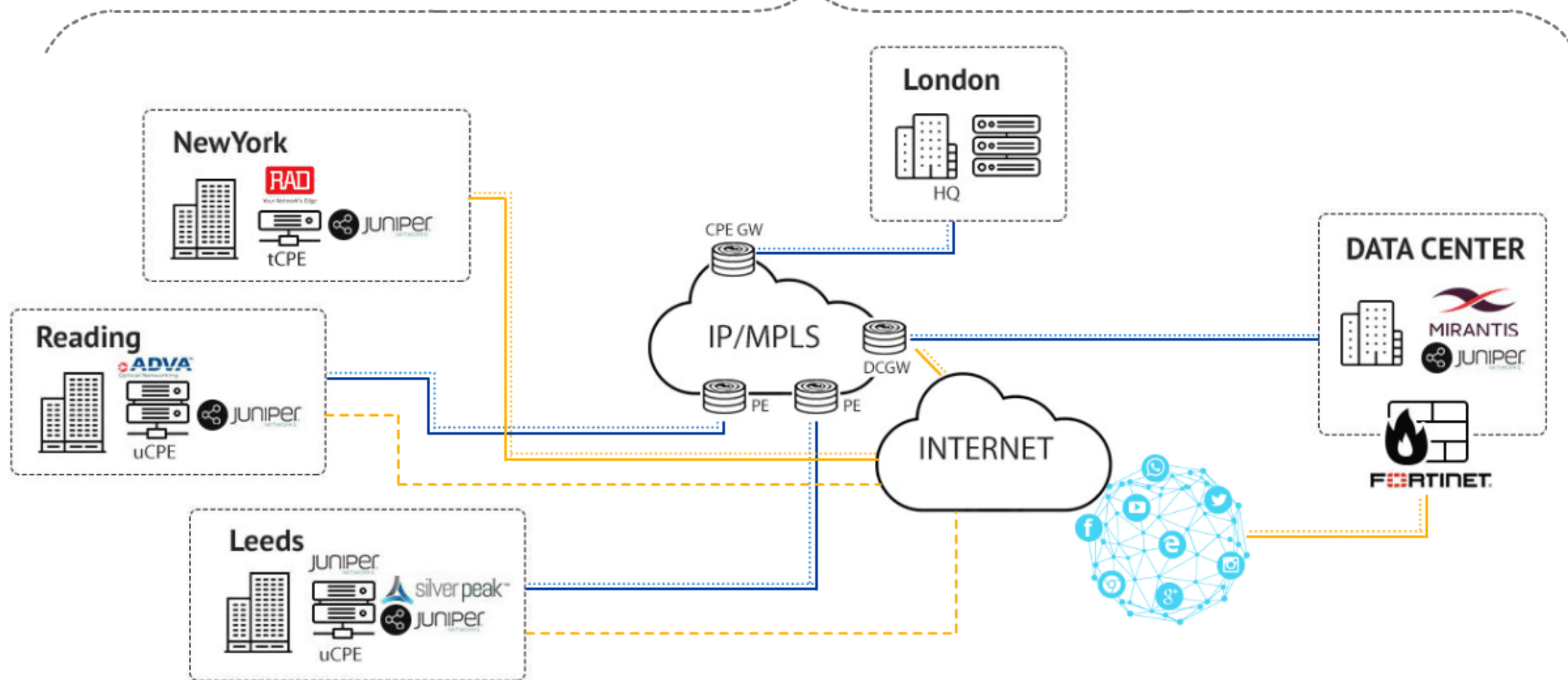
Our experience with a tier 1 European CSP



Proactive Service Management – Existing Network – Regular backups from Reading site to HQ



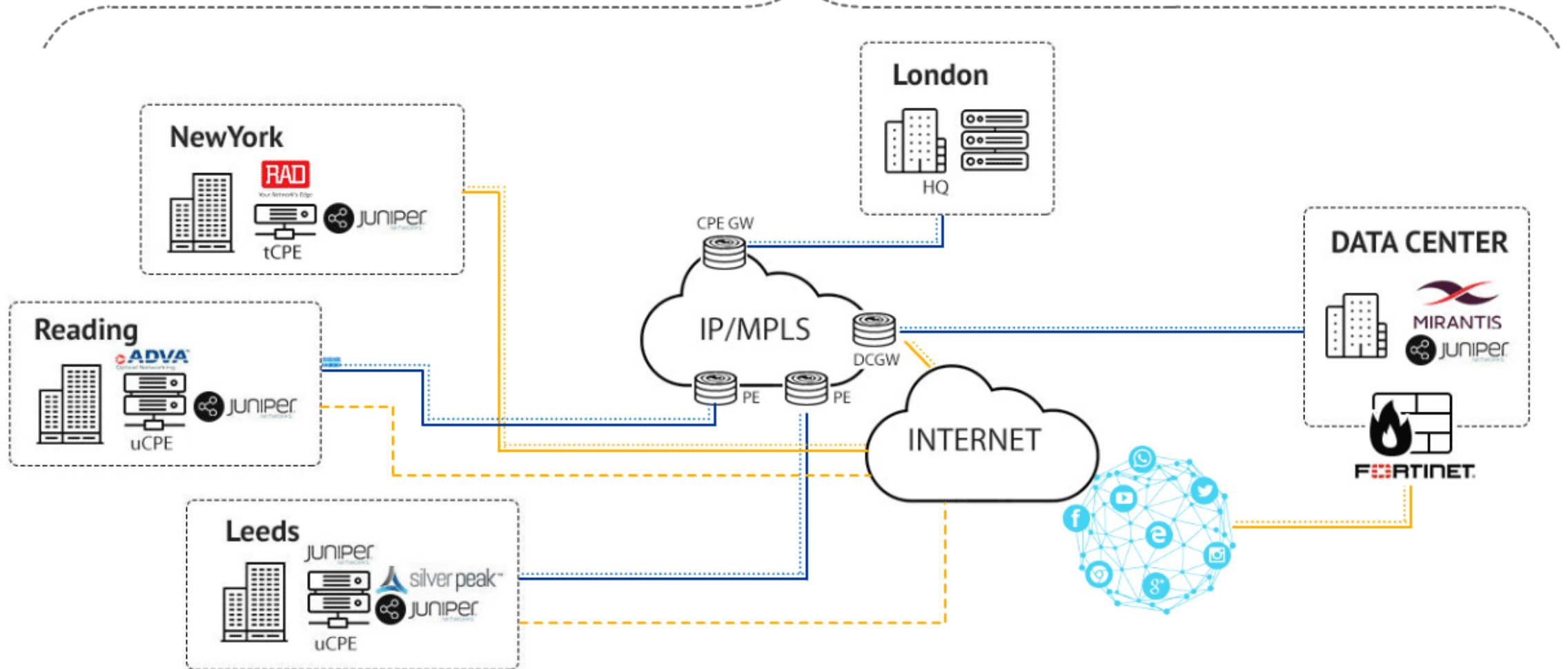
- IP/MPLS connectivity
- Internet connectivity
- - - Fallback line



Amdocs' NFV orchestrator instantiates WAN optimization's VNF on the uCPE



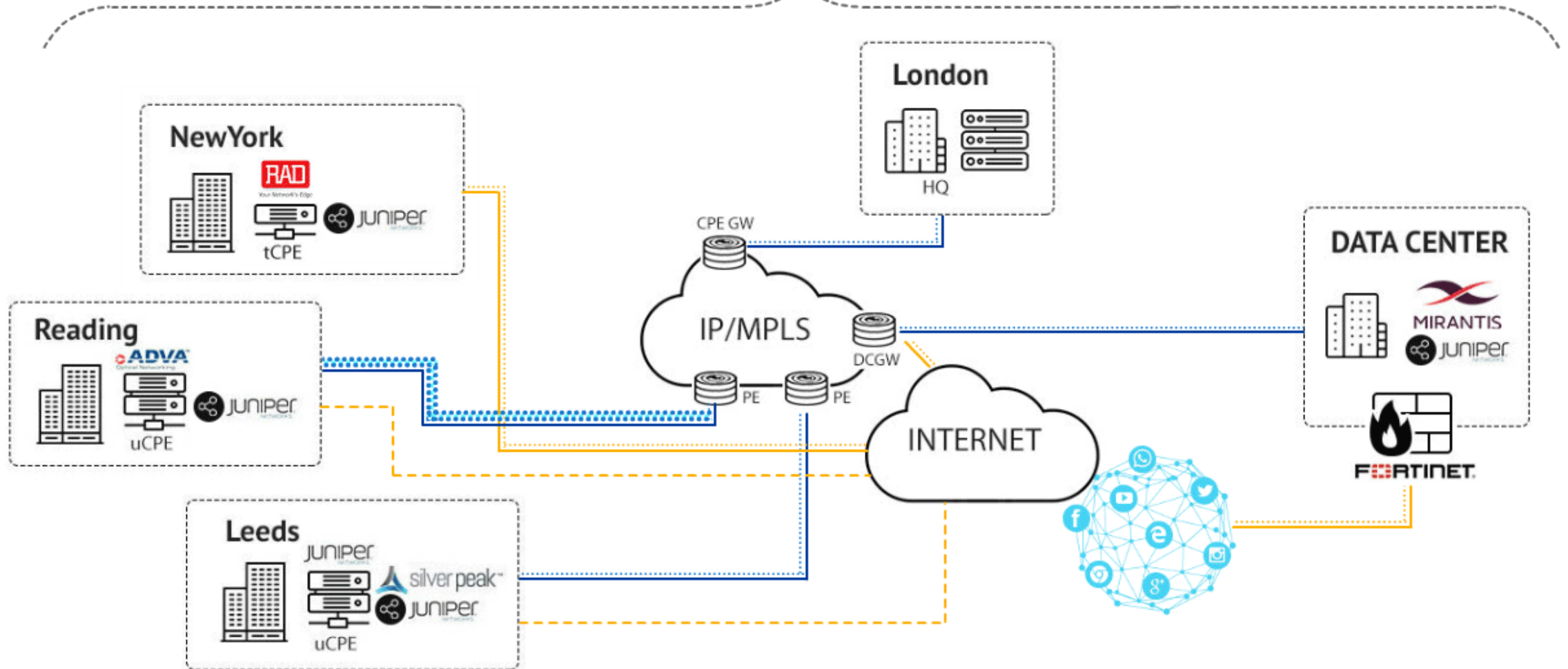
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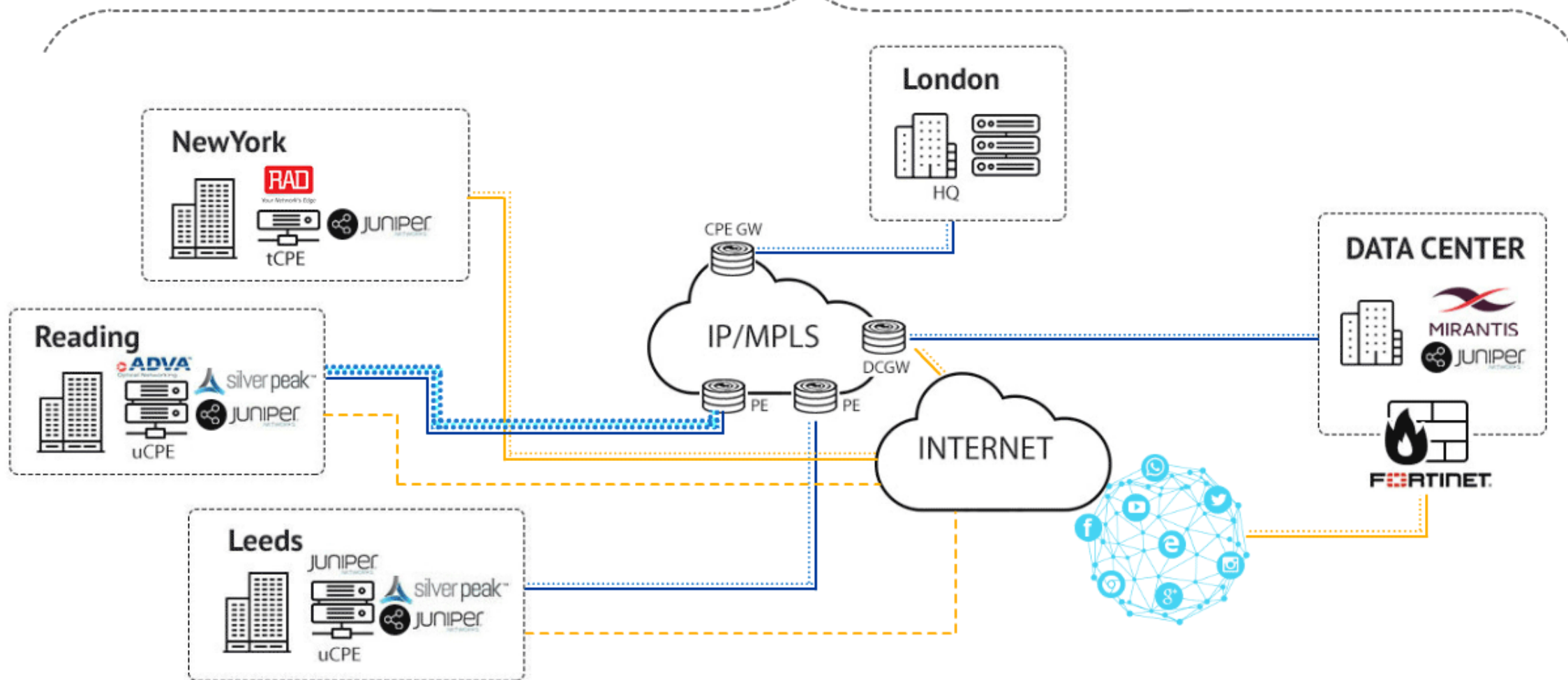


Proactive Service Management – Juniper SD-WAN Controller is offloading part of the traffic to the internet connection

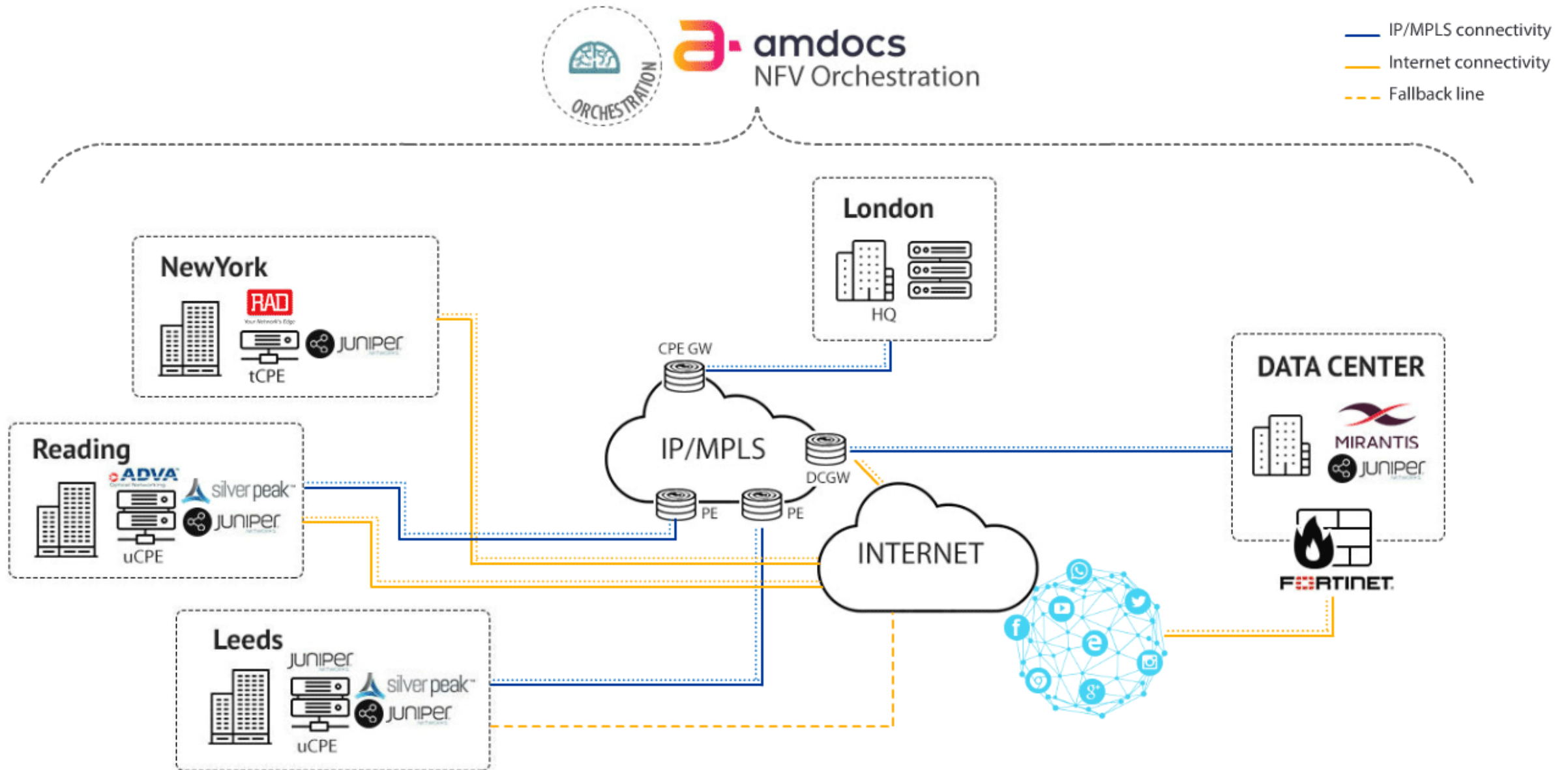


a. amdocs
NFV Orchestration

- IP/MPLS connectivity
- Internet connectivity
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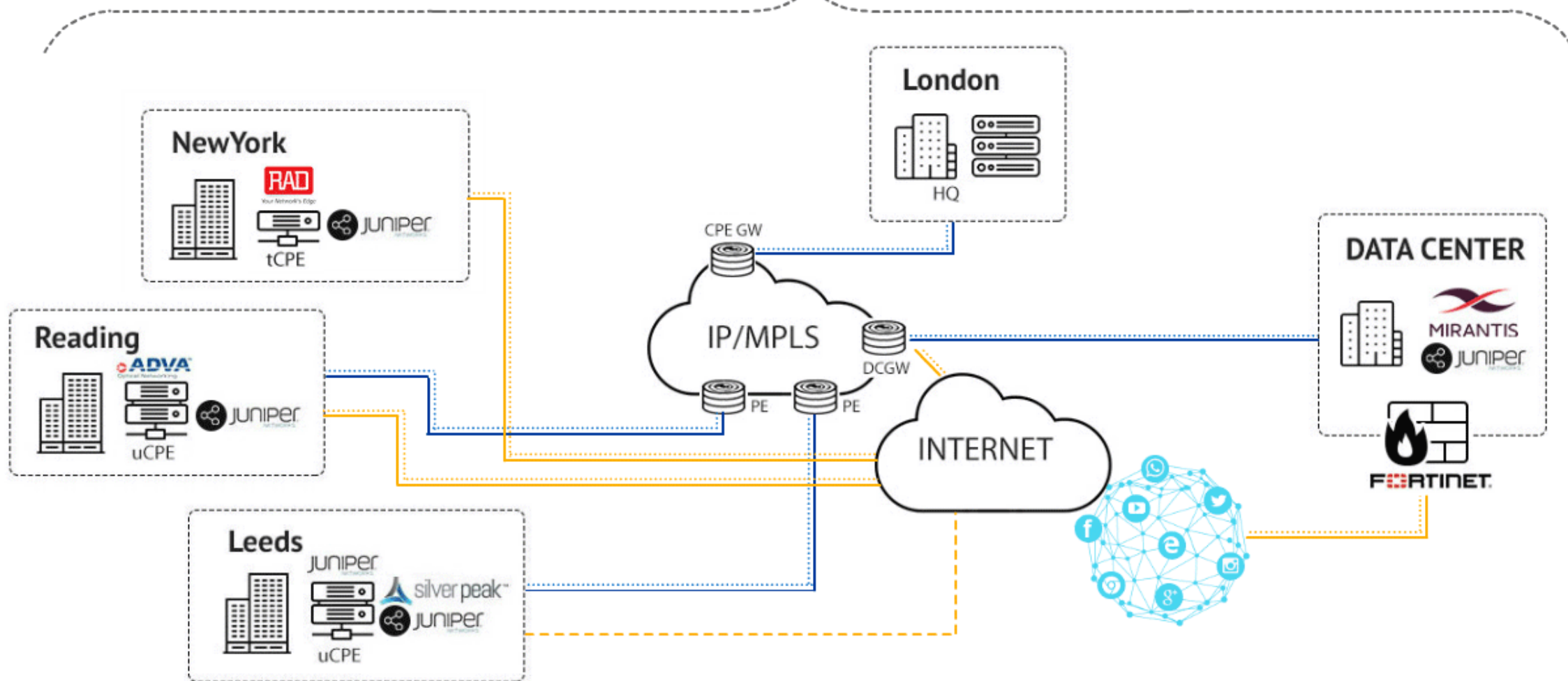
Amdocs' NFV orchestrator turn off WAN optimization on the uCPE



Amdocs' NFV orchestrator increases bandwidth at the Reading site to avoid frequent offload



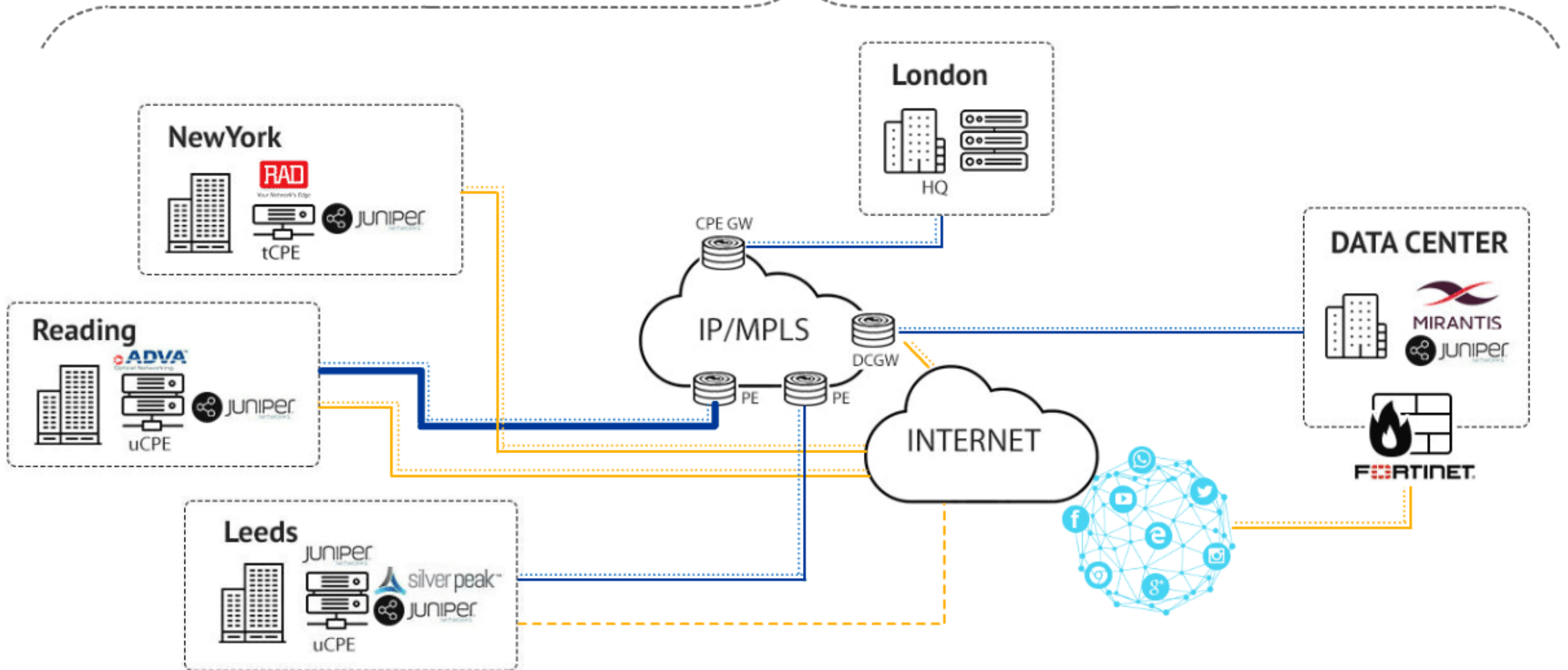
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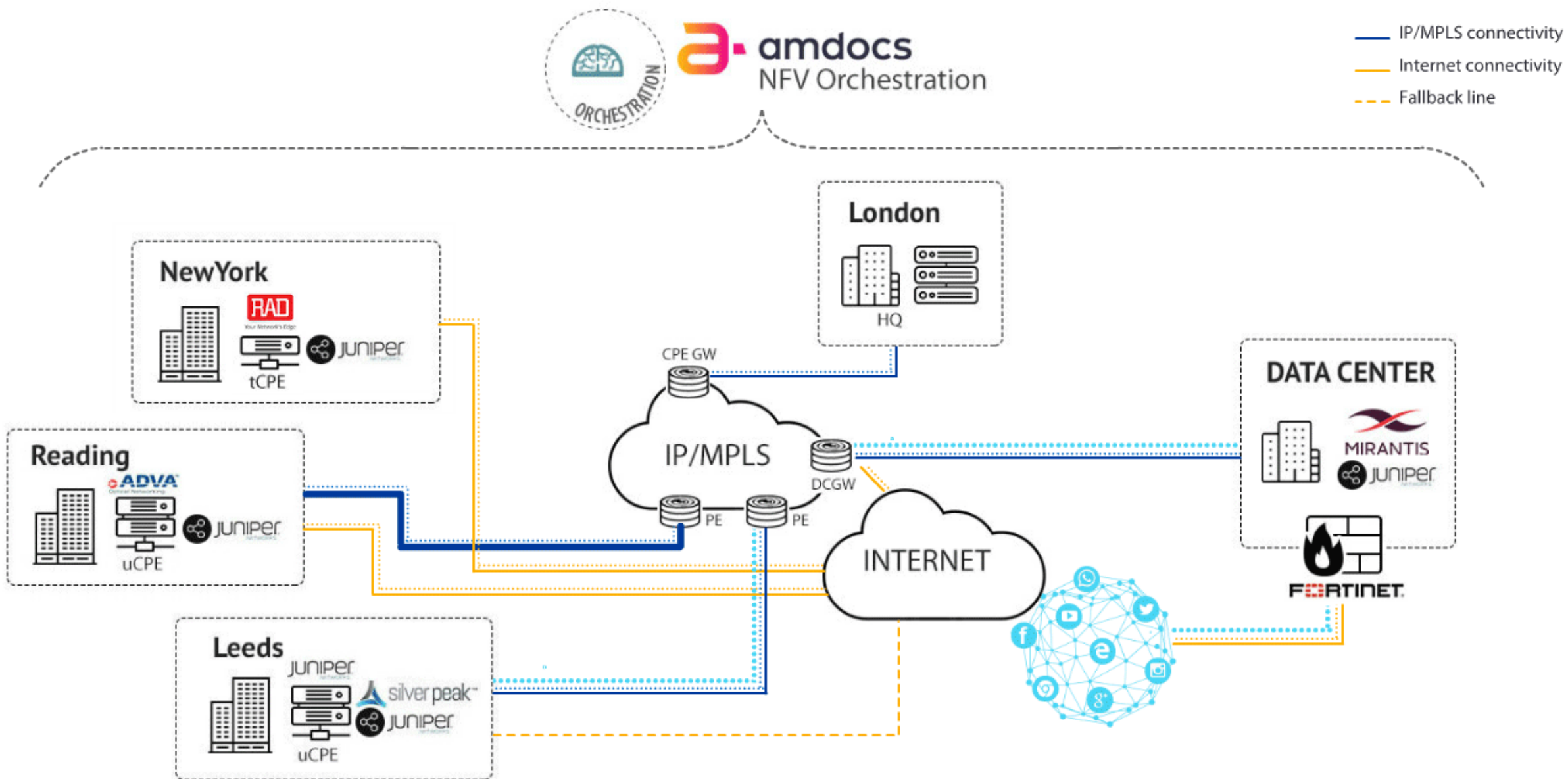
Congestion in Leeds site due to high internet usage



- IP/MPLS connectivity
- Internet connectivity
- - - Fallback line



Amdocs' NFV orchestrator instantiates a virtual FW on the uCPE to allow direct connection to the internet from this site (local breakout)



Why NFV Orchestration for SD-WAN?



Manage **end-to-end service lifecycle** - introduction, fulfilment and operations



Closed-loop operations - for hybrid (physical/virtual) network



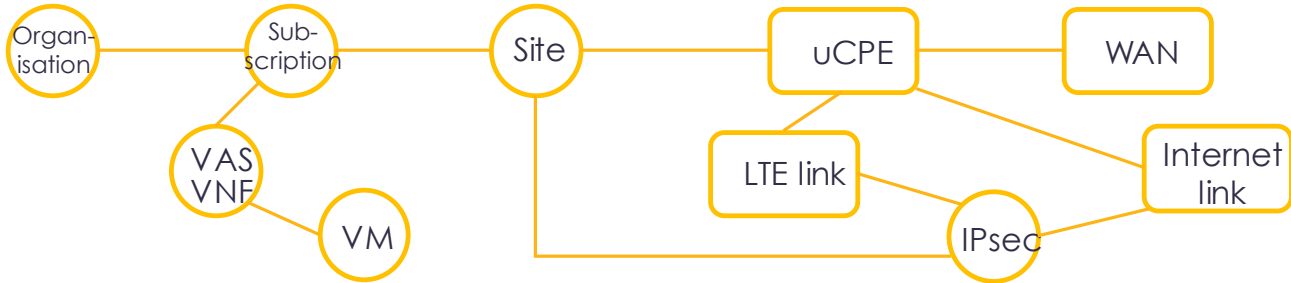
Multi-domain, multi-vendor orchestration – SDN/SD-WAN controllers & VNFs from any vendor



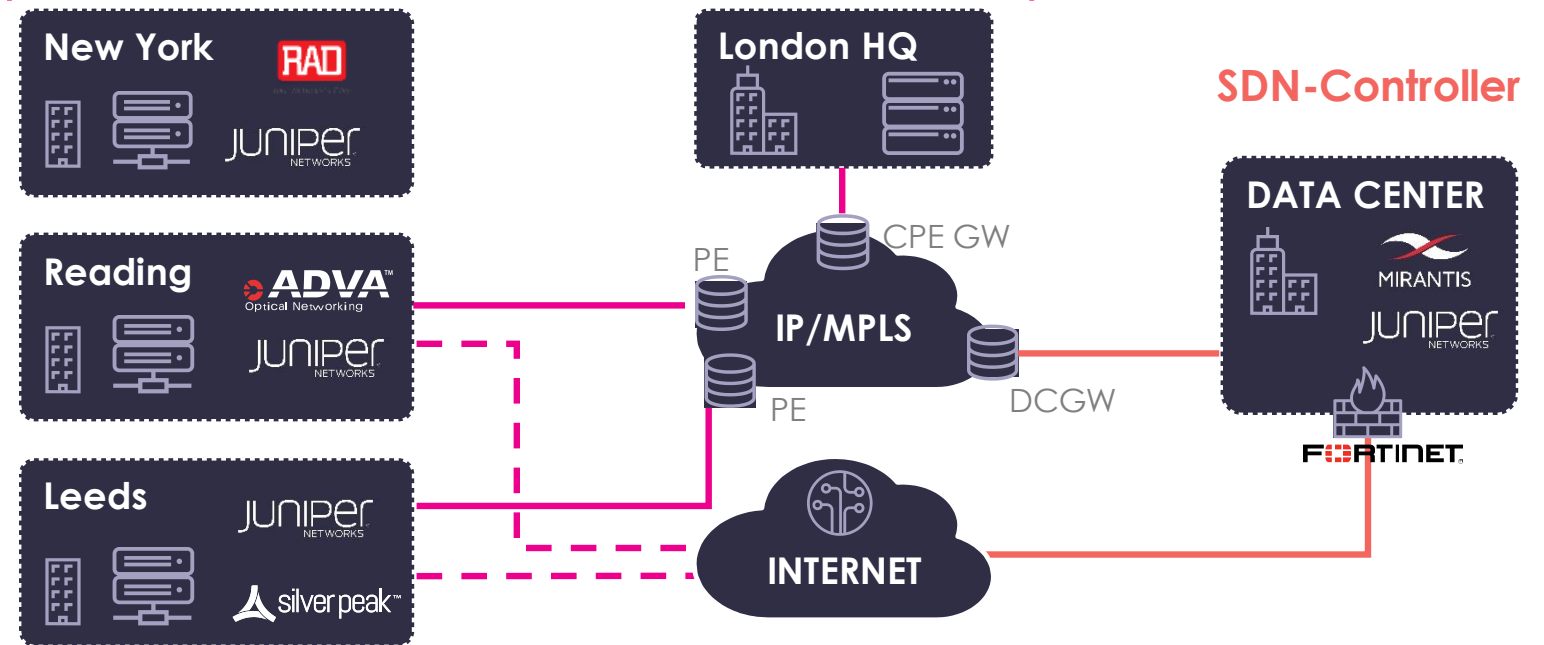
Link hybrid SD-WAN with MPLS IP-VPN for end-to-end services

NFV Orchestration

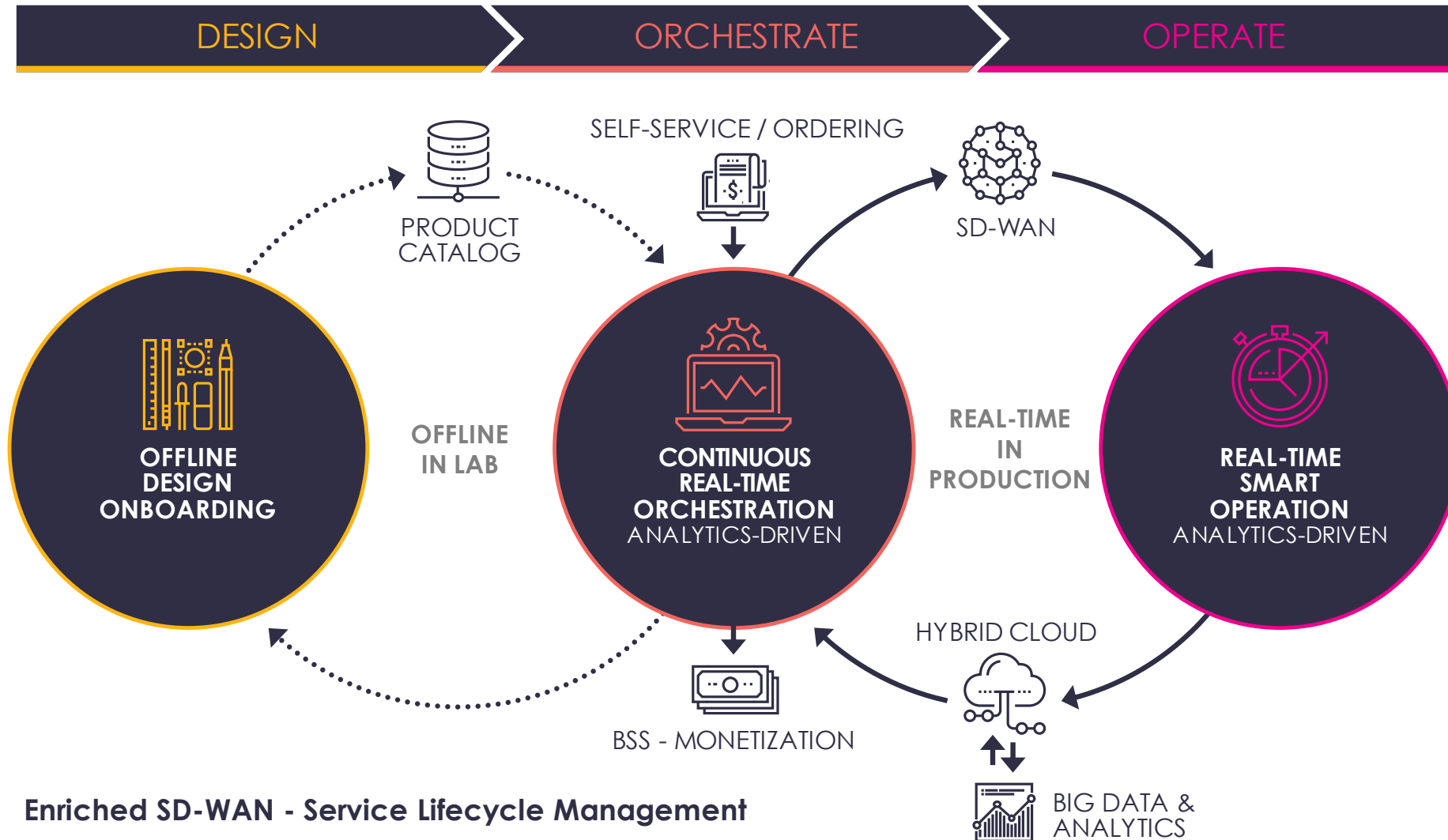
End-to-end lifecycle management of VNFs and services; glue between network layer and BSS/OSS



SD-WAN



Key enabler for a differentiated SD-WAN solution



Summary and Key Takeaways

Differentiation is key



Service providers need to leverage their uniqueness - providing SD-WAN as **carrier grade** hybrid solution **bundled with VAS services**

Service lifecycle management is key



Management and Orchestration plays a crucial role for adding services connecting to existing systems and analytics

Existing systems and processes must evolve



Service fulfilment, inventory, assurance and service operations must evolve to meet SD-WAN and other NGN services requirements, agility and TTM

A hand holding a lit sparkler in a field of tall grass at sunset, with the text "Thank you" overlaid.

Thank you