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Azure Virtual WAN

- What is vWAN

- Components of vWAN

What is Azure Virtual WAN

Azure Virtual WAN is a networking service that brings many networking, security, and routing functionalities together to provide a single operational interface.

- Simplifies management of various hub and spoke deployments providing centralized security

- Automated large-scale branch connectivity using VPN and Express Route services

- Unified network and policy management

- Optimized routing using the Microsoft global network

- Provides advanced routing enhancements – BGP and Routing Intent

- Ability to integrate with Fortinet FortiGate solutions providing SD-WAN and NGFW services
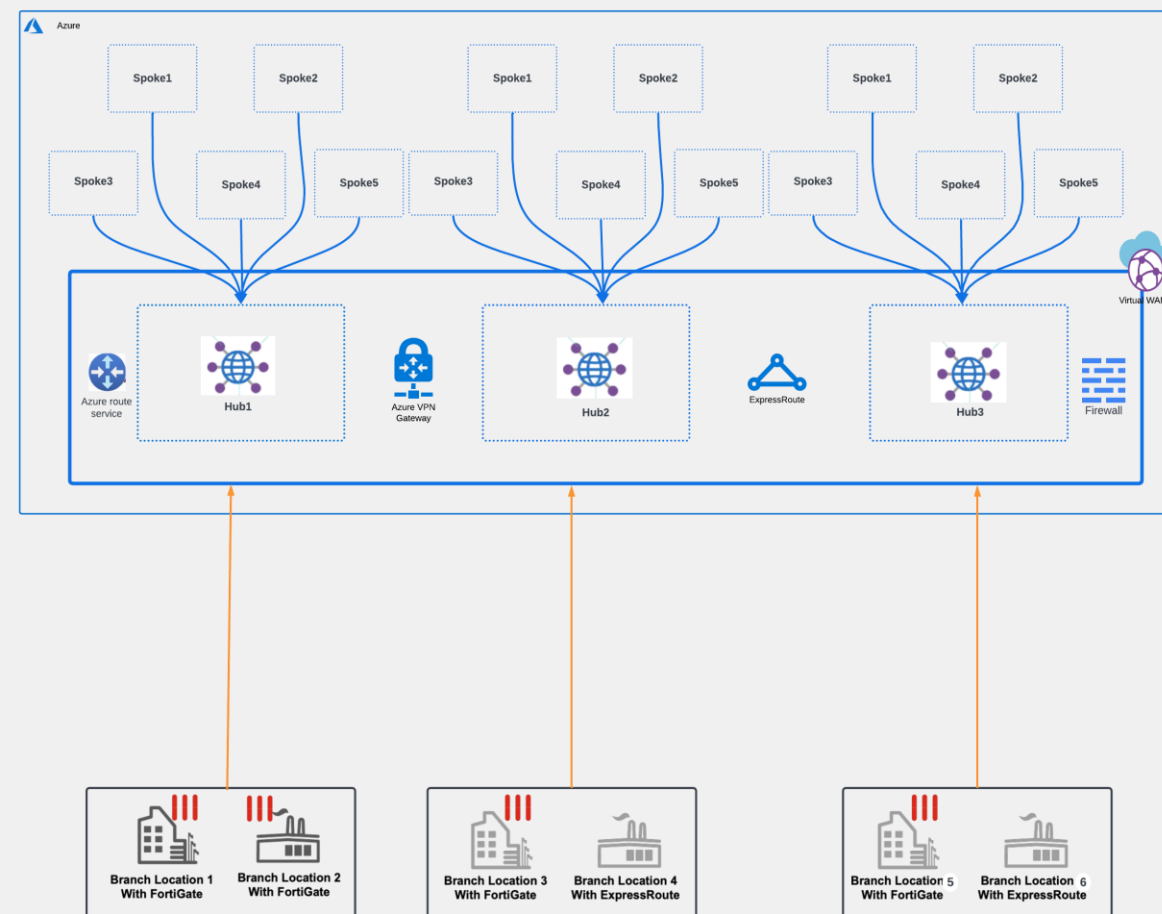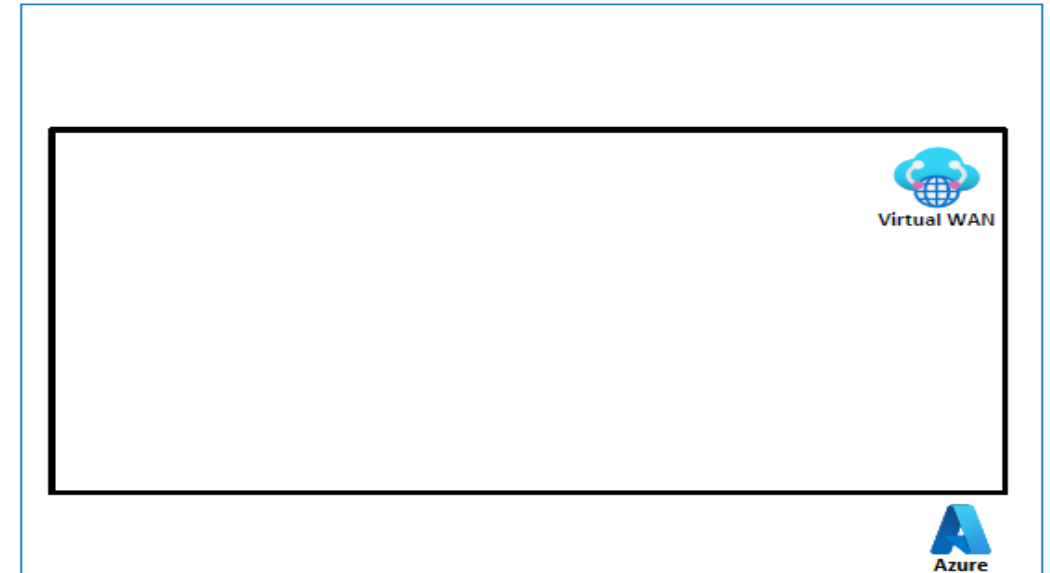
Virtual WAN Components – Virtual WAN

- Managed Service deployed from Azure portal
- Simple deployment template
  - Name
  - Region
  - Resource Group
  - Type (connectivity options)
    - Standard
    - Basic

**Already deployed for this lab because of time.

Virtual WAN Components – Virtual Hub

- Managed Service deployed from Azure portal
- Simple deployment template
  - Name
  - Region
  - Resource Group
  - Address space
  - Capacity (Scale Units)
  - Routing Preference
    - AS Path
    - Express Route
    - VPN

  - Additional Services

**Already deployed for this lab because of time.
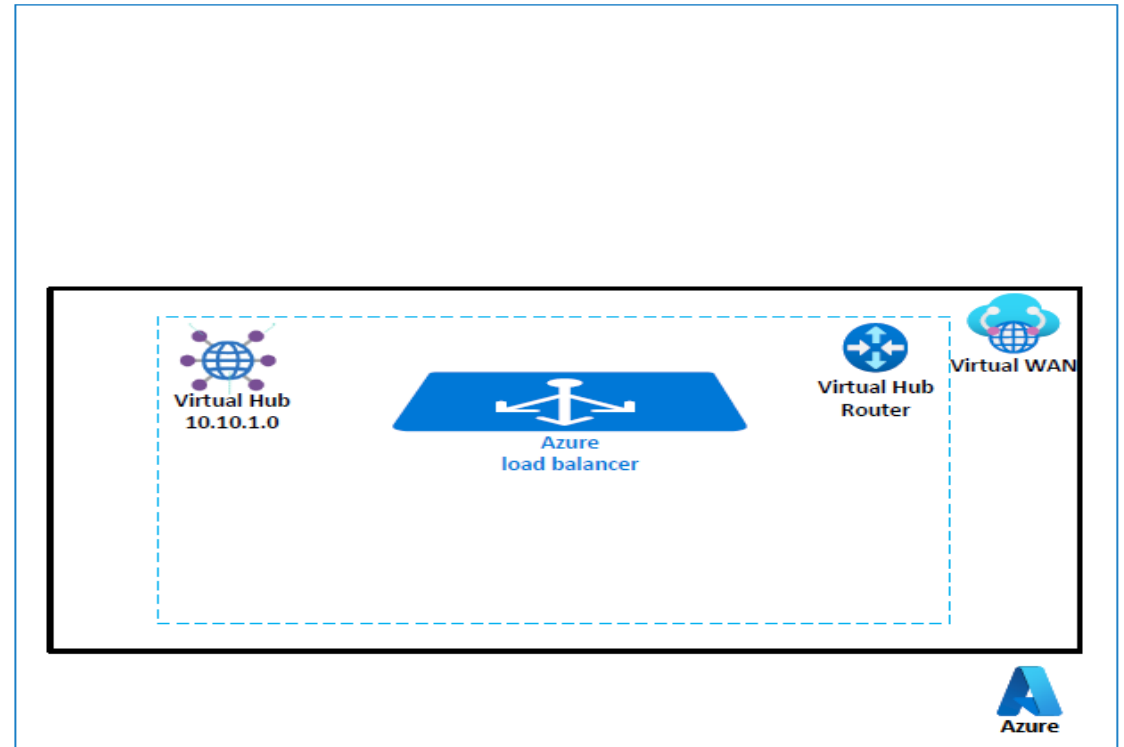
Virtual WAN Components – Virtual Networks
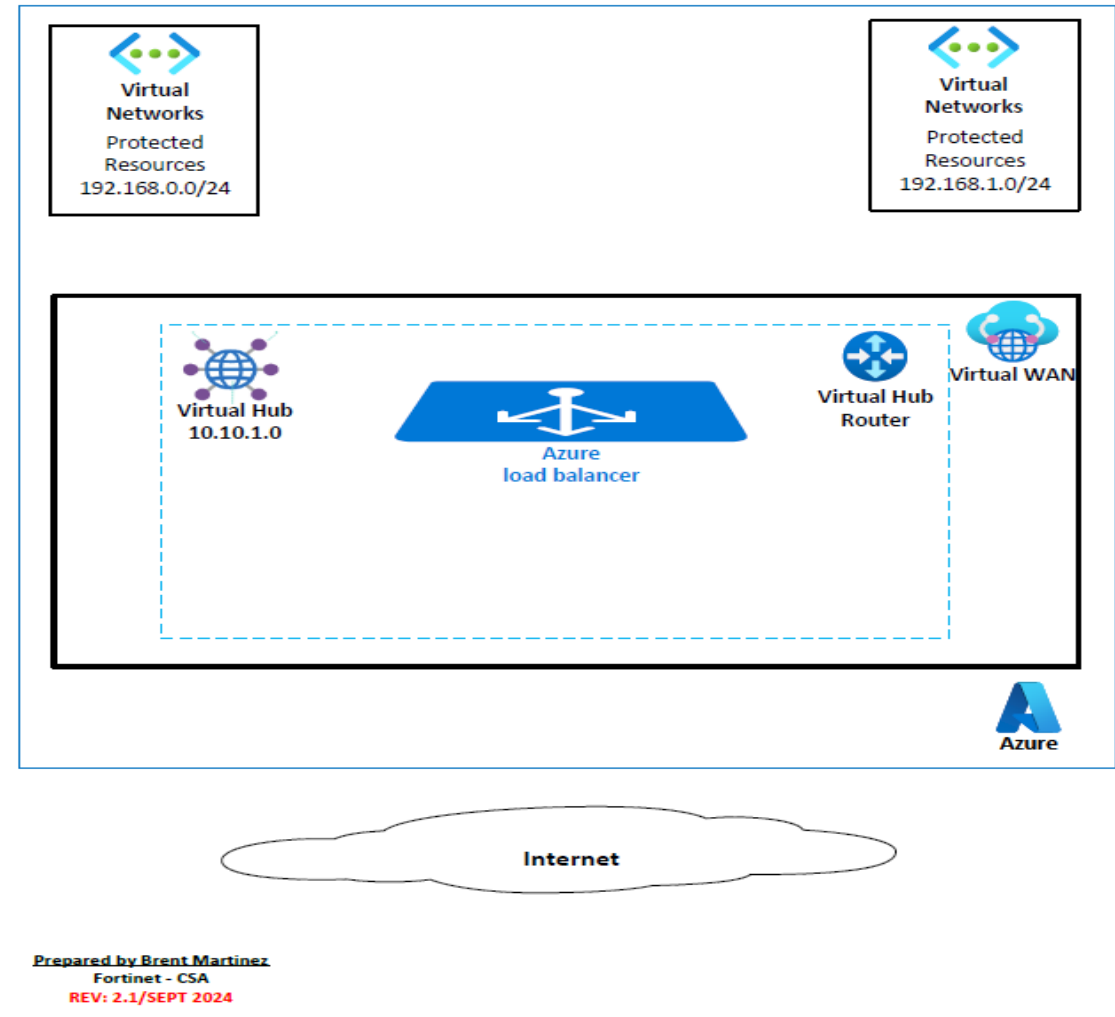
- VNETs deployed from Azure portal
- Comprehensive deployment template
  - Name
  - Region
  - Resource Group
  - Address space
    - Subnets
  - Additional Services
    - Deploy Virtual Machines
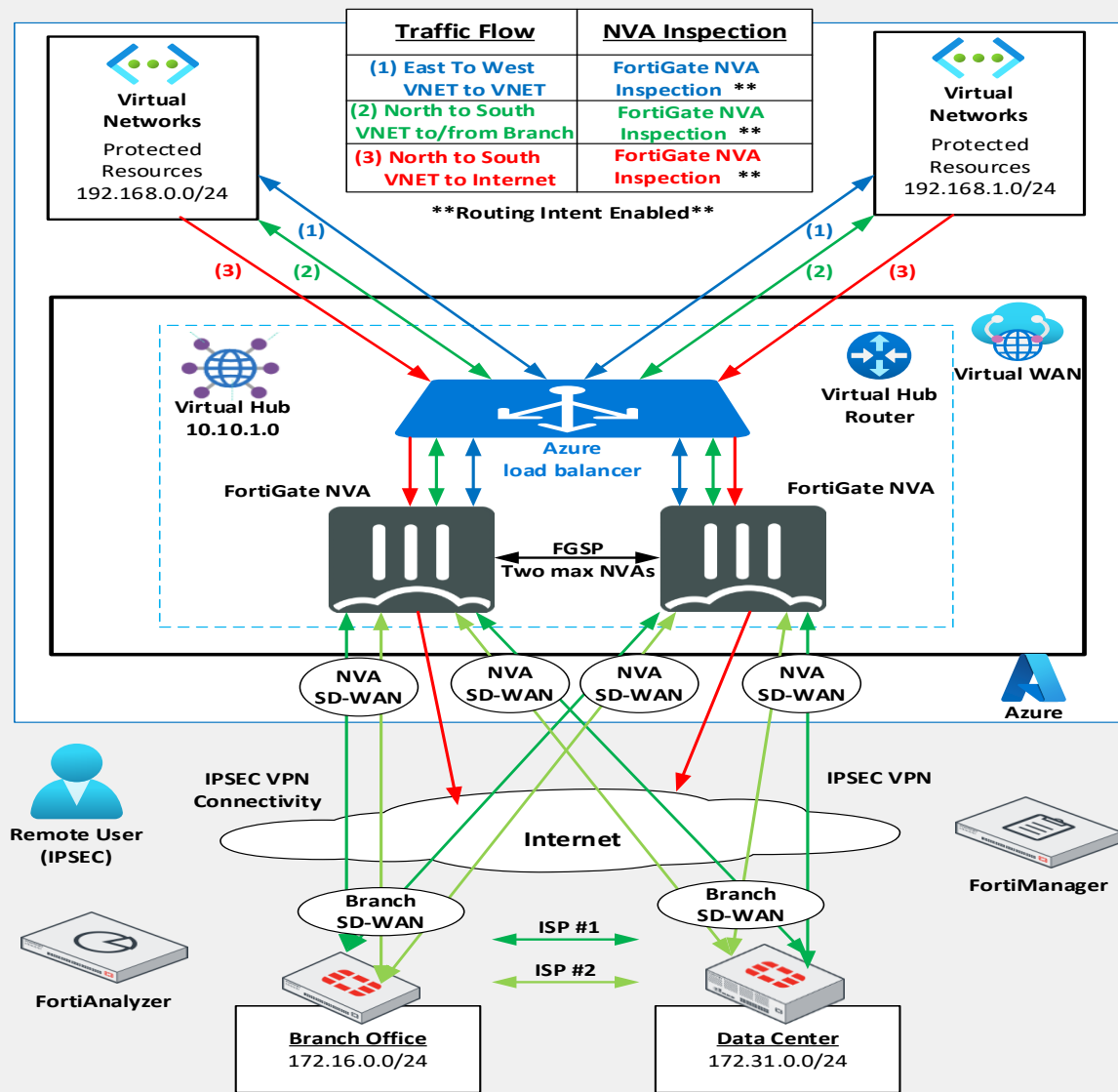
**Already deployed for this lab because of time.

FortiGate Integration with Azure VWAN

The industry's first fully Integrated network virtual appliance providing **Secure SDWAN** AND **Next Generation Firewall Services**

- Simple and structured deployment model
  - Deployed via Azure portal – Managed service
  - SDWAN and/or NGFW deployment options
- High Availability and Resiliency
  - Active-Active – up to 5 FortiGates (NGFW)
- Performance and Scale
- Dynamic Routing Capabilities
- Single management interface – FortiManager – Appliance / VM
- Centralized logging – FortiAnalyzer – Appliance / VM
- Flexible licensing options
  - BYOL / FortiFlex
  - PAYG – New in Q2 2024

Traffic Flow	NVA Inspection
(1) East To West VNET to VNET	FortiGate NVA Inspection **
(2) North to South VNET to/from Branch	FortiGate NVA Inspection **
(3) North to South VNET to Internet	FortiGate NVA Inspection **

Routing Intent Enabled

Azure Marketplace Plan
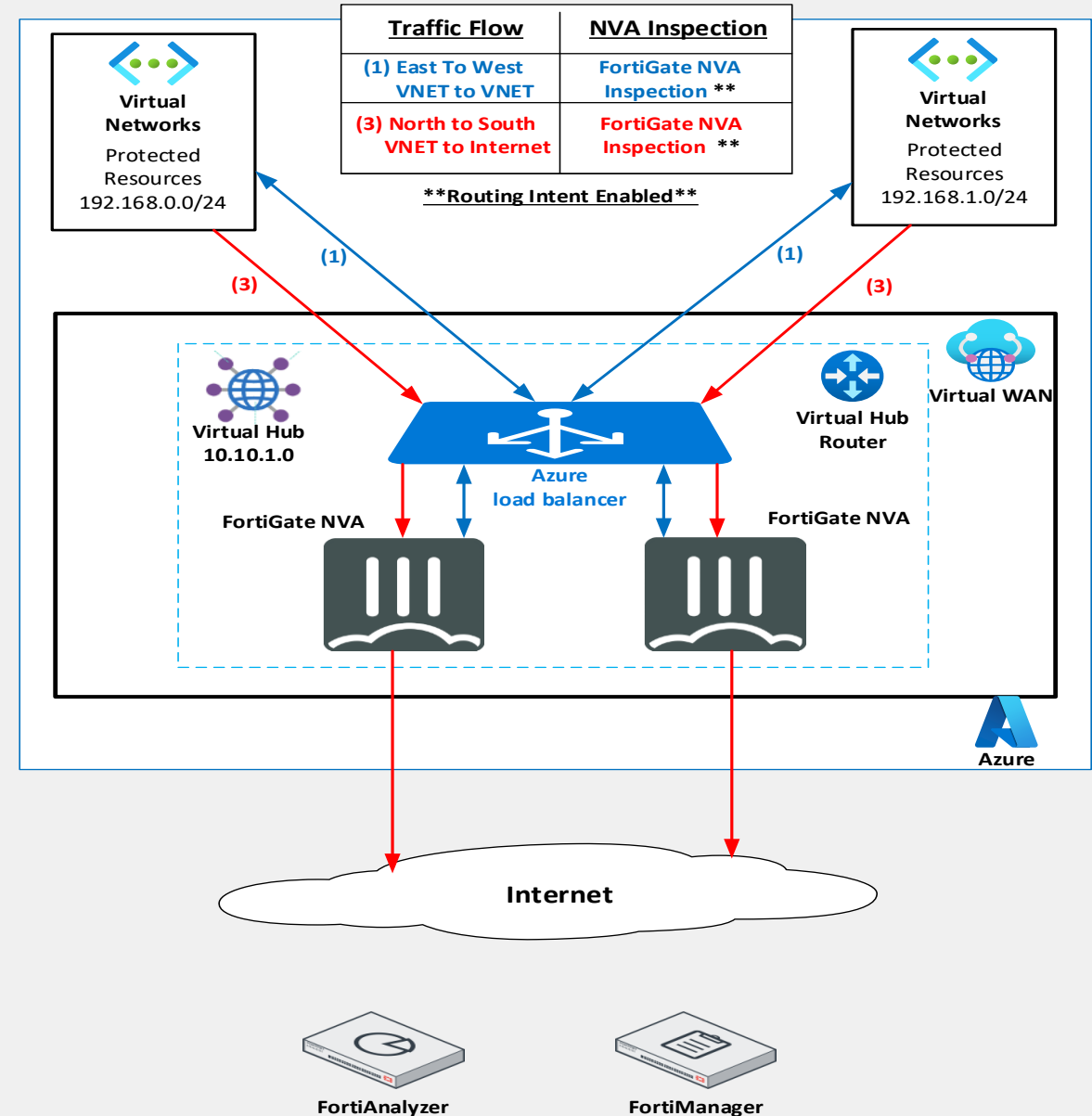
- NGFW Only

- SDWAN & NGFW

NGFW Only - Option

- Inspects East-West and Internet bound traffic
  - Network inspection across VNETs connected to the Virtual WAN
  - Internet bound traffic inspection
- High Availability and resiliency
  - Active-Active - supports up to 5 VMs and 80 Gbps
- Performance and Scale
- Dynamic Routing Capabilities
- Single management interface – FortiManager – Appliance / VM
- Centralized logging – FortiAnalyzer – Appliance / VM
- Flexible licensing options
  - BYOL / FortiFlex
  - PAYG – New in Q2 2024

NGFW - Plan

Traffic Flow	NVA Inspection
(1) East To West VNET to VNET	FortiGate NVA Inspection **
(3) North to South VNET to Internet	FortiGate NVA Inspection **

Routing Intent Enabled

Virtual Networks
Protected Resources
192.168.0.0/24

Virtual Networks
Protected Resources
192.168.1.0/24

Virtual WAN

Virtual Hub
10.10.1.0

Virtual Hub Router

Azure load balancer

FortiGate NVA

FortiGate NVA

Azure

Internet

FortiAnalyzer

FortiManager

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SDWAN & NGFW - Option

- North-South and East-West inspection
    - North-South inspection for traffic destined to the Internet or the SDWAN connected networks. (See red & green traffic flows on the diagram)
    - Inspection across vNETs connected to the virtual WAN (See blue traffic flow on the diagram)
- High Availability and resiliency
    - Active-Active – supports 2 VMs up to 10Gbps
- Performance and Scale
- Dynamic Routing Capabilities
- Single management interface – FortiManager – Appliance / VM
- Centralized logging – FortiAnalyzer – Appliance / VM
- Flexible licensing options
    - BYOL / FortiFlex
    - PAYG – New in Q2 2024
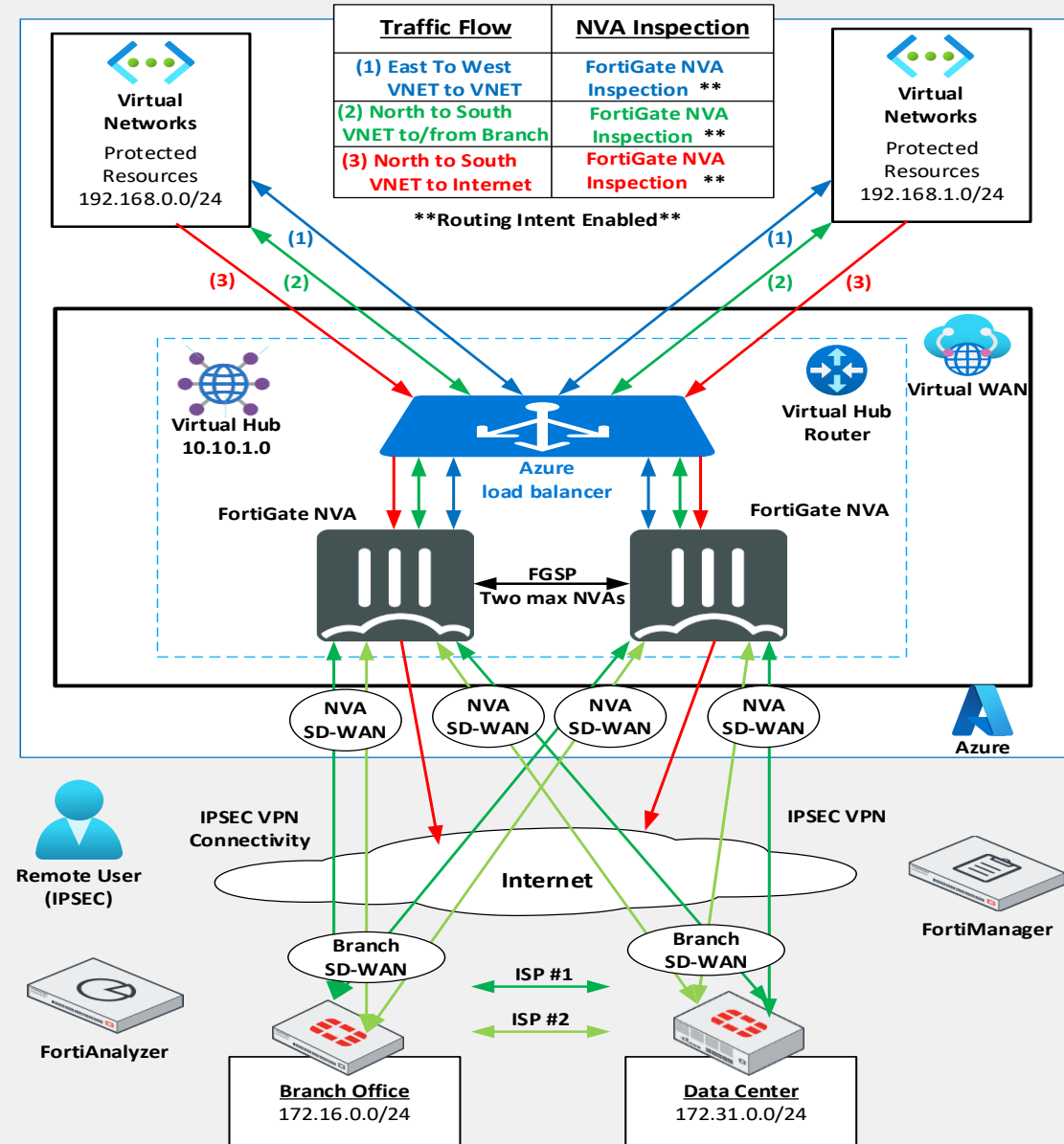
Order Types in VWAN

- Scale Units

NGFW Only – Scale Units

The following table summarizes FortiGate vWAN license options:

Scale units	Bandwidth	Suggested license SKU	Security service (support included)	Instance count
2	1 Gbps	FortiGate-VM (2 CPU)	UTP Bundle	2
4	2 Gbps	FortiGate-VM (4 CPU)	UTP Bundle	2
10	5 Gbps	FortiGate-VM (8 CPU)	UTP Bundle	2
20	10 Gbps	FortiGate-VM (16 CPU)	UTP Bundle	2
40	20 Gbps	FortiGate-VM (16 CPU)	UTP Bundle	3
60	30 Gbps	FortiGate-VM (16 CPU)	UTP Bundle	4
80	40 Gbps	FortiGate-VM (16 CPU)	UTP Bundle	5

Scale units cannot change dynamically. If you want to use a different scale unit after deploying the NVAs, you must redeploy the NVAs.

SDWAN & NGFW – Scale Units

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20	10 Gbps	FortiGate-VM (16 CPU)	UTP Bundle	2

Scale units cannot change dynamically. If you want to use a different scale unit after deploying the NVAs, you must redeploy the NVAs.

Questions?

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Lab Overview

Lab Overview

Overview
- Connect to your Azure Environment
- Review resources

Deploy
- Deploy FortiGate NVAs in Azure VWAN Hub

Configure
- Configure FortiGate NVAs
- HA / FGSP
- Firewall Policy

Route
- Configure FortiGate Static Routes
- Ensure BGP peering
- Configure Azure Routing Intent
- Associate VNETs to Hub

Verify
- Verify Spoke to Spoke traffic
- Verify Spoke to Internet traffic

Getting Started

\- Moderated/Q&A via Teams

\- Student username assignments

\- Link to course in the Teams chat:
https://fortinetcloudcse.github.io/azure-102-foundational/

\- Review lab material & begin