FortiGate Firewall – Active Directory Integration via FSSO

1. Introduction

This document describes the complete setup and configuration of a FortiGate firewall (300D), integrated with Windows Server 2016 Active Directory (AD) using Fortinet Single Sign-On (FSSO). The project includes the deployment of VLANs, VDOMs, High Availability (HA), switch configuration, firewall policies, and user authentication testing.

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2. Project Overview

Devices Used

- **FortiGate 300D** (2 units for HA)
- **Windows Server 2016** (Domain Controller + FSSO Agent)
- **Laptop (User PC)** connected to user VLAN
- **Switch** with VLANs for Server and User
- **Laptop for Management / Firewall Access**

Purpose of the Project

- Integrate FortiGate with AD using FSSO
- Enable user-based authentication for firewall policies
- Learn configuration of VLANs, VDOMs, HA, and AD integration
- Validate communication between VLANs

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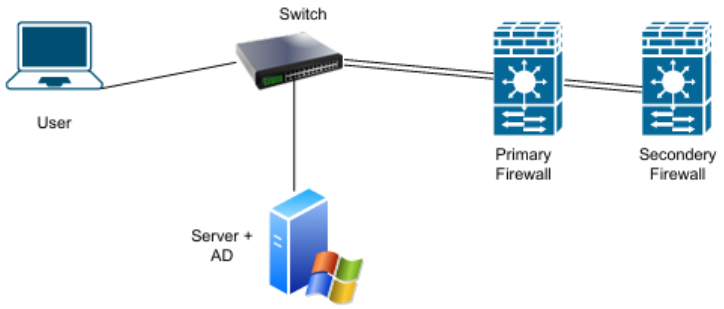
3. Network Topology



Typical structure: - VLAN 10 – Users - VLAN 20 – Servers - Trunk link between Switch ↔ Firewall - FortiGate HA (Active-Passive or Active-Active)

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4. Windows Server 2016 AD Configuration

4.0 Windows Server Installation Issues & Fixes

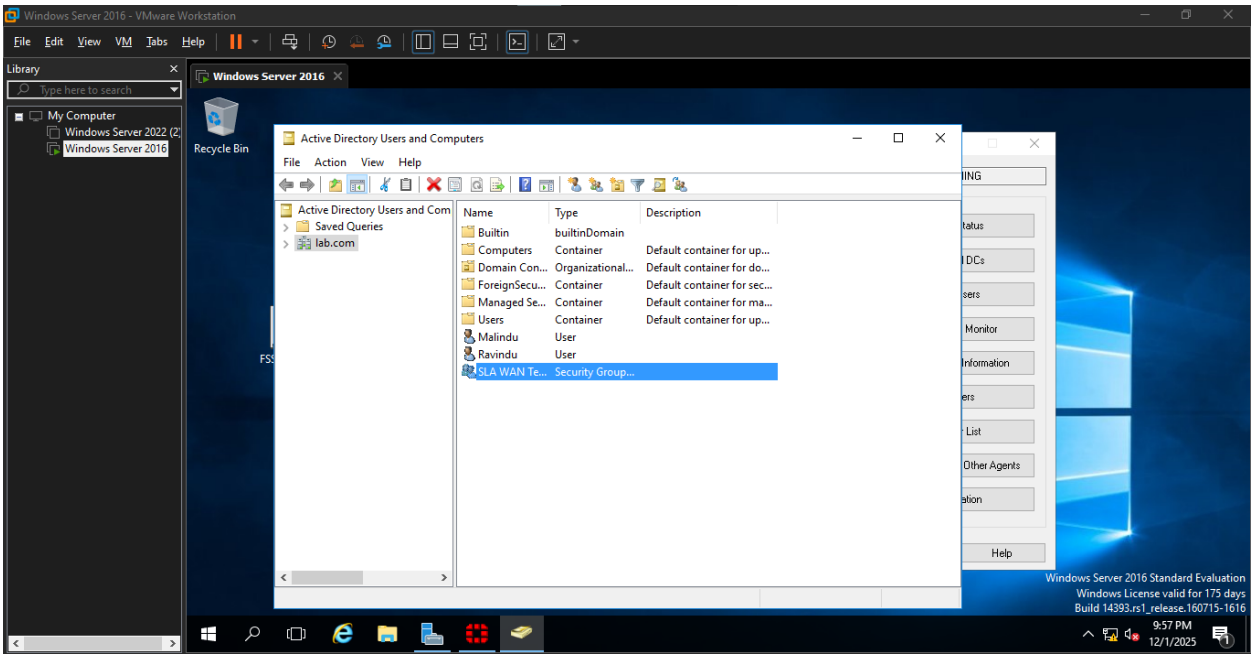
- **Error:** *Windows cannot find the Microsoft Software License Terms.*
  - **Fix:** Create VM **without ISO attached**, then add ISO afterward and boot.
- **Error:** *Timeout / EFI Network Boot (EFT Network)*
  - **Fix:** VM Settings → Options → Advanced → Switch BIOS/EFI mode → Restart installation.

4.1 Install Active Directory Domain Services

- Promote server to Domain Controller
- Create users via **AD Users and Computers**
  - Example user:
    - **ravindu** / Password: ### 4.1 Install Active Directory Domain Services
- Promote server to Domain Controller
- Create domain users and groups

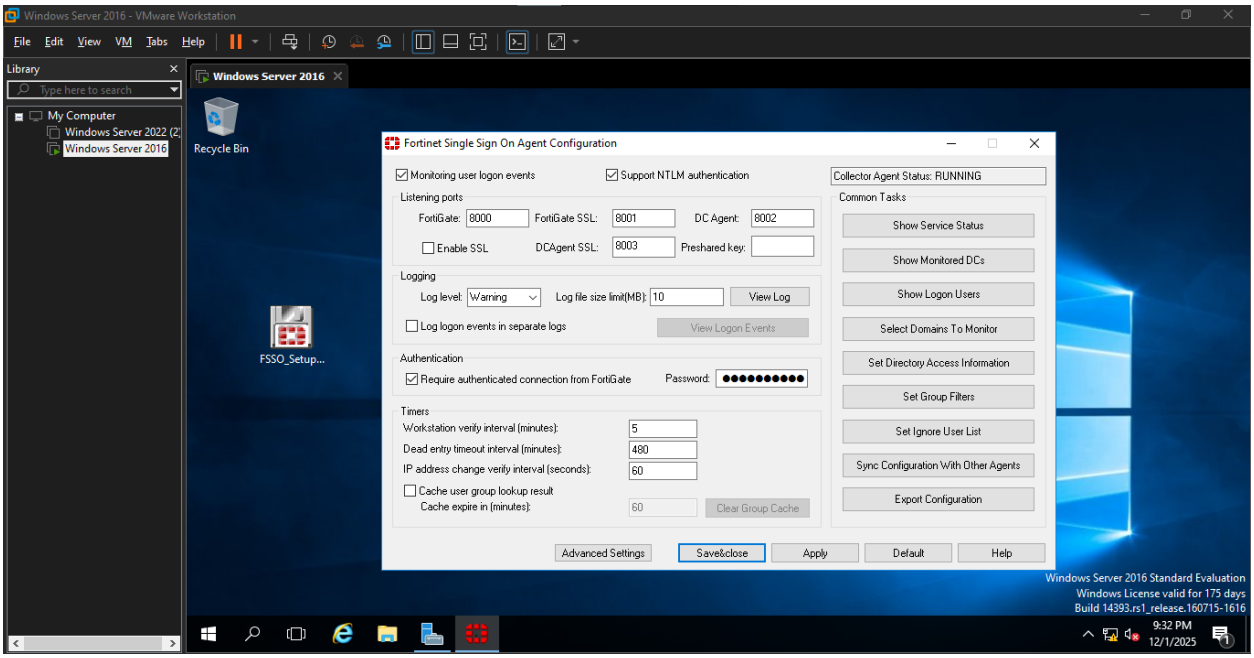
4.2 Setup DNS

- Ensure DNS entries for firewall and server
- Verify forward and reverse lookup zones



4.3 Install and Configure Fortinet FSSO Agent

Steps: 1. Install **FSSO Collector Agent** 2. Install **DC Agent** (optional if using polling mode) 3. Configure LDAP access credentials 4. Allow communication from Firewall to Collector (TCP 8000/8002)



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5. FortiGate Configuration

5.0 General Firewall Setup

- Create **VDOMs**
- Assign ports to VDOMs
- Enable **DHCP** on ports and set IP ranges
- Create **VLAN interfaces** for trunking (e.g., VLAN 10, VLAN 20)
- Create policy to allow access to **Domain Controller**

5.1 Create VDOMs

- Example: `root`, `user_vdom`, `server_vdom`
- Assign interfaces to appropriate VDOMs

5.2 Configure Interfaces

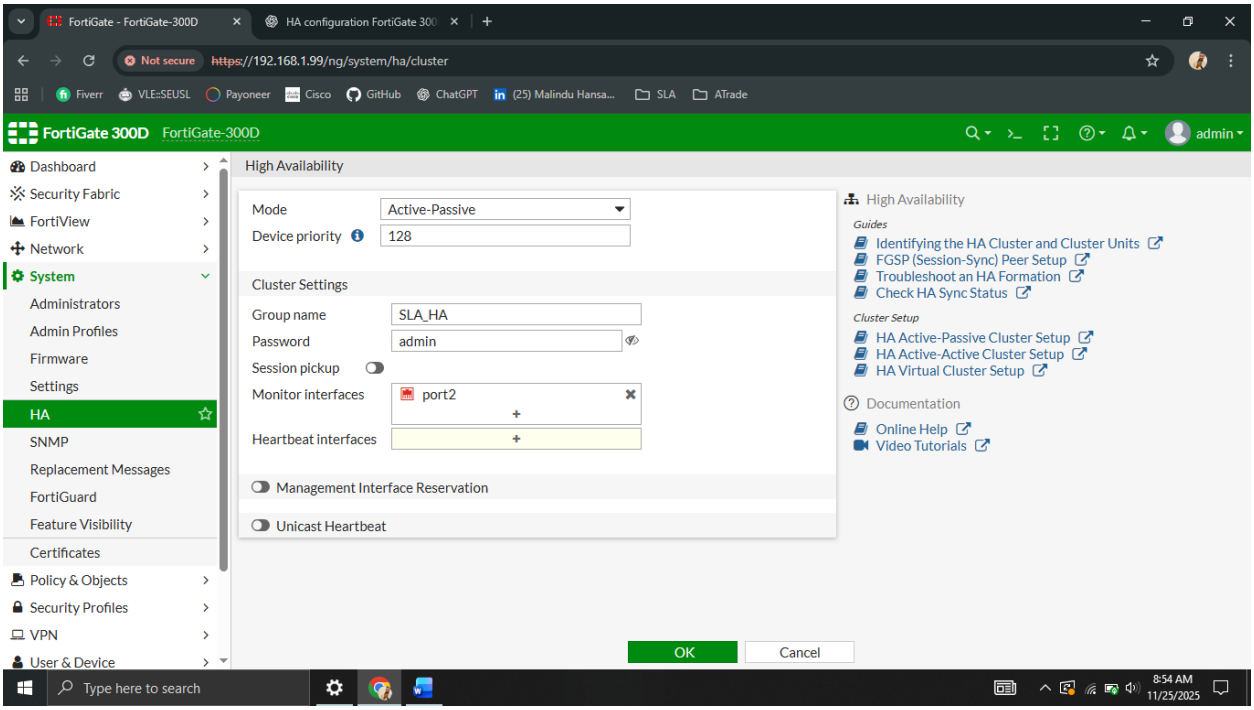
- Set VLAN sub-interfaces on the trunk port
- Example:
  - `port2.10` for VLAN 10 (Users)
  - `port2.20` for VLAN 20 (Servers)

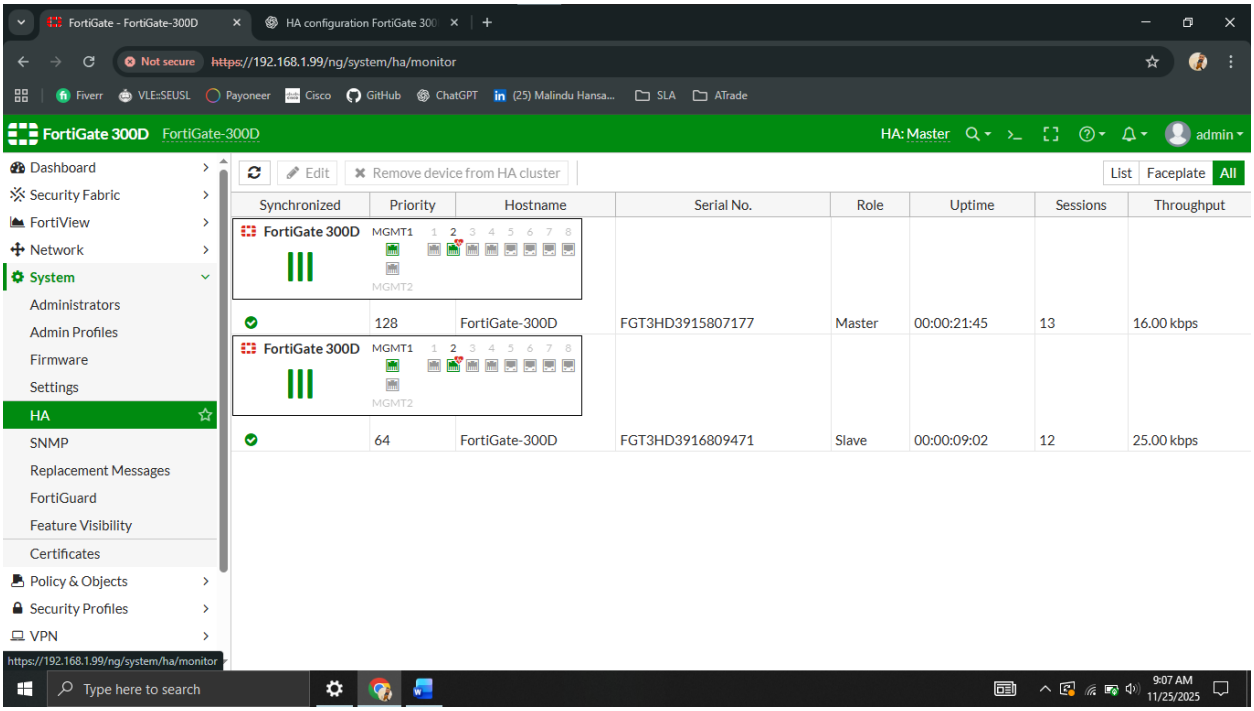
5.3 Configure DHCP (optional)

- Enable DHCP server per VLAN

5.4 Configure HA Pair

Settings include: - Mode: Active-Passive - HBDEV: Heartbeat Interfaces - Sync: Sessions, Configurations





5.5 Firewall Policies

- Allow User VLAN → Internet
- Allow Server VLAN → Internet
- Inter-VLAN Rules if needed
- Policies referencing FSSO user groups

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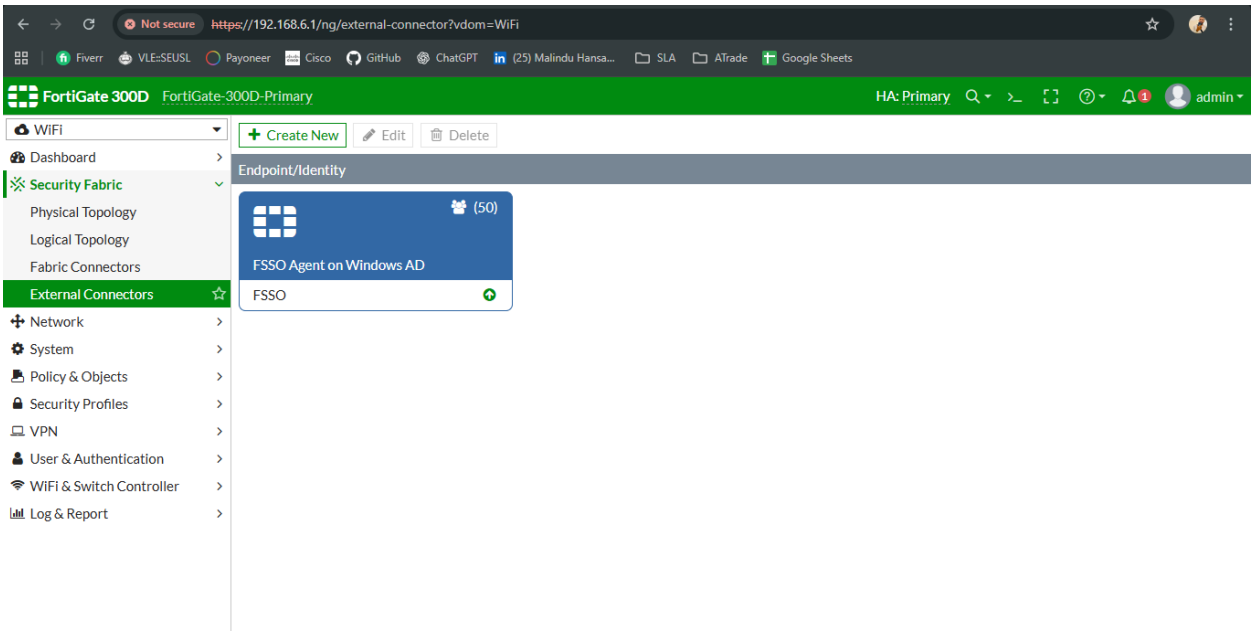
6. FSSO Authentication Setup on FortiGate

6.0 FSSO Installation on Server

- Download and install FSSO
- Set password: **Airbus@330**
- Turn off Windows Firewall during installation

6.1 Configure FSSO Connector on FortiGate

- Go to **Security Fabric > External Connectors**
- Create new FSSO connector
- Enter server IP + FSSO password
- Test connectivity ### 6.1 Add LDAP Server
- Base DN, Bind DN, Authentication type

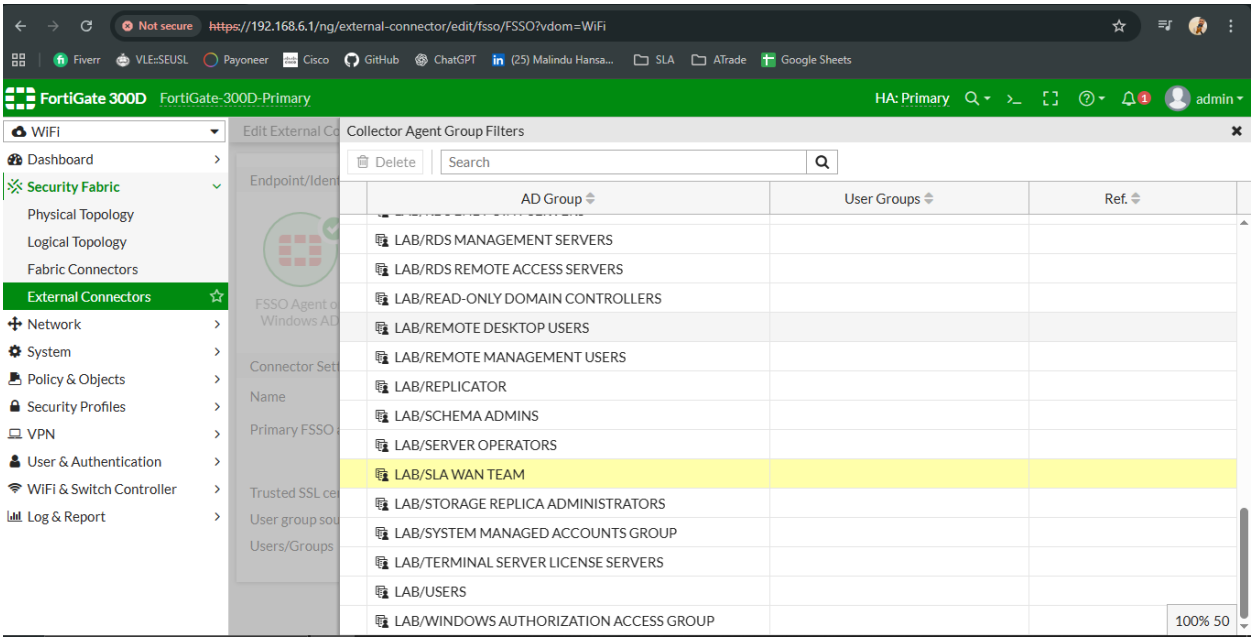


6.2 Add FSSO Connector

- IP of Collector Agent
- Port 8000/8002
- Test connectivity

6.3 Create User Groups

- Map AD Groups with FSSO Groups



6.4 Apply User-Based Firewall Policies

- Example: Allow Only AD Users in group `Employees` to access internet

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7. Switch Configuration

- Create VLANs 10 and 20
- Assign access ports for server and user devices
- Configure trunk port to FortiGate

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8. Testing & Verification

8.1 Ping Connectivity

- User VLAN → Server VLAN
- User VLAN → Gateway
- Firewall ↔ Server communication

8.2 Authentication Testing

- Log in with domain account from user laptop
- Verify FSSO user detected in FortiGate → `User & Device > Monitor`
- Check traffic logs

8.3 Failover Testing (HA)

- Disconnect primary firewall
- Ensure secondary takes over

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9. Conclusion

This project demonstrates the full workflow of integrating FortiGate firewall with Windows AD using FSSO, complete VLAN separation, HA failover, VDOM usage, and authentication-based policy enforcement.

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11. References

- Fortinet Documentation and Cookbooks
- Windows Server 2016 AD Guidelines