

COMP 012 - Network Administration

Project Development Phase

SESSION 15: PROJECT SPRINT 3 - INTEGRATION AND TESTING

ACTIVITY 15.1: PYTHON AUTOMATION INTEGRATION

Topic: Adding automation to your infrastructure

Description: Implement Python automation for management tasks

INSTRUCTIONS:

Create automation scripts:

Script 1 - Infrastructure Health Check:

- Connect to all servers (SSH/WinRM)
- Collect: CPU, memory, disk, uptime
- Generate formatted report
- Alert on issues

Script 2 - User Management:

- Create users from CSV
- Add to appropriate groups
- Generate password report

Script 3 - Backup Script:

- Backup critical configurations
- Timestamp backups
- Rotate old backups

Script 4 - Security Audit:

- Check open ports
- Verify firewall status
- Check for failed logins
- Generate security report

Test all scripts thoroughly

Document usage instructions

Deliverables: Submit automation scripts with documentation

35 Points

ACTIVITY 15.2: CLOUD INTEGRATION (OPTIONAL)

Topic: Adding cloud component to infrastructure

Description: Integrate cloud services with your on-premises infrastructure

INSTRUCTIONS:

If implementing cloud:

Deploy cloud component:

- Cloud VM for specific purpose

- Could be: DR site, public web server, backup

Configure connectivity:

- Secure communication (SSH tunnel or VPN)
- DNS resolution between environments
- Firewall rules for cloud access

Hybrid management:

- Update automation scripts for cloud
- Single management interface

If not implementing cloud:

- Enhance on-premises security
- Add monitoring solution (Nagios/Zabbix)
- Implement log centralization
- Add additional automation

Document integration architecture

Deliverables: Submit cloud integration or enhanced on-prem documentation

30 Points

ACTIVITY 15.3: TESTING AND DOCUMENTATION

Topic: Comprehensive testing and final documentation

Description: Test all components and create complete documentation

INSTRUCTIONS:

Create and execute test plan:

Connectivity tests:

- All servers can communicate
- Internet access works
- DNS resolution works
- DHCP assigns addresses

Service tests:

- Web servers accessible
- File shares accessible
- Authentication works

Security tests:

- Firewall blocking unauthorized traffic
- ACLs working correctly
- Audit logging active

Create documentation package:

- Network topology diagrams
- IP addressing scheme
- Server configurations
- Security policies
- Automation scripts documentation

- Troubleshooting guide
- Milestone: 75% complete

Deliverables: Submit test results and documentation package (75% milestone)

40 Points

TOTAL POINTS: 105