**Special Topic 2020 – Network Automation**

Due: Due: by ?

IN730151, 15 Credits, Level 7, Special Topic

Where to hand in: email to [mholtz@op.ac.nz](mailto:mholtz@op.ac.nz)

**Learning Objectives**

1. Design and implement solutions for automating the provisioning of network elements.
2. Develop network automation deployment scenarios for virtualised environments / contexts.

**Deliverables**

You are to research network automation. This research will demonstrate both your technical understanding of network automation as well as provide critical evaluation for where and how network automation should be used and where it shouldn’t.

In addition you will provide three working lab scenarios that will not only support your understanding but that can be adapted for use in future advanced networking classes.

1. **Deliverable – Written paper**

You will submit a written paper that provides a technical description of network automation. Provide consideration for:

* Different vendor solutions
* Open source options
* Cloud services
* How network automation relates to Dev Ops and Software Defined Networking.

The paper will evaluate the pros and cons of network automation and provides guidance for current industry best practice (you may provide context as appropriate).

1. **Deliverable – Lab scenarios**

You are to design three lab scenarios for testing network automation:

You are to provide instructions for configuring each scenario as well working examples within appropriate environments (e.g. GNS3).

You are to provide a topology diagram for each scenario.

You are to provide discussion for why you have chosen this scenario and how it demonstrates network automation operation.

You are to provide evidence of testing for each scenario.

**Marking Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A Range | B Range | C Range | Fail |
| Technical overview of Network automation  (30% of mark) | Research paper is technically correct covering all stated considerations in depth | Research paper is majority technically correct covering all stated considerations in moderate depth | Research paper is partially technically correct covering most stated considerations in limited depth | Research paper is technically weak covering some stated considerations in limited depth |
| Evidence of critical evaluation of Network automation (Pros & cons) and consideration for best practice  (15% of mark) | Demonstrates critical, in-depth evaluation of network automation | Demonstrates some critical, in-depth evaluation of network automation | Demonstrates limited critical evaluation of network automation | Demonstrates minimal critical evaluation of network automation |
| Evidence of external sources / literature  (5% of mark) | A wide range of relevant literature that supports your technical understanding and critical analysis of the technology | A range of relevant literature that supports your technical understanding and critical analysis of the technology | A limited range of or less relevant literature that supports your technical understanding and critical analysis of the technology | A minimal range of or non-relevant literature that supports your technical understanding and critical analysis of the technology |
| Lab Scenario #1 - Local  (15% of mark) | Device configurations provided with strong evidence of testing and have minimal mistakes. Instructions and topology diagram clear and accurate. Scenario discussion well-reasoned. | Device configurations provided with evidence of testing and have few mistakes. Instructions and topology diagram mostly clear and accurate. Scenario discussion fairly reasoned. | Device configurations provided with some evidence of testing and have a number of mistakes. Instructions and topology diagram partially clear and accurate. Scenario discussion lacking. | Device configurations are untested and show many mistakes. Instructions and topology diagram unclear. Scenario discussion poorly reasoned. |
| Lab Scenario #1 - Cloud  (?% of mark) | Device configurations provided with strong evidence of testing and have minimal mistakes. Instructions and topology diagram clear and accurate. Scenario discussion well-reasoned. | Device configurations provided with evidence of testing and have few mistakes. Instructions and topology diagram mostly clear and accurate. Scenario discussion fairly reasoned. | Device configurations provided with some evidence of testing and have a number of mistakes. Instructions and topology diagram partially clear and accurate. Scenario discussion lacking. | Device configurations are untested and show many mistakes. Instructions and topology diagram unclear. Scenario discussion poorly reasoned. |
| Lab Scenario #2 - Local  (?% of mark) | Device configurations provided with strong evidence of testing and have minimal mistakes. Instructions and topology diagram clear and accurate. Scenario discussion well-reasoned. | Device configurations provided with evidence of testing and have few mistakes. Instructions and topology diagram mostly clear and accurate. Scenario discussion fairly reasoned. | Device configurations provided with some evidence of testing and have a number of mistakes. Instructions and topology diagram partially clear and accurate. Scenario discussion lacking. | Device configurations are untested and show many mistakes. Instructions and topology diagram unclear. Scenario discussion poorly reasoned. |
| Lab Scenario #2 - Cloud  (?% of mark) | Device configurations provided with strong evidence of testing and have minimal mistakes. Instructions and topology diagram clear and accurate. Scenario discussion well-reasoned. | Device configurations provided with evidence of testing and have few mistakes. Instructions and topology diagram mostly clear and accurate. Scenario discussion fairly reasoned. | Device configurations provided with some evidence of testing and have a number of mistakes. Instructions and topology diagram partially clear and accurate. Scenario discussion lacking. | Device configurations are untested and show many mistakes. Instructions and topology diagram unclear. Scenario discussion poorly reasoned. |
| Lab Scenario #3 - Physical  (?% of mark) | Device configurations provided with strong evidence of testing and have minimal mistakes. Instructions and topology diagram clear and accurate. Scenario discussion well-reasoned. | Device configurations provided with evidence of testing and have few mistakes. Instructions and topology diagram mostly clear and accurate. Scenario discussion fairly reasoned. | Device configurations provided with some evidence of testing and have a number of mistakes. Instructions and topology diagram partially clear and accurate. Scenario discussion lacking. | Device configurations are untested and show many mistakes. Instructions and topology diagram unclear. Scenario discussion poorly reasoned. |
| Presentation  (5% of mark) | Few or No basic errors – spelling, grammar  APA referencing for all sources and quotes | | | Legibility (spelling and grammar) interrupts communication of meaning. APA and formatting inaccurate. |