# COMP3000

# Computing Project

# 2020/2021

**Project Title:**

NetManager: NetworkConfiguration & Management Tool with Enhanced Security

## Links:

**Source Code:** <https://github.com/jwhite96/COMP3000>

**Backlog:** <https://tasks.office.com/live.plymouth.ac.uk/en-US/Home/Planner/#/plantaskboard?groupId=434e3152-1419-4e0c-b2c3-c4e0d0d4a459&planId=JwVQaMjgi06AWHtSP1mLf5YABBy3>

## Project Vision:

The continued growth in IT and the increase in users has led to larger and more complex networks making the management of these systems a challenge for networking professionals. At present configuring a network requires direct access to the network hardware and configuring each device manually. This is both time consuming and prone to human error. A possible solution to this problem is Software-Defined Networking (SDN) which separates the data and control plane creating one centralised controller for the network. This allows for programmatically efficient configuration and easier management of the network. SDN can be used to build software applications that automatically configure networks, monitor network status and manage networks dynamically.

NetManager is a network configuration and management tool (NCM) for automatic configuration of networks and dynamic management of a network topology. This application will assist networking professionals in monitoring and controlling their networks as well as allowing enforcement of security policies

For: IT administrators, data centre engineer, networking professionals

Whose: challenge is configuring and managing networks

The: NetManager

Is a: network configuration management application (NCM) for automatic configuration of networks and dynamic management a network topology. Will include built in systems that will implement security within the network and alert system administrators to potential security flaws in the network.

That: [what are the key reasons]

* Faster and more efficient configuration of network devices
* Easier management of a network using a simple GUI to help visualise a network topology

## Risk Plan:

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Risk ID** | **Risk Category** | **Risk Description** | **Impact Score (1-5)** | **Likelihood %** | **Risk Rating** | **Risk Response** | **Contingency Plan** |
| **Project Execution** | | | | | | | |
| R1 | Project Execution | Project too complicated/difficult to complete | 5 | 25% | 1.25 | Risk Avoidance | Thorough technical analysis and prototyping |
| R2 | Project Execution | Run time performance issues | 3 | 25% | 0.75 | Mitigation | Code optimization to improve performance |
| R3 | Project Execution | MVC compatibility issues | 3 | 40% | 1.2 | Mitigation | Adequate testing during each development stage to check each component is compatible |
| R4 | Project Execution | Project not within scope | 3 | 30% | 0.9 | Risk Avoidance | Ensure project is still within scope during supervisor meetings |
| R5 | Project Execution | Changes to technologies during development | 2 | 35% | 0.7 | Mitigation | None |
| **Personnel Risk** | | | | | | | |
| R6 | Personnel | Insufficient knowledge to complete system requirements | 4 | 25% | 1 | Risk Avoidance | Ensure enough research is carried out before development begins (mostly during sprint zero) |
| R7 | Personnel | Unexpected illness or personal issues | 2 | 30% | 0.6 | Mitigation | Alter current schedule and pushback tasks into next sprints if required |
| **Schedule Risk** | | | | | | | |
| R8 | Schedule | Unexpected server downtime/maintenance | 1 | 75% | 0.75 | Acceptance | None |
| R9 | Schedule | Time constraints due to other commitments | 3 | 30% | 0.9 | Mitigation | Improved planning and alteration to current schedule |
| R10 | Schedule | Issues related to the COVID-19 Pandemic | 2 | 60% | 1.2 | Mitigation | [*Dependant on restrictions and changes*] |
| **Compliance Risk** | | | | | | | |
| R11 | Compliance | Potential copyright infringement with similar products | 1 | 25% | 0.25 | Acceptance | As this is project is for educational purposes this risk can be accepted but will still need to be taken into consideration |
| R12 | Compliance | Unintentional regulatory noncompliance’s | 1 | 10% | 0.1 | Acceptance | Same as above |
| **Loss** | | | | | | | |
| R13 | Loss | Accidental loss of work | 3 | 20% | 0.6 | Mitigation | Create multiple backups to keep loss to a minimum |
| R14 | Loss | Theft/Fraud | 4 | 10% | 0.4 | Acceptance | None |

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| **Risk Category** | **Definition** |
| Project Execution | Risks affecting the development of the project e.g. systems, technologies, code etc. |
| Personnel | Risks affecting the human aspect of the project |
| Schedule | Risks that could affect the schedule and cause time delays during development |
| Compliance | Risks associated with failure to meet regulatory standards |
| Loss | Risks related to the loss of work, hardware or data |

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| --- | --- |
| **Risk Response** | **Definition** |
| Risk Avoidance | Eliminating the risk before it occurs |
| Mitigation | Reducing the damage caused if this risk occurs |
| Acceptance | Accepting the risk if it occurs |

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| **Probability Level** | **Range** |
| High | Greater than 50% |
| Significant | 30-50% chance |
| Moderate | 10-29% chance |
| Low | Less than 10% chance |

## Keywords:

Networking, Network Management, Network Configuration, Python, Software Defined Networking