Improving the available network infrastructure to implement the Bring Your Own Device (BYOD) concept for the University of Vocational Technology

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Abstract

The Bring Your Own Device is a concept of consumerization to allow network users to be connected with network using their own personal devices to accomplish the regular tasks. This concept is very useful for the academic institutes, as majority of students are not able to be accommodated into the computer labs at the same time. The available network of University of Vocational Technology has limitations to support the BYOD concept due to the available network design.The staff has no flexible way of accessing the network, and the students are limited to use available wired network at the library and computer labs as per the VLAN based network design. To implement BYOD concept, the available network infrastructure should be improved.

The primary data were collected in two forms. Firstly, the random 100 users of the network, representing staff, students and guests, experiences of using network collected through the questionnaire. Then, the available network was analysed using tools to collect quantitative data such as signal strength of distributed wireless network and bandwidth usage of wired network. The secondary data, security mechanisms, network topologies, and service distribution, were collected by evaluating the overall network designs to address the weaknesses to support for BYOD environment.

The network implementation introduces into four different parts. One is for the student, second one is for the staff, third one is for the students and staff and the fourth one is for the demilitarize zone. It is required to implement access control list (ACL) based control for the users to access the wired network using their own device instead of available VLAN based wired network. The current wireless network access authentication mechanism is WEP which is not strong enough. The BYOD encourages users to access the wireless network from their mobile device. Introducing the WPA2 is recommended to authenticate users for the wireless network for such environment. Further, the seamless IP addresses assignment is

required through the DHCP server in the authorization process. The additional rules are required to deploy at the firewall to address foreseeable risks introduce from personal devices.
In a university, BYOD is increasingly becoming popular since it facilitates flexible way to work. Itintroduces environment to work independently from time and location. Further, it increases the productivity asuser hasitsown comfort zone to work. More importantly, it is required to implement user policies in addition to mature network to avoid risks.

Keywords: BYOD, ACL, VLAN, DHCP, WEP, WPA2