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Towards a Unique, Secure, and Robust Wireless Local Area Network Device Identifier

With today's technological evolution, wireless networks have become very common for organizations, homes and public places. For any device to be authenticated and authorized to use any of the wireless network services, it must first be identified then authenticated and authorized to have access to the wireless network resources. One of the biggest challenges with implementing wireless networks, though, is implementing the identification of the wireless devices. Apart from port numbers and IP addresses at application and network layers respectively, devices in a network use MAC addresses for identification at the physical layer. However MAC addresses can be spoofed and altered thereby compromising the security, robustness and uniqueness qualities of a device identifier. This study therefore examined uniqueness, security and robustness characteristics of MAC in relation to a device serial number in order to establish a suitable network device identifier. In order to achieve this, test runs through a proof of concept method by using Advanced IP Scanner and getmac command line tools. Advanced IP Scanner was used to spoof MAC and serial number of a device to determine the security, hence robustness of the identifiers while getmac was used to determine uniqueness of the identifiers. The run tests indicated that a MAC address can actually be spoofed and altered rendering the MAC address not unique, insecure and unreliable. This is as a result of the fact that a computer's MAC address, apart from it being hard-coded in the hardware, has a copy of the MAC address in the system software. On the contrary, a computer's serial number is hard-coded in the hardware only and therefore cannot be spoofed and altered making it unique, secure and reliable. The researcher recommends that a study be conducted on how a device serial number can be used as network device identifier

Keywords

Network device, MAC Address, Serial Number, Identifiers, Wireless Local Area Network

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