

ABSTRACT

The continuous development of information technology will be a supporting element for the company's Information System. Bandung District Government is a part of structural district government that manages the needs of the community located in Bandung District. BAPAPSI is a department which manages Management Information System (MIS) that used by Bandung District Government. However, in the existing condition shows that the network infrastructure in all district department have many problems, which needs some development of network infrastructure at Bandung District Government.

The improvement of network infrastructure uses Network Development Life Cycle (NDLC) with Analysis, Design, Simulation Prototyping, Implementation, and Monitoring & Management Phase simulated in the chosen simulator GNS3 that will build a virtual simulation environment for minimalizing the risk of implementing new network infrastructure in real environment. Simulation of this work uses Cisco Three-Layered Hierarchical Model that will simplify the build of good network infrastructure, measurable, and easier to understand because focuses on three layer which is core, distribution, and access layer.

The testing of prototype applies some scenarios for analyzing three parameters which is throughput, delay, and packet loss. The results of all scenarios that uses bandwidth and work time show that the difference of allocating bandwidth with throughput 47,98 kbps for equal bandwidth scenario but 1147,354 kbps in priority bandwidth scenario at peak time, and 182,56 kbps (equal bandwidth) and 1268,85 kbps (priority bandwidth) at spare time. All of scenarios have 0,0484 s delay and in equal bandwidth has 0,0264% packet loss but none in priority bandwidth scenario. So the better prototype is the one that using allocating bandwidth for each of district department users differently (priority bandwidth).

Key Word : Information Technology, Information System, Network Infrastructure, Bandung District Government, NDLC, GNS3, Cisco Three-Layered Hierarchical Model, Bandwidth.