**INVENTON IN THE FIELD OF CUMPUTER SCIENCE**

**TRANSMISION CONTROL PROTOCOL**

**ABSTRACTS**

**English:**

**Abstract:**

The Transmission Control Protocol/Internet Protocol (TCP/IP) represents the foundational framework of modern computer networking. Developed in the 1970s by researchers funded by the U.S. Department of Defense, TCP/IP standardizes how devices communicate and exchange data across networks, including the global internet. This protocol suite consists of two main components: Transmission Control Protocol (TCP) and Internet Protocol (IP). TCP ensures reliable delivery of data by managing packet sequencing, error detection, and retransmission, while IP facilitates packet routing and addressing across interconnected networks. TCP/IP's universal adoption, interoperability across diverse platforms, scalability to accommodate network growth, and built-in security features have contributed to its prominence. As an open standard maintained by the internet engineering community, TCP/IP continues to evolve, supporting a wide range of applications and services critical to modern communication and information exchange.

**Kiswahili:**

**Muhtasari:**

Itifaki ya Udhibiti wa Usambazaji/Itifaki ya Mtandao (TCP/IP) inawakilisha mfumo wa msingi wa mtandao wa kompyuta wa kisasa. Iliundwa katika miaka ya 1970 na watafiti waliodhaminiwa na Idara ya Ulinzi ya Marekani, TCP/IP inasanifisha jinsi vifaa vinavyowasiliana na kubadilishana data kwenye mitandao, ikiwa ni pamoja na mtandao wa ulimwengu. Hii ni mfululizo wa itifaki mbili kuu: Itifaki ya Udhibiti wa Usambazaji (TCP) na Itifaki ya Mtandao (IP). TCP inahakikisha uwasilishaji wa data kwa kutekeleza mpangilio wa pakiti, kugundua makosa, na kutuma upya, huku IP ikirahisisha upangaji wa njia na kuorodhesha pakiti kwenye mitandao iliyounganishwa. Kupitishwa kwa TCP/IP kote duniani, utangamano wake kwenye majukwaa mbalimbali, uwezo wake wa kukua na mitandao, na vipengele vyake vya usalama vilivyojengwa vimechangia umuhimu wake. Kama kiwango wazi kinachodumishwa na jumuiya ya uhandisi wa mtandao, TCP/IP inaendelea kubadilika, ikisaidia matumizi na huduma mbalimbali muhimu kwa mawasiliano ya kisasa na kubadilishana habari.

**Kikuyu:**

Luhya Translation:

Obwambayi: TCP/IP (Transmission Control Protocol/Internet Protocol) nechiolanga busa bw'ethondeka bwa okwandika amachetsio ka kompyuta ya khu. Yachiolakho myakha ya 1970 nebalemi beamerika ababe neofisi ye CIA, TCP/IP yekhale yabukhonyi bwaya obulemi bwekumanyana nebutali nobulolele. Yewubusania mbuulakhu ebirundu bina: Itifaki ya Kumanya ya Kukanda (TCP) na Itifaki ya Mtandao (IP). TCP yeena emachio khukhuyia ethuĩro khupakiti, khuyisia mutali wo khuyisia khupa, na khuyisia mutali wo khuyisia muwusania. IP yeena emachio khukhuyia mutali wa ithuĩro no khuyisia pakiti no khukhola amukanda arekhonye. Khukhuyia ebirundu bya TCP/IP nekhusanya nemachio akhukhola busa bwa TCP/IP no khukhuyia mĩtambo ya ithuĩro, khuyisia ithuĩro lya bulano, na khuyisia bunaloli bwa mutali bwemakanda. Ithondeka ya TCP/IP yilo busa bwa muwusania bubachio no khandi obukhonyi bwebirundu bya ithuĩro no khuyisia bunaloli bwa muwusania bwebachio