An FPGA-Based System for Tracking Digital Information Transmitted via Peer-to-Peer Protocols

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Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x10 mm. This item is printed on demand - Print on Demand Neuware - This research addresses the problem of tracking digital information that is shared using peer-to-peer file transfer and VoIP protocols for the purposes of illicitly disseminating sensitive government information and for covert communication by terrorist cells or criminal organizations. A digital forensic tool is created that searches a network for peer-to-peer control messages, extracts the unique identifier of the file or phone number being used, and compares it against a list of known contraband files or phone numbers. If the identifier is on the list, the control packet is saved for later forensic analysis. The system is implemented using an FPGA-based embedded software application, and processes file transfers using the BitTorrent protocol and VoIP phone calls made using the Session Initiation Protocol (SIP). Results show that the final design processes peer-to-peer packets of interest 92% faster than a software-only configuration, and is able to successfully capture and process BitTorrent Handshake messages with a probability of at least 99.0% and SIP control packets with a probability of at least 97.6% under a network traffic load of at least 89.6 Mbps....

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