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SMART NIC CARD BASED PATIENT DATA BASE REMOTE ACCESSING SYSTEM FOR MEDICAL TRANSCRIPTION

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ABSTRACT

The continued growth of software based networking, encryption, management, and visibility capabilities might put a pressure on server CPU processing capacity. Servers are increasingly using smart network interface cards to offload intensive packet processing tasks. Network interface cards have longbeen used to connect servers to Ethernet networks (NICs). Smart NICs offload various operations from the server processor, allowing more cycles to be allocated to application performance. Smart NICs rely on specialized processors, which are often field programmable gate arrays, to power their offload capability (FPGAs). Standard development tools can be used to programme the FPGAs. A smart NIC card is a portable integrated device with data storage and processing capabilities used in information technology. As in other industries, the use of smart cards in healthcare systems is becoming more popular due to increased capacity and performance. NIC cards have been used as electronic health records (EHRs), and their efficiency combinedwith easy and fast data access have made them widely adopted in hospitals. A chip card-based integrated electronic health record system is used in the system. The system uses smart cards for personal identification and data transmission and connection. The patient's smart card also carries generic health information in addition to personal information. Smart cards are used by doctors to access patient card data. Electronic medical records have many advantages over paper records, including improved accuracy and quality of patient care, cost, efficiency, and productivity savings. The proposed solution is based on the latest and most advancedANC (Active Network Card) technology for storing patient data as tags or key fobs. It can be hidden anywhereand works invisible.

Keywords*: NIC card, Active network card, Electronic Health record etc.,*

1. INTRODUCTION

Diseases are on the rise in today's world, and the number of patients is growing by the day. Some long-term patients must take their prescription on a daily basis. Humans go from oneplace to another every day in order to meet their basic necessities. The situation has stabilized as hetravels with medicines for his illness. One can go on an international trip or a local excursion. As a result of the sickness, he passes out. They take him to a emergency ward which is nearer. When he's unconscious, it takes a long time for the doctor to figure out what's wrong with him and how to treat

him. During this time, it's possible that a life-threatening crisis will occur. Technologies for such medical communication and posting of medical data have not yet been developed. As a result, technology must be utilized to address this issue. This article describes smart NIC cards for remote data access.

The smart NIC card is a portable integrateddevice with data storage and processing capabilities used in information technology. As in other industries, the use of smart cards in healthcare systems is becoming more popular due to increased capacity and performance.NIC cards are utilized as an ElectronicHealth Record (EHR), and their efficiency, blended with smooth and short statistics get entry to, has brought about huge adoption in hospitals. A clever card-primarily based totally Integrated Electronic Health Record System is designed on this gadget. The gadget employs a clever card for private identity and statistics transfer, in addition tostatistics connectivity. In addition to privateinformation, the affected person`s clever card is packed with conventional fitness information. Smart playing cards are utilized by fitness care practitioners to get entry to statistics on affected person playing cards. Electronic fitness facts have some of benefits over paper facts, together with multiplied accuracy and best of affected person treatment, in addition to cost, efficiency, and productiveness savings.

A. EXISTING METHOD

This system defines the OP4T architecture andprovides an open source implementation for theNetFPGA SUME prototyping board. Using the P4programming language and partial reconfiguration,that open source version has been shown to provide in band, accurate packet time stamping without compromising feasible productivity. The ability of OP4T to measure fine-grained properties of a software packet forwarder, such as packet batching, is illustrated.

Problem Statement

- The open source channel accessing method takes longer to allocate channels and the description key is more complicated.
- Each data packet`s switching time is adjusted in accordance with the gate memory array. As a result, data management becomes more challenging.

B. PROPOSED METHOD

The proposed solution is based on the latest and most advanced ANC (Active Network Card) technology for storing patient data as a tag or key chain. It can be hidden anywhere and work invisibly.

2. LITERATURE REVIEW

Thomas Clausen; Mohammed Hawari [1] OP4T The microsecond-scale temporal behaviour of network traffic in data centres is difficult to monitor and comprehend because it is exceedingly bursty. This paper introduces the Open Platform for Programmable Precise Packet Timestamping (OP4T), a hardware architecture targeting Field- Programmable Gateway Arrays (FPGAs), integrated into data-centre servers as a Smart Network Interface Card (SmartNIC), and flexible enough to enable advanced latency diagnosis, to bring observability into data-centre networks. The OP4T architecture is defined in this paper, and an open-source implementation for the NetFPGA SUME prototyping board is proposed. That opensource implementation is experimentally proved to offer in-band, exact packet timestamping without reducing feasible throughput by exploiting the P4 programming language and partial reconfiguration. OP4T is demonstrated as being capable of measuring fine-grained features of a software packet forwarder, such as packet batching.

Shuhe Wang, Zili Meng, and Chen Sun [2] Smart network interface cards (SmartNICs) are commonly utilised to speed up network functions that are software-based (NF). However, selecting an NF to offload to the Smart NIC as part of the service chain by accident can cause considerable performance deterioration due to frequent communication between the CPU and the Smart Network Interface Card. This white paper introduces SmartChain, a high-performance and efficient architecture that allows SmartNICs and CPUs to divide the service chain optimally. SmartChain comprise of two steps. To begin,

SmartChain evaluates if pieces in a chain are suitable for running on SmartNIC in order to take advantage of its high performance. SmartChain also ensures that the dependencies between items are maintained. Second, SmartChain models service chain delay and resource limits and addresses the partition problem with 01 integer linear programming, which is our core innovation. On the basis of Netronome SmartNIC, we create a SmartChain prototype. When compared to strawman alternatives, the evaluation findings reveal that SmartChain can cut service chain latency by up to 87 percent while maintainingthroughput.

Yaming Xu [3] You can extend it with the explosive growth of information, data transmissionand compression are becoming more and moreimportant. Most of the existing compressionalgorithms are implemented by the softwarearchitecture, which wastes CPU resources. By offloading the algorithm to the hardware, it is advantageous to allocate resources properly and improve CPU processing efficiency. FPGA-based intelligent network interface cards (NICs) not only can offload data, but also have the ability to send compressed data directly to cloud storage devices. It provides an operating environment for new compression algorithms with efficient network transmission speeds and can reduce system powerconsumption to a certain range. In this research, wepropose an FPGA-based smart NIC that can offload the CPU's LZ4 compression algorithm to the FPGA, thereby increasing CPU usage. Experiments show that the architecture can successfully open up the data channel, with a network speed approaching 46 Gb/s. Simultaneously, the experiments show that the time it takes to run the LZ4 compression method on the CPU is related to the file size. Itdemonstrates that employing a smart NIC for data offloading has significant practical implications forhuge files.

3. SYSTEM FUNCTION

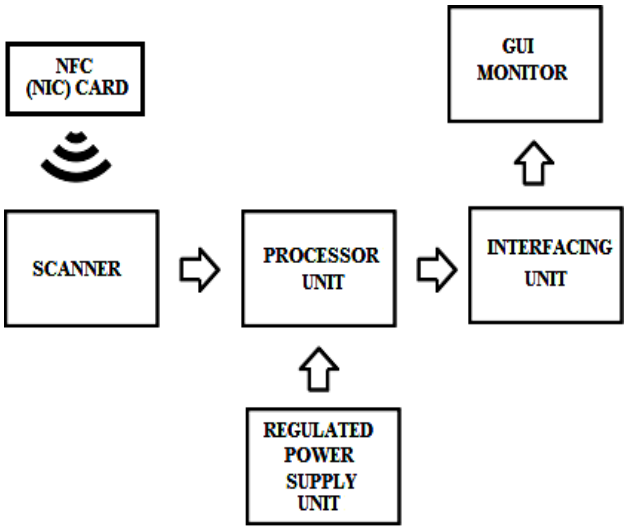

Fig.1 block diagram of the system

Arduino uno R3, MIFARE card scanner(reader), NIC Card, key chain, 2X16 LCD displayunit, and +12V power supply unit make up the system. The Arduino Uno (ATmega128) controlleris used to connect the MIFACRE scanner and LCDdisplay devices. When the NIC card is placed nearthe reader, the card reader scans the data on it. Thecontroller reads the data that has been received. The scanned data is shown on the LCD display unit. The +12V power supply unit is utilised to provide energy to the circuit in order for it tofunction.

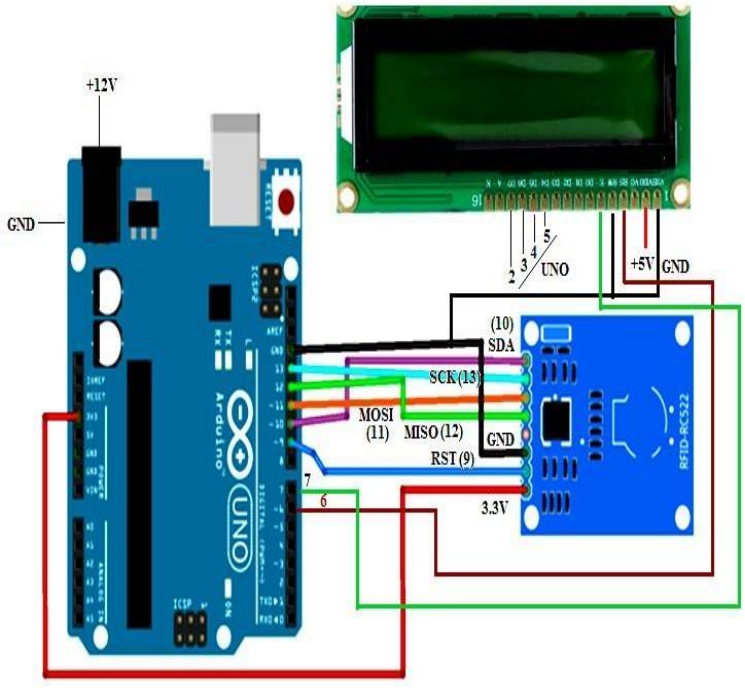

Fig.2 Circuit diagram of the system

4. NIC READER AND CARD

Fig.3 Mifare card reader –RC522

The MF RC522 is a 13.56mhz contactless read/write card chip with a high level of integration. It's an NXP non-contact card chip that's low-voltage, low-cost, and tiny in size, making it perfect for intelligent instruments and portable handheld devices. The MF RC522 makes use of an advanced modulation and demodulation concept that can be found in all passive contactlesscommunication technologies and protocols that operate at 13.56mhz. For MIFARE product verification, it also supports the rapid CRYPTO1 encryption mechanism.

Fig.4 mifare card

MIFARE is the trademark of NXP Semiconductors for a family of chips used in contactless smart cards and proximity cards. The brand name refers to proprietary solutions based onthe ISO/IEC 14443 Type A 13.56 MHz contactlesssmart card standard at various levels. It uses the AES and DES / Triple DES encryption standards, as well as a proprietary encryption method from thepast. According to NXP, their smart card chips have sold 10 billion times and their reader moduleshave sold over 150 million times. NXPSemiconductors, which was spun off from Philips Electronics in 2006, owns MIFARE.

5. EXPERIMENTAL RESULT

The recommended mechanism operates as follows:

- Connect the USB to TTL converter to the laptop or desktop computer that is connected tothe circuit's microcontroller.
- Install the terminal ver-1.9b application on your laptop or PC.
- Select the port on the laptop to which the USBto TTL is connected in the software.
- Next, press the connect button on the software.

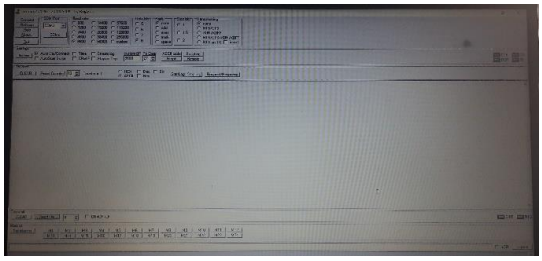

Fig.5 Terminal software

- The information saved in the microcontroller andscanned by the RFID scanner is then transferred tothe application via the USB to TTL link.
- The scanned data, as well as the IP address of theNIC card, will appear in the terminal software.
- Finally, we can quickly and securely retrieve datafrom the NIC card.

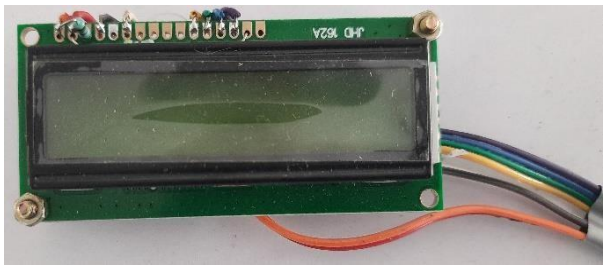

Fig.6 LCD Display

- An LCD monitor displays the step-by-step procedure.
- The message "card is detected" will appear if thecard recognized.
- Following that, you'll see "Displaying the data."
- The message "card not detected" will appear if thecard is not recognized.

6. CONCLUSION

This system is properly designed and functioning for accurate remote data access. An intelligent network interface card is essential in thissystem. The size of the card is fairly modest and the cost is negligible. This system can be applied toa variety of data posting applications.

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