

# Network Device Inventory Management System

Suraj Suntakar, Jayasimha S R



**Abstract:** *Inventory Management System is a centralized data repository that helps in managing the inventory with ease. A centralized data repository of data helps people to get access to the information fast thus increasing productivity. This paper discusses developing a web-based application that will be capable of managing and monitoring networking devices in an IT organization. The application will consist of a centralized data repository of all the networking devices in an organization. A centralized network device inventory helps employees to easily manage and monitor all the networking devices in the organization. The application will also help employees in the fast troubleshooting of any networking issue that arises in the organization thus, increases the productivity of employees. The application will be capable of sending timely updates regarding the warranty period, inventory data updates, etc., to the concerned people.*

**Keywords:** *Centralized repository, MERN Stack, Network Device Inventory, Networking*

## I. INTRODUCTION

Network Device Inventory Management System is an essential tool in every organization where they manage their own Network Infrastructure. There are a lot of proprietary tools available in the market but they are not highly customizable. Many organizations use spreadsheets and other free tools available to store the data of networking devices as there is no monetary cost related to it. But these tools do not satisfy all the needs of the people using this data. The data is stored manually and the chance of erroneous data is very high. The data can be scattered in multiple locations, hence it is difficult to gather information from this data which consumes a lot of time in only gathering the information about the devices. Lack of a centralized device inventory can drastically reduce the productivity of an organization. Building a Network Device Inventory Management is not a straightforward task and requires a lot of planning.

This rapid development of technology has given many benefits to the human, especially in the communication and in getting information. Hence it is necessary that all the organizations or companies must use the technology wisely to improve productivity and to get maximum output.

BPRTIK is one such institution that aims to provide proper training and information to the field of communication and information.

The inventory management system in BPRTIK able to perform the division of the state and asset. This process starts with managing the process control, maintaining the reports, and the external services [1].

In the IT environment, the complications of inventory system are more due to a large amount of data, we should ensure that the data is unified and consistent to save the storage space and to increase the scalability of the system. In the IT environment, the inventory management manages the accounts with the help of a computer, where the user only needs to enter the GRN after checking the computer does the accounting automatically and produces a different kind of table data after comparing it with the traditional environment. This automatic computing of accounting improves the accuracy, timeliness, and the processing speed [2].

## II. LITERATURE REVIEW

This paper [3] discusses the system implemented through a database which stores the information about the patients and also the donor. This data can be updated to know the bloodstock and add donor membership to obtain information about the donor. This can also be used as an android application on smartphones where users can access the information about the bloodstock and patients easily; they even get a notification from the BTU if the bloodstock is running low.

In the paper [4] the author discusses how the main success of the global market depends upon the supply chain and how effective food inventory management is a key success to the industry. Anigbogu et al proposed a system for sales and inventory management this system is useful because it can automatically provide food preservative demand. This system is used for tracking and managing sales for smaller businesses. Here the food preservatives are managed using a web-based platform and four machine learning models were applied to predict the sales.

The paper [5] discusses how the Laboratory inventor management system uses Radio Frequency Identification (RFID) technology. With the help of this technology, the library staff can record how many types of equipment are issued by the students and how many types of equipment are there in the laboratory. It becomes easier for the staff to maintain the information because this system gives ready report to the staff of each article and also about the student. This technology also prevents the theft and reduces the workload of the staff; it can store and update data in a database it is faster and the easiest way to record the information.

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This paper [6] discusses how inventory management helps to manage all the spare parts of the factory. In this study, the author took an example of the factory in Thailand which has applied this data mining technique. The main aim is to classify the spare parts in A, B, C categories the classification is done in terms of precision, recall, f-measures, and accuracy.

The paper [7] discusses the First In First Out method for inventory/goods. This method analysis the incoming goods and sends the first incoming good out, because of this method there will not be any loss of data and data redundancy.

This paper [8] the author discusses how the Reorder Point (ROP) method is used to solve the problem of unbalanced goods in the central warehouse in inventory control. ROC method is used because in this method it can re-store the stock an also distribute the stock at the same time. This study aims to develop inventory control on supply chain distribution of goods from suppliers to the central warehouse, this minimizes the cost of supply chain and the stock will also be safe.

In this paper [9] the author discusses a concept where suppliers are connected to on hub and that hub is connected to another hub and that another hub is connected to retailers in this is prohibits direct delivery from supplier to retailers. But in the synchronized database (SD) the central database collects all the data from the retailer database and sees where the goods are requested and then directly delivers the goods from suppliers to retailers.

This paper [10] discusses what happens when the inventory management system is not accepted by the top management. According to the top management, the inventory management must make sure that there is an uninterrupted supply of raw materials, they should also allow improved utilization of stocks. When an organization implements this inventory management it gains lots of good feedback from the customers.

## III. PROPOSED METHODOLOGY

The web application is designed using the object-oriented approach as the web application will be developed in small modules that combine both data and process, and the web application will undergo continuous design, adaption, and maintenance phases.

Fig. 1 depicts the existing workflow of the system where in the employees manage device details stored in spreadsheets in different locations. It is very difficult to manage and retrieve the device details. Fig. 2 is the proposed system for Network Device Inventory Management System.

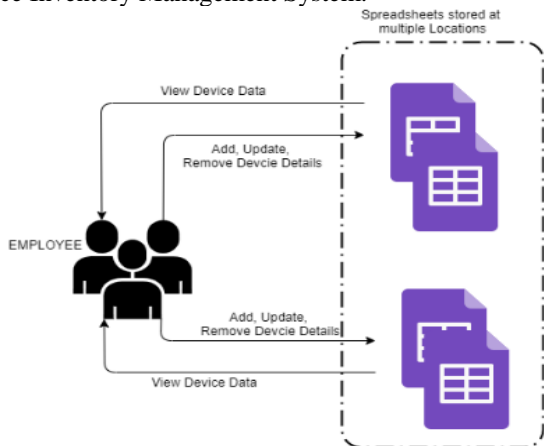


Fig. 1. Existing system workflow

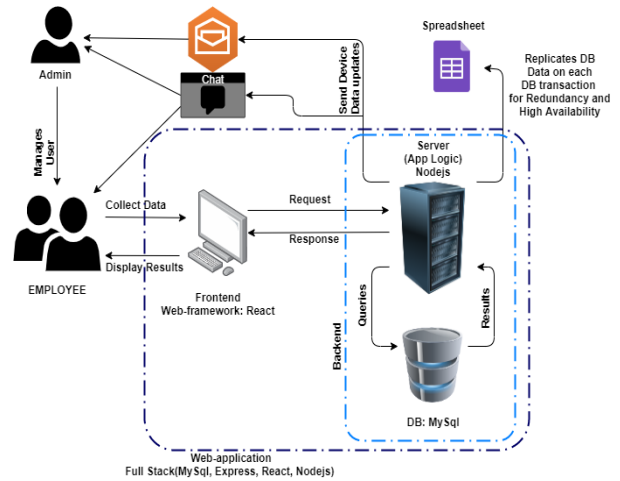


Fig. 2. Proposed System workflow

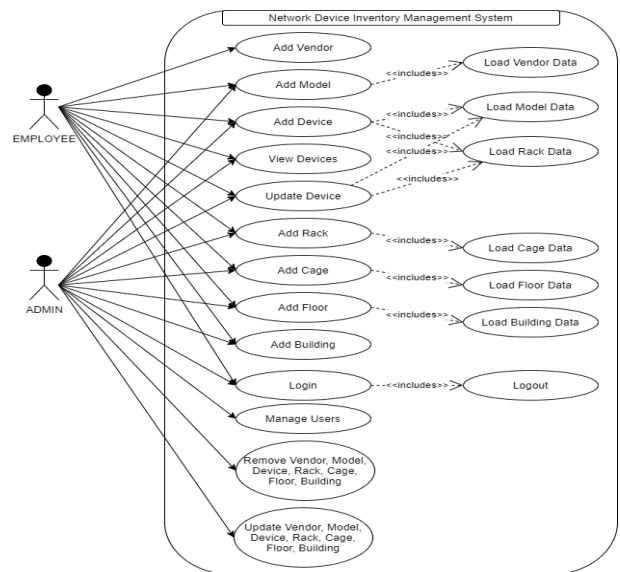


Fig. 3. Use case diagram of the proposed system

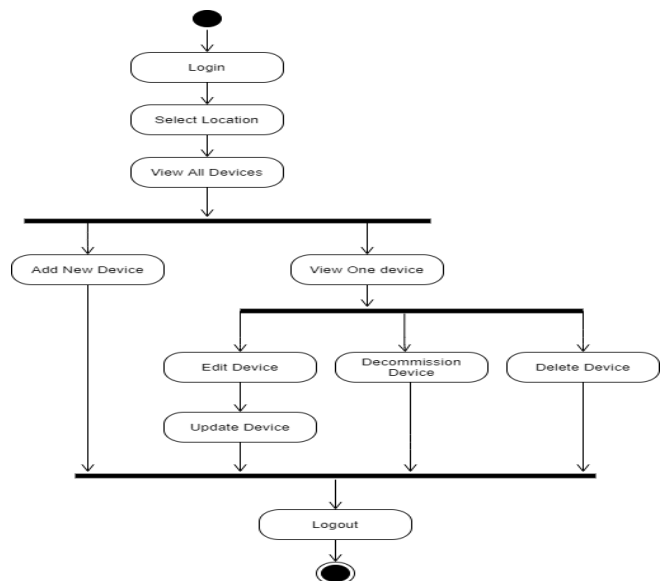


Fig. 4. Activity diagram of proposed system

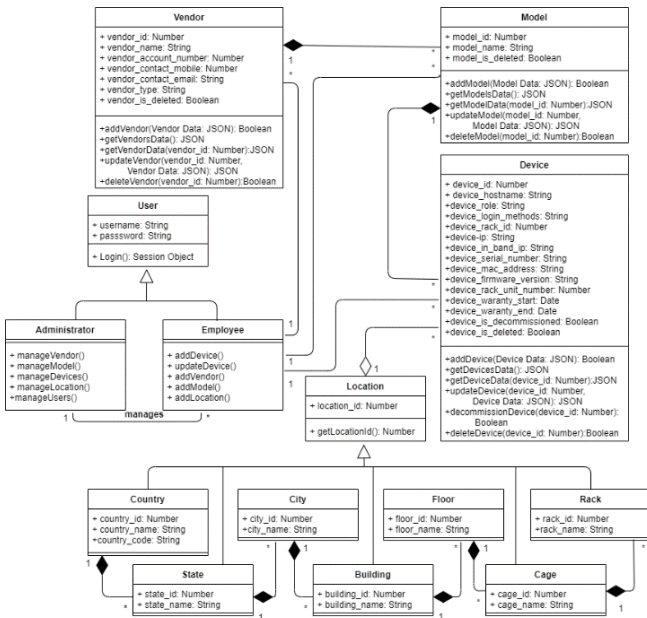


Fig. 5. Class Diagram of the proposed system

Fig. 3, Fig. 4, and Fig. 5 show the Use Case diagram, Activity diagram, and Class diagram of the proposed system.

IV. RESULTS

The web application is developed using MERN stack, backend is MySQL and server side API's are written using Nodejs, and the frontend is developed using React. Figure 7 is the login screen of the application, Figure 8 is view all devices screen with an option to add new device, Figure 9 is view one device with options to edit, decommission and delete device. Fig. 6, Fig. 7, and Fig. 8 are screenshots of the implemented web-based application, Fig. 6 is the login screen, Fig.7 is the view all devices screen, Fig. 8 is a screen to view one device with options to edit, decommission and delete device.

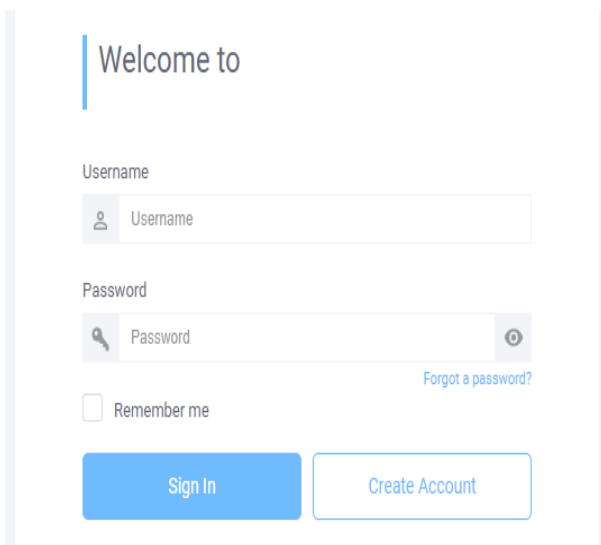


Fig. 6. Login Screen of Network Device Inventory Management System

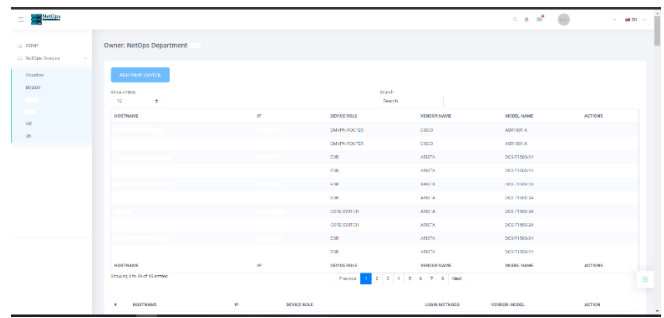


Fig. 7. View All Devices Screen of Network Device Inventory Management System

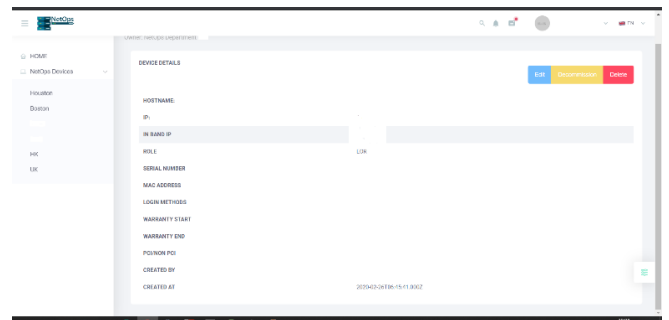


Fig. 8. View One Device of Network Device Inventory Management System

V. CONCLUSION

Organizations use different types of tools to manage and monitor the Network Device Inventory. The tool may not satisfy all the needs of the organization and the data may be scattered thus making it difficult and time-consuming to gather information from the data available. This paper presents a straightforward model for developing a web-based application which is a centralized data repository of all the networking devices in an organization. The web-based application reduces manual work for managing and maintaining a network device inventory. The web-based application reduces the hardships faced by the existing system. The application helps users/employees in faster information retrieval about any networking device in an organization. Most of the employee's time is used in solving the issue and not in gathering the information of the device thus increasing the productivity of employees, which directly increases the productivity of the organization.

REFERENCES

1. E. Fetrina, E. Rustamaji, T. Nuraeni and Y. Durrachman, "Inventory management information system development at BPRTIK KEMKOMINFO Jakarta," 2017 5th International Conference on Cyber and IT Service Management (CITSM), Denpasar, 2017, pp. 1-4, doi: 10.1109/CITSM.2017.8089303.
2. L. Jinping, "Under the IT environment inventory accounting and management studies," 2017 29th Chinese Control And Decision Conference (CCDC), Chongqing, 2017, pp. 2579-2583, doi: 10.1109/CCDC.2017.7978949.
3. F. Lestari, U. Ulfah, F. R. Aprianis and S. Suherman, "Inventory Management Information System in Blood Transfusion Unit," 2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Bangkok, 2018, pp. 268-272, doi: 10.1109/IEEM.2018.8607557.

4. P. Tangtisanon, "Web Service Based Food Additive Inventory Management with Forecasting System," 2018 3rd International Conference on Computer and Communication Systems (ICCCS), Nagoya, 2018, pp. 448-452, doi: 10.1109/CCOMS.2018.8463339.
5. G. A. Kumbhakarna and R. P. Chaudhari, "RFID basedlab inventory management system," 2017 International Conference on Information, Communication, Instrumentation and Control (ICICIC), Indore, 2017, pp. 1-3, doi: 10.1109/ICOMICON.2017.8279154.
6. W. Prachuabsupakij, "ABC Classification in Spare Parts for Inventory Management using Ensemble Techniques," 2019 IEEE Asia Pacific Conference on Circuits and Systems (APCCAS), Bangkok, Thailand, 2019, pp. 333-336, doi: 10.1109/APCCAS47518.2019.8953154.
7. M. C. Utami, D. R. Sabarkhah, E. Fetrina and M. Q. Huda, "The Use of FIFO Method For Analysing and Designing the Inventory Information System," 2018 6th International Conference on Cyber and IT Service Management (CITSM), Parapat, Indonesia, 2018, pp. 1-4, doi: 10.1109/CITSM.2018.8674266.
8. D. A. Efrilianda, Mustafid and R. R. Isnanto, "Inventory control systems with safety stock and reorder point approach," 2018 International Conference on Information and Communications Technology (ICOIACT), Yogyakarta, 2018, pp. 844-847, doi: 10.1109/ICOIACT.2018.8350766.
9. Y. Sutanto and R. Sarno, "Inventory management optimization model with database synchronization through internet network (A simulation study)," 2015 International Conference on Electrical Engineering and Informatics (ICEEI), Denpasar, 2015, pp. 115-120, doi: 10.1109/ICEEI.2015.7352480.
10. N. Nemtajela and C. Mbohwa, "Inventory management models and their effects on uncertain demand," 2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Bali, 2016, pp. 1046-1049, doi: 10.1109/IEEM.2016.7798037.

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