

A Survey on Network Assets Management using Windows Management Instrumentation

Husnain Afsar

Department of Computer Science
Vidyavardhaka College of
Engineering Mysuru, India

Mahadevaswamy N

Department of Computer Science
Vidyavardhaka College of
Engineering Mysuru, India

Sujay K Somanath

Department of Computer Science
Vidyavardhaka College of
Engineering Mysuru, India

Chitta B S

Department of Computer Science
Vidyavardhaka College of
Engineering Mysuru, India

Anusha K S

Department of Computer Science
Vidyavardhaka College of
Engineering Mysuru, India

Abstract—It is essential for all the organizations to have its own asset that it uses in its business operations. A lot of network assets such as hardware, software, and websites, have accumulated during the phase of digital transformation. By managing network assets effectively, the risk associated with the internet can be reduced. It consists of a systematic process for maintenance, upgradation, and operation of physical assets in a cost-effective manner while considering potential interactions with the universal system. Each day, new users and IT assets are added to the IT infrastructure. There is no doubt that the infrastructure is growing. In order to maintain them, autonomous systems must be able to function over the long term. From the past few years, the measurement community of the Internet has developed various techniques for asset discovery. In this paper, a comprehensive picture is painted of how network identifiers and services are discovered when asset discovery techniques are systematized. Our research has gathered recent academic literature related to security and networking in order to organize asset discovery techniques in a systematic fashion.

Keywords— *Assets Management, IT Assets, IT Asset Inventory, IT Operational Efficiency, Windows Network Assets, Management Instrumentation (WMI).*

I. INTRODUCTION

The need for network asset management has increased day by day as a result of the rapid development of information security technologies. An accurate understanding of the IT infrastructure of an organization is the foundation of any organizations IT security aspect. It is impossible for an organization to assure its own security or security of others if it does not know what systems and software it uses. To manage infrastructures, IT professionals need to have a deep understanding of IT protocols, interfaces, and standards, considering the increasing number of networks and the development of new intelligent devices. To manage assets effectively and efficiently for community benefit, it is important to look at asset management from a comprehensive and structured standpoint that includes information about the systems and equipment in business, where they are located,

how they are used, what they cost, whether their expiration date has passed, how they impact IT and business processes.



Fig: Network Asset Management Process

There are 3 parts of network management process, they are

1. Detection
2. Management
3. Application

Detection: Monitoring network security assets starts with detection. At present, there are three common asset detection methods: active, passive and information hunting based on search engine. Diverse levels of assets are considered in the detection process.

Management: Network security asset management is primarily concerned with management. There are two major components of network security asset management: technology development and regulation development. Assets pertaining to network security, such as firewalls, routers and switches, need dynamic management in their lifetime.

Application: Using network security asset management for security operations reflects its true value. Network security assets management aims to identify risks proactively.

II. LITERATURE SURVEY

This study analyzes the relevant literature on network asset management. According to many researchers and practitioners, traditional approaches to infrastructure management are no longer effective for which the complexity of assets may be a contributing factor.

John Colombi et al, [1] have described the effectiveness of management infrastructure using 6 different processes that consists of Stakeholder Requirements Definition Process, Decision Management Process, Risk Management Process, Information Management, Measurement Process and Life-Cycle Model Management. And have also discussed about a

number of studies that discuss the application of SE processes to assets management, that applications are explored in this paper.

Patrick Sager at el, [2] have come up with the discussion of complex problems associated with configuration and implementation of industrial automation systems. Compared to manual configuration, automation provides benefits such as the reduction in engineering efforts that are time-consuming and complex, Config data quality improvement and windows assets can be integrated faster.

Yumo Wang at el, [3] have discussed briefly about the network security assets management especially for banks which says that managing network security assets effectively requires combining data from various sources and based on multidimensional asset information, we summarized detection management and multidimensional asset application.

Afifah Muftinisa at el, [4] have come up with the development and implementation of fixed assets management system. In this study, the PT has been computerized and the manual form has been automated. To improve efficiency and to decrease human effort, they have focused on reducing human efforts.

Maohua Yang at el, [5] by the means of computer information management, they have analyzed and designed a fixed asset management system. Upon combining with other management systems, it enables enterprises to regulate and perfect their fixed assets further. Lastly, it promotes management effectiveness of modern enterprises and the competitiveness in the market.

I Shreesha at el, [6] have conducted an asset management valuation study for LG Electronics and have pointed out how the company can make better use of the fixed assets in the company.

Mathew Vermeer at el, [7] have systematized advances in network measures ensuring the protection of organizations. Research on cybersecurity and network measurement is challenged by replication challenges, this paper sheds light on what causes these challenges. Solutions to these challenges have been found out therefore providing a framework that does such differences explicit.

P Pavithra at el, [8] have carried out a study on the fixed assets with special reference to Polaris Consulting and Services Limited that measures how profitability position is influenced by fixed asset management and determine how much capital expenditures the company has made in relation to its fixed assets.

The author Vinod Mohan [9] has described the it asset management benefits and their best practices. He has given us a methodology called IT Asset Management [ITAM] that consists of 4 different processes called the Asset Discovery, Asset Tracking, Asset Lifecycle Management and Asset

Reporting and alert. In addition to coordinating IT asset procurement, ITAM simplifies complex IT operations, improves resource productivity, and supports compliance.

III. COMPARISION AND RESULT ANALYSIS

Year	Author/s	Purpose	Techniques Used	Advantage s
2021	Mathew Vermeer at el	Systematizing advances in network measurement for protection of organizations	DNS related asset discovery	Even if any changes come in future the developed framework easily adapts to the changes.
2020	Yumo Wang at el	Asset Management for banks	ICMP, TCP connect TCP SYN, TCP FIN	Network risks that are faced by banks are be minimized
2018	Afifah Muftinisa at el	Development and Implementation of fixed assets	RAD model	Online Assets management helps in reducing human errors & increase efficiency
2013	Vinod Mohan	To enhance IT Management Practices and its benefits	IT Asset Management [ITAM] methodology	Gain control over IT inventory
2012	Dasheng Wei at el	New Approach for fixed asset management	*Base set Management *Fixed Asset management	Analysis and design of fixed assets by computer information system
2011	John Colombi at el	Analysis of System Engineering & Assets Management Practices	1:- Stakeholder Requirements Definitions Process 2:- Decision Management Process 3:- Risk Management Process 4:- Information Management 5:- Measurement Process 6:- Life-Cycle Model Management	Effectiveness in Management of Infrastructure
2005	Patrick Sager at el	Automating the Configuration of IT assets in	Configuration is done using ABB Network and	Automation helps in reduction of time consumin

		Industry	Device Scanning tool (NDS)	g, Improvement in quality of configuration & faster integration
--	--	----------	----------------------------	---

This paper considers data from 2011 to 2021. All processes, procedures, and controls used to manage fixed assets in this organization are extremely inefficient, according to the findings of this study. This paper describes how the process of managing and controlling fixed assets is managed and controlled based on qualitative data. Based on some years of developing and implementing asset management in a variety of infrastructures a reference model is developed. This reference model is the outcome of some years of development and application.

The study utilized Analytical research as the methodology. The data was analyzed using statistical and financial tools, including correlations, regressions, trend analyses and ratio analyses. The results have shown that asset management is positively related to performance of the company. Therefore, it is recommended that asset management is a key contributor to effective company performance.

IV. CONCLUSIONS

It is difficult to manage assets that are susceptible to risk, and risk is more significant when it comes to infrastructure than other assets. Although the standards have some guidance, they are not always sufficient. A strong reference guide would be beneficial. Engineering personnel have been more productive in installing and configuring IT assets, the reliability of the IT assets has been improved through online monitoring and the quality of what is being monitored in real-time by service and support personnel has improved. IT asset management is a must for any organization, whether it be small, mid-sized, or

large. A centralized, automated, simplified asset management system will help you improve your IT administration's efficiency. Stay informed of IT asset changes in your environment, and take control of your IT asset inventory. To overcome the drawback of previous methodologies Network Assets Management application can be built using WMI.

REFERENCES

- [1] Vhance V. Valencia, John M. Colombi, Alfred E. Thal, Jr., and William E. Sitzabee. Asset Management: A Systems Perspective. Proceedings of the 2011 Industrial Engineering Research Conference T. Doolen and E. Van Aken, eds
- [2] E. Koch T., Gelle E. and Sager P. (2005). AUTOMATING THE CONFIGURATION OF IT ASSET MANAGEMENT IN INDUSTRIAL AUTOMATION SYSTEMS. In Proceedings of the Seventh International Conference on Enterprise Information Systems, pages 306-311
- [3] Yumo Wang(B) and Qinghua Zhang: Brief Introduction of Network Security Asset Management for Banks. W. Lu et al. (Eds.): CNCERT 2020, CCIS 1299, pp. 215–221, 2020. https://doi.org/10.1007/978-981-33-4922-3_16
- [4] Afifah Muftinisa, Rosalina*, Rikip Ginanjar, RB. Wahyu, Nur Hadisukmana. Development and Implementation of Fixed Asset Management System
- [5] Yumo Wang(B) and Qinghua Zhang: Brief Introduction of Network Security Asset Management for Banks. W. Lu et al. (Eds.): CNCERT 2020, CCIS 1299, pp. 215–221, 2020. https://doi.org/10.1007/978-981-33-4922-3_16
- [6] Balavanthula Sairam, I Shreesha and Dr.Vara lakshmi thavva. A STUDY ON FIXED ASSETS MANAGEMENT IN LG ELECTRONICS. ISSN:2455-2631 December 2019 IJSDR | Volume 4, Issue 12
- [7] Mathew Vermeer* , Jonathan West† , Alejandro Cuevas‡ , Shuonan Niu† , Nicolas Christin‡ , Michel van Eeten* , Tobias Fiebig* , Carlos Gan'an* , Tyler Moore†. SoK: A Framework for Asset Discovery: Systematizing Advances in Network Measurements for Protecting Organizations
- [8] I Dr.T.V.Ambuli, IIR.Surendher, IIS.V.Praveen, IVP.Pavithra. A Study On Fixed Assets Management With Special Reference To Polaris Consulting And Service Limited, Chennai. Proceedings of International Journal of Research in Management & Business Studies (IJRMBS 2019) Vol. 6 Issue 1 Jan. - Mar. 2019
- [9] Vinod Mohan. IT Asset Management Benefits & Best Practices. 2013, SolarWinds Worldwide, LLC