

METHODOLOGY FOR GENERATION OF CORPORATE NETWORK HOSTNAME

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Abstract

The general concept of corporate network is made up of two or more interconnected computers sharing information, for the right functionality of the sharing. the nomenclature of these computers within the network is extremely important for proper organization of the names on Active Directory (AD -Domain Controller) and removing the duplicated names improperly created equal, removing the arrest of communications between machines with the same name on the network. The aim of this study was to develop a methodology together with an application to conduct web creation and management of computer names that have standardized information. As a result it was observed that the application was effective for not creating duplicate hostnames and impossible to stop the corporate network.

Keywords: *Hostname, Methodology, Domain Controller, Corporate Network*

JEL Classification: M48.

1. Introduction

According to Tanenbaum (2003), many companies have a significant number of computers, for example, a company may have computers to monitoring its production, inventory and prepare the payroll, and so on. Initially, each computer worked isolated one from other, in some moment the management decided to

connect them to extract and correlate all information about company. In generic terms, the issue is sharing resources, and the goal is: to make all programs, equipment and especially data, available to everyone on the network, regardless of physical location of the resource and user.

Through this way, every computer connected on the network receive one IP address that is nothing more than the computer address on internet and one Hostname, that is a computer's name.

The hostnames are also responsible for identifying the computers within a network, are fixed in the computer accessing the system properties and on the "computer name" tab, Hostname is added, this name is defined through a logical choice at the discretion of each company (Figure 1).

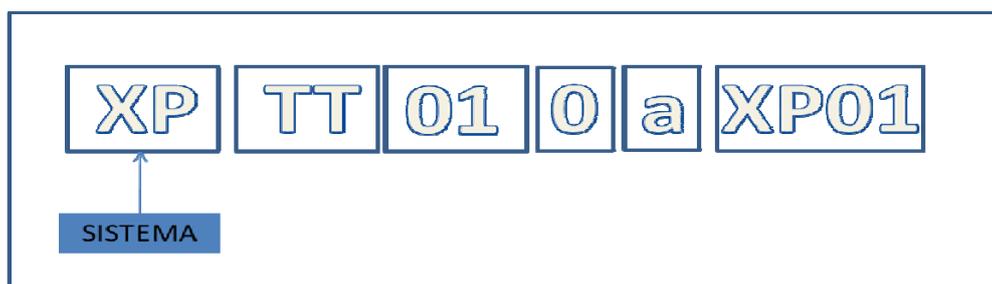


FIGURE 1 - Example of no default Hostname.

In large companies, where the number of machines is extremely broad, it is necessary to create and manage names for computers working in a field.

According to Microsoft (2010), Active Directory (AD) is a directory service and a set of attributes about resources and services on the network, which means it's a way to organize and simplify access to your network resources centralizing them, as well as improve safety and provide protection for database objects against intruders, or to control internal users access the network.

The Active Directory maintains information about user accounts, printers, groups, computers, servers, network resources, etc. It can be fully scalable, increasing according to our needed.

Currently, to generate hostnames, some companies create spreadsheets in Microsoft Excel and determine a classification according to the department, generating at random, and without logical system.

In this way it becomes difficult to know the location of computers in enterprise networks with large numbers of computers, and leave the Active Directory not organized in the standardization of hostnames.

However, this becomes impractical for companies that work with interconnected networks in several countries, continents or regions.

The motivation for writing this work came from the observation that many companies produce the names of their computers without methodology, precariously and without due consideration.

Therefore, this article aims at establishing a methodology for generating Hostnames on corporate networks.

2. Corporate Networks

According to Ueda (2010), essentially a network consisting of two or more computers and peripherals (printers, scanners, etc.) interconnected so they can share data.

Enterprise networks are aimed at reducing the cost and accelerate the exchange of information among employees of a firm and with other subsidiaries or separate companies.

The various network components communicate through a predefined set of signals (the protocols).

Enterprise networks are used to speed the flow of information between the departments of a company (purchasing, sales, logistics, etc.), between the branches (of the same country or ot), and between companies working together (Just in systems in time, for example). Figure 2 illustrates a model of Corporate Network.

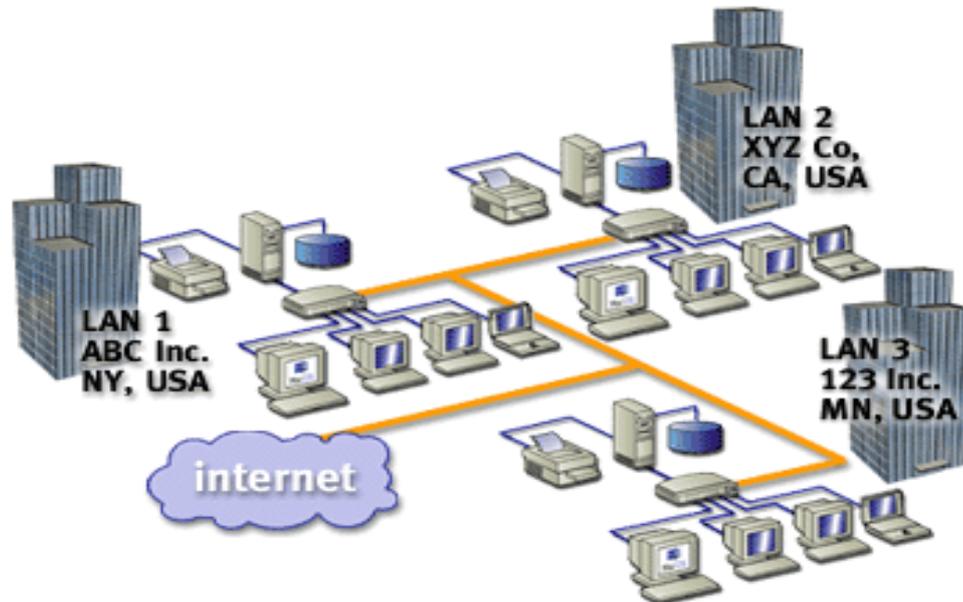


FIGURE 2 - Model of the corporate network.

Among the main types of corporate networks have the following applications as Ueda (2010):

- LAN (Local Area Network) or Local Area Network: Used to connect the various terminals located in the same building.
- WAN (*Wide Area Network (WAN)* or wide area network: *LAN Internet* connections).
- VPN (*Virtual Private Network*) or Virtual Private Network, is a private communications network usually used by a company or a group of companies.

3. Hostname

Hostname is a label that is assigned to a device connected to the corporate network that is used to identify the device in various forms of electronic communication.

Hostname is a fixed name that once inserted into the machine is not mutable. This characteristic gives it great importance, since through it we can identify a computer on a corporate network.

This is not feasible through the IP address, since this is dynamic and can change every system startup. This usually occurs when using DHCP (Dynamic Host Configuration Protocol).

Thus, the hostname becomes more important than the IP address within the network, because in most cases the equipment is dynamic IP, or IP is not always the same for that computer.

The Hostname is fixed, ie, after the computer name has been defined and inserted into the network, you can not change it, then it is possible to identify the computer on the network and depending on the criteria used by the company through the Hostname is possible know the department, sector, country, and other information where the computer.

The names to be created can not be duplicated in any way according to Microsoft (2010), if this occurs for any reason, will result in an arrest of communications between machines with the same name, i.e. double the network, as demonstrates the (Figure 3).

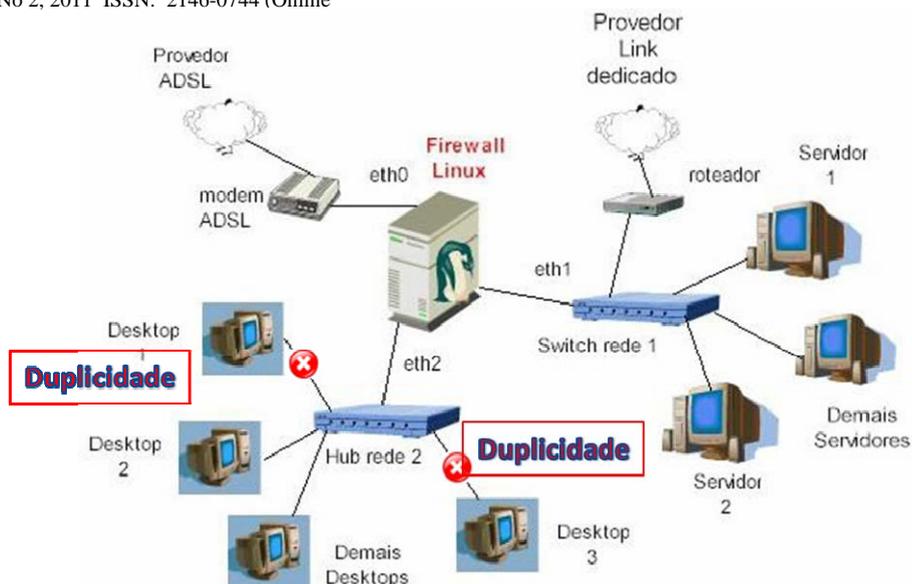


FIGURE 3 - Duplication of Hostname.

4. Corporate Network Security.

Securityhacker (2011), is very common that companies believe they are safe and being attacked do not have the technology to block these attacks on the corporate network.

LOG analysis, IDS, pentest, fingerprinting and forensic audit Filesystem are techniques to verify that your network is secure.

One of the terms that become obsolete nowadays is called the "safety net". This is rapidly being replaced by "information security".

According to Zhang (1988), The concept of information derived from Latin and means a process of communication or something related to communication, but in reality there are many different definitions of information, each more complex than others.

According to Wilson (1989), information management is understood as the effective management of all information resources relevant to the organization, both internally generated funds and externally produced as appealing as necessary, to information technology.

According to Microsoft (2010), a computer virus is a small program created to infect one or more computers interfering with the operation of these machines.

5. Materials and Methods

In a first step we conducted a survey on the books in greater depth in order to investigate the conceptual basis, for example, work as corporate networks, to assign classifications to computers accessing networks controlled by Active Directory.

At this stage were also evaluated what areas beyond computing can provide knowledge for a process of creating names for computers and web application development that will automate this process. The application must control the creation of hostnames so that the generated names are not duplicated, thus avoiding the arrest of communications between computers on the network.

At first it was thought in the areas of Organizational Management, Mathematics.

In the second phase were collected separately relevant aspects to be evaluated with regard to developing a dynamic web application and secure.

In the third step, we defined the method of evaluating the performance of web application.

In principle, we sought to use methods of inspection and approval.

The method of inspection or approval shall be used to evaluate the system and nomenclature of the names that will be assigned to future computers that will connect to AD, for web programming experts.

Some tests will be conducted in a corporate environment by analysts to support a great company of the automotive, registering users, listing the hostname of a new computer user who uses the computer as a means of control.

In the fourth step, we applied the method of assessment to be validated.

It was created a web application with language ASP (Active Server Pages), which is a framework from Microsoft, using VBScript code. As the application server was used IIS (Internet Information Service), and as a database for the register was used Microsoft Access.

The generation of the Hostname is done in a way that avoids duplication, since according to Microsoft (2010), "If this occurs for any reason, will result in an arrest of communications between machines with the same name."

Furthermore, the creation of names is not done randomly, but follows a pattern that allows the names for acronyms expose information such as company name, parent branch where is located, type of computer (Client or Server) and model of machines (Desktop or Laptop) followed by a four digit numbering.

As Microsoft (2010), some novelties must be taken into consideration before creating names for computers that will be managed by Active Directory (AD), for example, the characters are not allowed. Another requirement of Microsoft (2010) is a minimum length that can not be less than 1 character and maximum length of names can not exceed the 15 characters that are entered in the domain controller.

As you can see in Figure 4, where has all the information needed to locate a computer on the network.

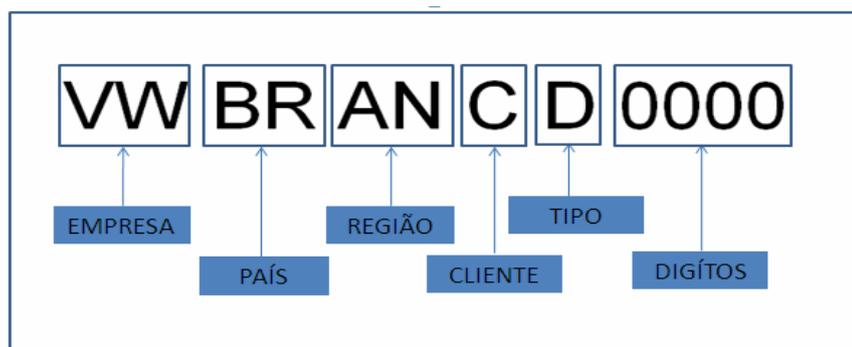


FIGURE 4 - Training of the nomenclature used in the standard methodology.

6. Conclusion

We developed the application for web environment that manages the creation of different Hostnames containing symbols that suggest standardized information such as company name, parent branch where is located, type of computer (Client or Server) and machine model (Desktop or Notebook) followed by a four digit number.

Through the serial number was also possible to make the management of new names and query data as the physical location of the machine and user ID, in addition to other suggestions.

The Web application is efficient not to create duplicate hostnames, resolving to stop communication between the computers that make up the corporate network, thus bringing greater productivity in the company.

It was also noted that there is greater flexibility in detecting the name of the machine that has the virus which enables a decision-making with greater speed in the vaccine to remedy the problem.

It follows therefore that the application WEB along with the methodology developed is efficient and can be applied, which brings greater organization to Active Directory and resolve duplicate names on the corporate network.

The application is being implemented on a corporate network of a multinational company in the automotive and is reaching the goal for which it was created, which confirms the good performance of the developed standardization.

The continuity of this work will take place on completion of application deployment on the corporate network of multinational firms, and deployment of application in other business networks in order to verify its performance.

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