

RESEARCH METHODS ACCC5006

RESEARCH AND THINKING OF
NETWORKING AND SYSTEM
ADMINISTRATOR CONFIGURATION

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1.INTRODUCTION

The long-term success of an administrator, regardless of the level of experience and knowledge, depends on how thorough our knowledge is Active Directory. Active Directory is an extensible directory service that allows centralised management of network resources. It also allows you to add, remove, and remove or easily reallocate accounts for users, groups, and computers, as well as other types of Resources. Virtually all administrative tasks affect Active in some way Directory, which is based on standard Internet protocols and has a design that allows you to easily identify the logical and physical components of a network structure.

2.ACTIVE DIRECTORY

Active Directory provides the infrastructure needed to design a directory that satisfies every organization's needs. A directory consists of a collection of information different types of resources. In a distributed work environment, for such as a Windows network, users must be able to locate and use windows resources and administrators must be able to manage the use of those resources. Is why a directory service is needed is evident. This service stores all the information necessary to use and manage resources deployed in a centralized location. It also allows the operation at the same time of these resources, is responsible for authorizing access, identity management and resource relationship control. Because it provides these fundamental functions, a directory service must be deeply integrated with the security and management capabilities of the network operating system.

3. DEPLOYMENT OF NETWORK

For the construction of a network, both wired and wireless, some things are needed to do before carrying out the plant itself. A survey at the premises where the work will be carried out, be in possession, as far as possible of the plans of the structures concerned, to realise a rough design, complete with AP WIFI positioning, any rack cabinets and all the hardware needed to build the system;- predict any electrical points for the power of the hardware to be installed. The object of the plant to be built is therefore all the hardware needed to create an Institute network. If the latter already has a LAN/WLAN, the new hardware will be installed by setting up new wired points interconnected to the building's current wired network infrastructure.

3.1 ACCESS POINT

The performance of the Access Points in supply must be at the forefront of both radio and client management capabilities and must comply with IEEE 802.11 standards. Depending on the request, the Access Points on offer can be powered either autonomously using the current adapter, and in Power-over-Ethernet (PoE) mode

3.2 SWITCH

In a more or less extensive network, which must cover an entire building, the use of switches will be required, which will have to be able to better handle the data traffic of the institution's network and for this they will have the following characteristics:

- Must be the size needed to be mounted in a rack cabinet - Ethernet technology on copper cables: 1000BASE-T, 100BASE-T, 10BASE-T - Network Standard: IEEE 802.1D, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1w, IEEE 802.1x, IEEE 802.3ad, IEEE 802.3af, IEEE 802.3x Regardless of the solution and the number of WIFI AP AP offered, coverage of required areas must be complete.

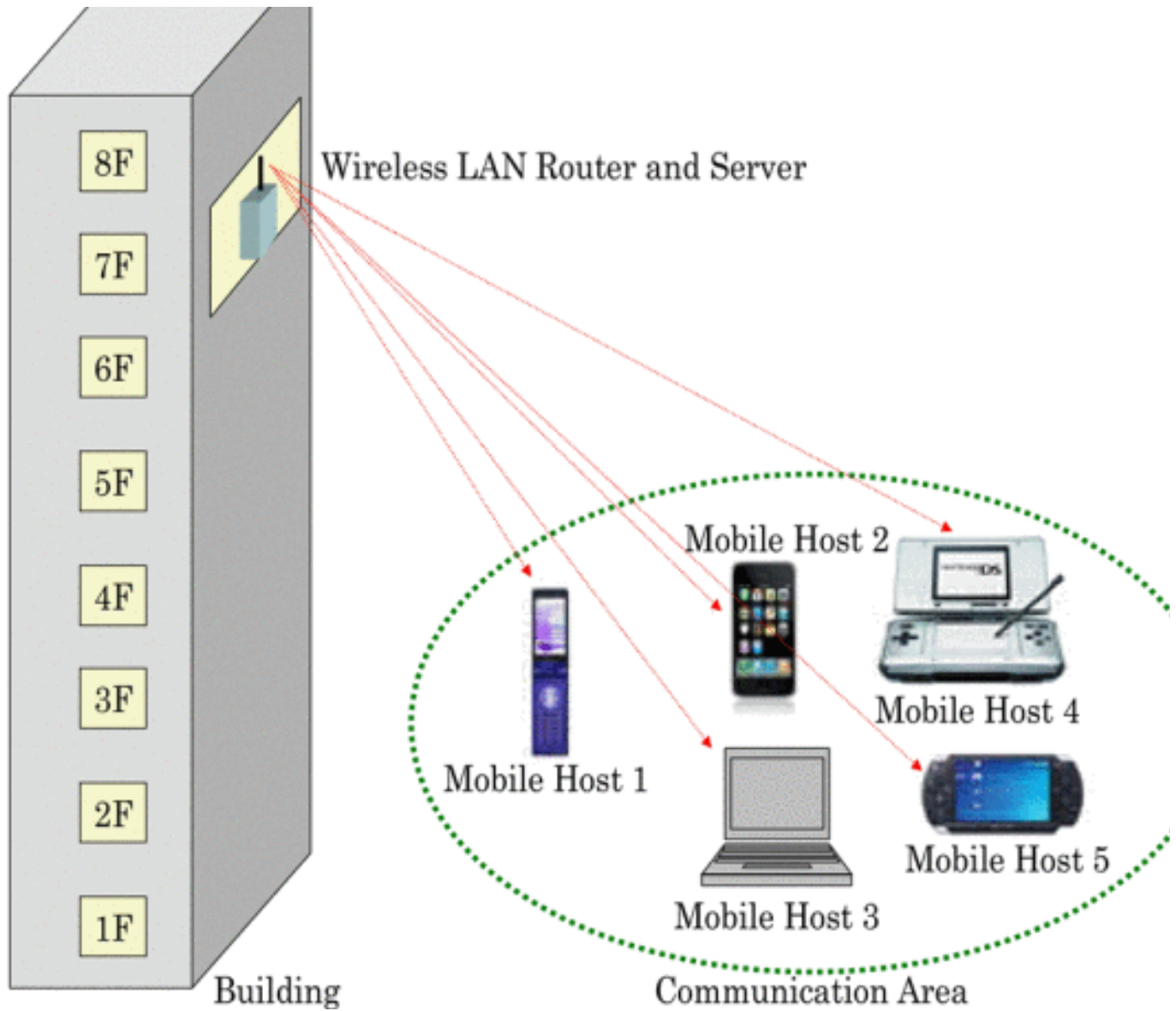
3.3 PREREQUISITES

Before we begin, we must ensure that we have purchased: 'a corporate contract for 4Mbit HDSL Internet connection and possibly with Rental Router' at least 8 static public IP addresses from our Internet Provider proskillsstrategie.com.

4. MILESTONES TO REACH

- We want to create a LAN consisting of desktop computers and wireless devices (Wireless).
- We want to securely publish our web server over the Internet and make it visible to everyone.
- The servers most at risk of attacks (web and mail) must reside in a DMZ network
- E-mail and website must be seen both on the Internet and in the LAN.
- We want to protect the LAN network from external attacks.
- We want to protect our mail from attacks on the mail server and we want to avoid spam (spam as much as possible).
- Computers and LAN servers must browse the Internet with a single public IP address and securely.
- We must block browsing on some unauthorised websites.
- We want to configure an Active Directory domain of the type "proskillsstrategie.com"
- We want to create a Server File with Backup of all administrative and educational data.
- We want to route all equipment logs to a Syslog server.
- We want to migrate all the data into the Cloud.

DESIGN PROPOSAL



5. WIRING REALIZATION

The laying of cables and the installation of wall sockets (or floor columns) RJ45 must be carried out by electricians specialized in structured wiring who with appropriate tools can "certify" the proper operation of every single section of the network (mitigation, noise, interference). This certification - usually issued to the user in TXT file format on a CD-Rom medium - serves to formalize the correct installation of the wiring carried out and is therefore useful as a guarantee of quality. As a wiring I advise us to make the so-called "structured wiring" that allows us to use ethernet cables for both data transport (LAN) and phones. In this way, when we take the RJ45 wall we can attach both a computer and our phone. Depending on the physical structure of the company we need to set the connections of the stations and switches differently:

1) Extended network on a plane

If the company extends over a single floor, all the ends of the individual cables that start from the wall sockets will convey to a centralized position that will then be the "Star Center" of the network.

However, that each cable has length limits (e.g. good quality cat.5 reaches up to 100 meters) so if we exceed that limit and we have not yet reached the star center we should add signal repeaters that today is a function that is carried out by switches. Summing up then the electrician passed us an ethernet cable from the RJ45 socket placed on the wall (or turret on the floor) to the back of the Patch Panel, this was done for each network point to be installed and put us an identification label with a number both on the wall socket and the corresponding rj45 attack on the patch panel in order to locate the cable section. Once we have stretched all the cables from the rooms to the patch panel, the work of the electrician is finished, and it is up to us to complete the work. We arrange to connect clients to one (or more) central switch by connecting a PC's network adapter to the socket to the wall using a cat.5 cable and mark the grip identification number. Let's move in front of the patch panel and the socket with the corresponding number we will put another cable that will connect that door of the patch panel to the nearest

nearest switch (usually present on the same rack). This type of wiring we have said that it is "structured" i.e. we can dynamically use the route of each cable to carry data or phone. If, instead of a PC, we want to connect a phone, we will use a 4-wire telephone cable (RJ11) from the wall on the phone and from its patch panel port another cable that will end up in the telephone exchange instead of the network switch.

2) Extended network over several floors

If instead the building extends over several floors, the cables of the sockets in the rooms will arrive at the "floor patch panel" where, in the same rack there will also be a "floor switch". Each "floor switch" will then have a connection with a central switch (the star center) placed in a strategic position (usually in the Server Room) through fiber-optic connections or if the distance and budget did not allow it, with cat cables. 5, maybe paired to form a backbone at 200, 300, 400... Mbit (Cisco Fast EtherChannel-type technique)

6. SERVER ROOM

Let's start by choosing the Rack that best suits our needs in terms of space, server compatibility and future expansion. The parameters to be taken into account when buying a rack are as follows: For servers I recommend a floor rack while for floor panel patches usually just need mini-racks that can be installed on the wall. Each Server Room should have an adequate cooling system that must ensure a constant temperature. Contact a specialized installer who will definitely ask us for the total of KiloWatts or BFUs that are "released" by the servers. We should then add all the Watt consumption of the equipment in the server room (monitor, server, external drives, etc.) and calculate how many BFUs are needed (consider that 1 Kw-hr equals 3412 BTU) but usually the calculation is made by them after providing them with the consumption in watts.

7.NETWORK CONFIGURATION: IP ADDRESSING PLAN

Before proceeding we choose which IP addresses should be used. The following is an IP addressing plan consisting of 4 really usable subnets:

- Server: 192.168.0.0/24 (host from 192.168.0.2 to 192.2
- Plan 1: 192.168.1.0/24 (host 192.168.1.2 to 192.168. 1,254)
- Plan 2: 192.168.2.0/24 (host from 192.168.2.2 to 192.168.2.2 54)
- Plan 3: 192.168.3.0/24 (host192.168.3.2 to 192.168.3.254)

Addresses ending with .1 (e.g. 192.168.1.1) will be used for router sub interfaces, while .255 are the broadcast addresses of each subnet, which cannot be used to be assigned to hosts. These 4 subnets do not communicate with each other, it will then serve a router to put them in communication. We separate them by plan to ensure that the broadcast traffic of one subnet does not spread to the other (with this method we will have more performance).

8.ACTIVE DIRECTORY AND DNS

The The first step will be to prepare the Domain Primary Controller (formerly called the PDC) and then Active Directory. The server name for this example will be DC1. Once Windows 2003 Server is installed (I don't pause because it's intuitive) we run the DCPRMO command from Start/Run to start the wizard that will allow the server to become a domain controller. The essential parameters that we need to configure in this step are: the domain name (for example,Proskillsstrategie) and the name netbios (for example, Proskillsstrategie_HM). The second is to authenticate the old clients NT4, Win95, W3.11 and Win98.At this point we need to configure the DNS Server service on the same server, we will then create a new primary zone (direct) integrated into AD with the name aziendaspaspa.it and then a reverse lookup zone with the IPs of our Network. The direct zone allows clients to resolve host names to the corresponding ip address while the reverse zone, given an IP returns the host name. In our case we need to create a zone for each subnet, for example zone 192.168.0 the 192.168.1. Only the octet that indicate the

network are used to define the inverse zone.

8.1 CREATING USERS

At this point we have to decide on a standard for creating logins and a strict password policy. The logins (or UserName) we will create them with the initial of the first name and the last name in full, for example the login of Mario will be mross and the password will consist of at least 8 characters and consists of numbers and letters. To create users, we open "Active Directory Users and Computers" in the "Administrative Tools" menu on the Server Controller (DC1). At this point we enter a temporary password (e.g. mario12345) and click "The user must change password at the next logon" in such a way that we will instruct Mr. Mario Rossi to enter his PC as mrossi with password mario12345 but the first time he is asked to change the password as

8.2 CONNECTING CLIENT

We start connecting clients over the network. After positioning them in the rooms, we attach a "straight" cable from the network adapter of the single PC to the network point on the wall on the wall, then we go to the rack where the switch is located and attach another cable from the door of the patch panel (which corresponds to the wall socket of that room) to a free door of the switch.

8.3 JOIN CLIENT TO THE DOMAIN

A Windows domain is a "security context" where clients (and servers) run. All hosts that belong to a domain can be centrally controlled through settings managed on the domain controller through Group Policies, User Groups, NTFS permissions, etc. From the domain controller we can set any limits or configuration on clients that are part of it (and have therefore made 'Joint to Domain'). Join Domain is when we place a client in the domain (in our case, Proskillsstrategie_HM). To make a client add to the domain, we need to enter as the "Local Administrator" of the machine and right click on My Computer >> Computer Name >> Change and change the configuration from "Workgroup" to "Domain" and specify the

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9.CONCLUSION

Windows server has become an indispensable useful for companies thanks to its services it offers and the advantages that allow it to optimise resources and have total control of their network. According from the site Statistica.com 79% of companies use the Windows server with the opportunity to also migrate their data, doing backup to the cloud with maximum security.

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