

Computer Systems Servicing NC II

- *Setting Up Computer Servers*



LESSON 1: Understanding the "Server" and "Client"

Introduction

Networks, like humans, exist even within computer systems!

To understand this, this module will run you through how computer networks are connected in sharing information and resources through servers and clients.

Since you've just learned about networks in the previous module, the computer server will be an example of a network that you will be working with in the workplace. This lesson will run you through the client/server network model. You will be able to enumerate the various functions of the client/server model and as well as discuss their different topologies.



TOPIC 1: Client/Server

Client/Server, according to the Management Information System, is the new technology that yields solutions to many data management problems faced by modern organizations.

This is a model based on the distribution of functions between two types of independent and autonomous processes: *Server* and *Client*.

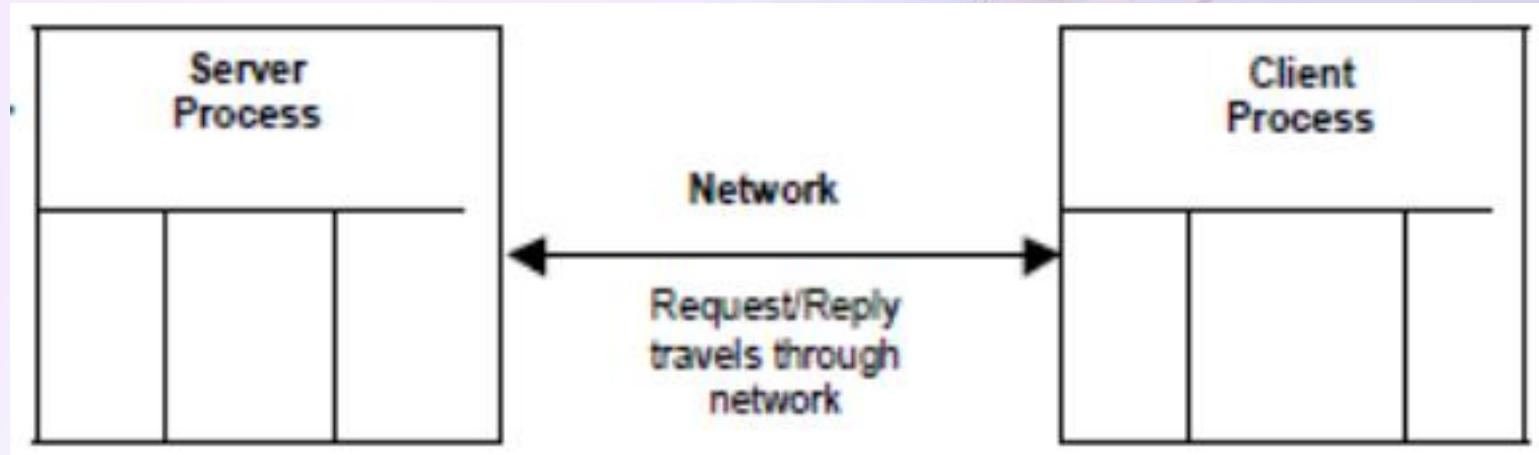
In simple method definitions,

Client - any process that requests specific services from the Server.

Server - a process which provides requested services for the Client.



TOPIC 1: Client/Server



Basic Client/Server Model

Basically, the two processes reside on two or more independent computers on a network. The server gives services for more than one client.

The network is the medium in which the server and client connects.



TOPIC 2: Client/Server Functions

FUNCTIONS	SERVER	CLIENT
	Checks authorization	Managing the user interface
	Ensures that integrity constraints are not violated	Accepts and checks the syntax of user inputs
	Performs query/update processing and transmits responses to client	Processes application logic
	Accepts and processes database requests from client	Generates database request and transmits to server
	Maintains system catalogue	
	Provide concurrent database access and recovery control	Passes response back to server

TOPIC 3: Client/Server Topologies

A Client/Server Topology is the physical layout of the Client/Server network. It plots out how the clients and servers are connected to each other.

The following are the most common designs and strategies:

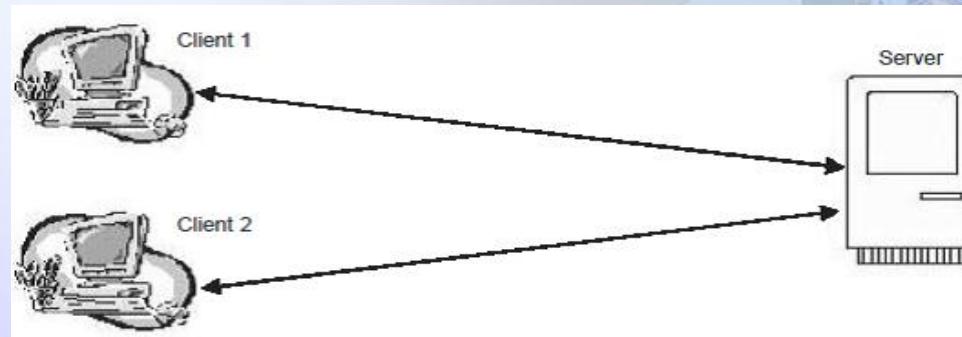
1. Single client, single server

One client is directly connected to one server in this setup.



2. Multiple clients, single server

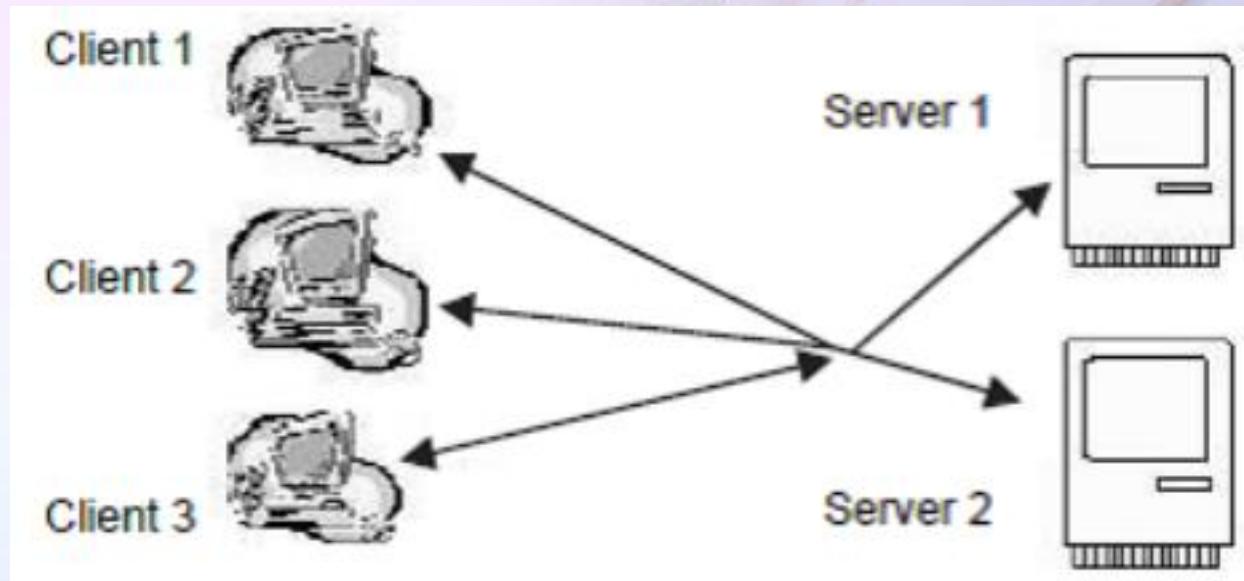
Several clients are directly connected to one server.



TOPIC 3: Client/Server Topologies

3. Multiple clients, multiple servers

Several clients are connected to several servers.



TOPIC 4: Advantages and Disadvantages

Advantages

- Performance and reduced workload
- Workstation independence
- System interoperability
- Scalability
- Data integrity
- Data accessibility
- System administration
(Centralized management)

- Integrated services
- Sharing resources among diverse platforms
- Masked physical data access
- Location independence of data processing
- Reduced operating cost
- Reduced hardware cost
- Communication costs are reduced

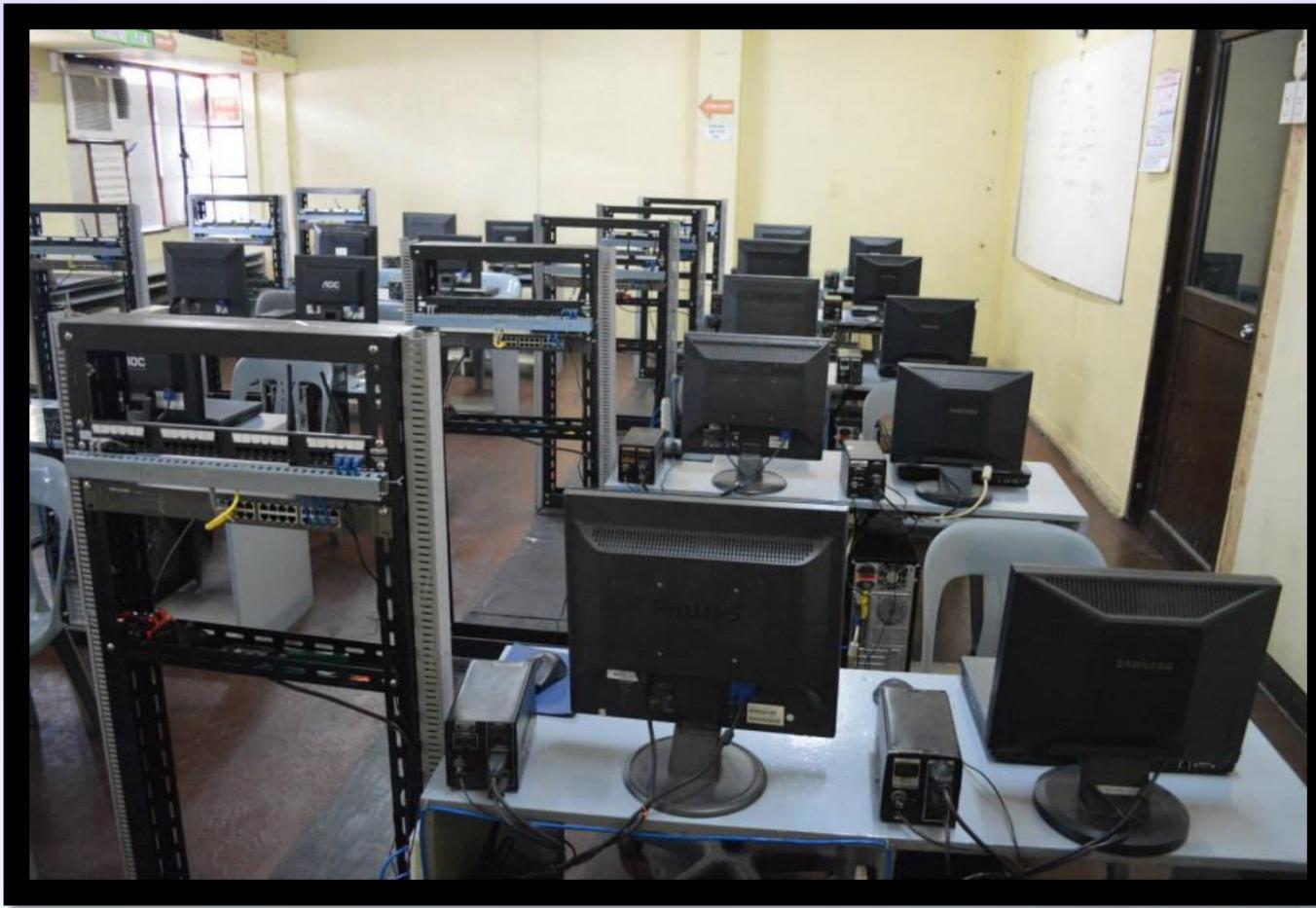


TOPIC 4: Advantages and Disadvantages

Disadvantages

- Maintenance cost
- Training cost
- Hardware cost
- Software cost
- Complexity





Computer Systems Servicing NC II

- *Creating User Folder*



LESSON 2: Creating User Folder

In this lesson, you will learn how to create a user folder with Network Operating System, or NOS, features.

Basically, a user folder is the storage of files stored by the user to the computer server.



TOPIC 1: Active Directory Domain Services

Before creating a user folder, the administrator of the server should first install the Active Directory Domain Services (ADDS) and create a user account.

To install the ADDS, the administrator should open command prompt (Ctrl + R then cmd), and type dcromo to install ADDS, DNS, and create a forest and domain.

A server that runs ADDS is a domain controller.

The domain controller basically:

- Validates and gives access to all users and computers in a Windows domain type network;
- Appoints and creates security protocols for all computers; and
- Installs and adds software.



TOPIC 1: Active Directory Domain Services

Features of ADDS

These are the features of having the Active Directory Domain Services:

1. **Security** - The data is stored securely. Each of the objects in the Active Directory has an ACL or Access Control List which consists of the resources that one may access and along with access privileges given to each resource.
2. **Query Capabilities** - The ADDS creates a global catalog to give a mechanism to handle queries. A client which has ADDS can query the catalog to request directory data.
3. **Replication** - To replicate a directory to all domain controllers means easy access, high availability, and improved fault tolerance.
4. **Extensibility** - Having ADDS is extensible. Meaning that new object types can be added to a directory. An attribute can be added, for example to the user object.
Once a user is created, a user folder is also automatically created upon the log-in of the user to the client computer.



TOPIC 2: Creating a User Folder

You can carefully follow the steps below if you have two computer units (one installed with Windows Server OS and a Windows 7/8/10) connected through a network cable.

1. On the server computer create a shared folder on drive C: or drive D:
2. On server manager, select Features, Group Policy Management, Forest, Domains, (Domain name), Right click on Policy, Edit
3. Choose User Configuration, Choose Policies
4. Choose Windows Setting



TOPIC 2: Creating a User Folder

5. Choose Folder Redirection
6. Choose your directory to be redirect, press right click on your mouse and select properties
7. Target Setting: Choose Basic
8. Under Root Path, type the share name of your folder
9. Click OK
10. Log-in to the client computer to automatically create User folder



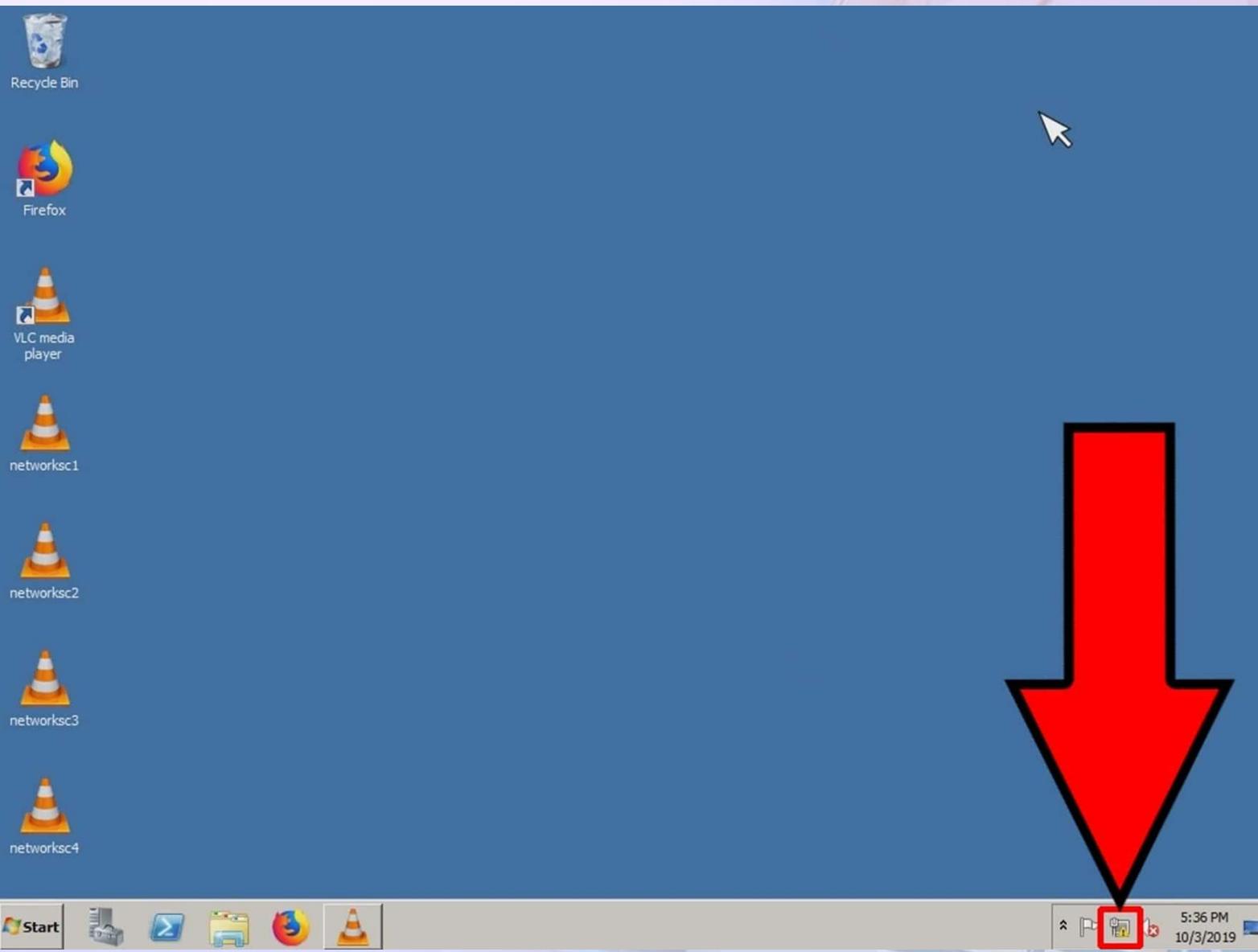
TOPIC 2: Creating a User Folder

Set Static IP Address

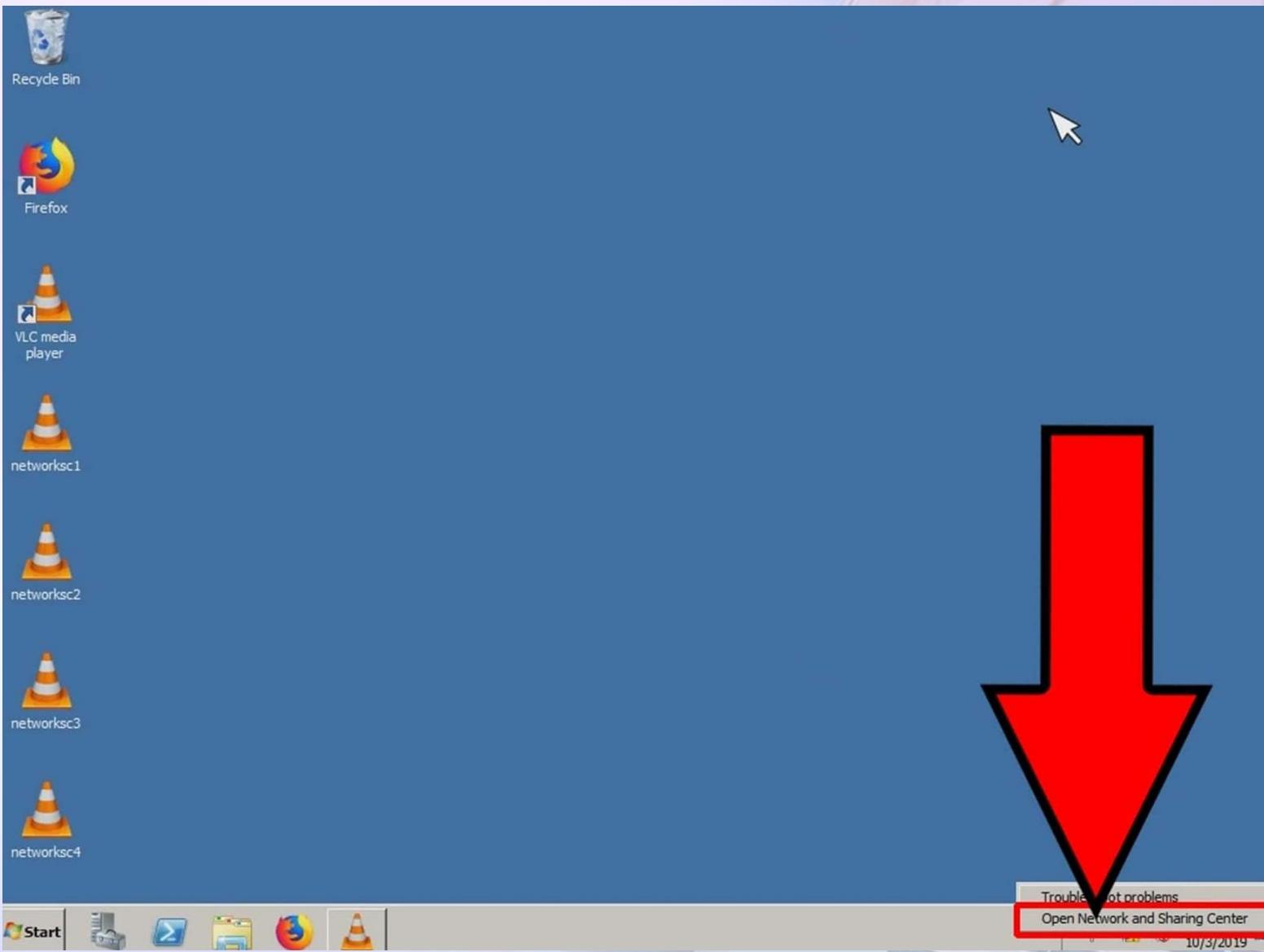
Follow the step-by-step procedures on how to set a static IP address. This is a crucial step when configuring the server as this is required for the server computer itself.



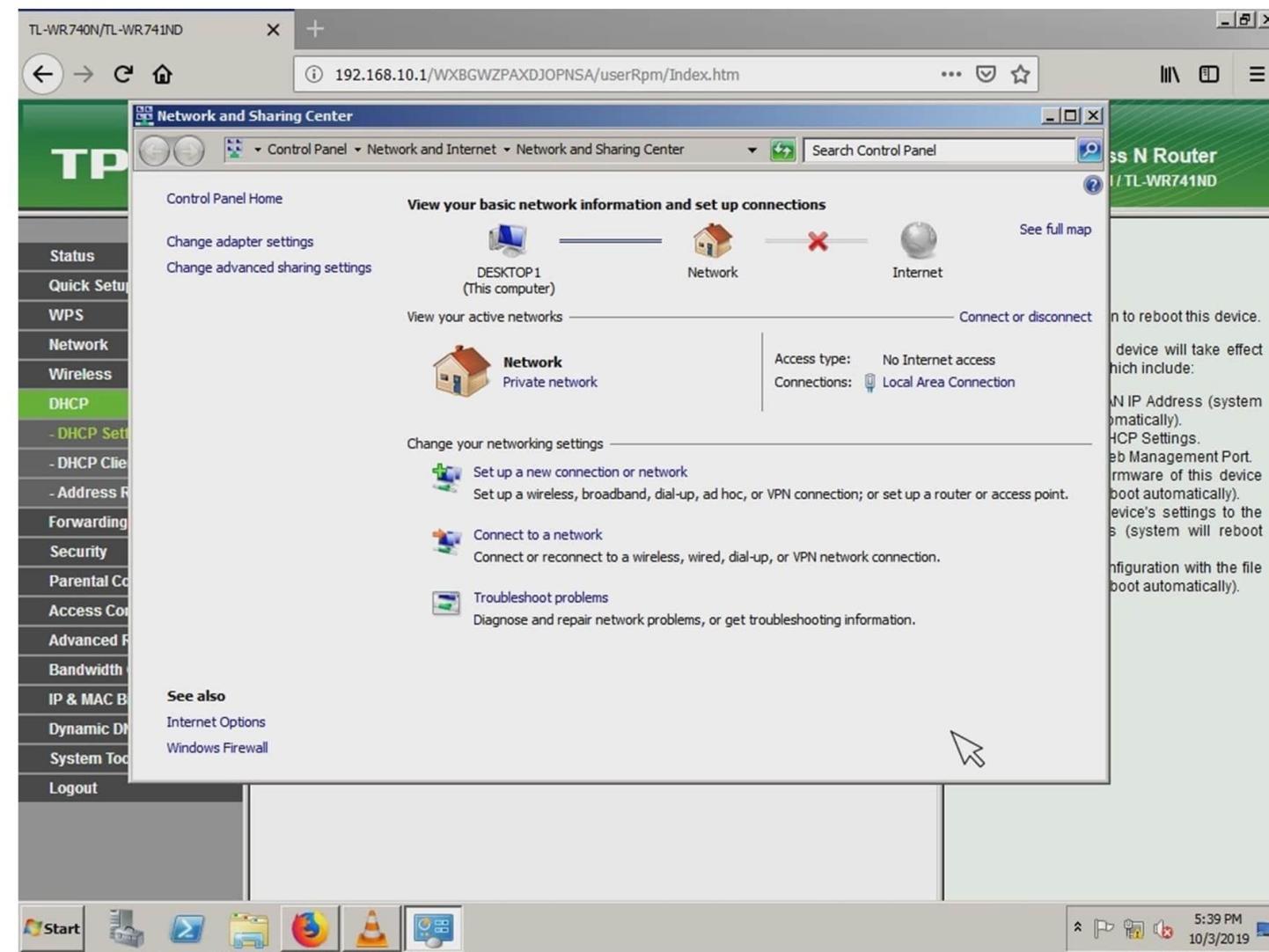
TOPIC 2: Creating a User Folder



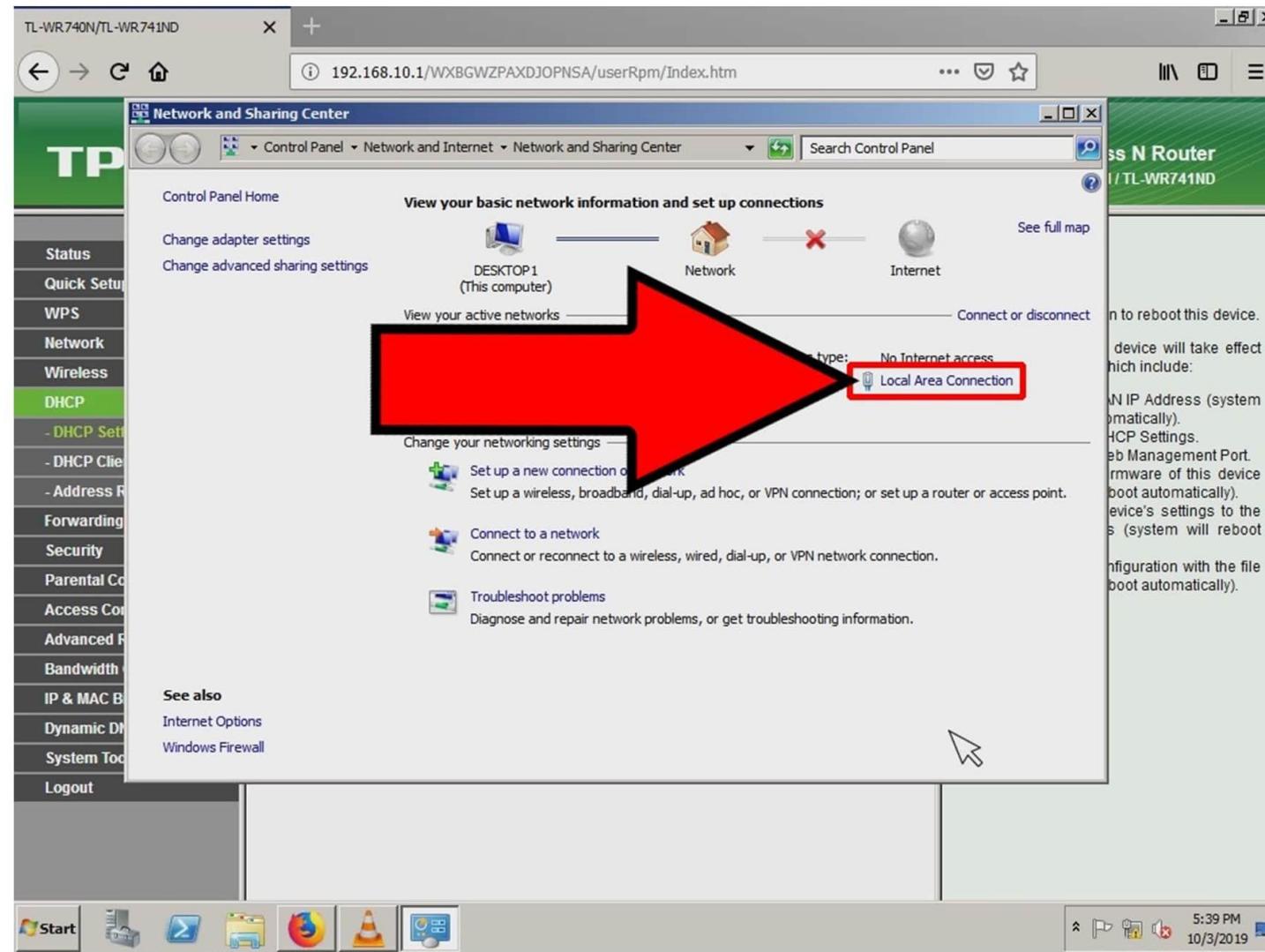
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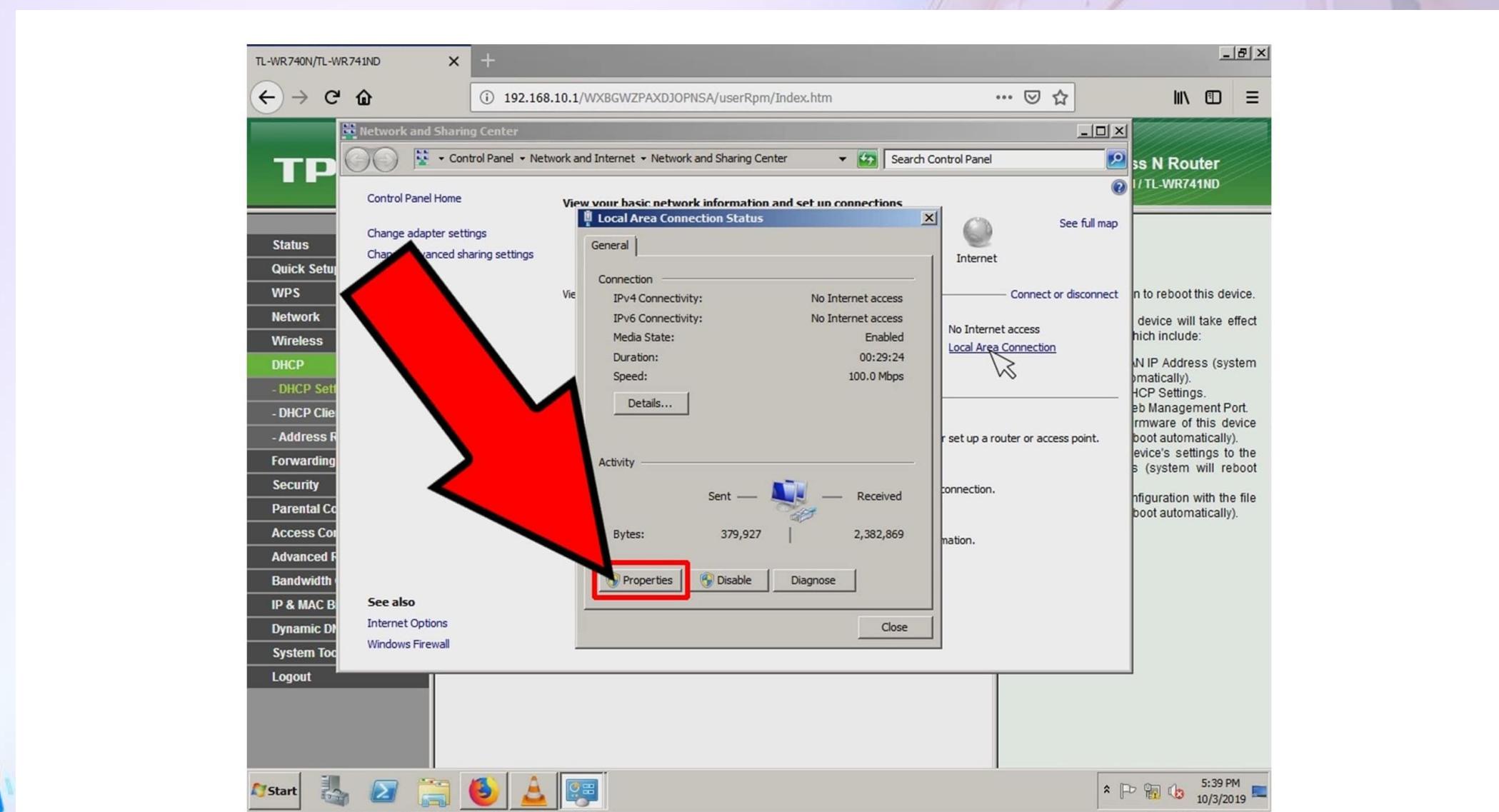
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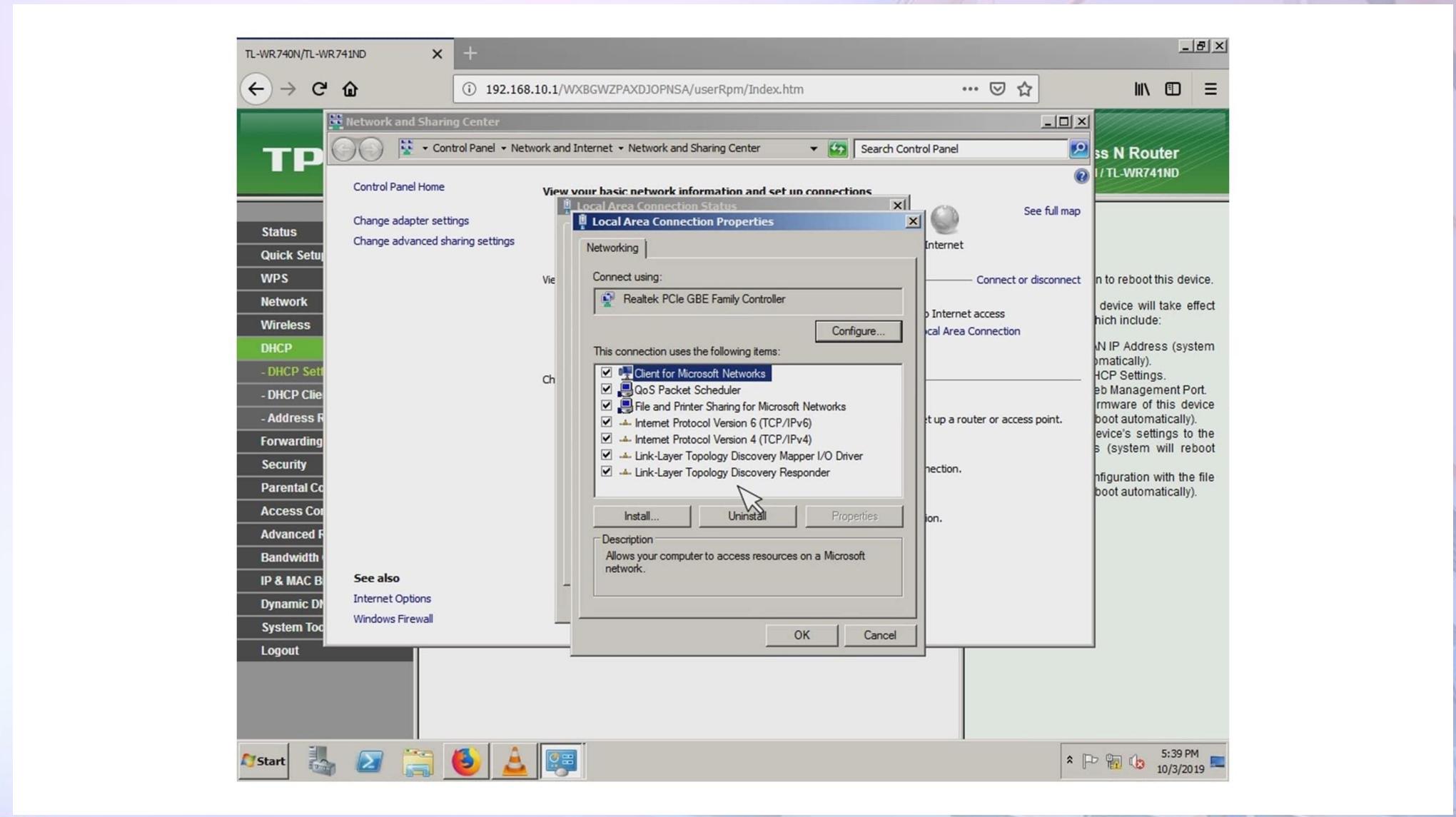
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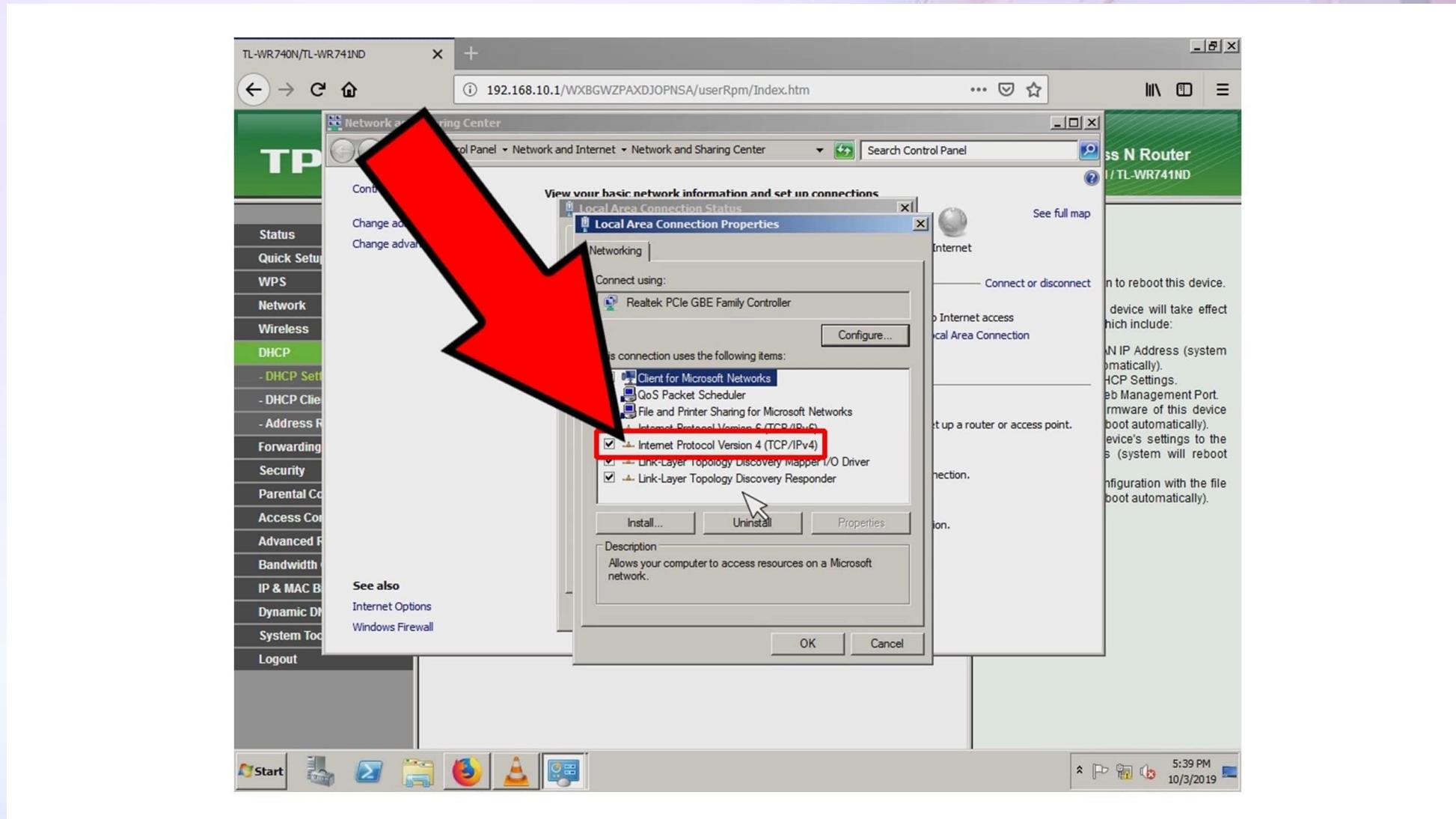
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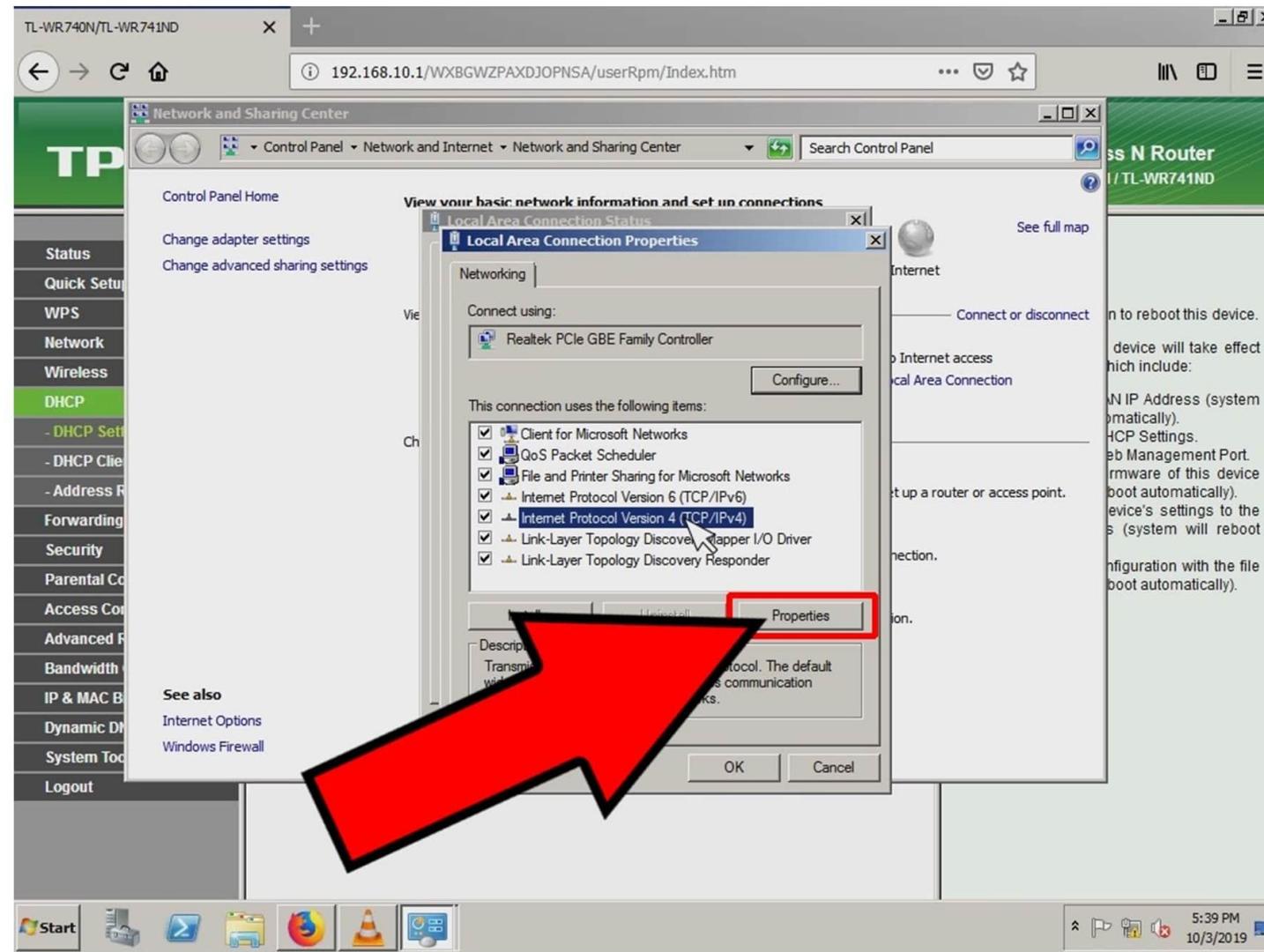
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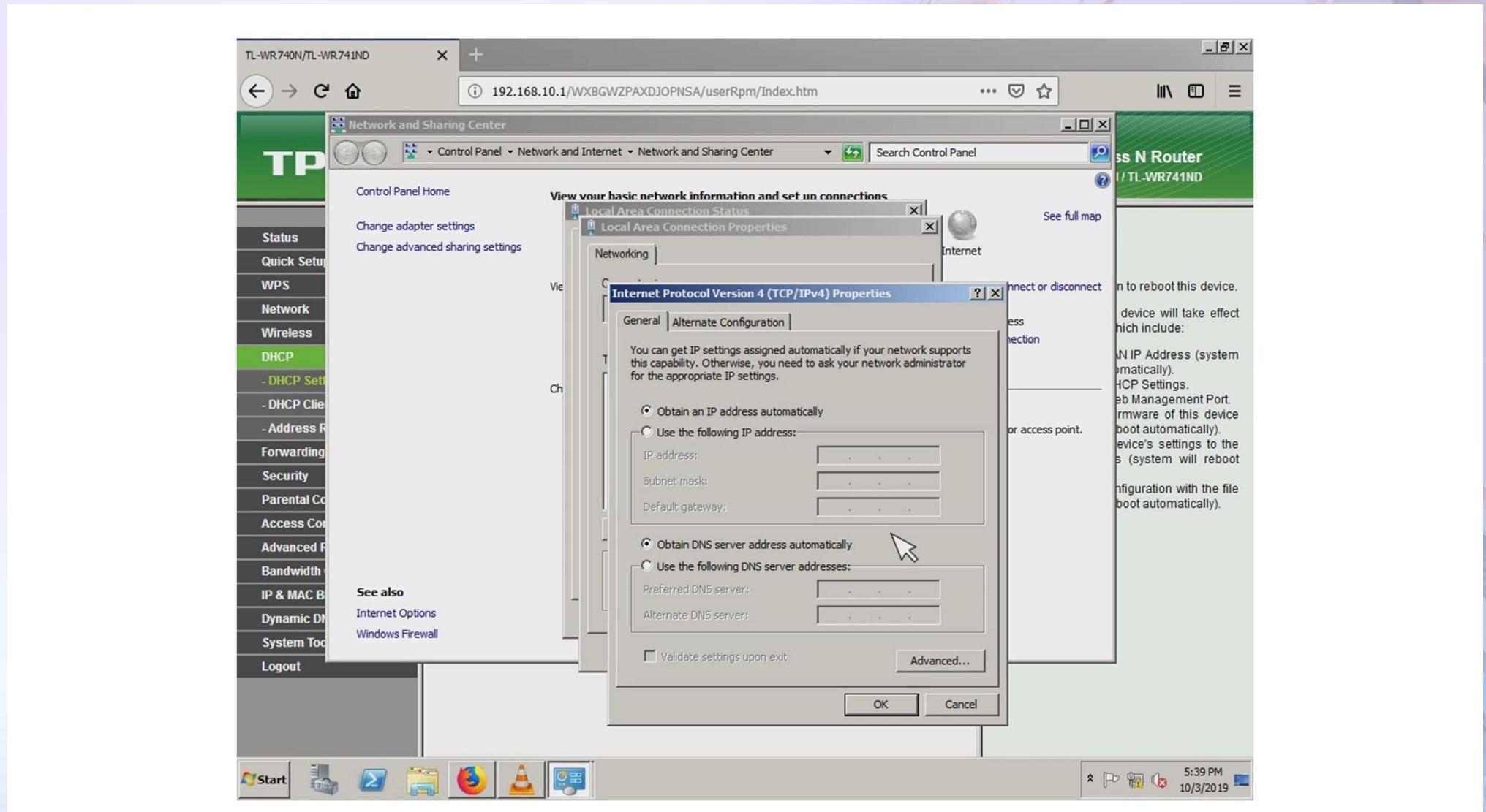
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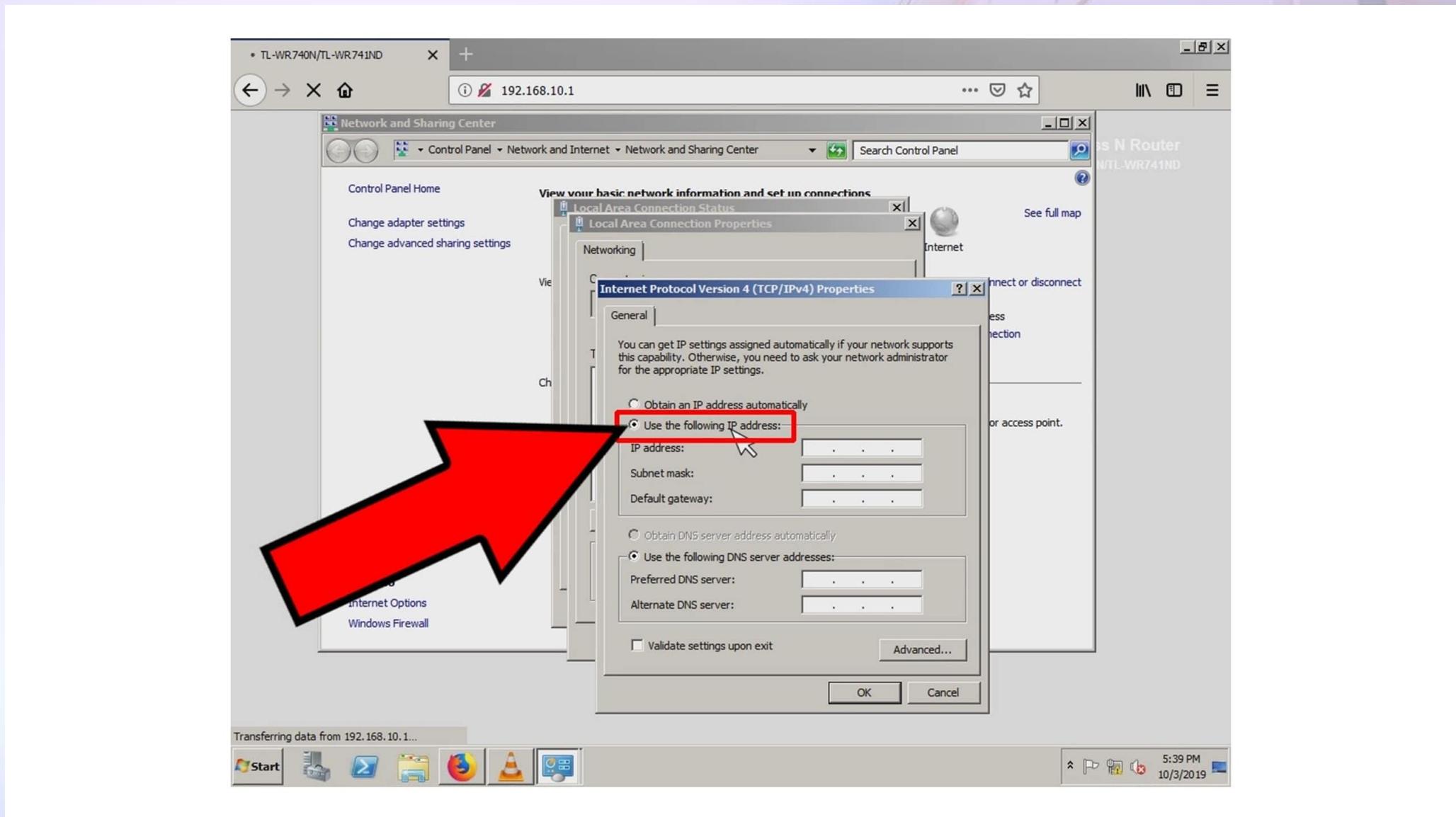
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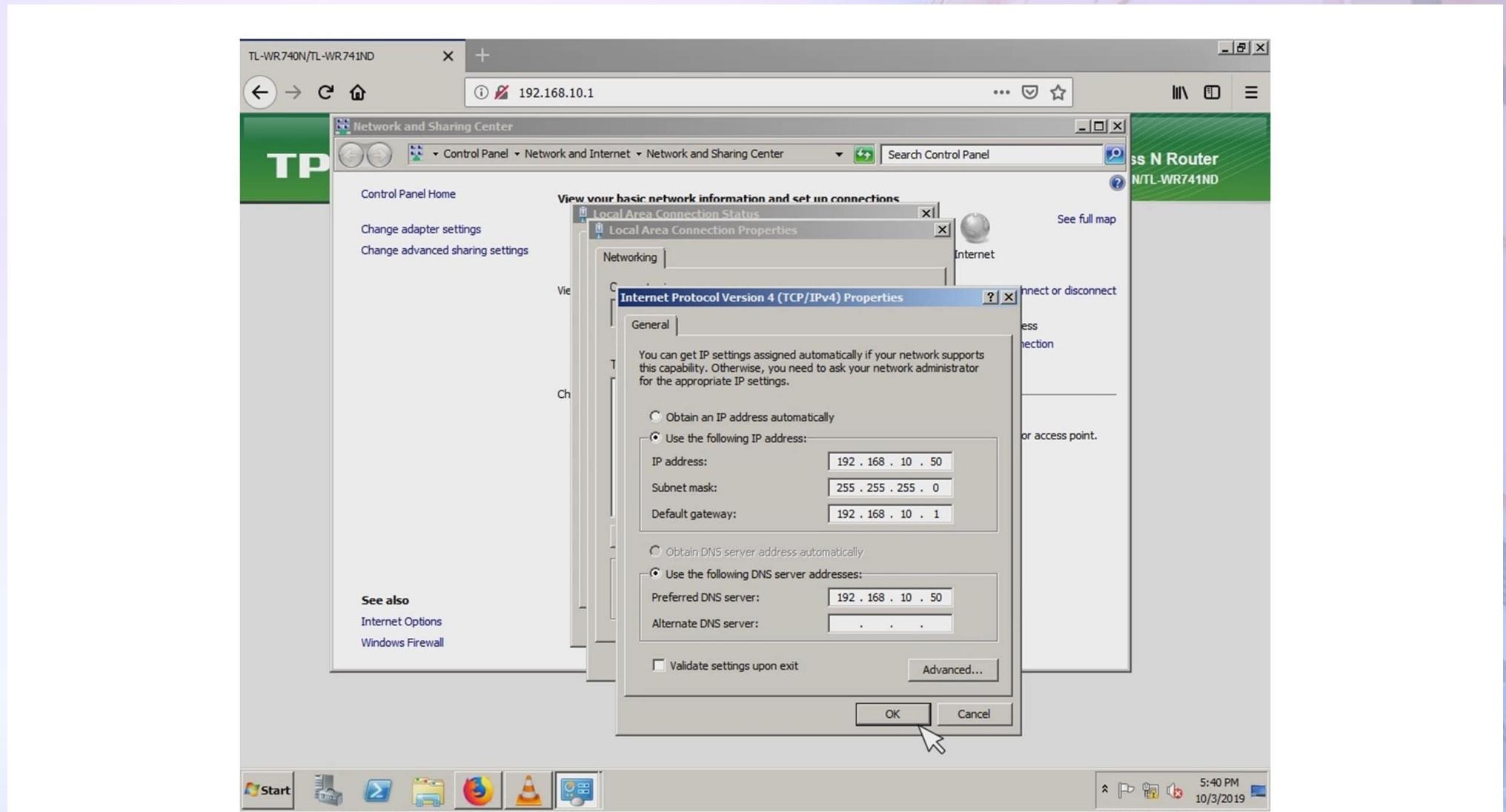
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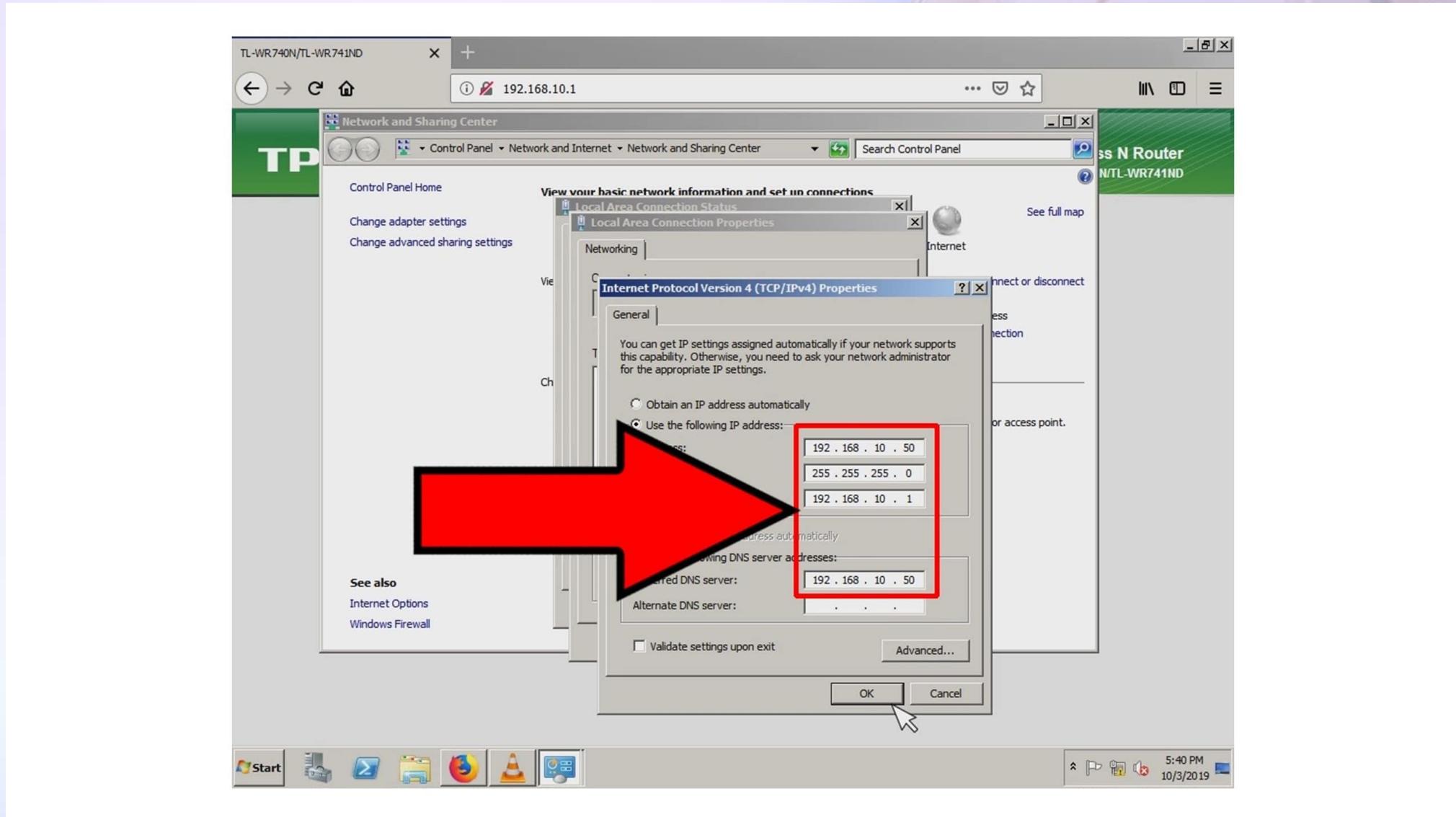
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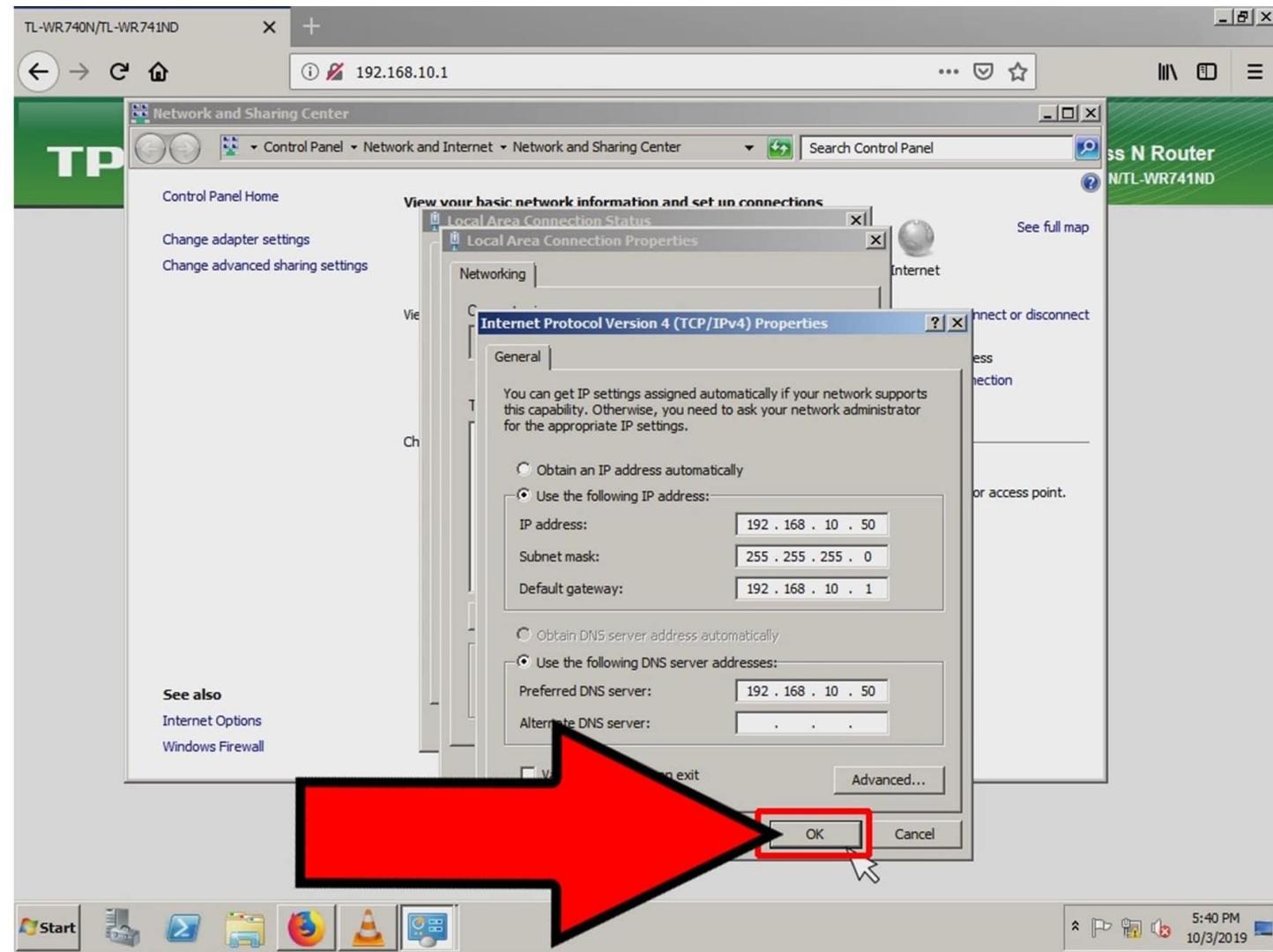
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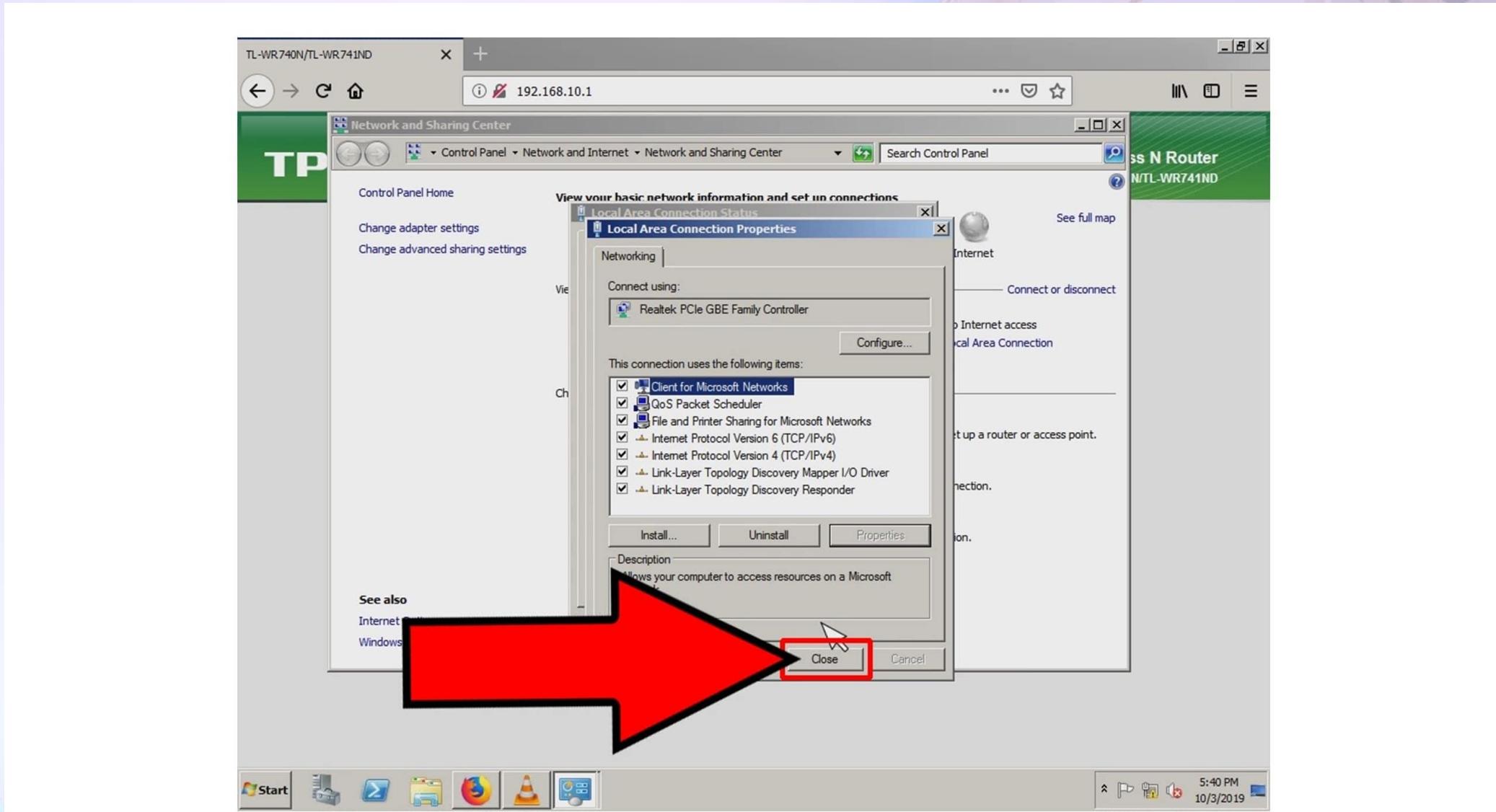
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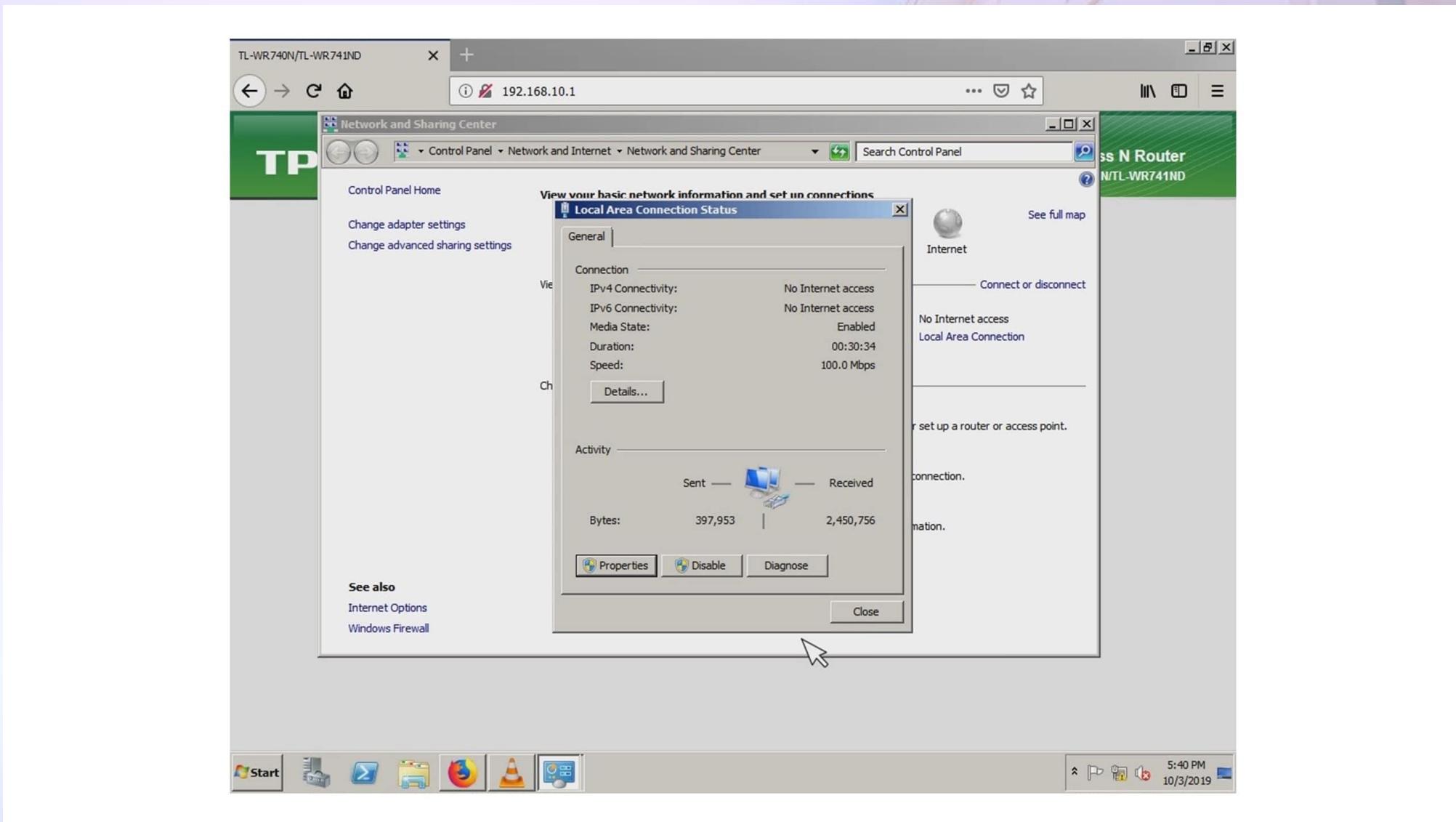
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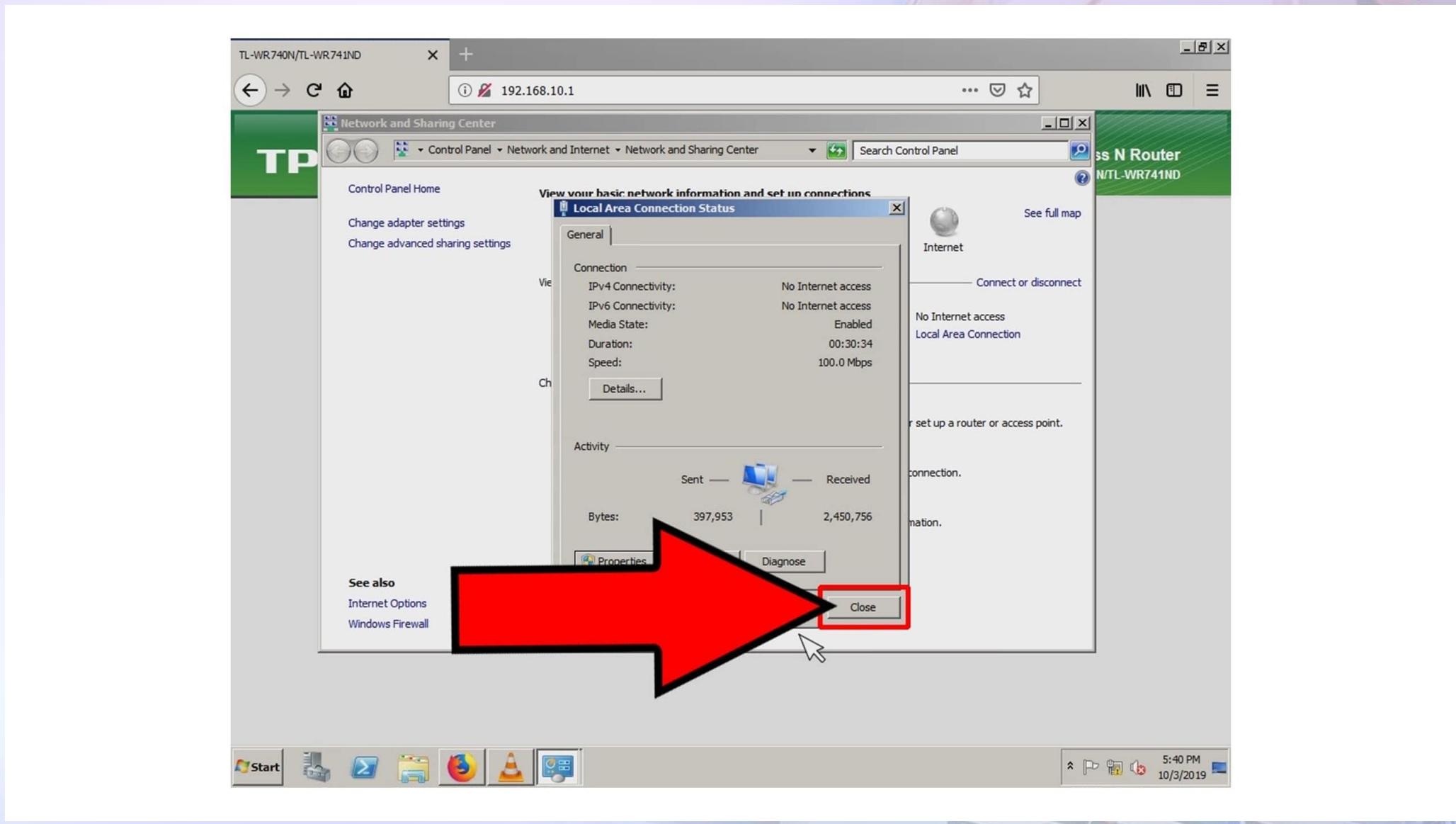
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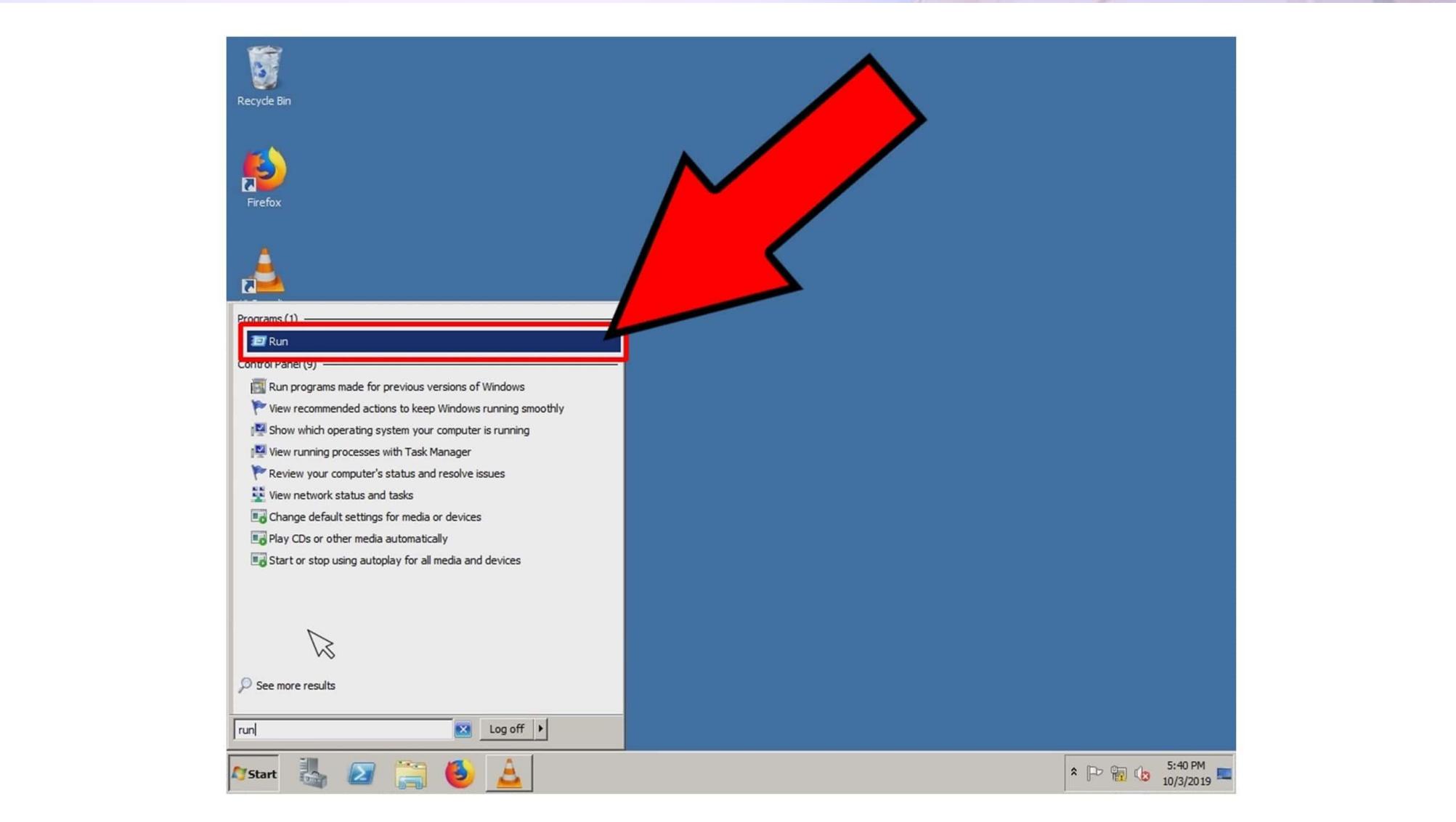
TOPIC 2: Creating a User Folder

Configuring the Active Directory Domain Services

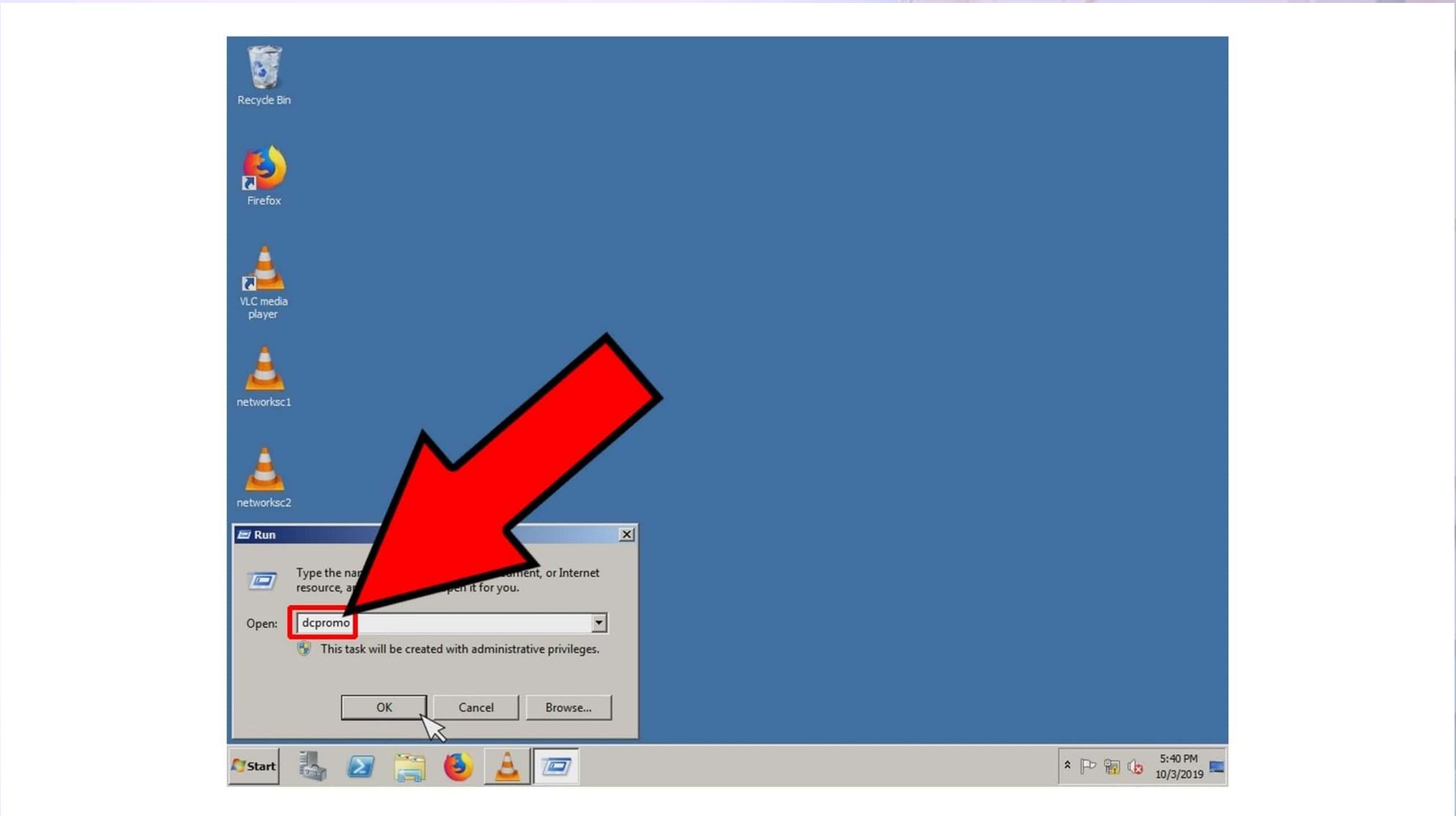
Follow the step-by-step procedures on how to configure the ADDS. This is important since this is where all the information on resources are centered on.



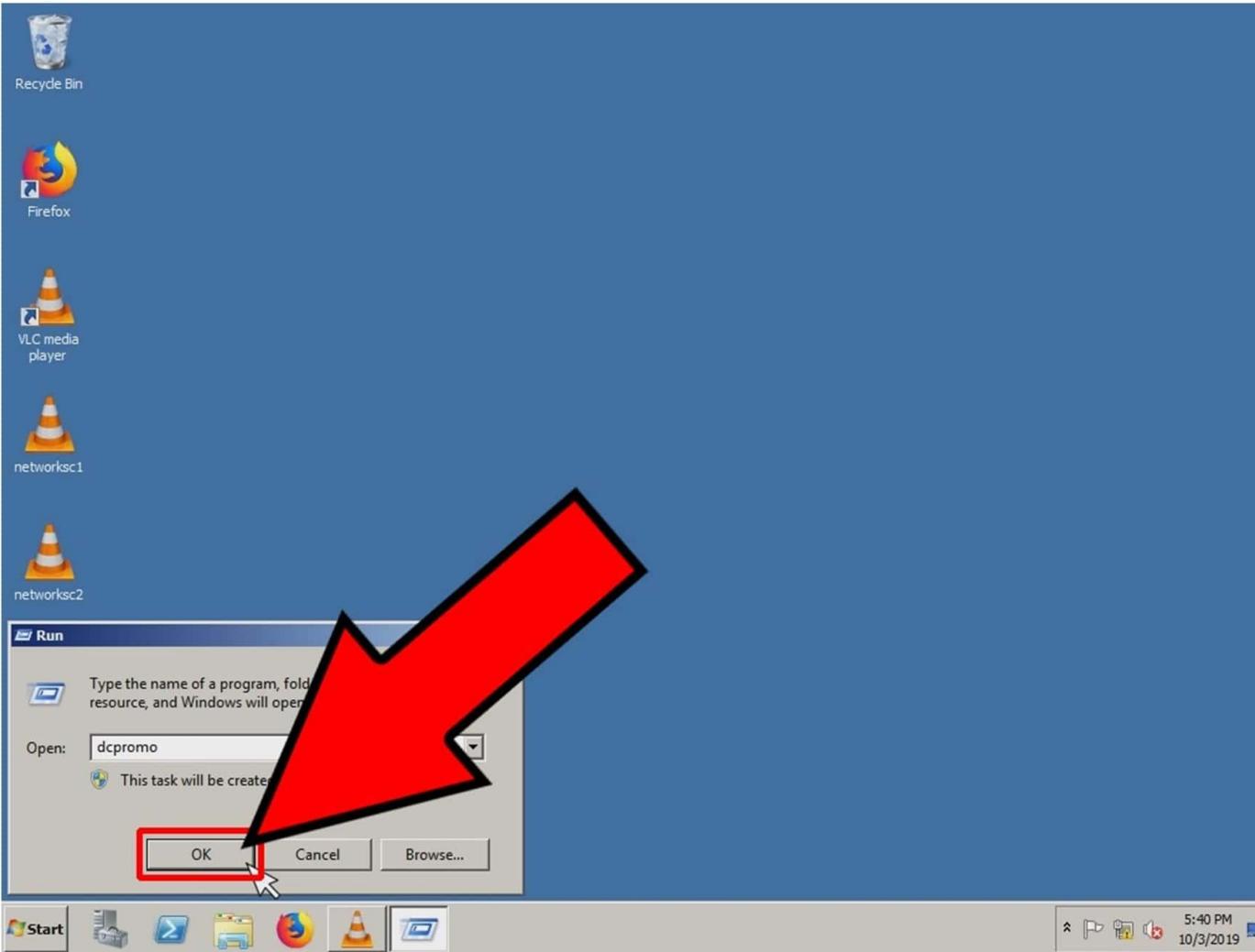
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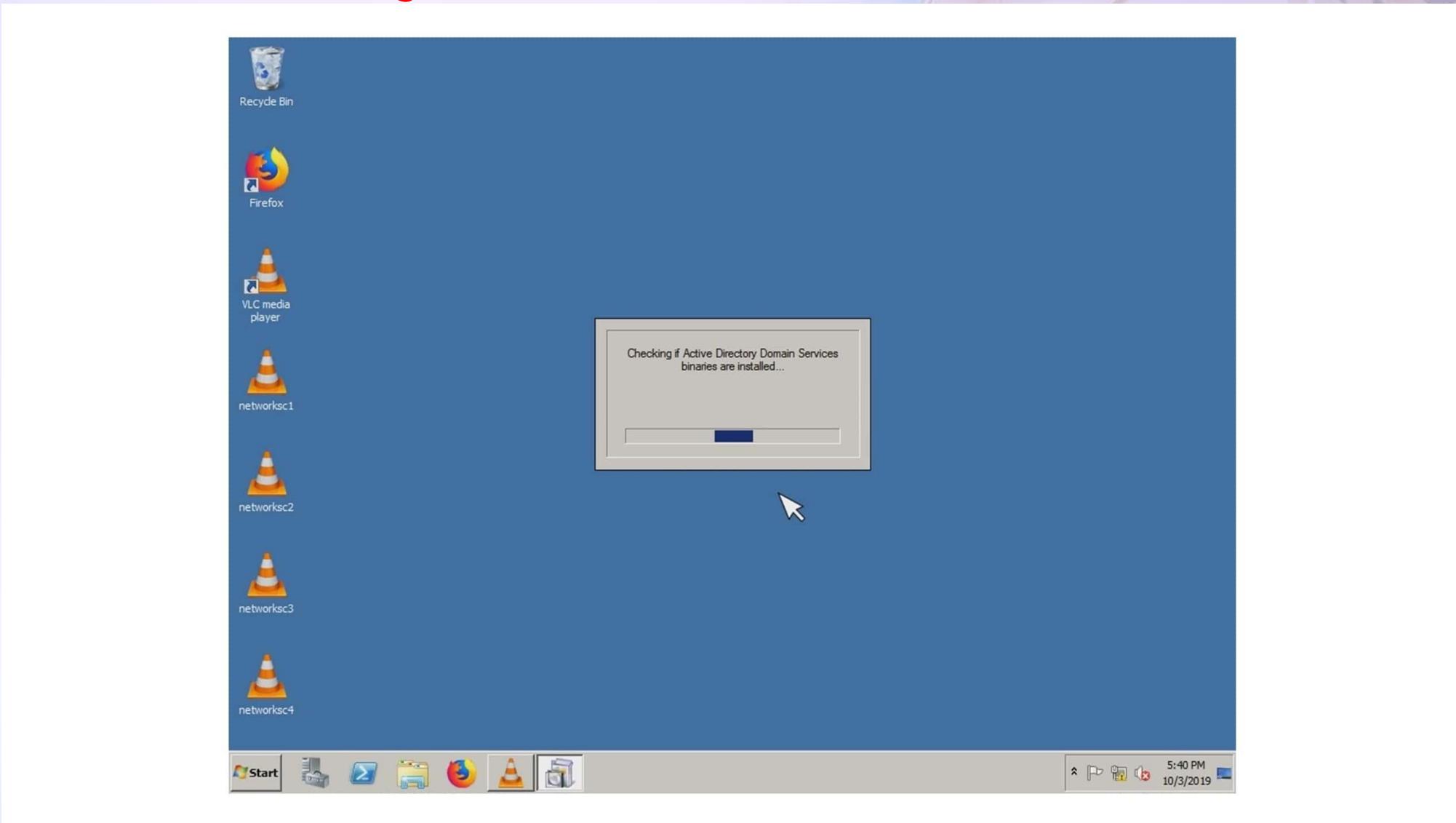
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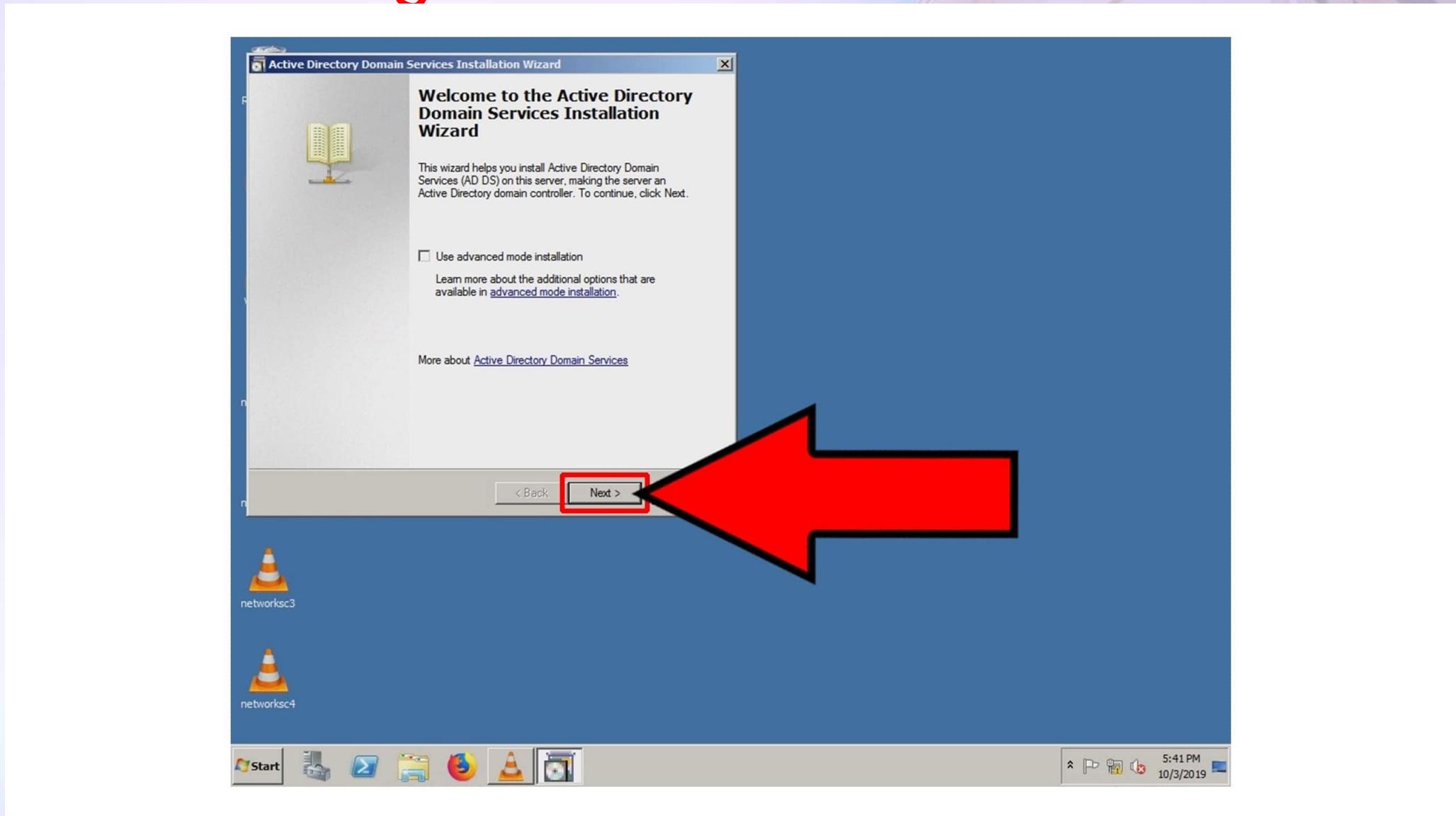
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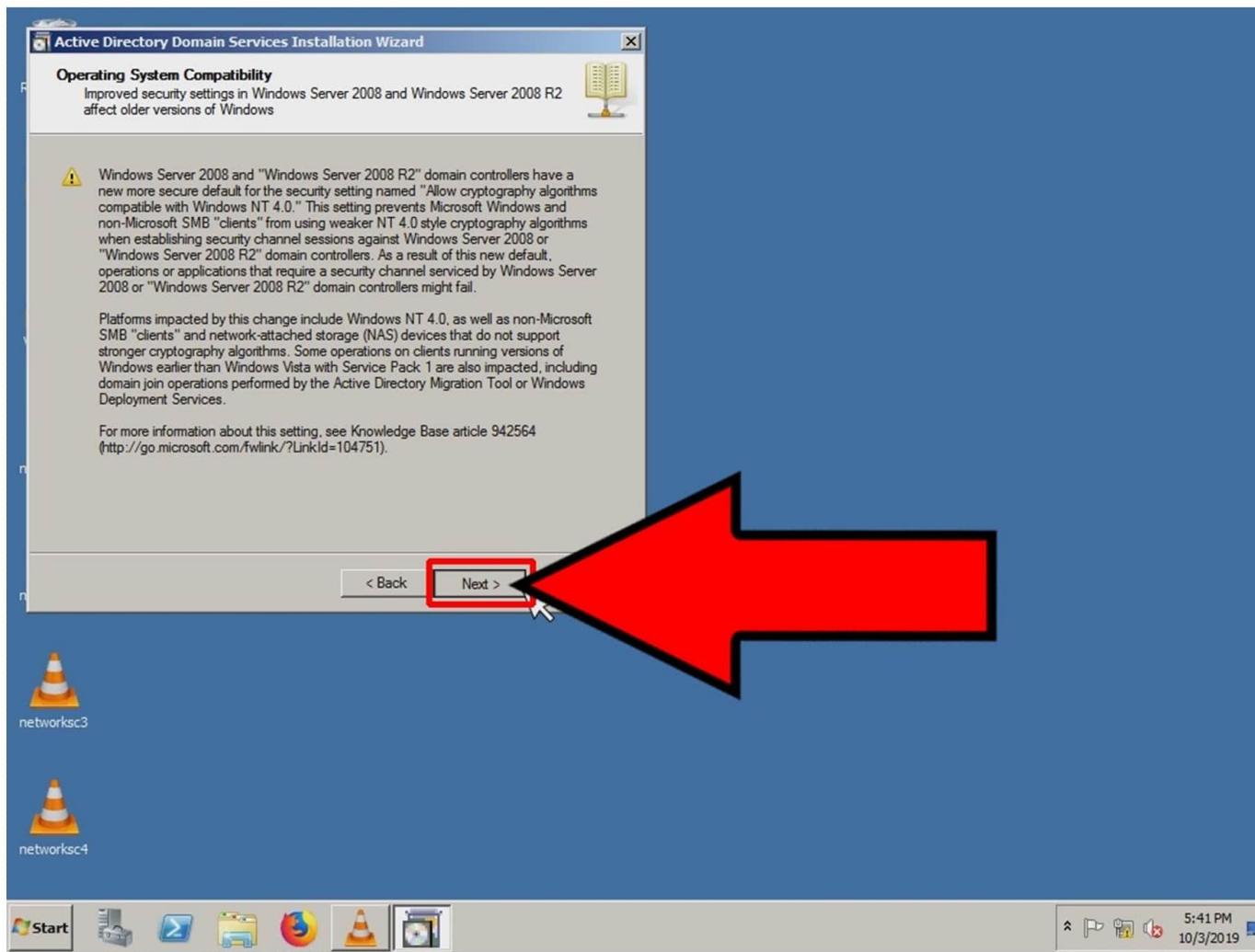
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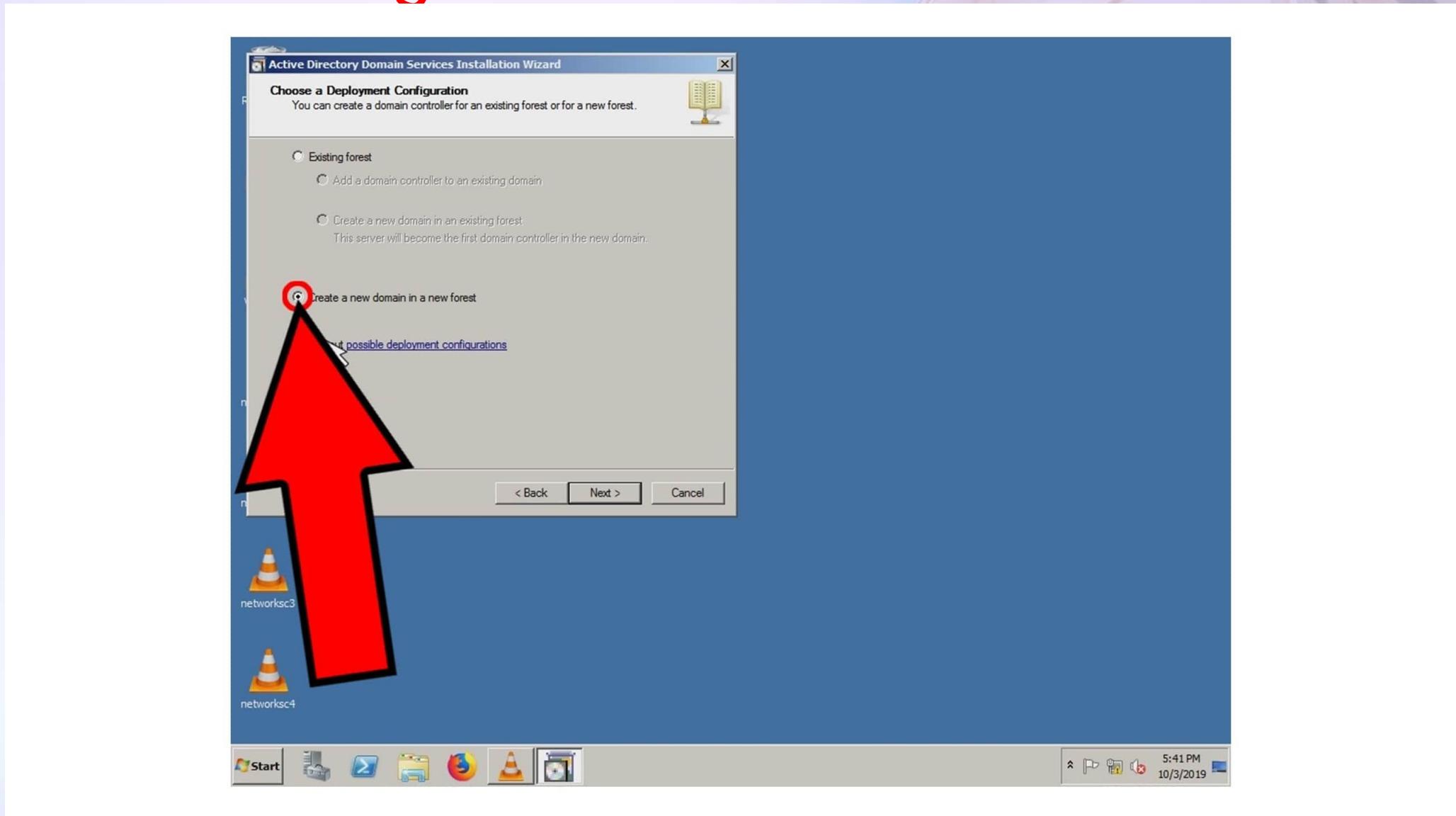
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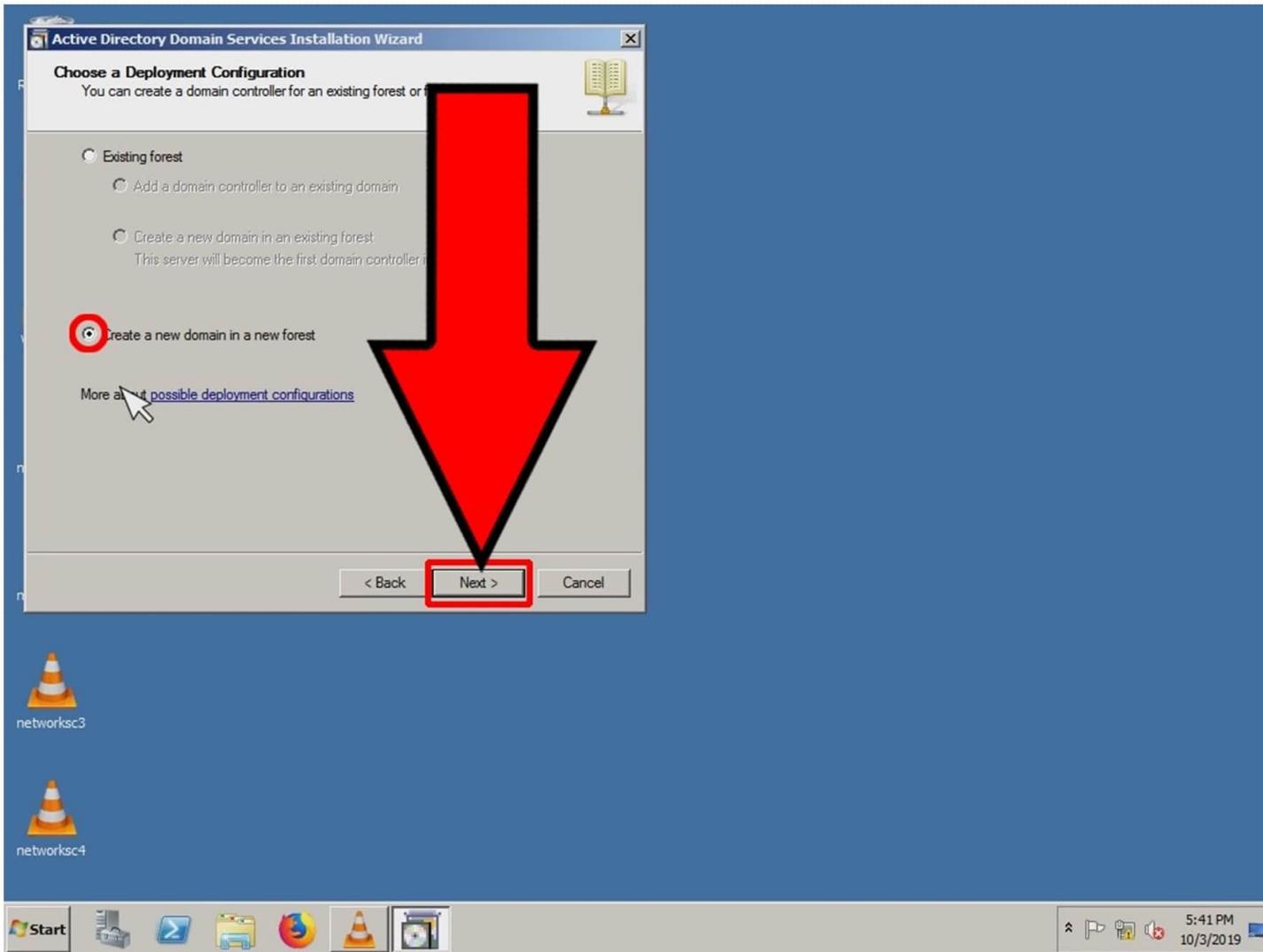
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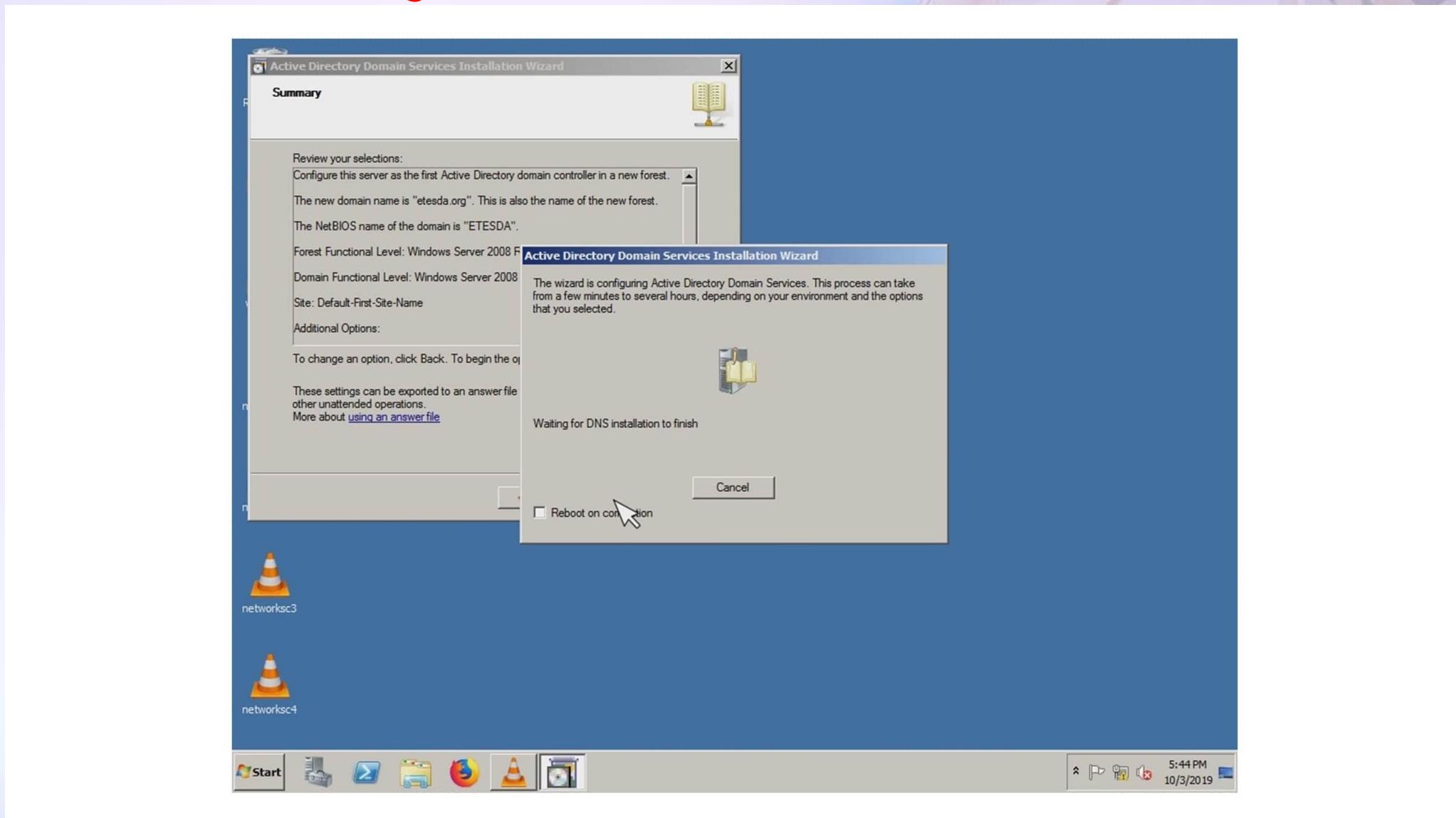
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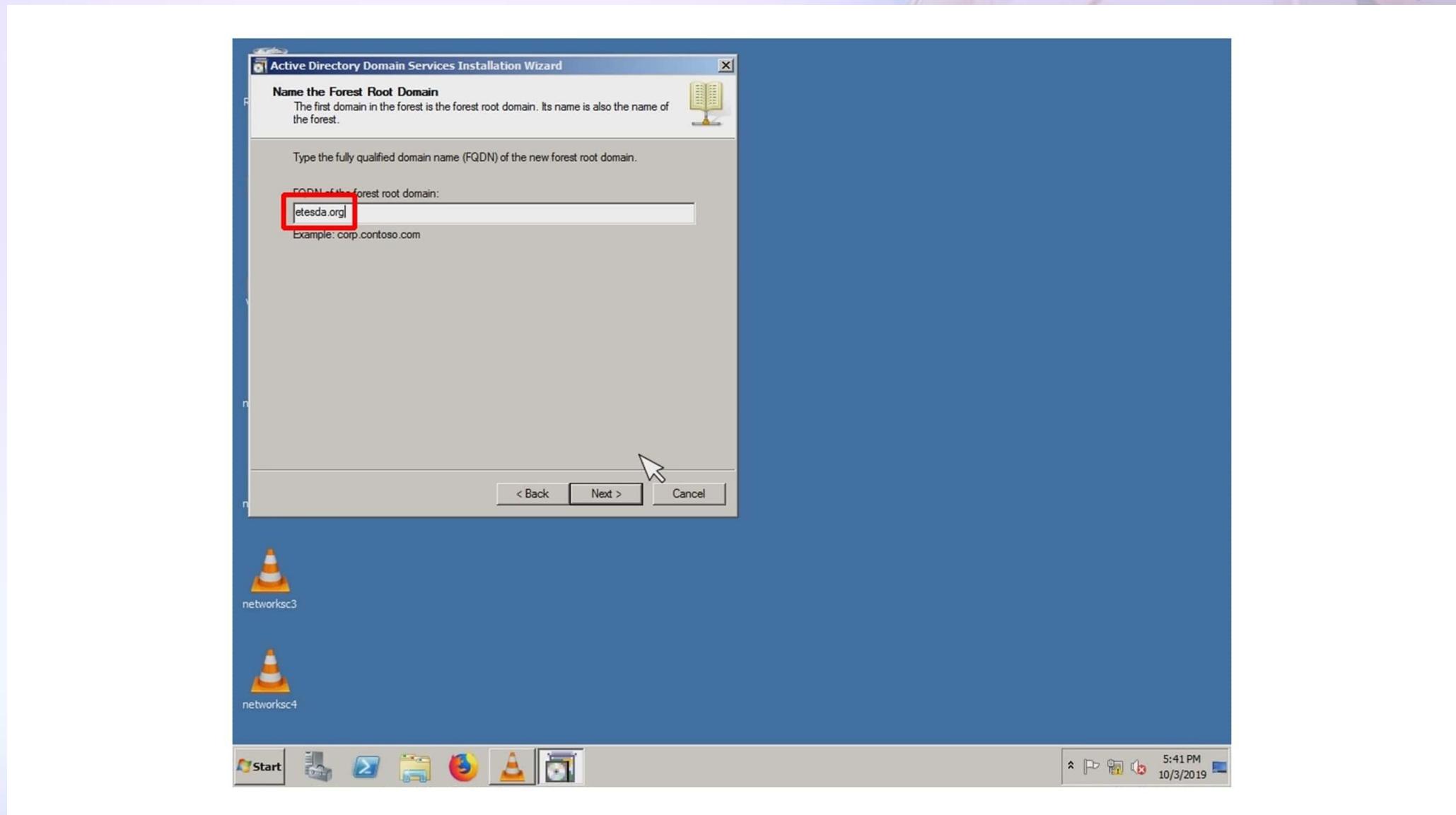
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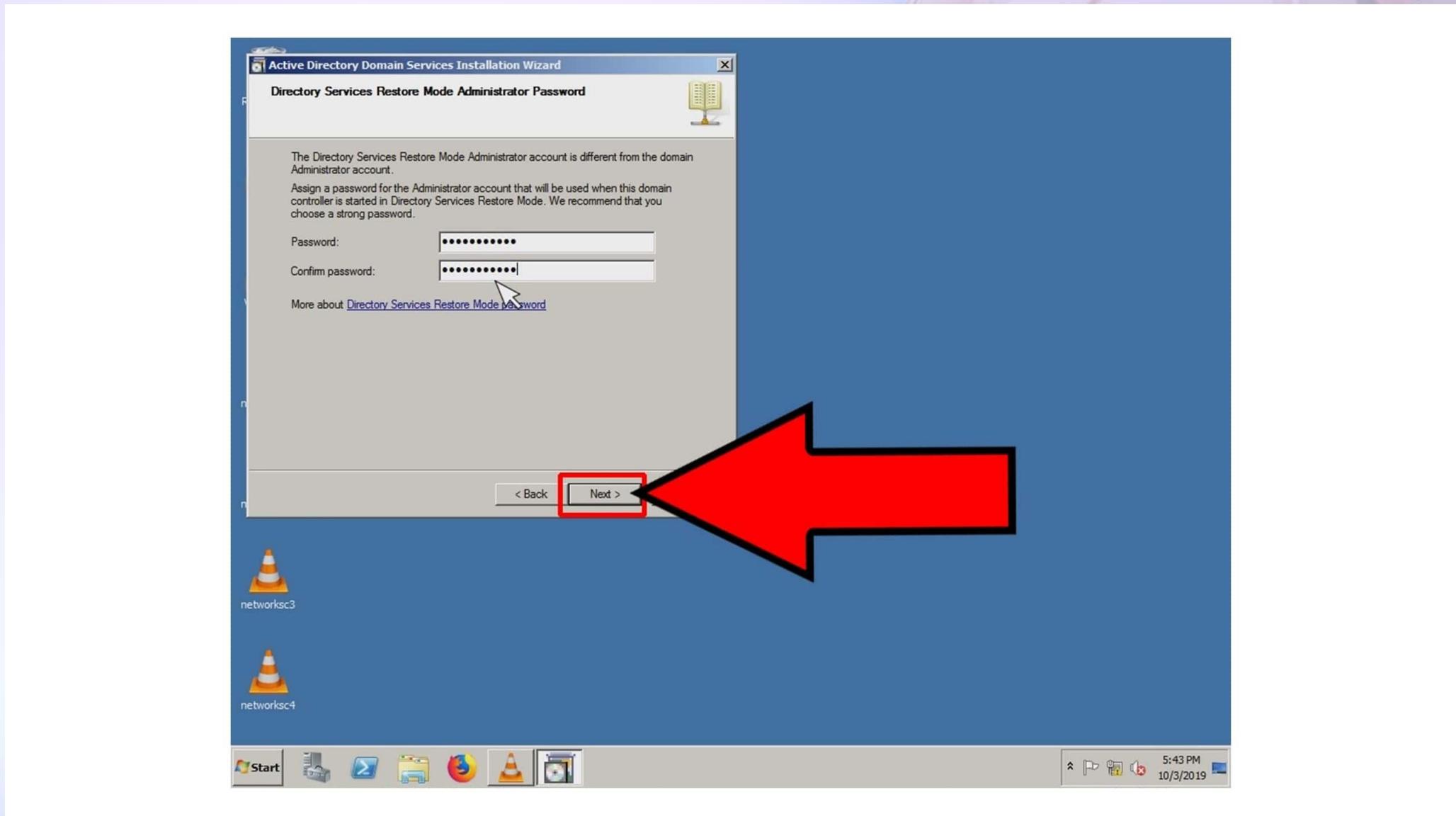
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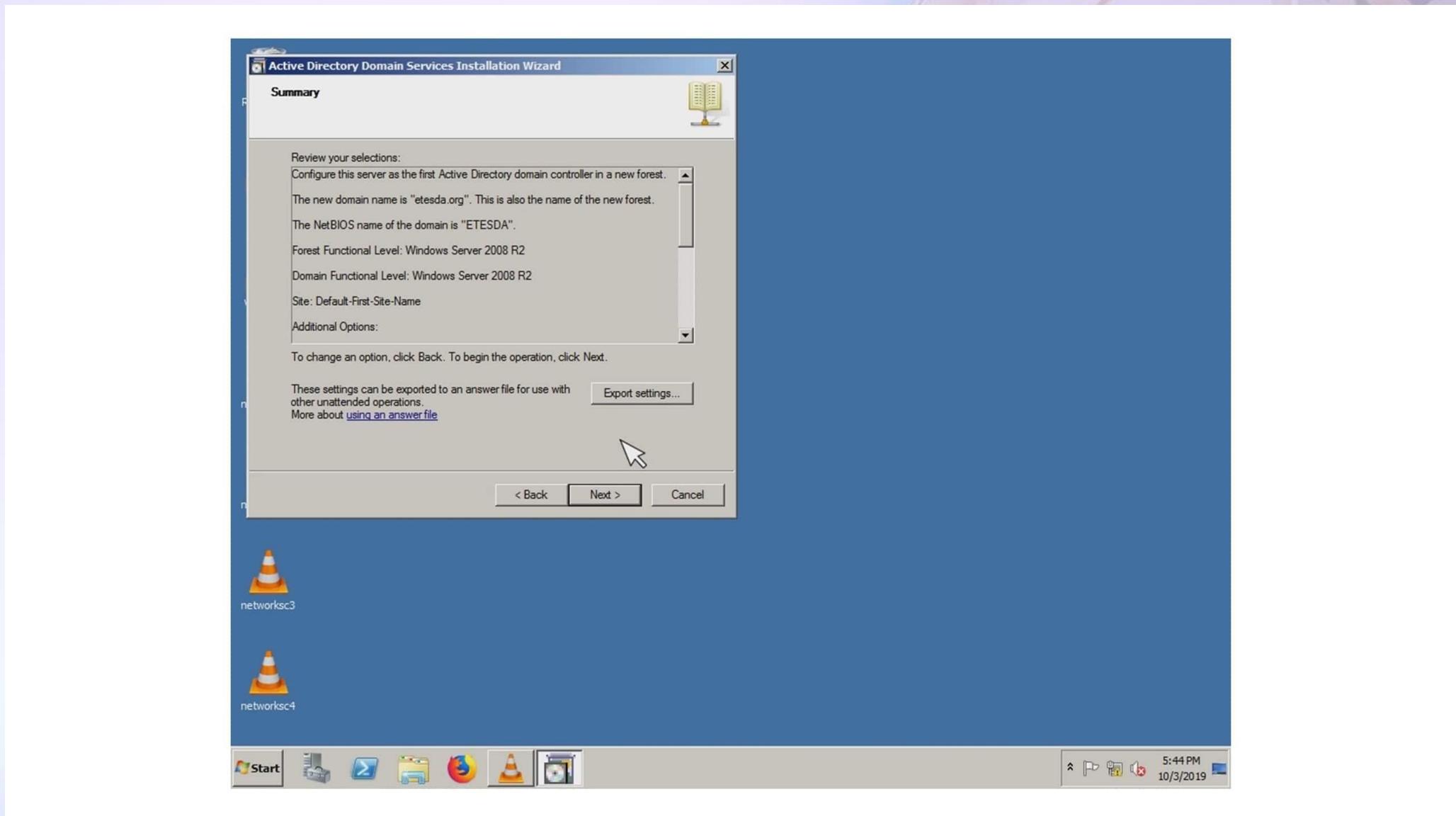
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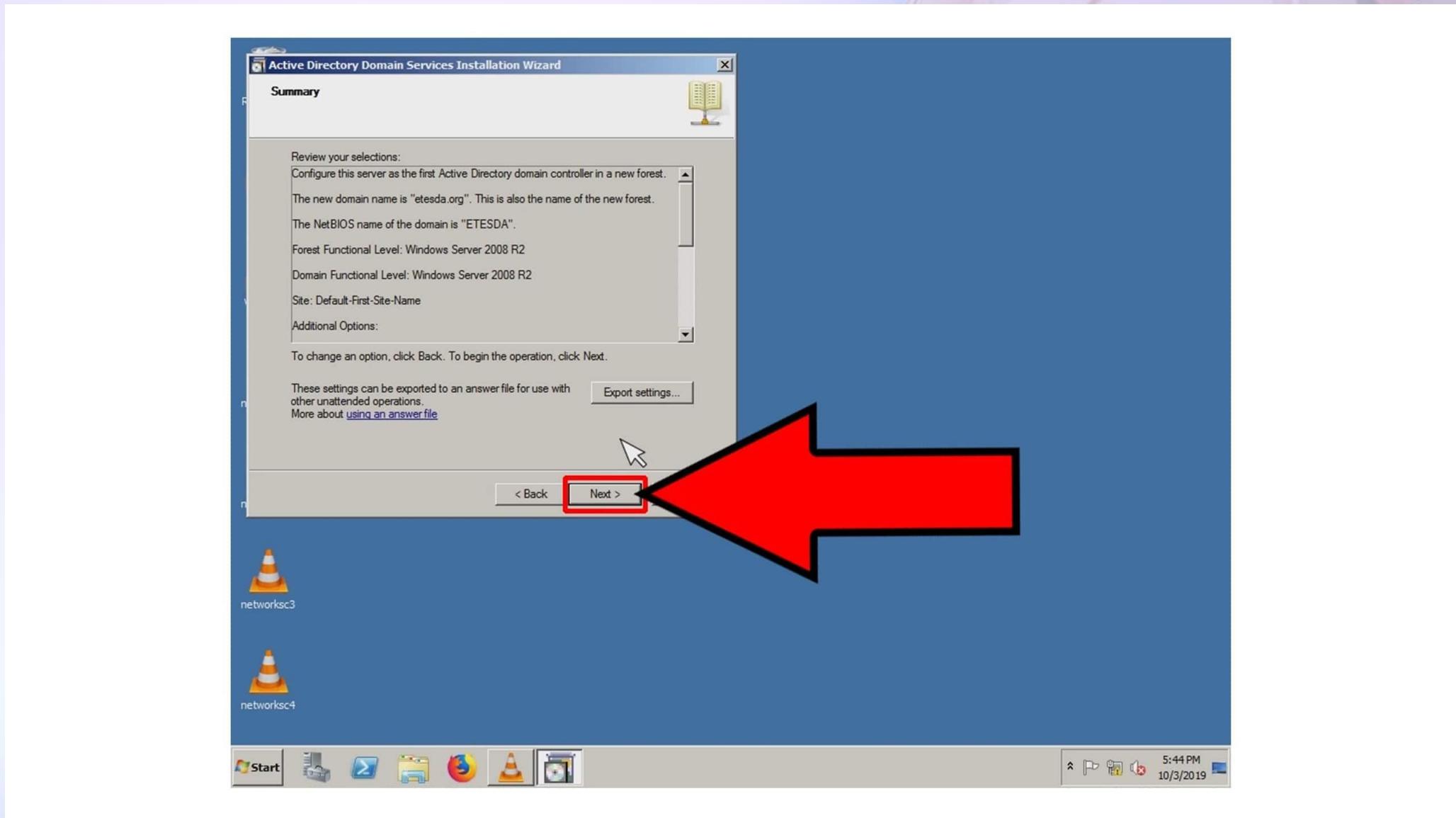
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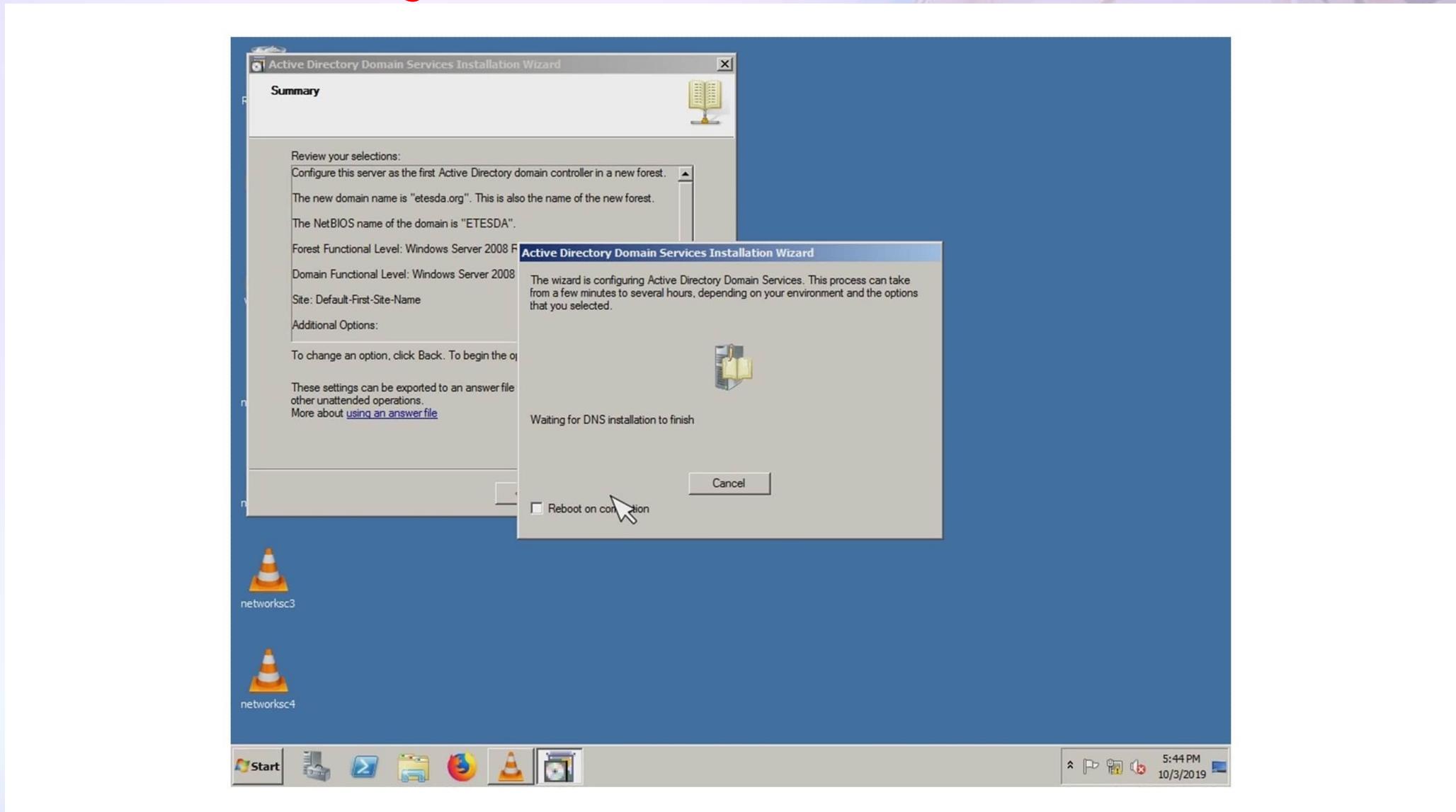
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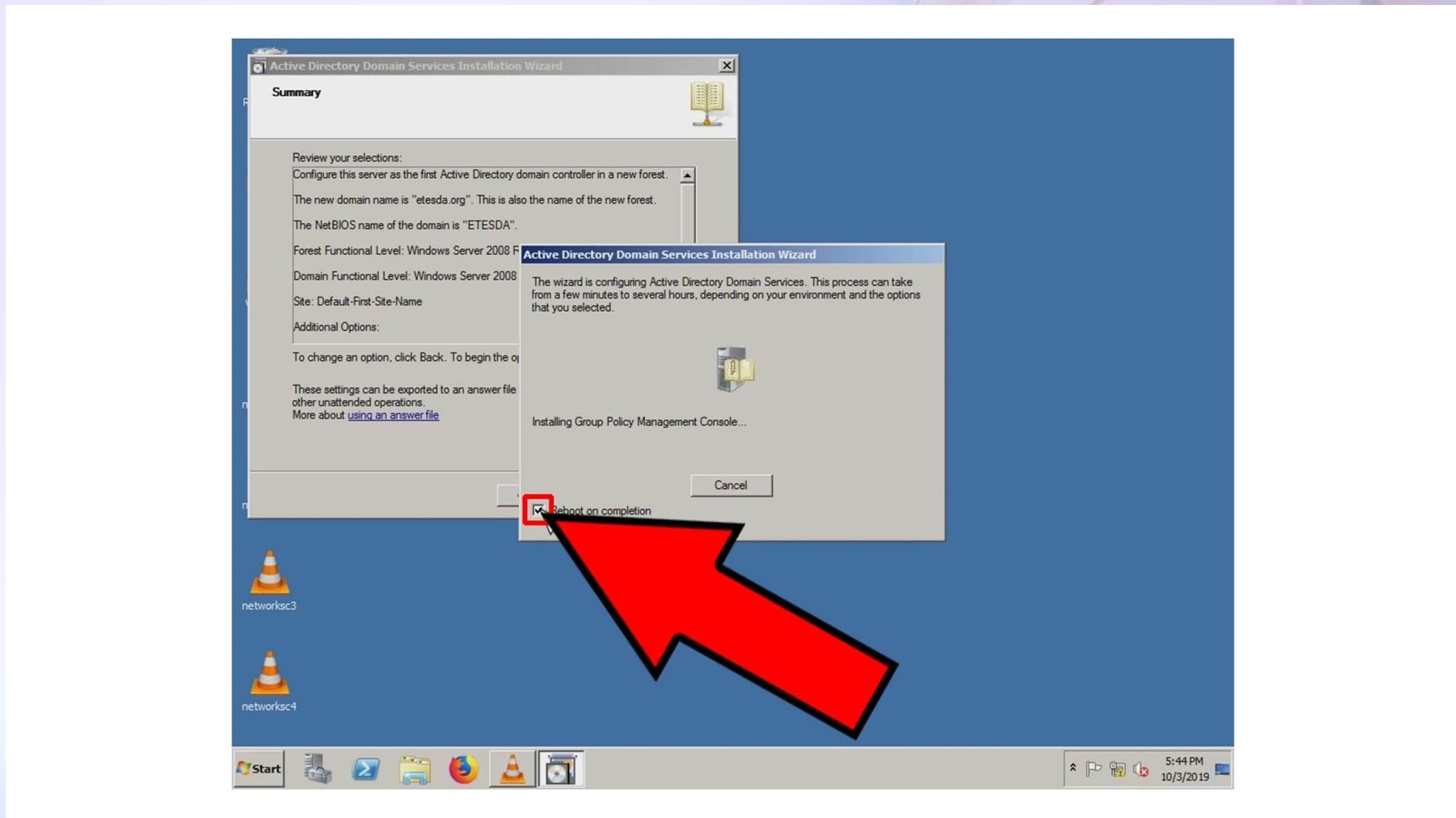
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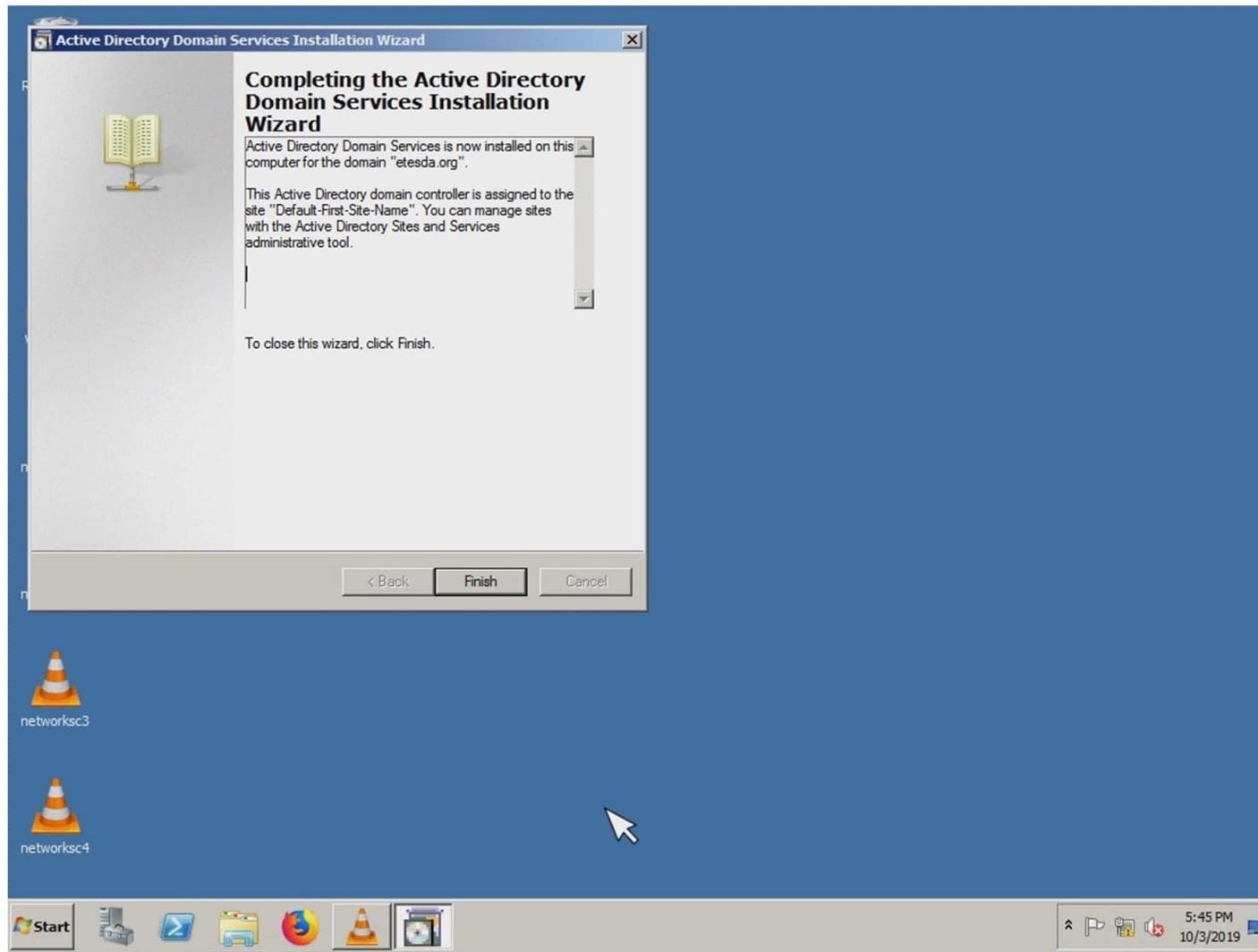
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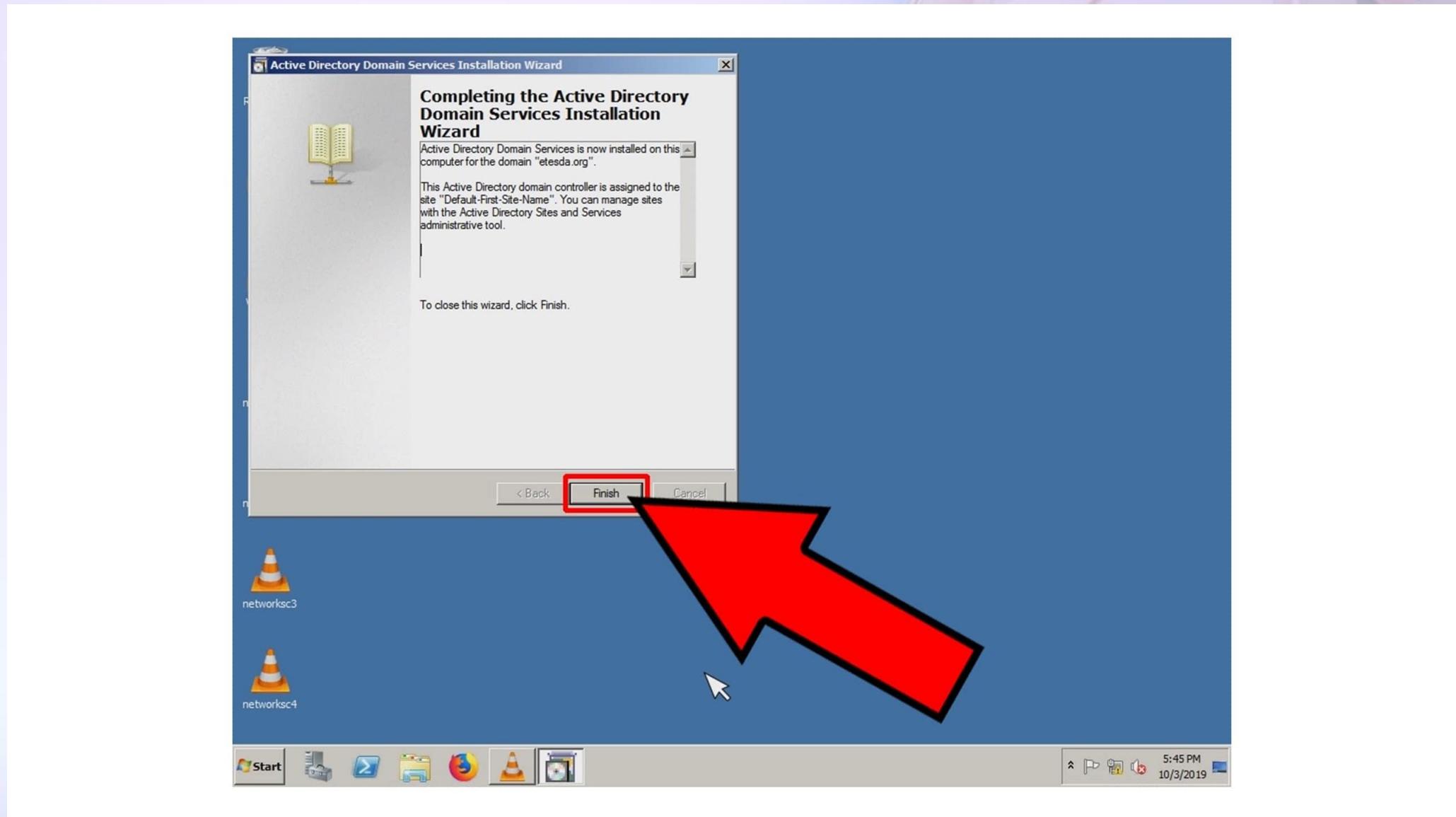
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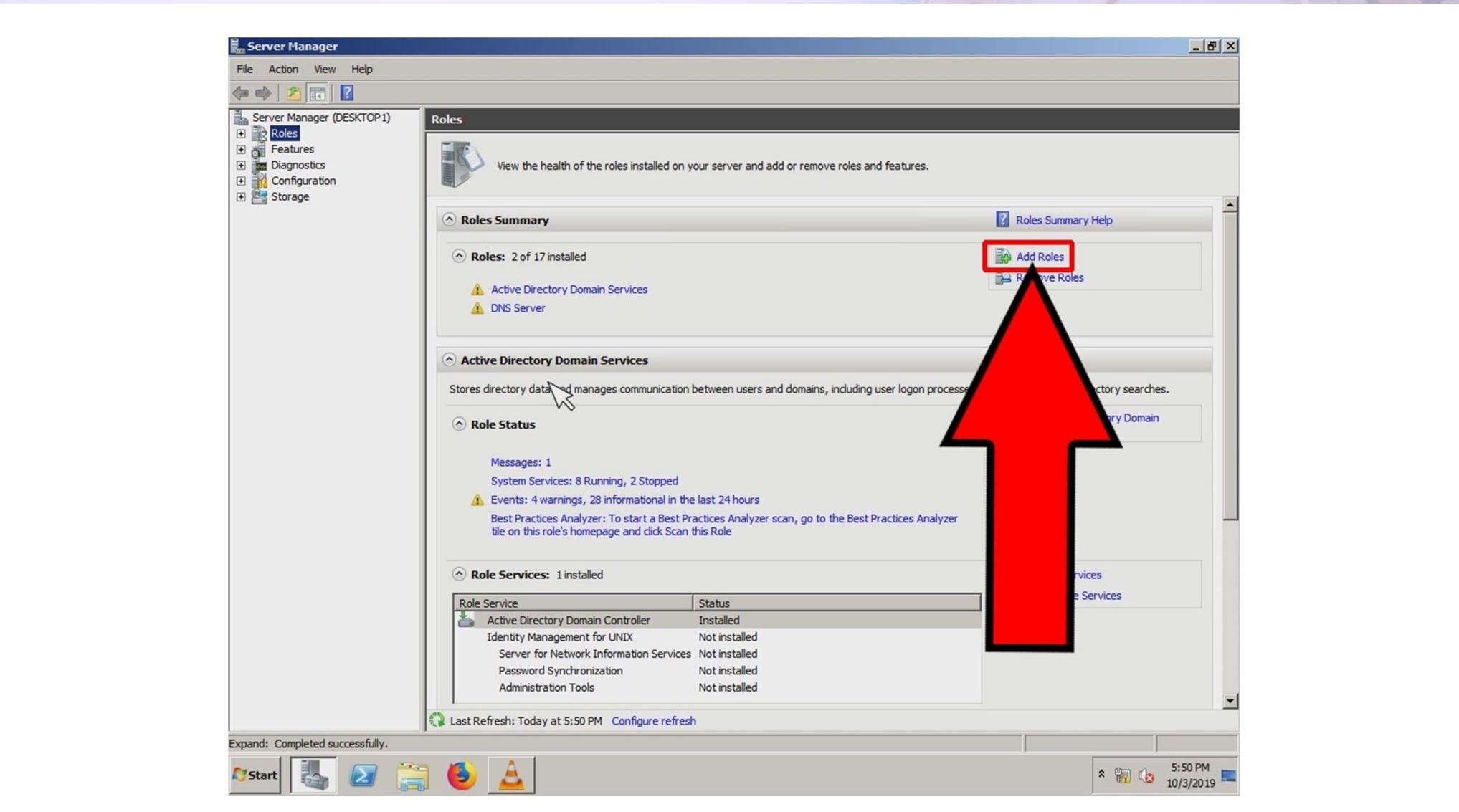
TOPIC 2: Creating a User Folder

Adding Roles

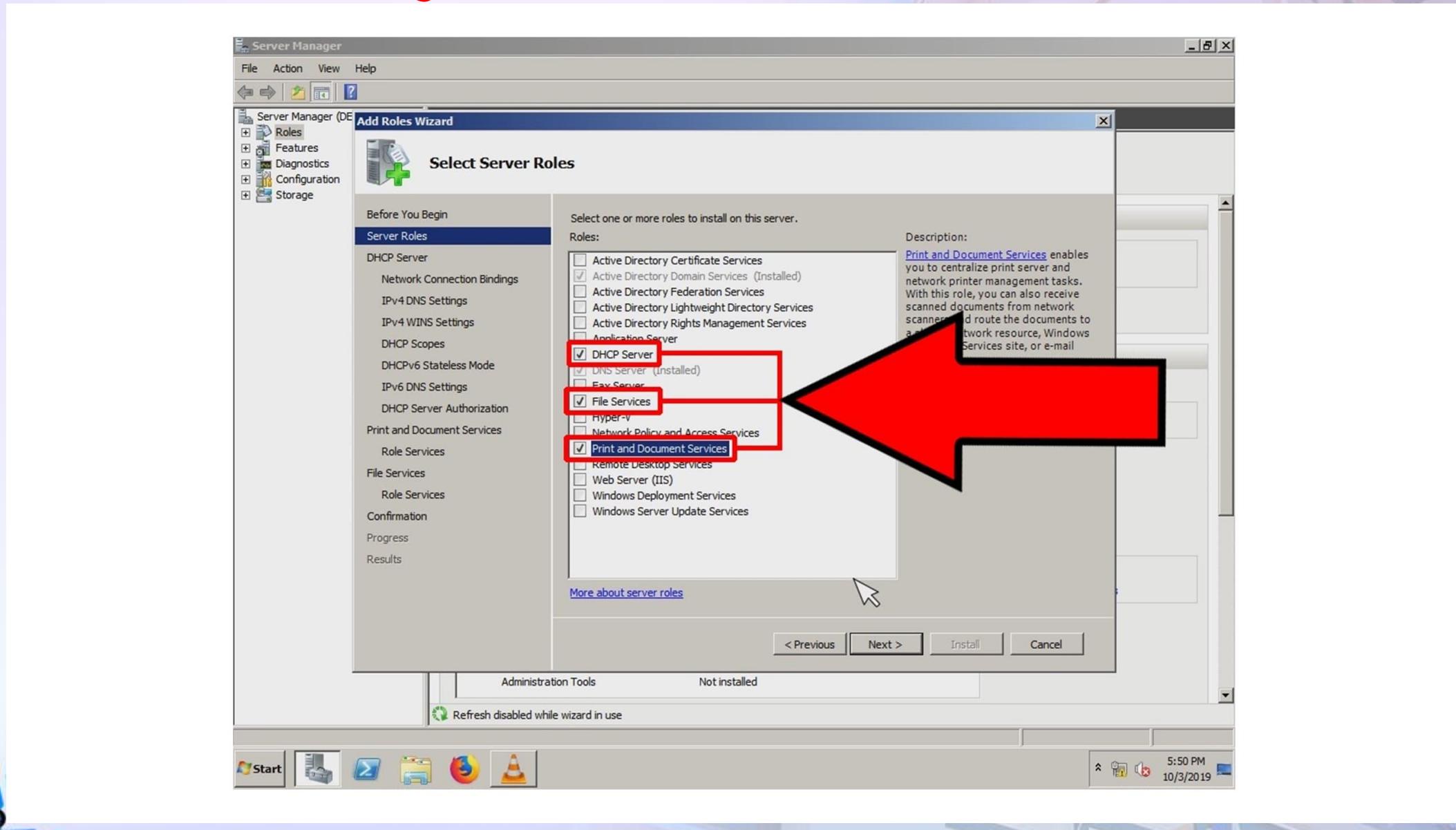
Follow the step-by-step procedures on how to add roles in the ADDS.



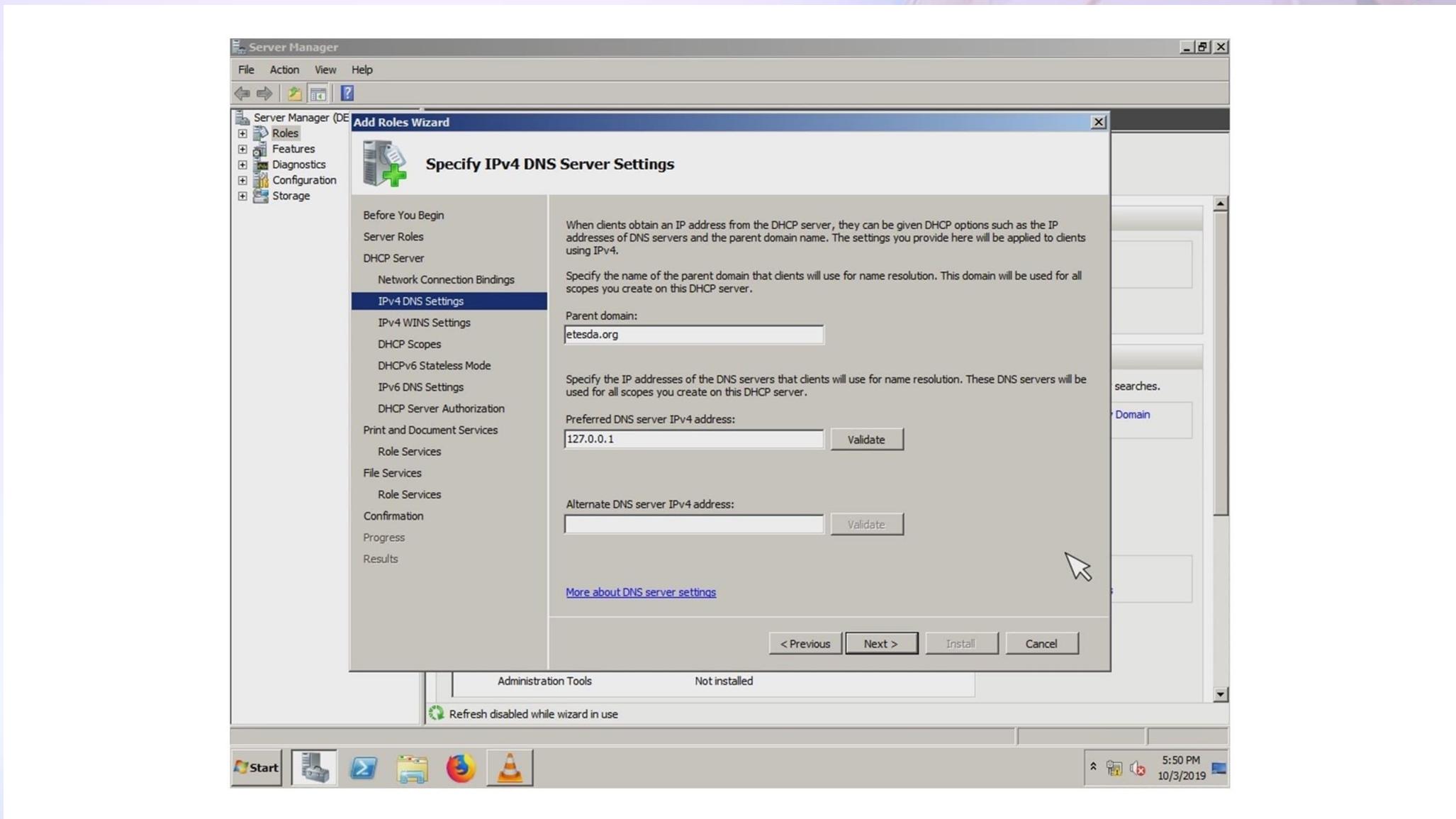
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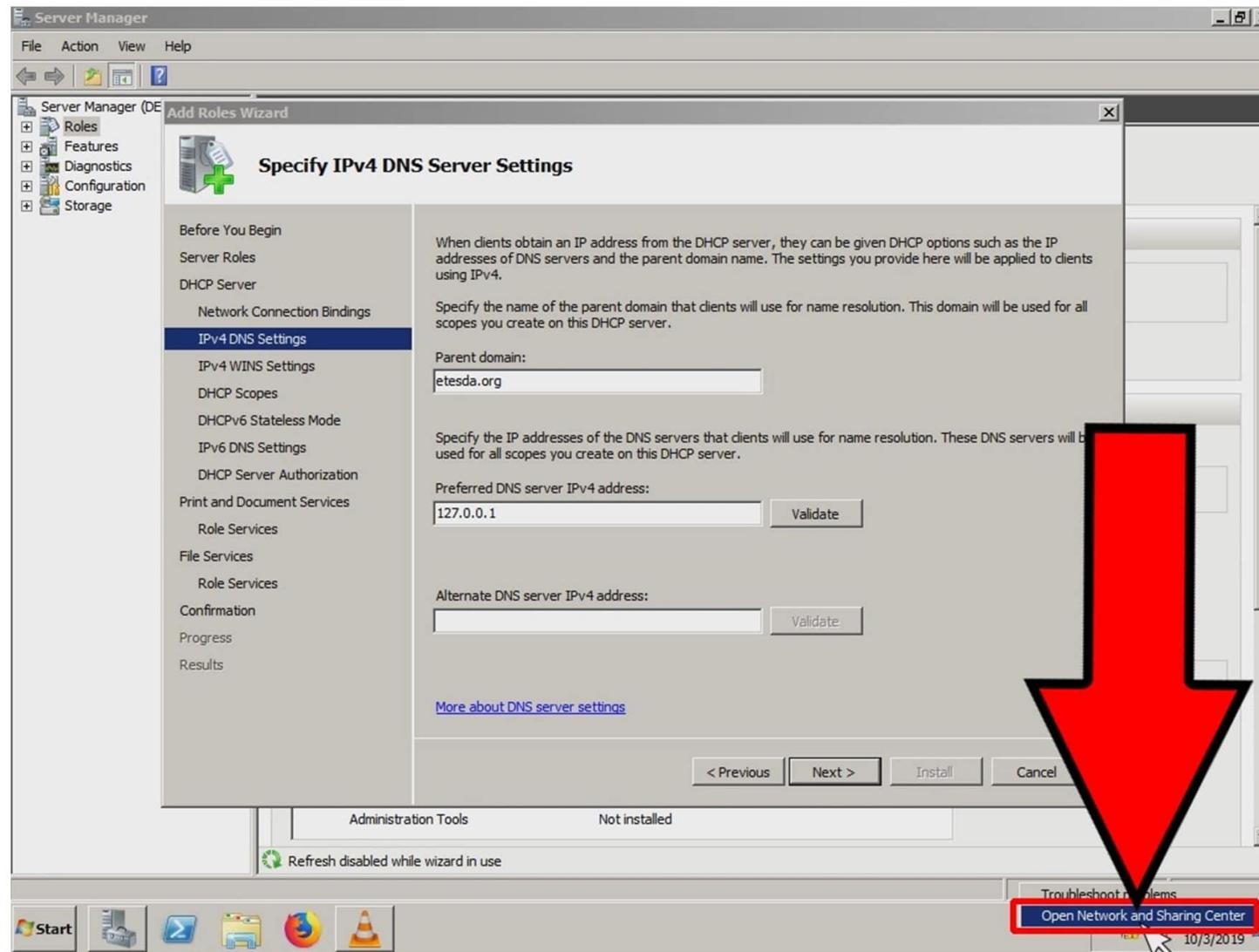
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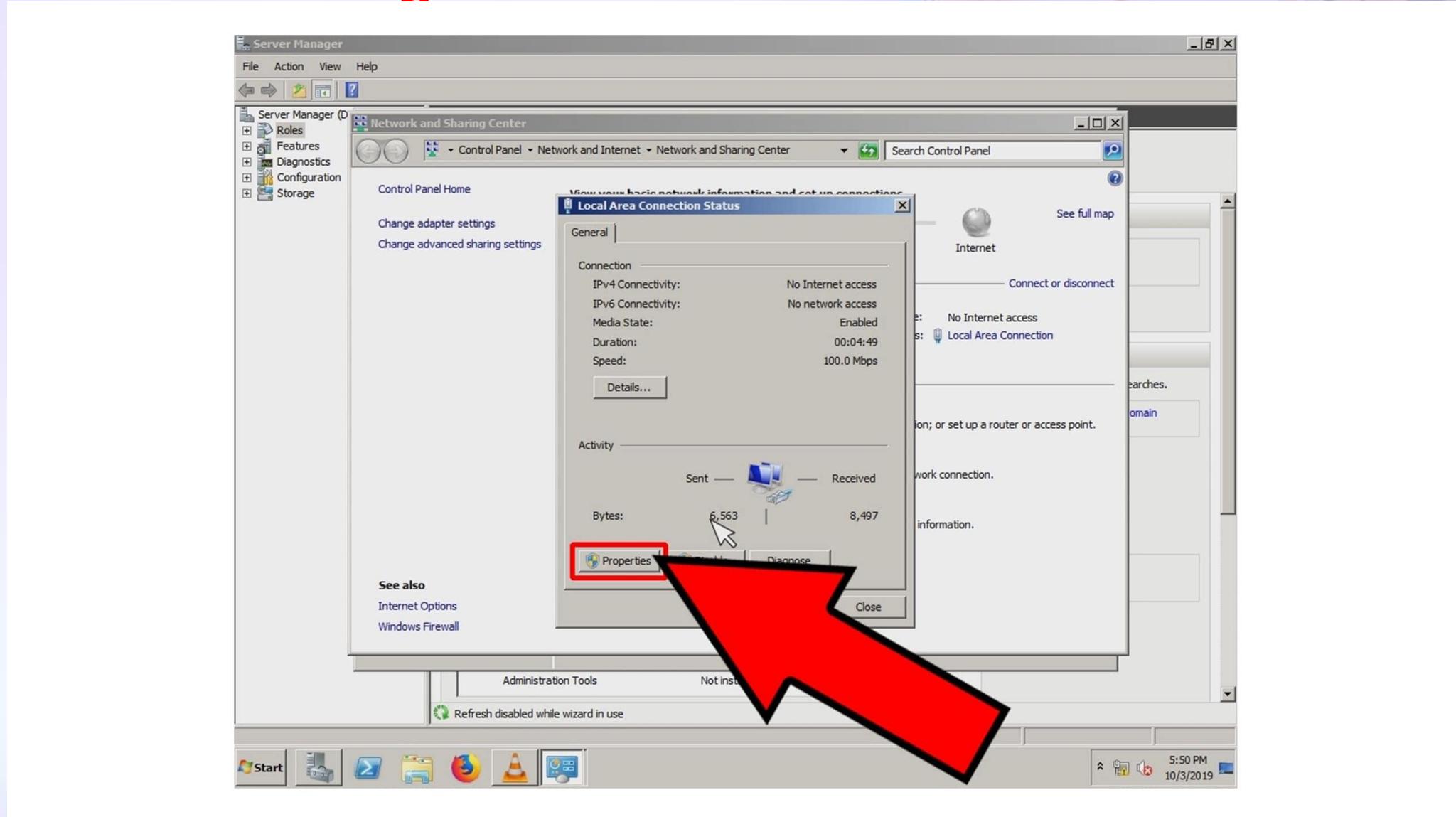
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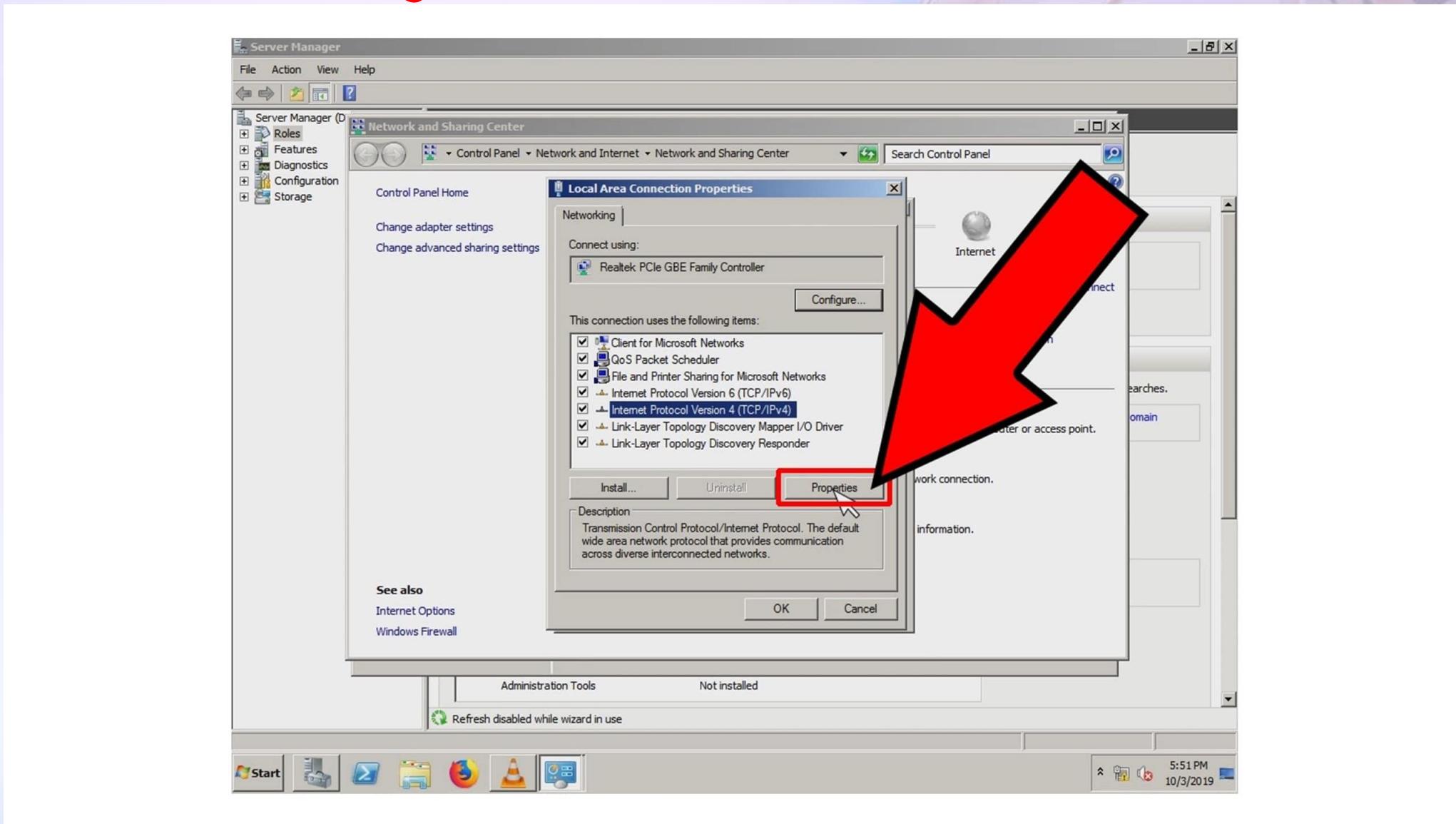
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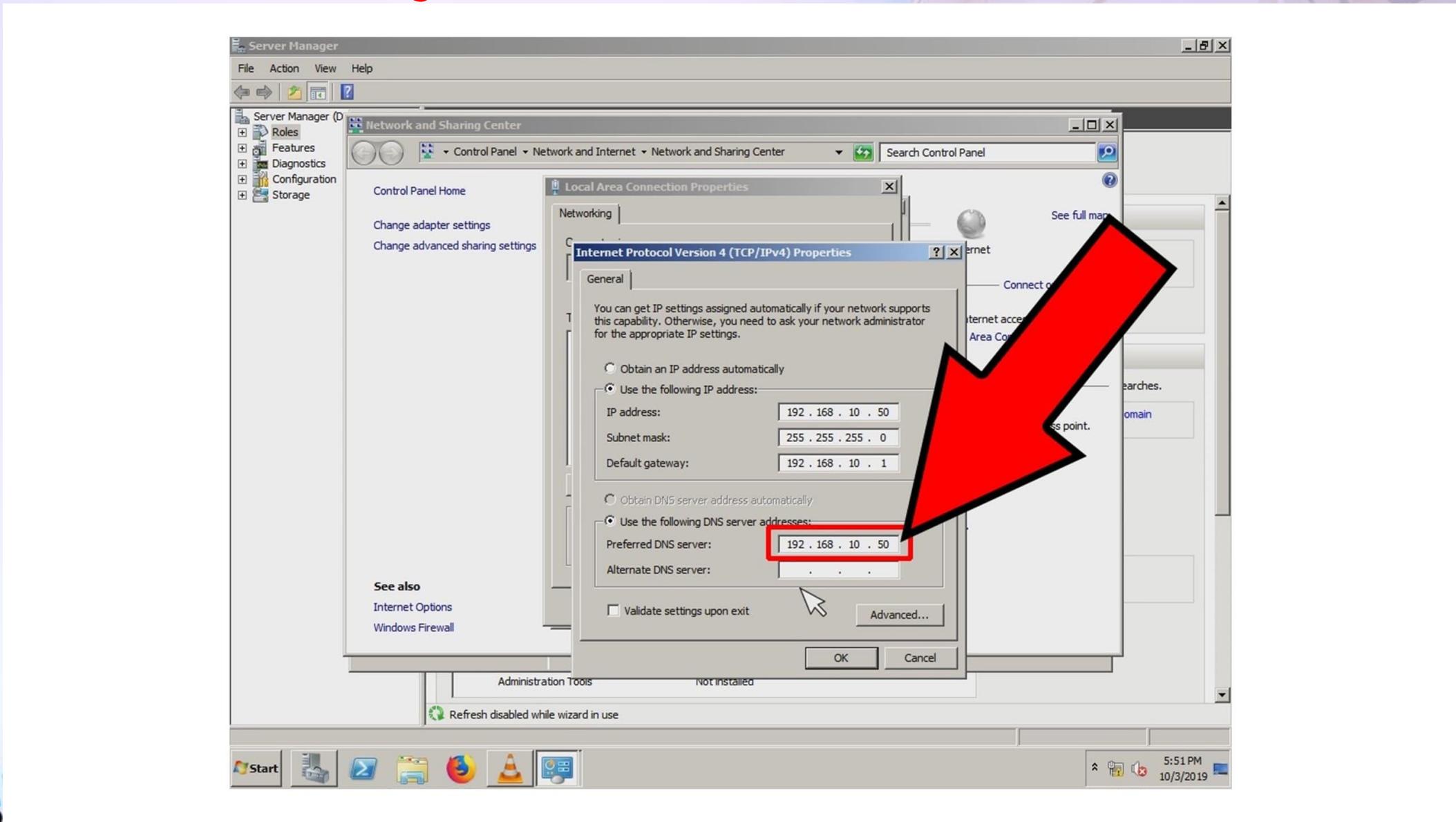
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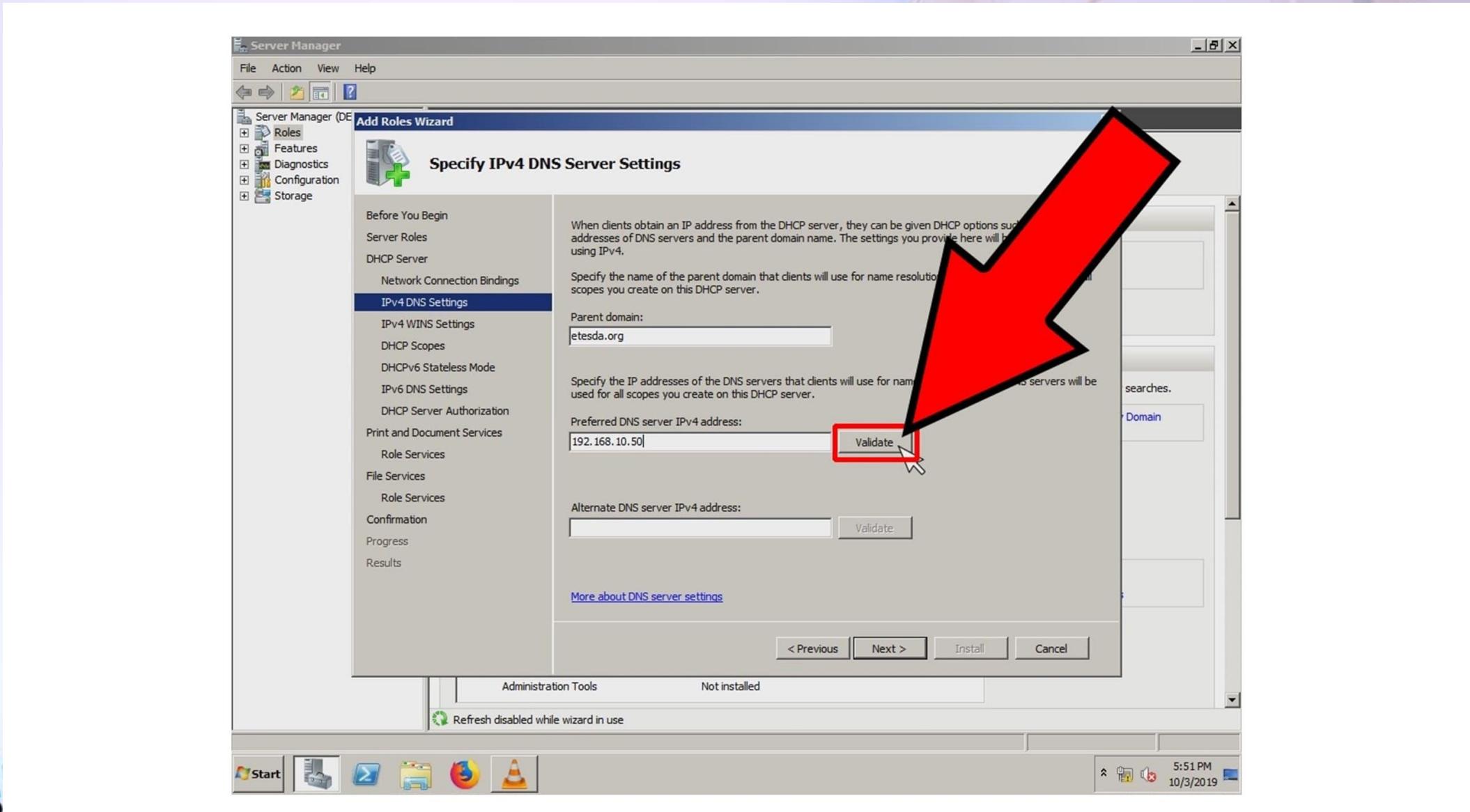
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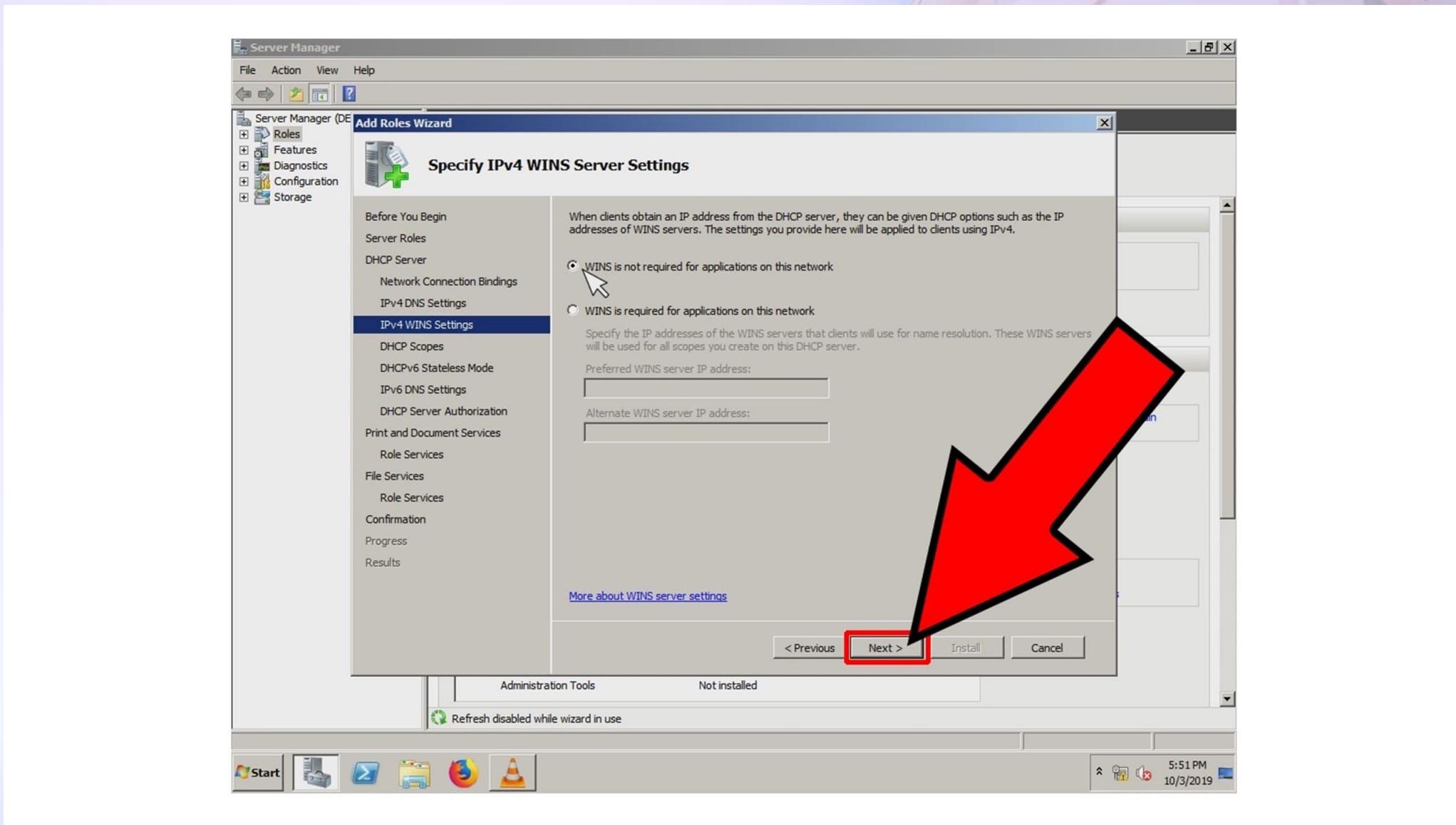
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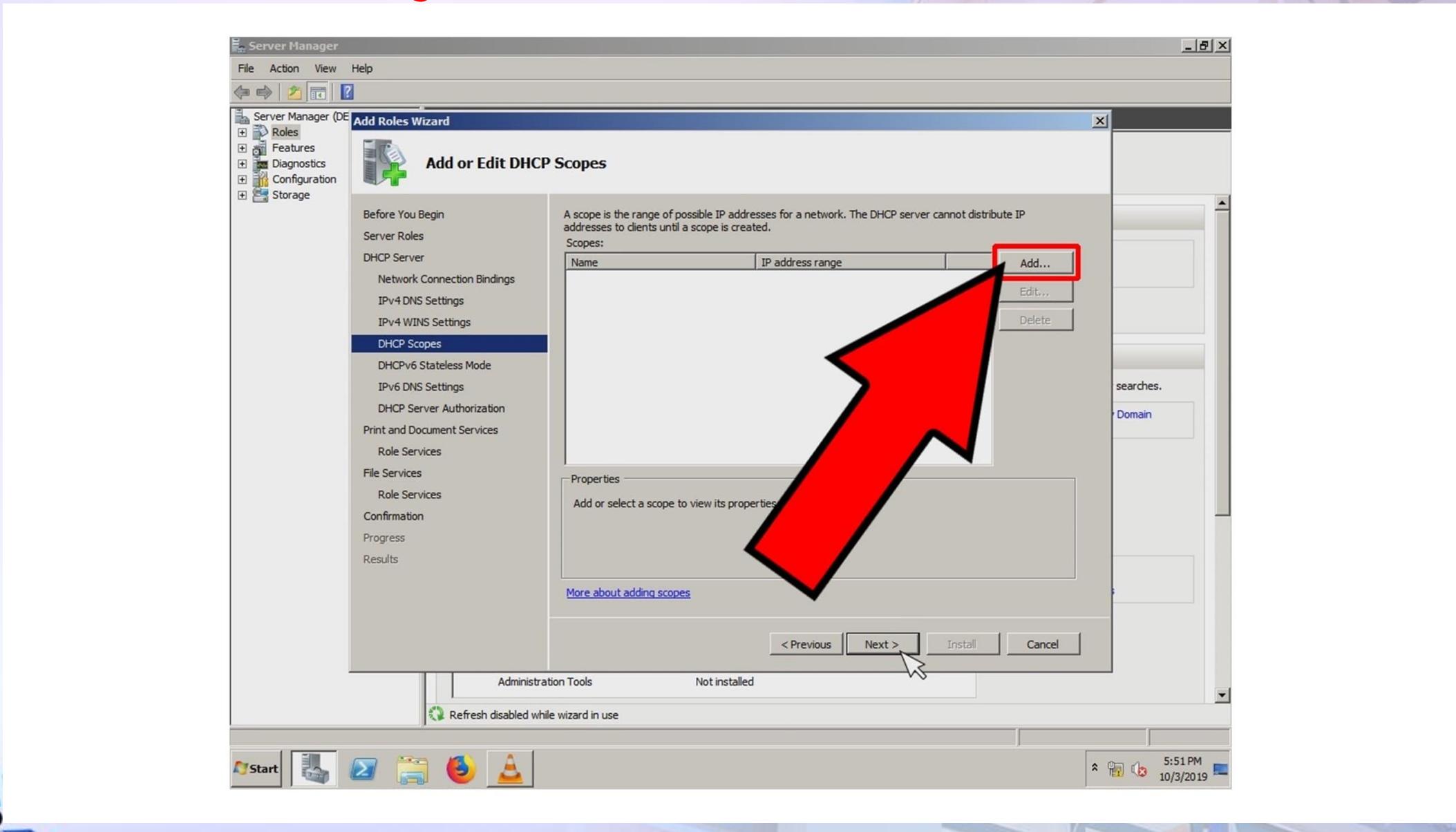
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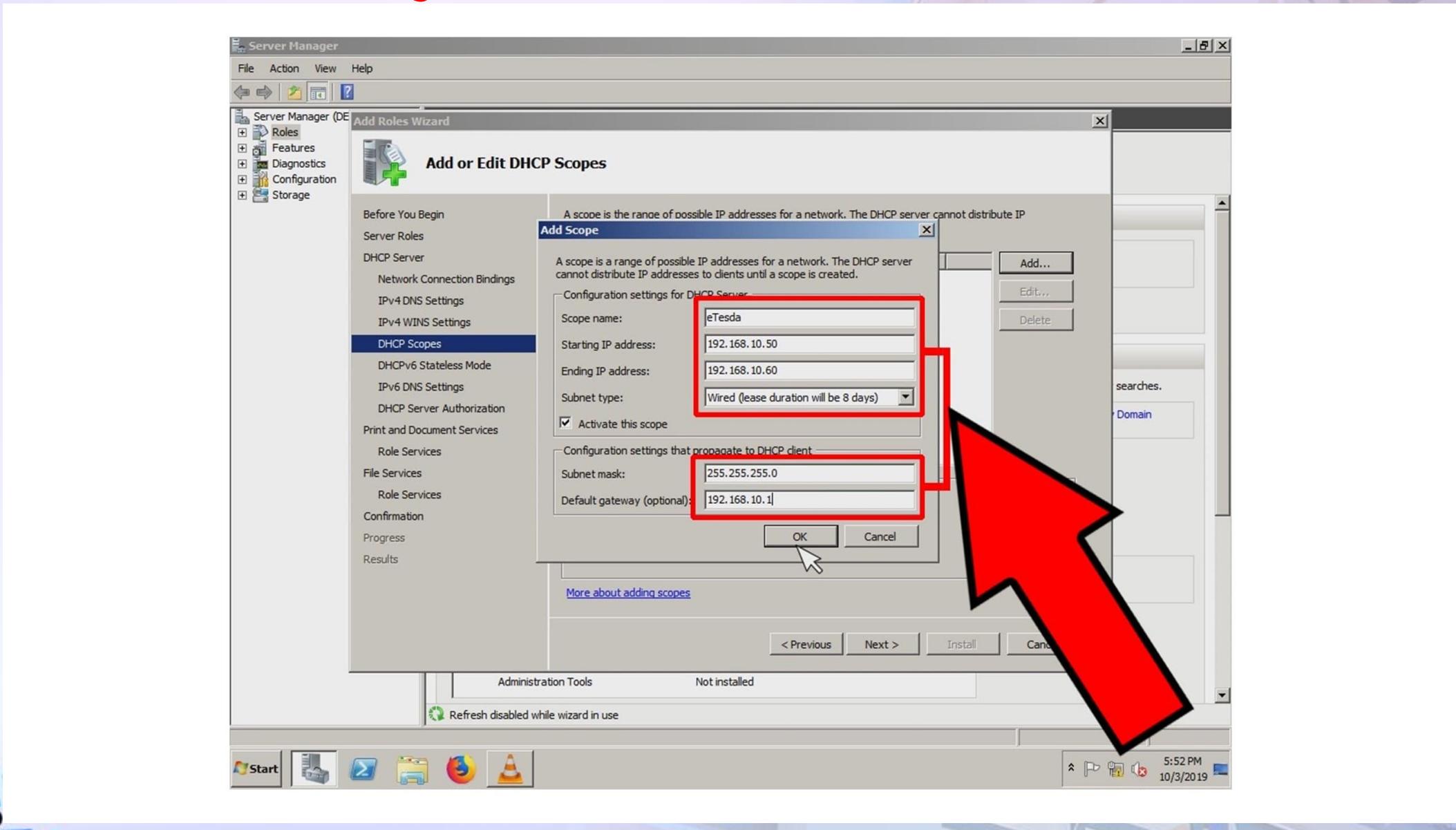
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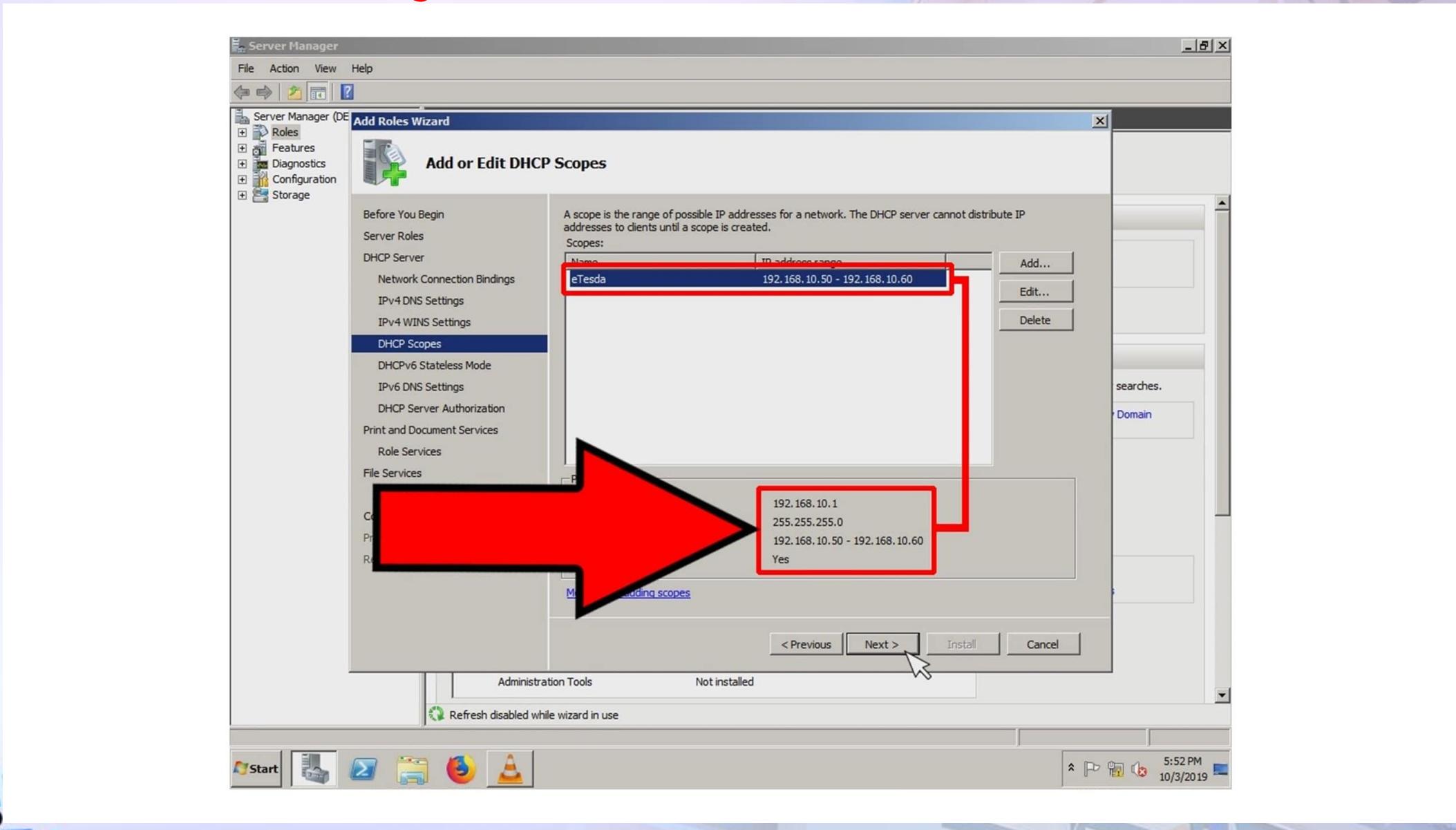
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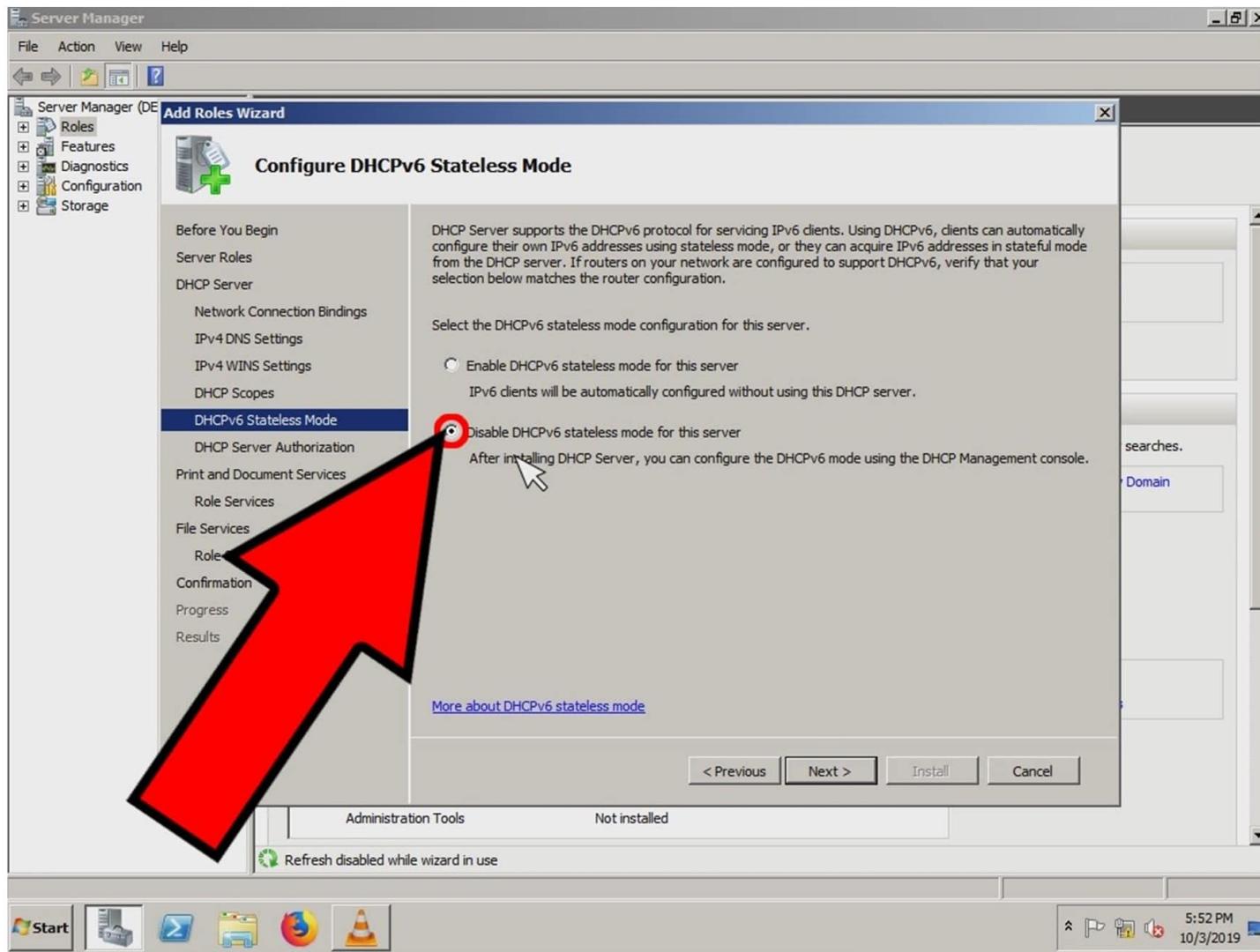
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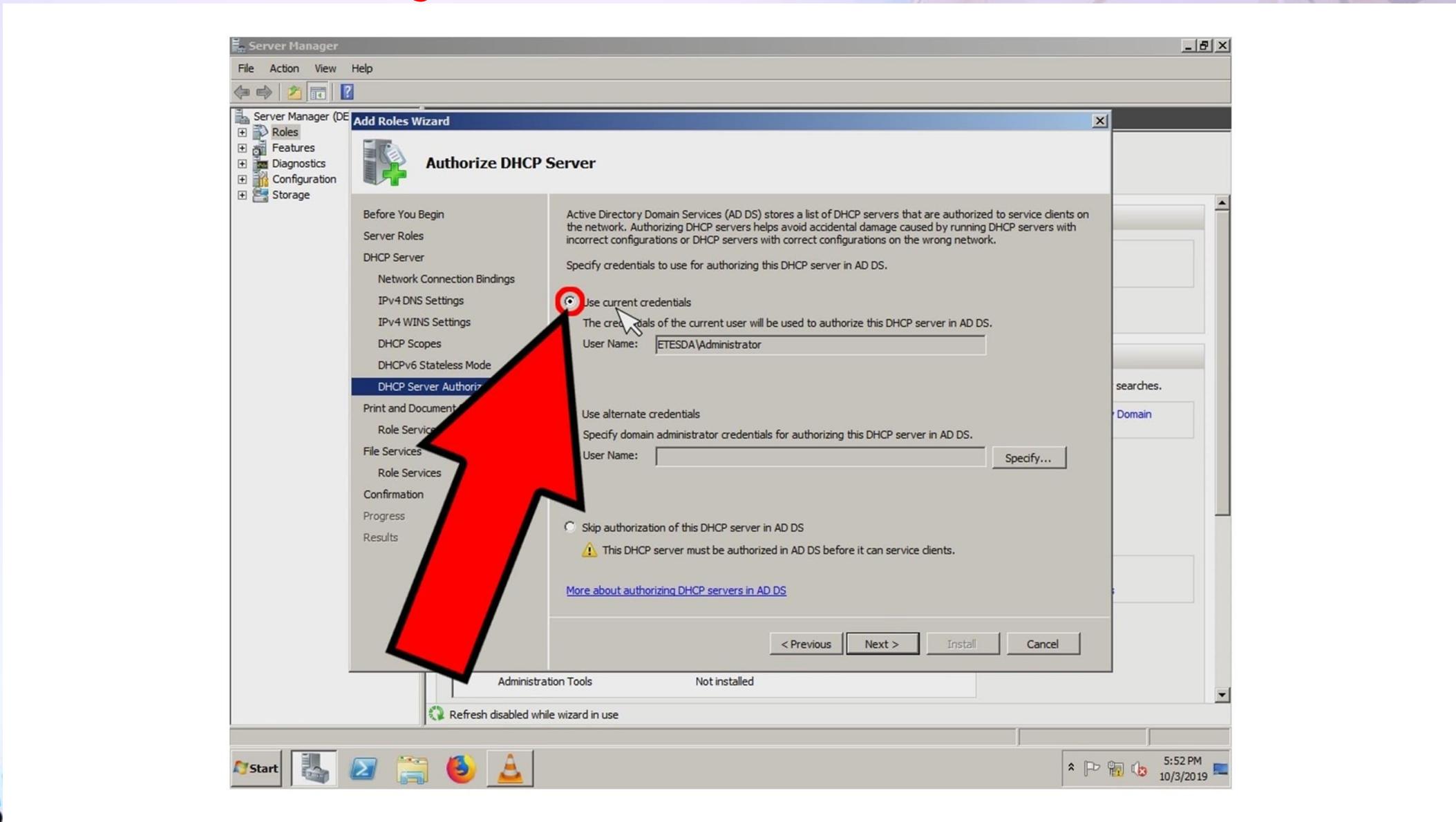
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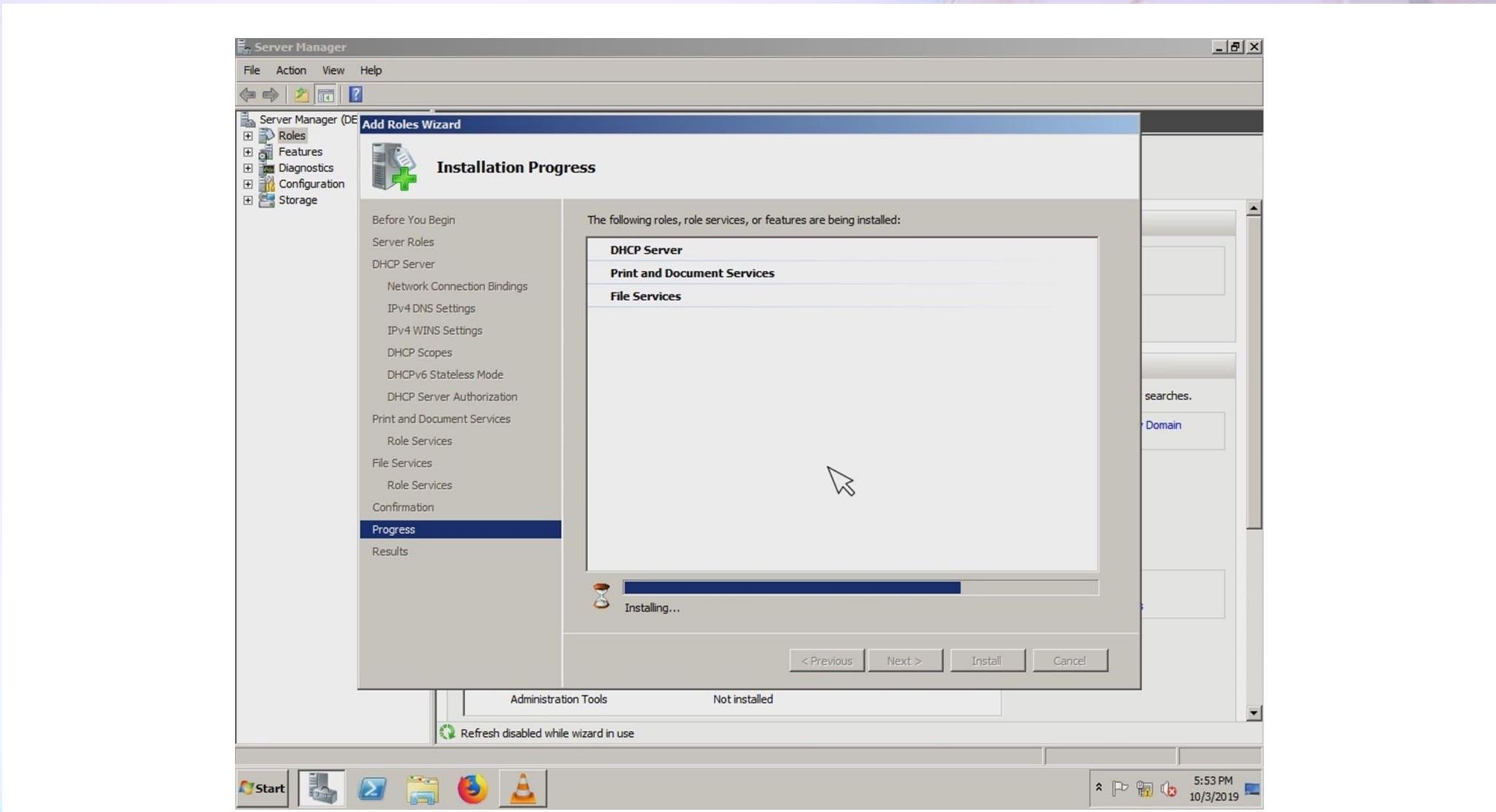
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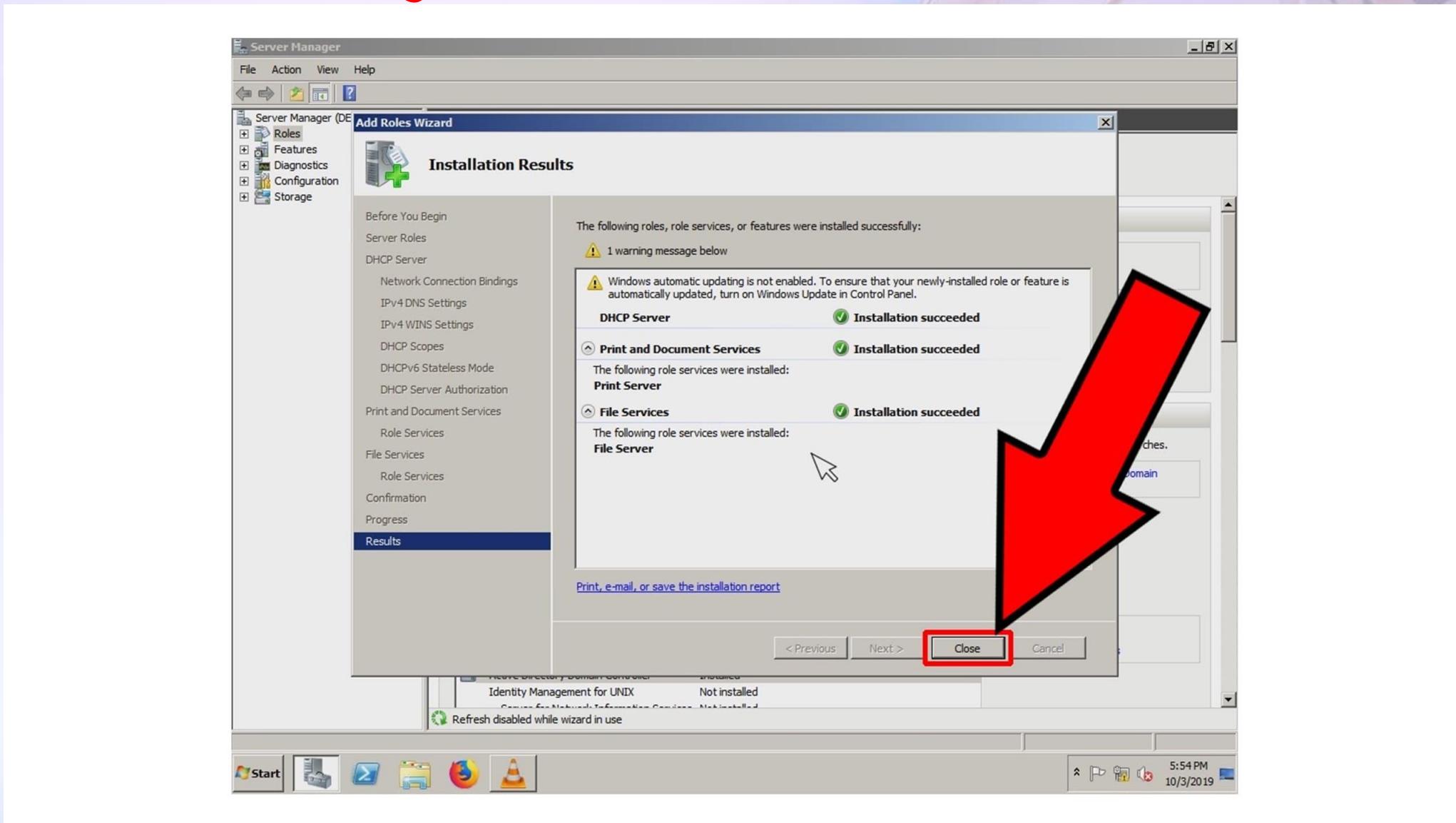
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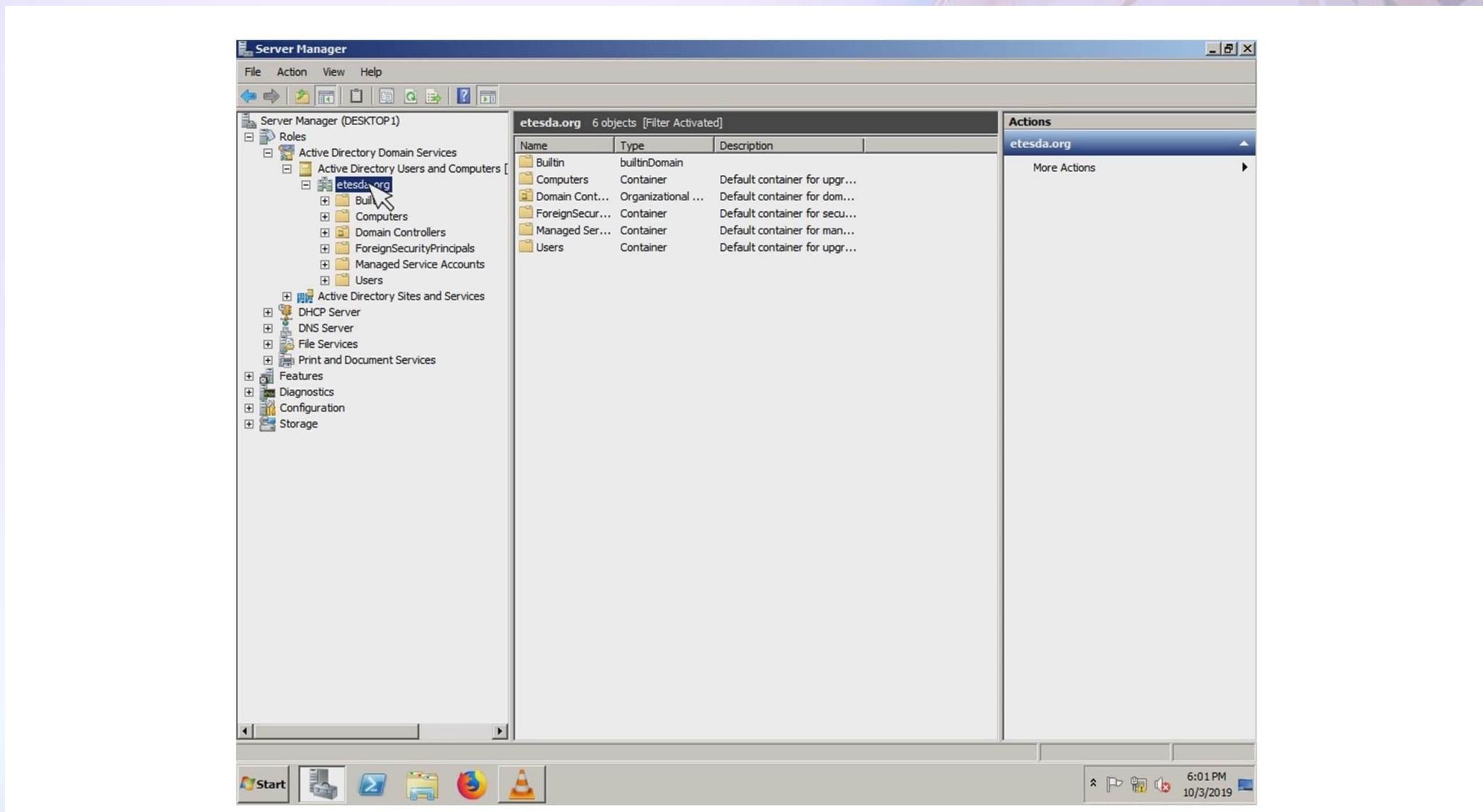
TOPIC 2: Creating a User Folder

Creating an Organizational Unit &
User

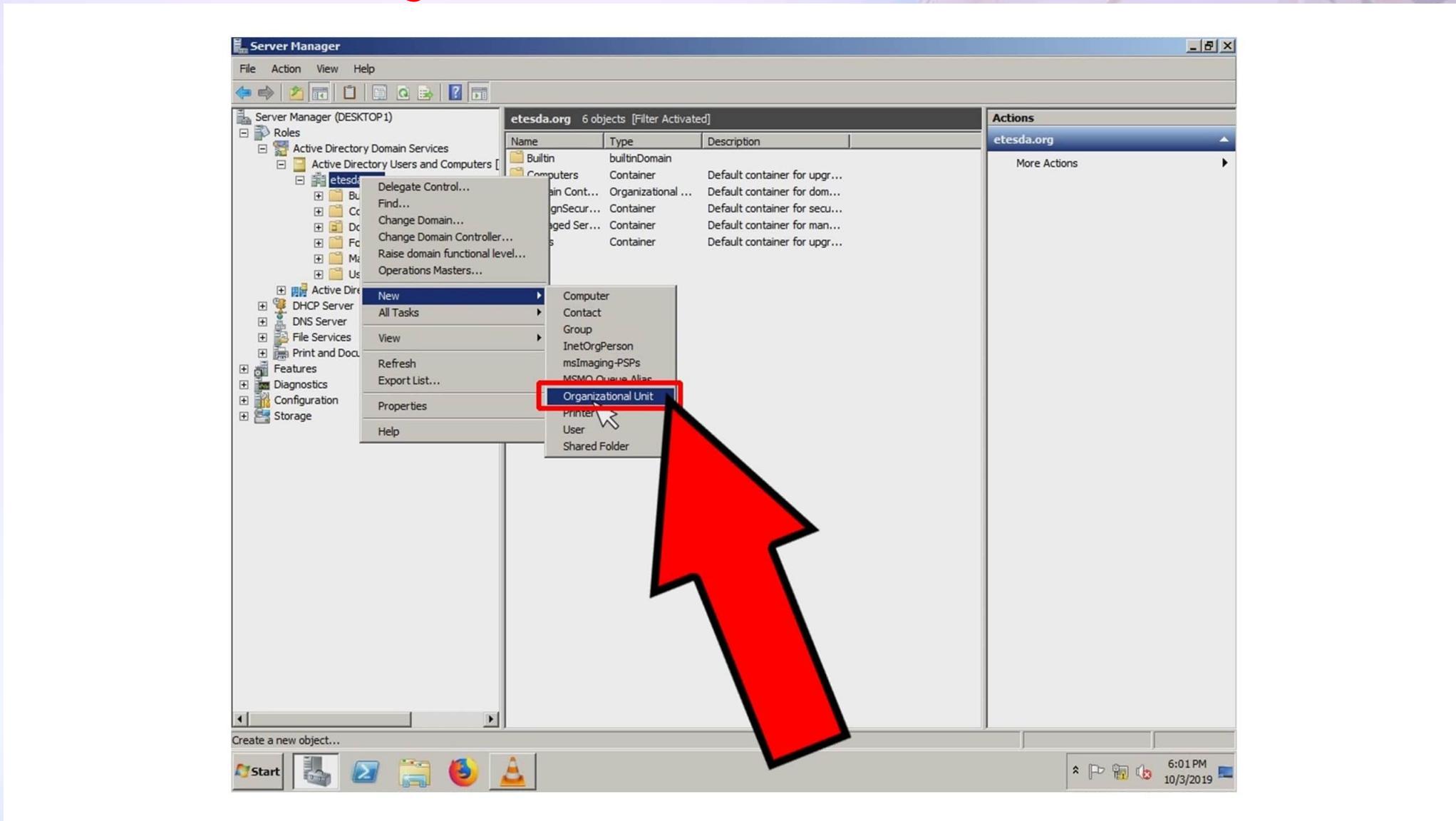
Follow the step-by-step procedures
on how to create an organizational
unit and a user.



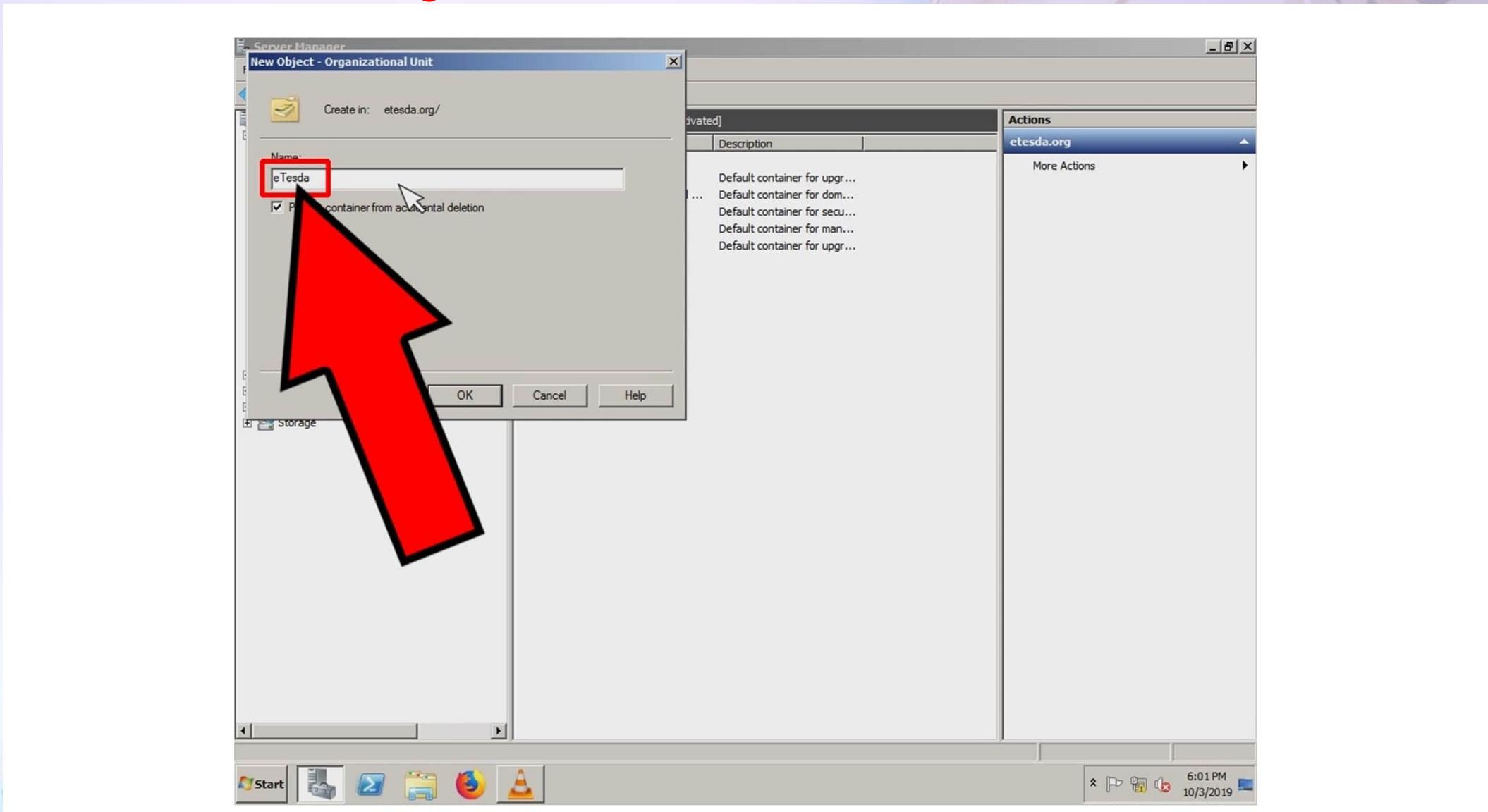
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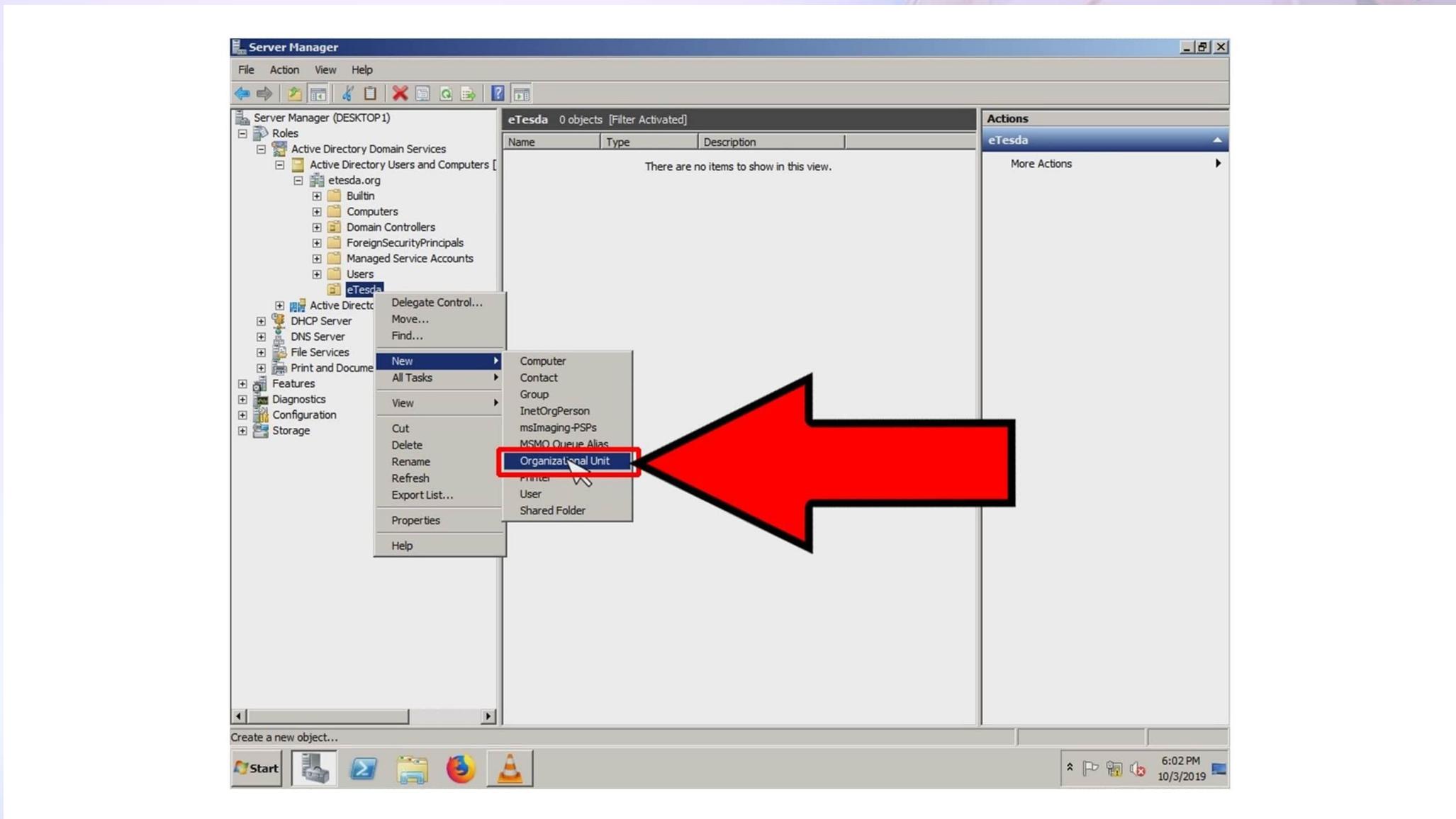
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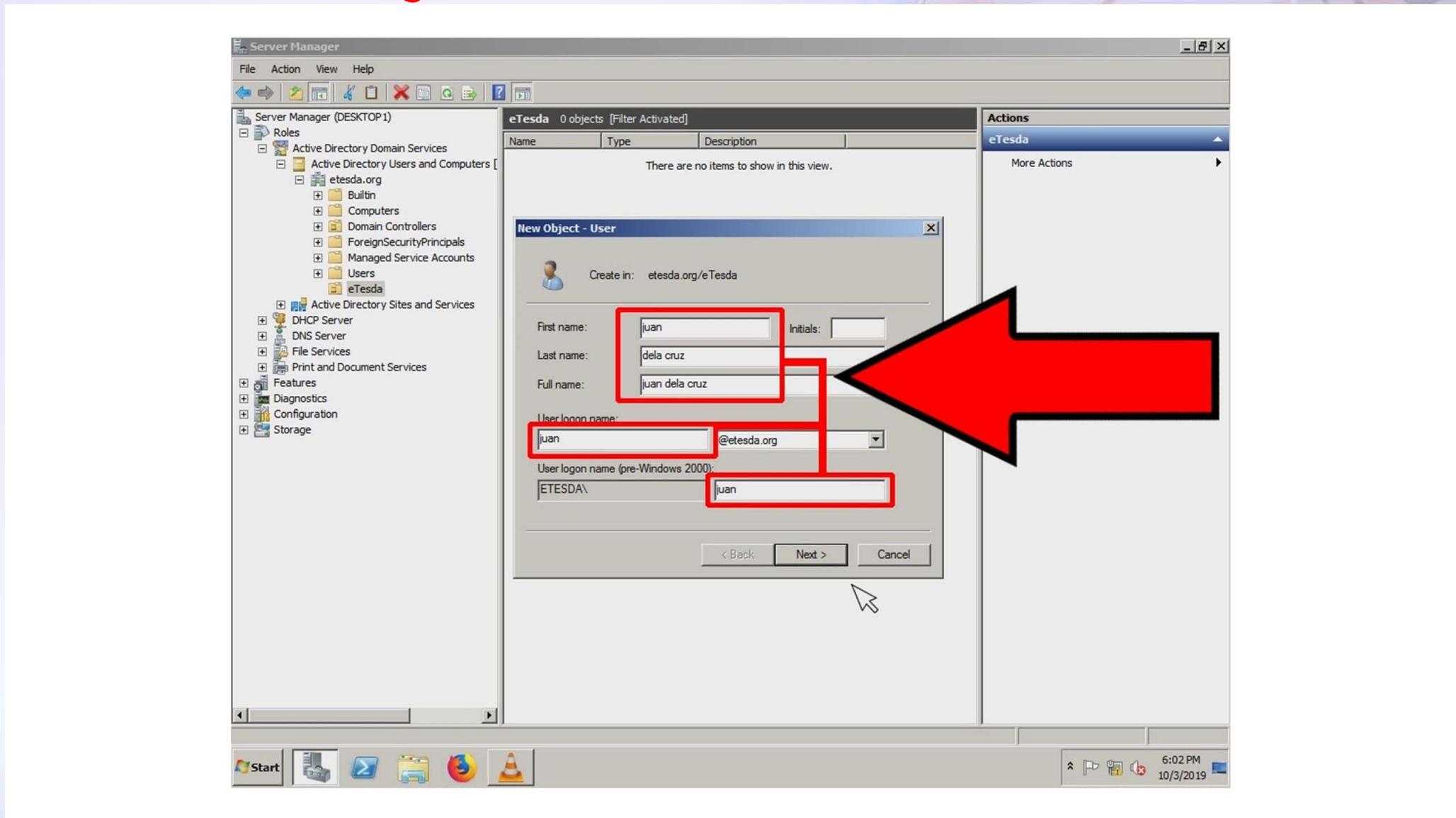
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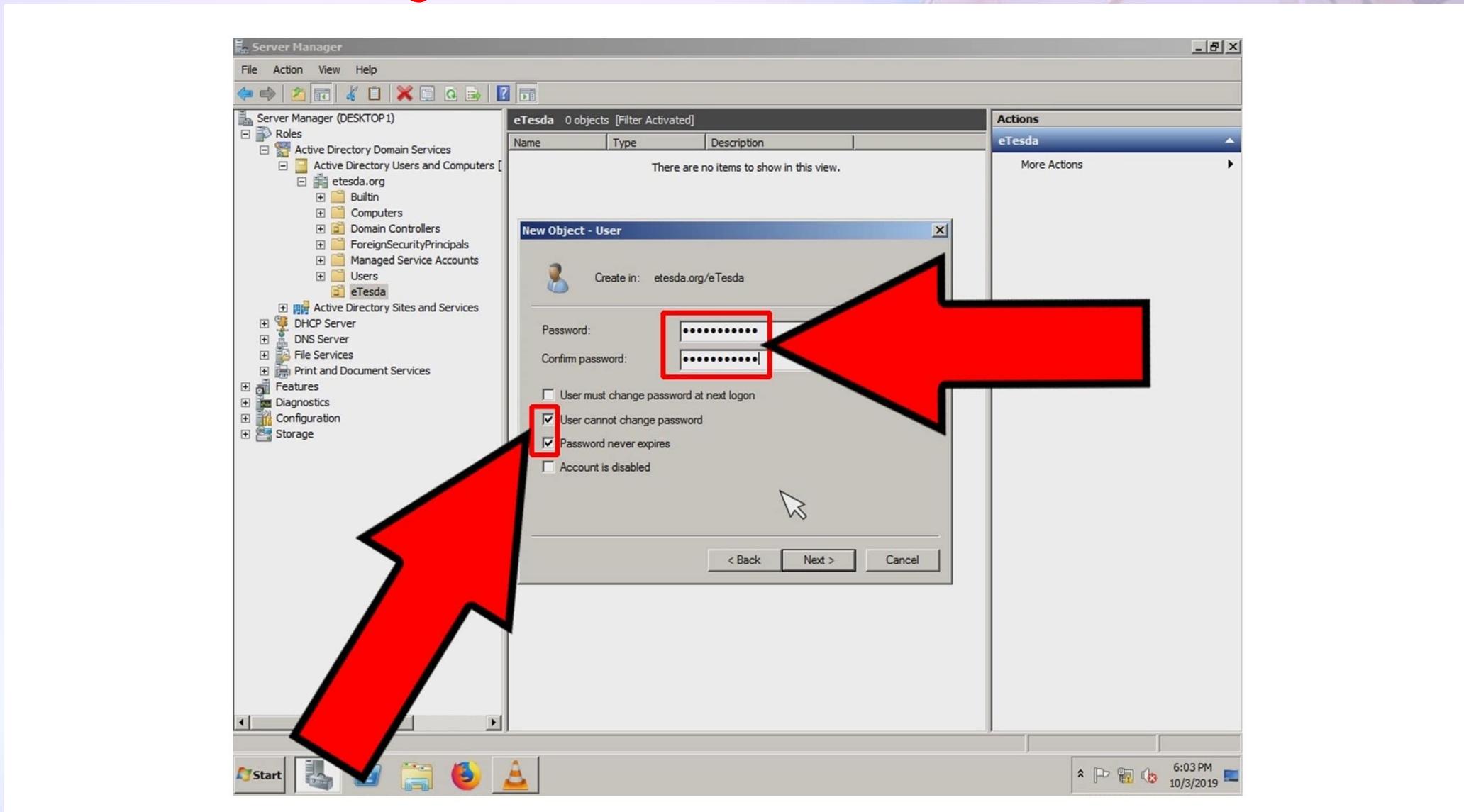
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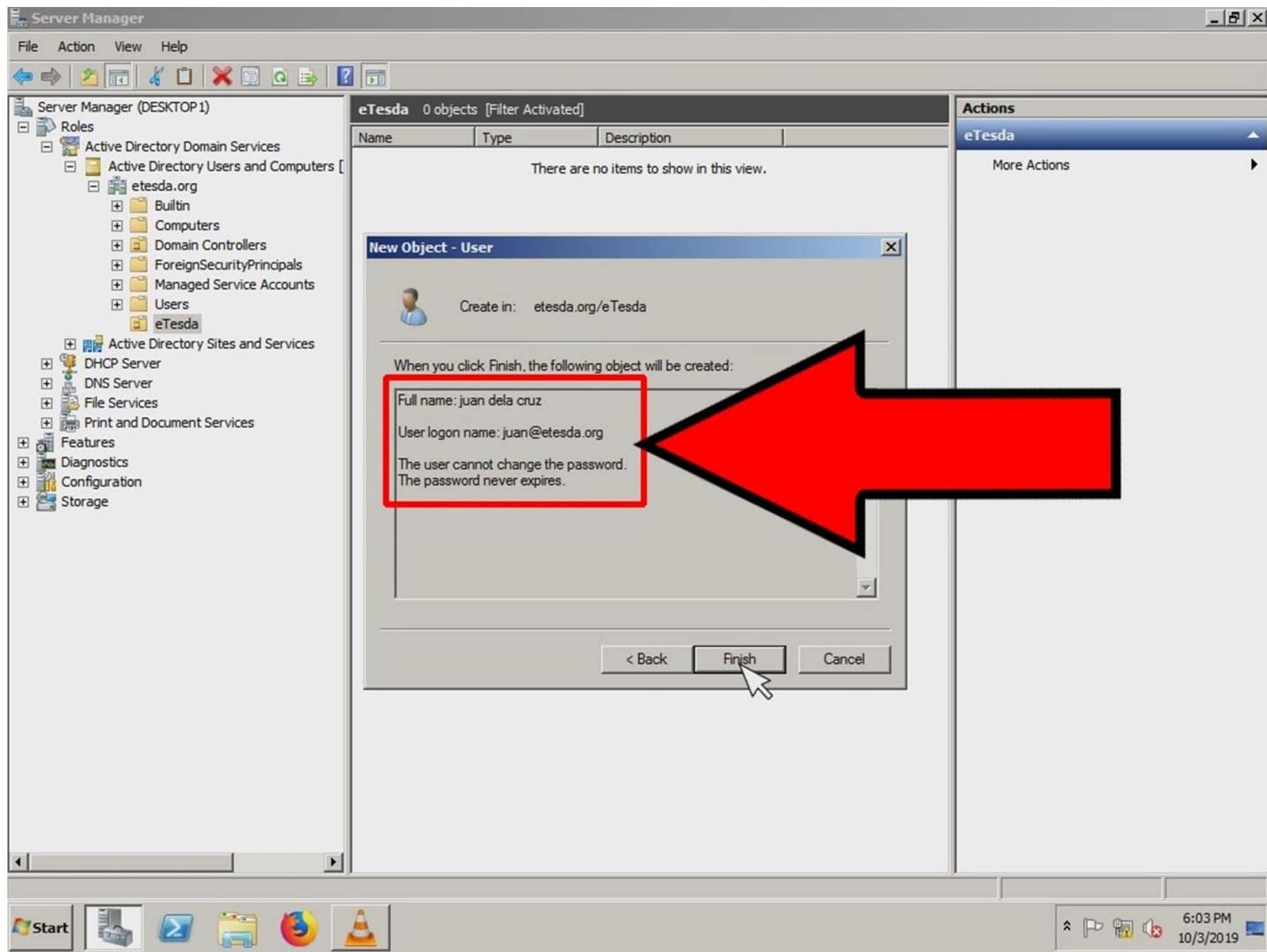
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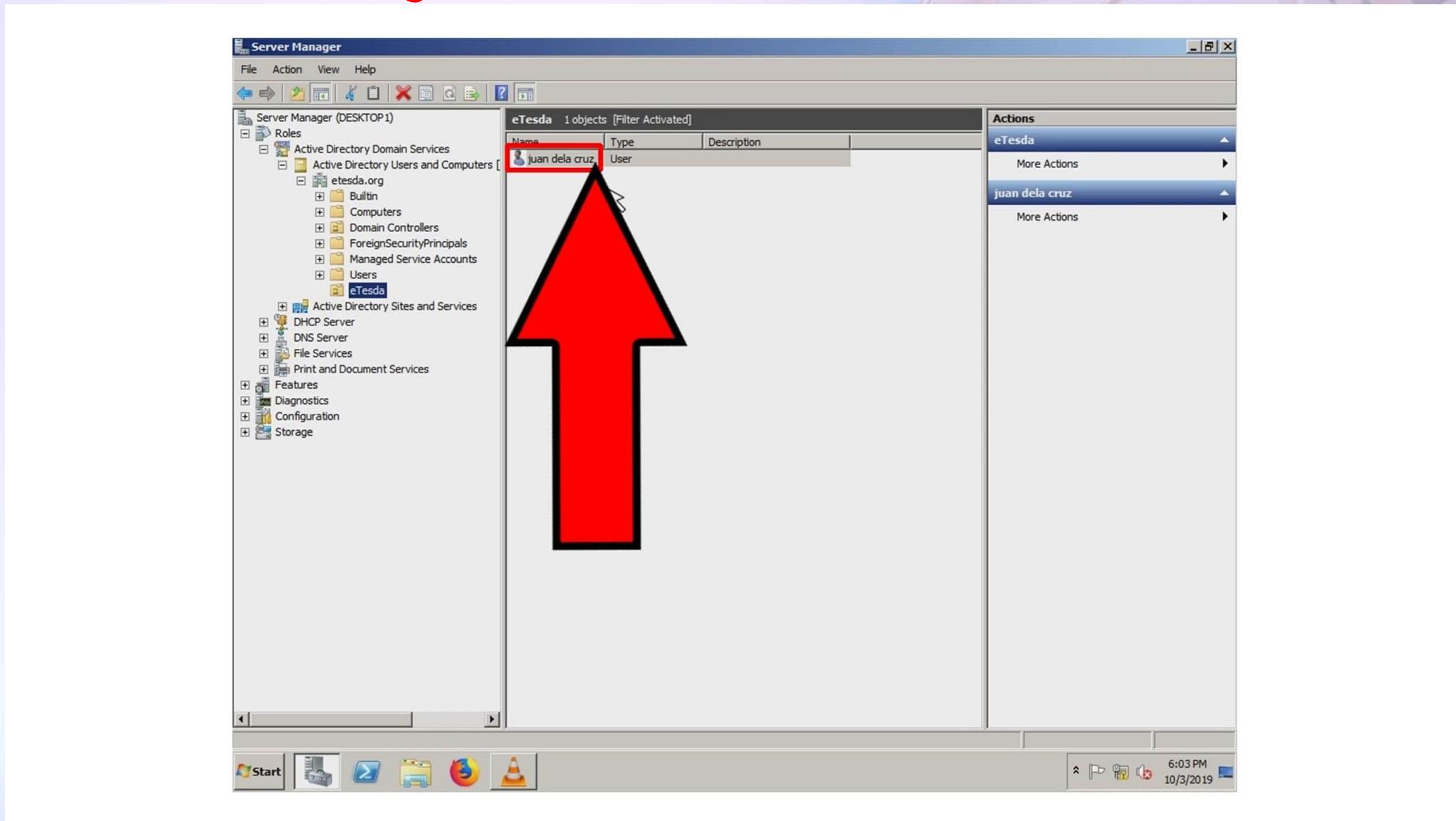
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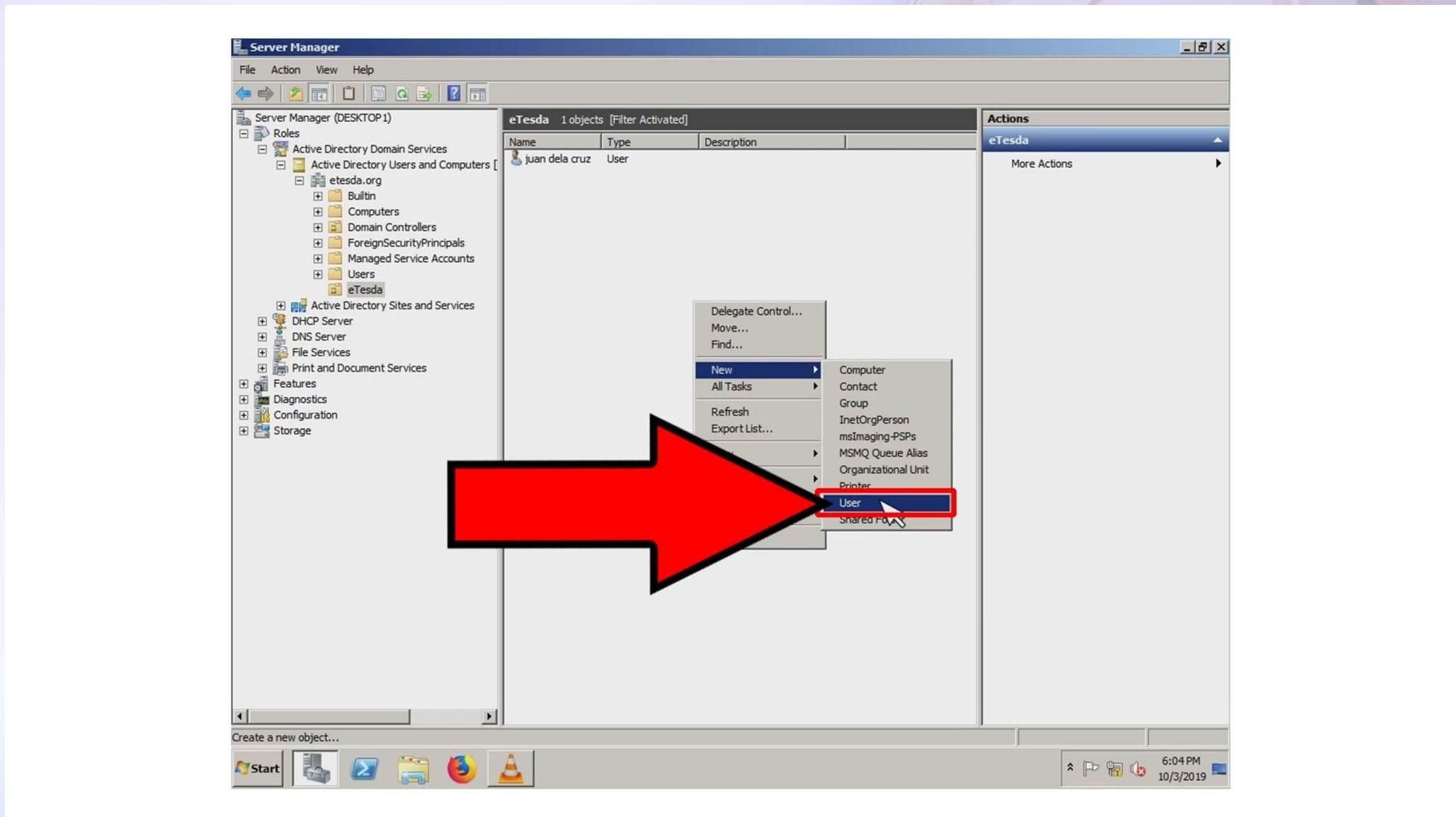
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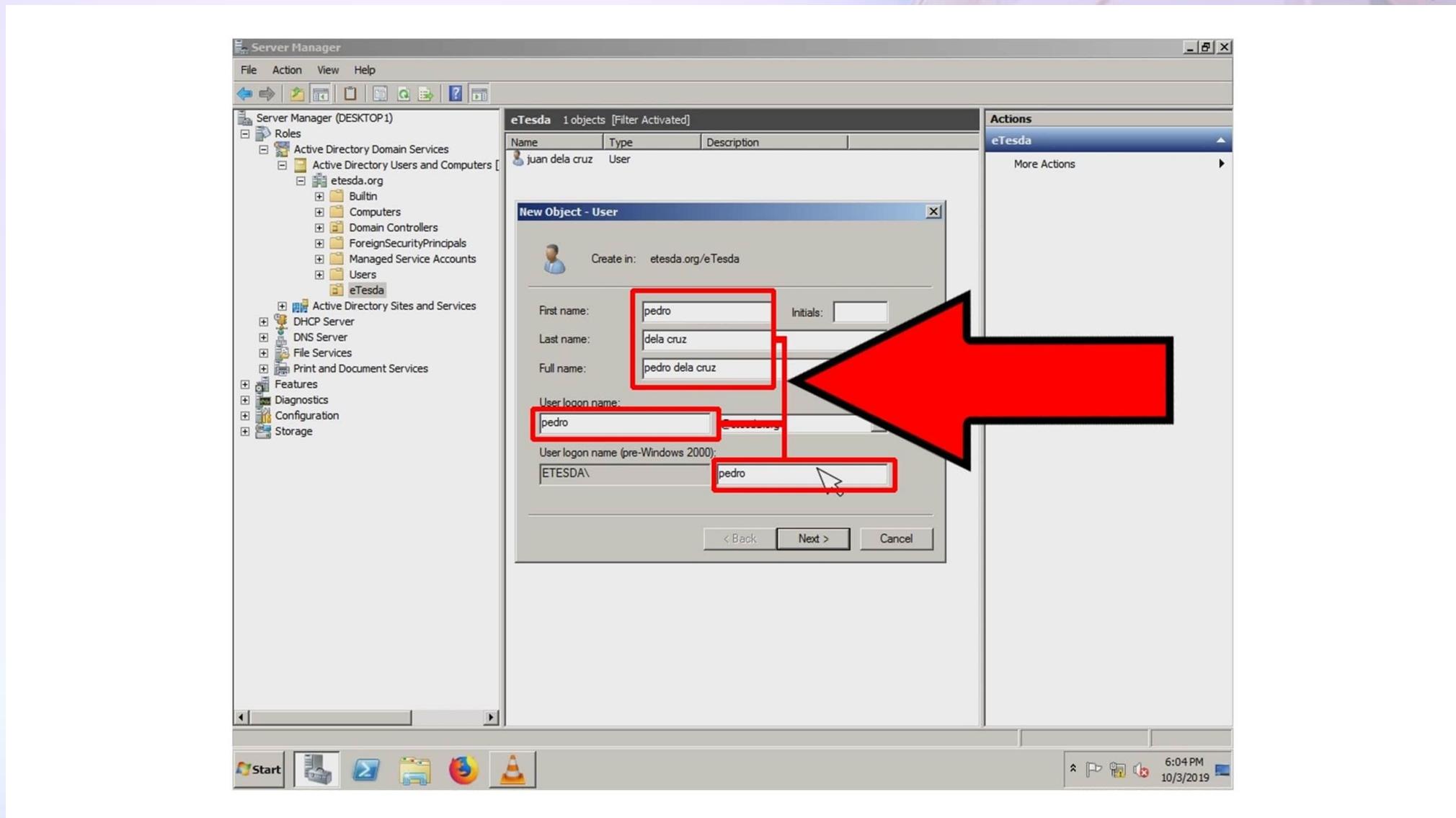
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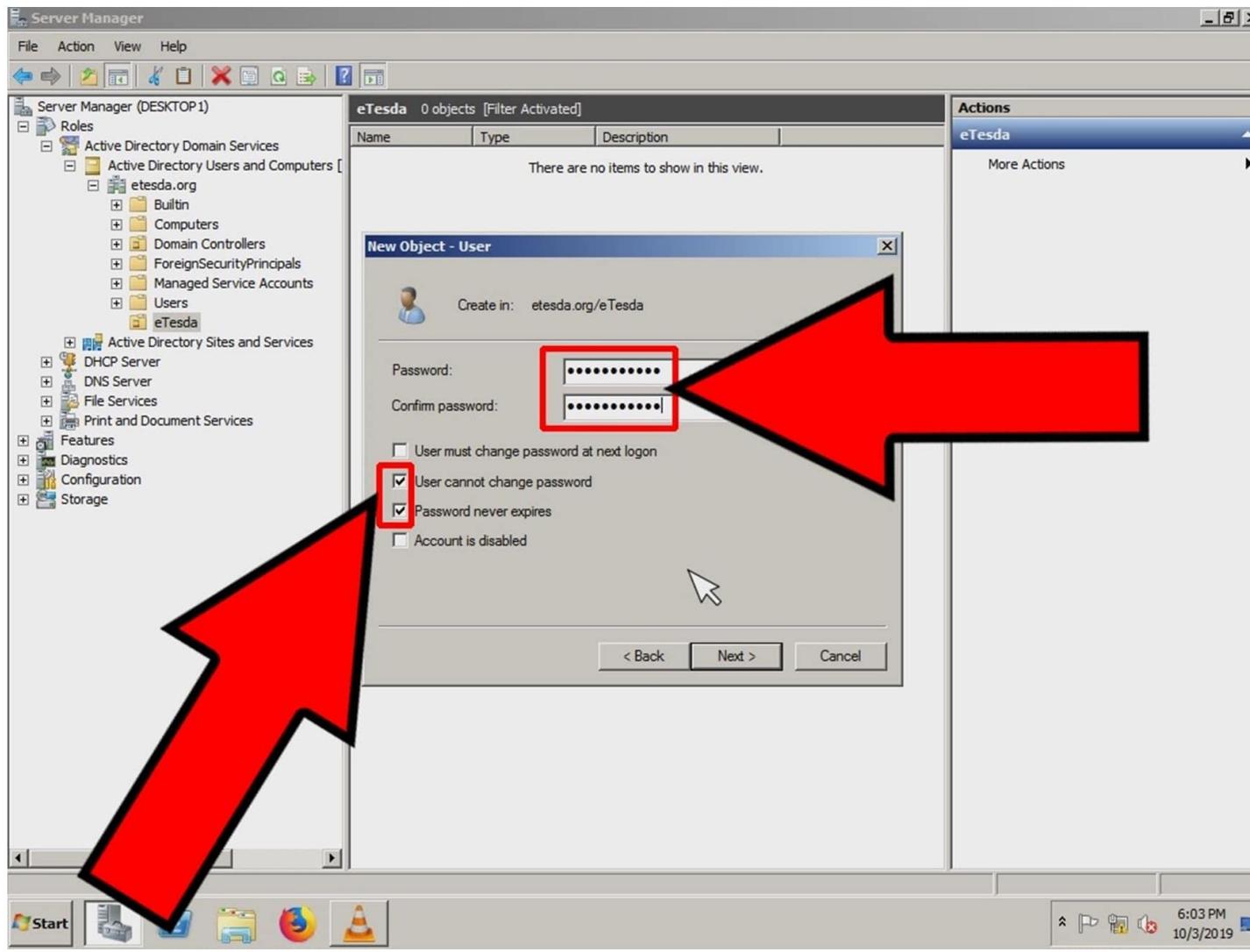
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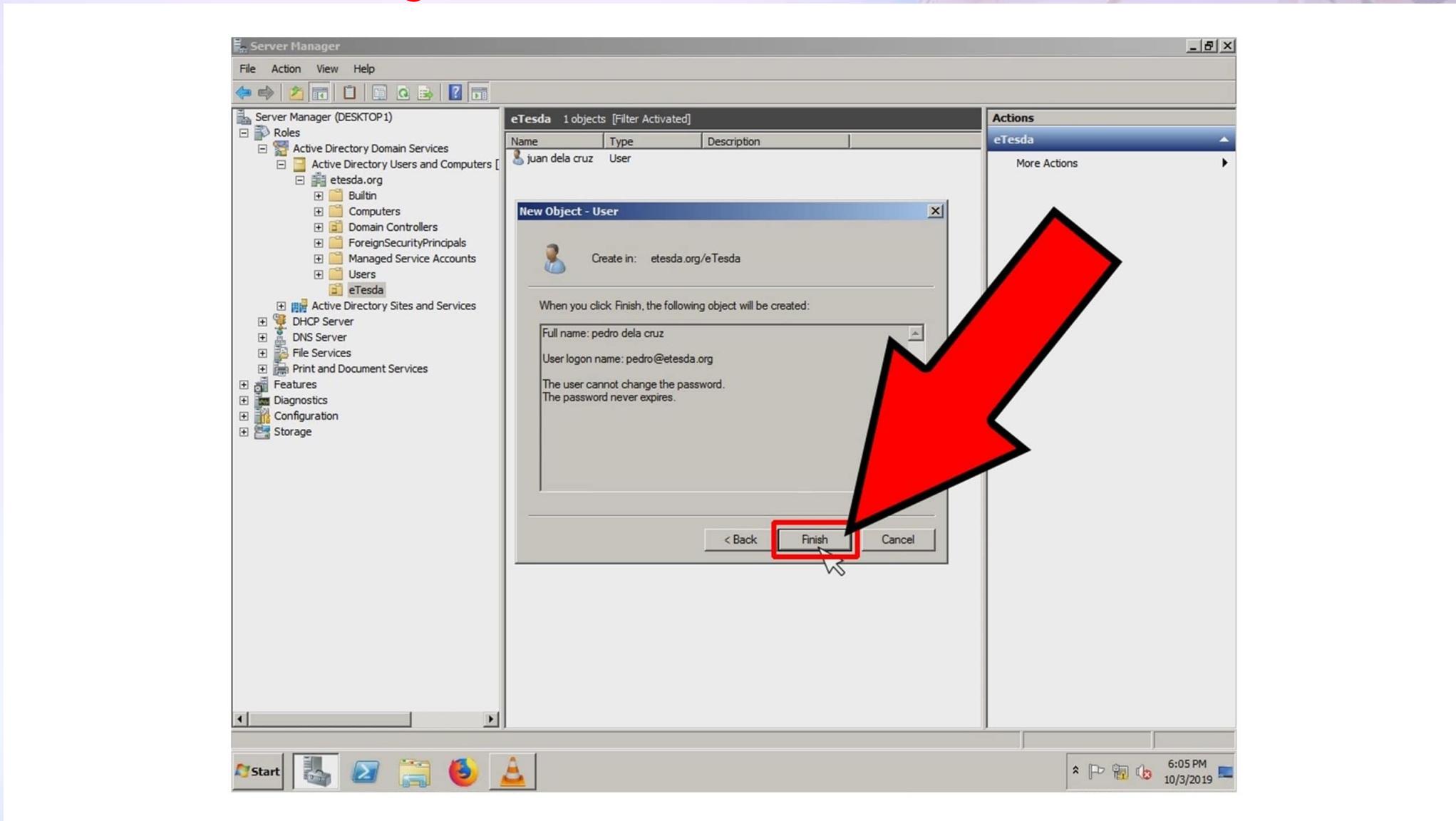
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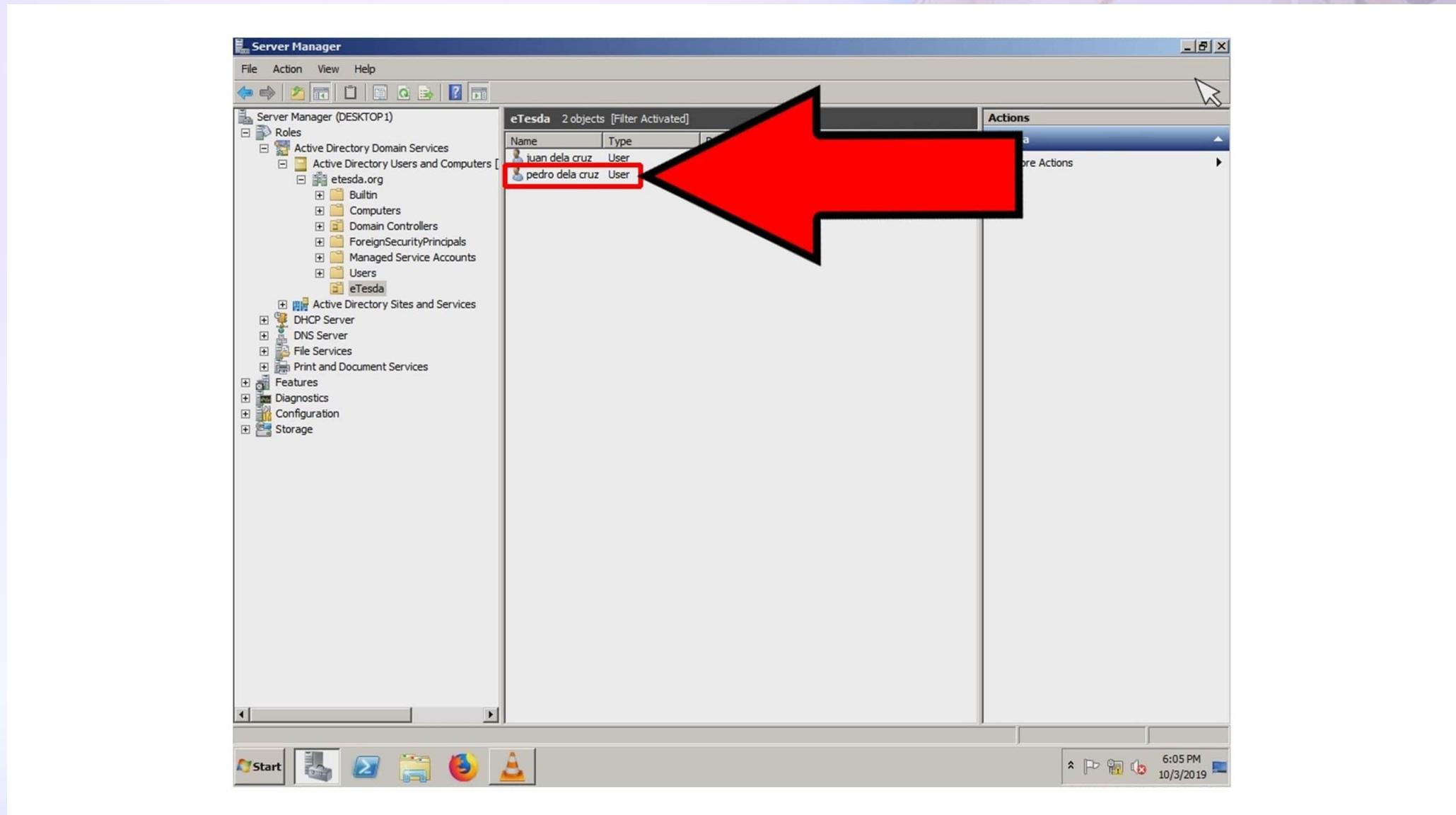
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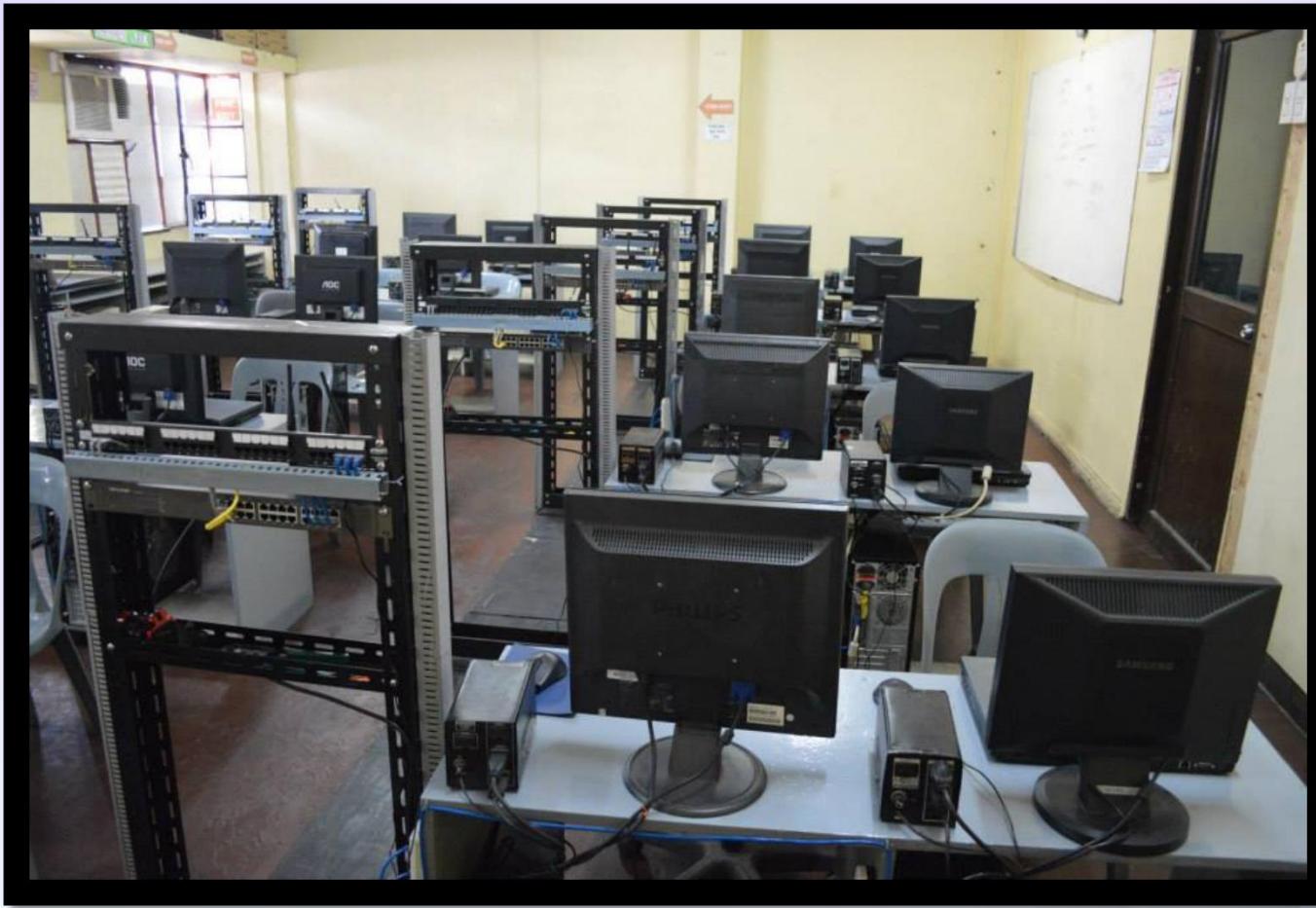


TOPIC 2: Creating a User Folder



TOPIC 2: Creating a User Folder





Computer Systems Servicing NC II

- *Configure User Access*



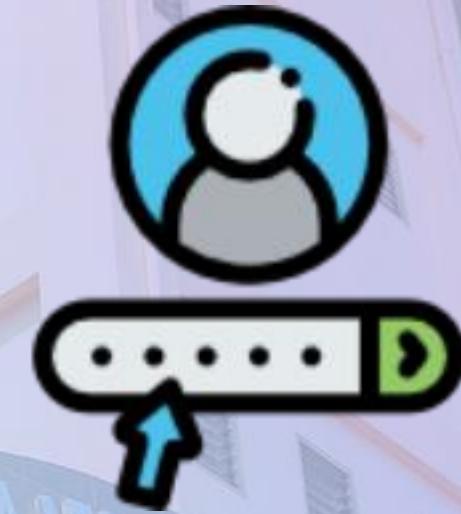
LESSON 3: Configure User Access

Introduction

In the workplace, computers are not used by an individual for personal use. Computers are usually accessed by more than one person. System administrators are able to log on locally if these accounts are in the domain.

A computer is able to identify between one person to another through a security device called the *user account object*.

Each user in the network has a unique user account which contains the contact details of the users as well as what his/her rights and restrictions in accessing resources/folders, etc.



TOPIC 1: Features of a User Account

Password Security - Each user account is protected by a password to provide authorization and access to the system.

Permissions - These are access privileges granted to a user account (e.g. group memberships, user-specific settings to access resources, etc.)

Identification - Having a user account means easily identifying the person to the computer system and network.

User Rights - Having user rights is a high-level privilege given to users or groups to define their action on a computer system.

Roaming - The administrator may define user accounts in a way that a user is able to log on to any system which is a member of a domain using a domain user account, a Remote Access Service (RAS), or gateway.



TOPIC 1: Features of a User Account

Environment Layout - Profiles are user-specific and able to store information about the layout, desktop, and user environment in general. They are specifically restricted through the use of mandatory profiles.

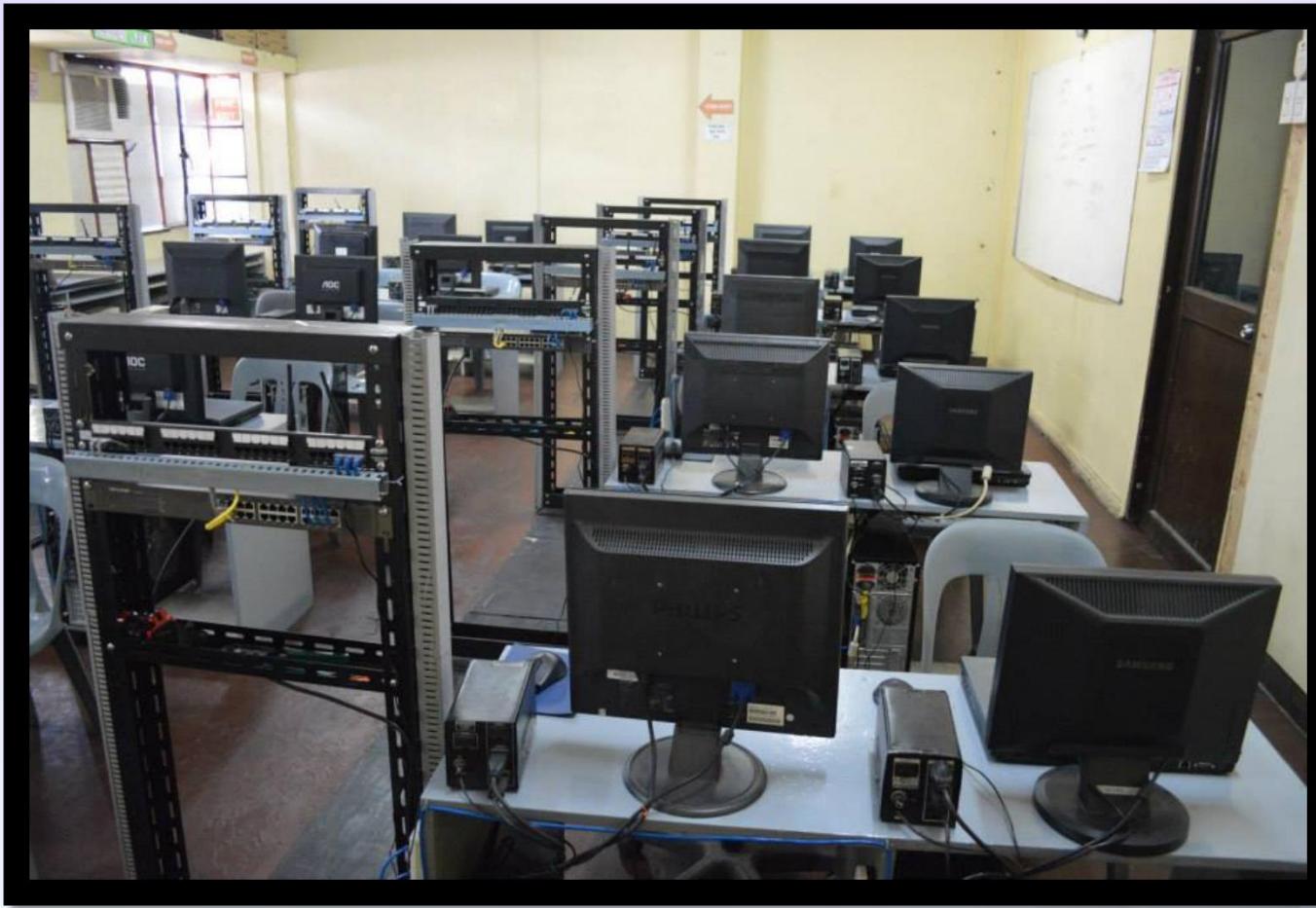
Auditing - The server can track access and use by domain user accounts.



TOPIC 2: Configuring User Access

1. To get to Active Directory Users and Computers, choose Start> All Programs > Administrative Tools > Active Directory Users and Computers.
2. In the console tree, click the folder that corresponds to the domain or organization unit to which you want to assign this new account.
3. In the details pane, right click the group and then choose Properties.
4. On the Members tab, Click Add.
5. Fill in the following information.
6. Click the Next button to continue setting up this new user account object.
7. Type the password for this account and confirm that password to the system by retyping it.
8. Configure the password setting using the options described.
9. Click the Next button when you're finished marking your selections.
10. Click the Finish button if everything is correct.





Computer Systems Servicing NC II

- *Checking Normal Functions*



LESSON 1: Checking Normal Functions

Introduction

In this lesson, you will be able to identify various boot processes. This is important because a startup failure might occur. To successfully boot the server operating system is the first step in handling the server.

Some issues may be easily diagnosed and corrected however, take note that not all server errors occur only during booting. It can also occur when it is running or even when the server is shutting down.



TOPIC 1: Boot Process

The boot process has five major stages:

- 1.Pre-boot
- 2.Boot
- 3.Load
- 4.Initialization
- 5.Log-on

In each stage, there are steps that should be followed in loading and using files. In each of these stages, observe how the process works, how the particular files are utilized, and what is seen on screen.



TOPIC 1: Boot Process

Pre-boot

Pre-boot is basically the BIOS startup process.

By turning on or resetting the computer, you should perform the Power-On Self-Test or POST routine discussed in the previous modules.

The BIOS shall execute the Initial Program Load where the boot devices are read and prioritized.

The partition information is seen as well as the boot sector and the Windows Boot Manager. You will also see the memory check, hardware, and boot device search.

The following are common causes of error during this stage:

Corrupt MBR

This is caused by many viruses in the Master Boot Record which corrupted it.

Improperly configured hardware

This happens when the hard drive is not recognized. This error can happen even if the device is fine and the configuration is unchanged.

No partition is marked as active

This may happen if the Fdisk utility is recently used and no partition is made from all the free space available.

Corrupt or missing Ntldr file

This may happen when the Ntldr file is corrupted or deleted by a virus.



TOPIC 1: Boot Process

Boot

Windows Boot Manager reads the boot configuration data (BCD). But in the case of having more than one boot partition, it prompts the user to choose a partition and its operating system.

If a choice is not made before the time clocks out, the default partition and operating system will be loaded. If you are booting a Windows Server operating system, the Windows Boot Loader (Winload.exe) is started.

The following are common causes of error during this stage:

Missing or corrupt files

If Ntldr, Boot.ini, Bootsect.dos, Ntdetect.com, or Ntoskrnl.exe is corrupt or missing either by a virus or by some malicious intent, the boot sequence will not succeed. An error message will indicate which file is missing or corrupt.

Improperly configured Boot.ini file

This may happen when you manually edit Boot.ini or if you have made any changes to the disk configuration.

Unrecognizable improperly configured hardware

If the error that appears is due to Ntdetect.com, the issue comes from the hardware.



TOPIC 1: Boot Process

Load, Initialization, and Logon

Load

By this time, the Windows Server 2008 “splash” screen comes up.

While this happens, the Windows Boot Loader loads the operating system kernel, the hardware abstraction layer that provides the interface between the operating system and a particular set of hardware, the Registry file, and the drivers for basic hardware devices, such as the monitor, mouse, and keyboard.

Initialization

The OS kernel is initialized and takes over from the Windows Boot Loader, bringing up the graphical display and filling the Registry with HKEY_LOCAL_MACHINE\HARDWARE key, and HKEY_LOCAL_MACHINE\SYSTEM\SELECT subkey (called the “Clone Control Set”) and loads the remainder of the device drivers.



TOPIC 2: Configuring User Access

Logon

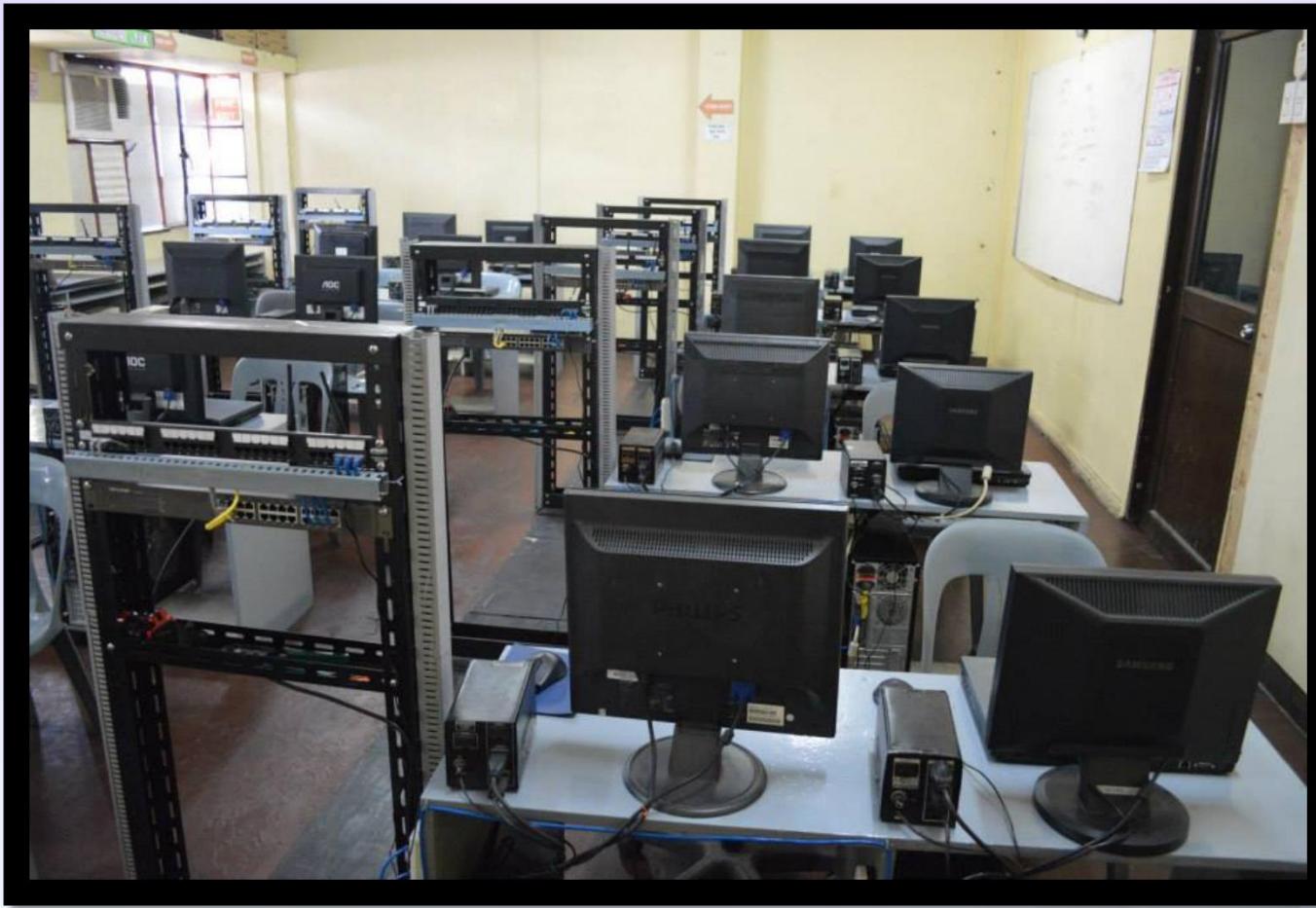
The Windows Server OS graphic user interface (GUI) comes up and the logon screen will show.

After a successful logon, the necessary services are prompted, the Last Known Good control set is written on the basis of the Clone Control Set, and the start-up programs are started.

Possible errors during logon stage.

1. If logon errors occurs, they are usually due to an incorrect username or password or to the unavailability of a DNS server or a domain controller to authenticate the request (if the computer is a part of a domain).
2. Errors can also occur if a service cannot be loaded. If a service fails to load, you will see a message in the System Log of Event Viewer.





Computer Systems Servicing NC II

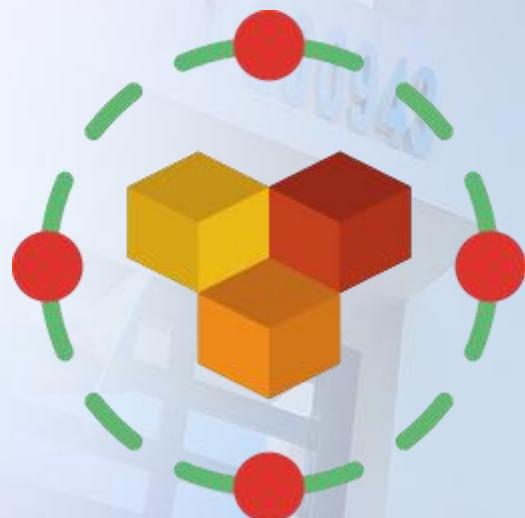
- *Installing Modules and Add-ons*



LESSON 2: Installing Modules and Add-ons

Introduction

One must be able to load modules and add-ons so that you can access their functions. Modules will contain other modules. But however, modules are independent and can be used without the other depending on the needs of the server.



TOPIC 1: Using Modules

The module is the package that contains Windows PowerShell commands. Examples of these are cmdlets, providers, functions, workflows, variables, and aliases.

You are able to write commands with these modules to organize commands and share with others.

Those who will receive modules can add commands in the modules to their Windows PowerShell sessions to use them like built-in commands.



LESSON 2: Installing Modules and Add-ons

List of Modules/Add-ons

The following are modules which support different functions and features in the Windows Server OS.

1. Active Directory module
2. Active Directory Rights Management Services module
3. Active Directory Rights Management Services Administration module
4. Application ID Policy Management module
5. Best Practice Analyzer module
6. Background Intelligent Transfer Service (BITS)

7. Failover Clusters module
8. Group Policy module
9. Network Load Balancing Clusters module
10. Remote Desktop Services module
11. Server Manager module
12. Server Migration module
13. Internet Information Services (IIS) module



LESSON 2: Installing Modules and Add-ons

The following are the steps you should follow in installing modules/add-ons.



Procedure:

Step 1: Find all “Module” commands

In the PowerShell window, type the following command and press ENTER:

Get-Command –Noun Module

Step 2: List all modules that are available

In the PowerShell window, type the following command and press ENTER:

Get-Module –ListAvailable

Step 3: Load the ServerManager module into the current session

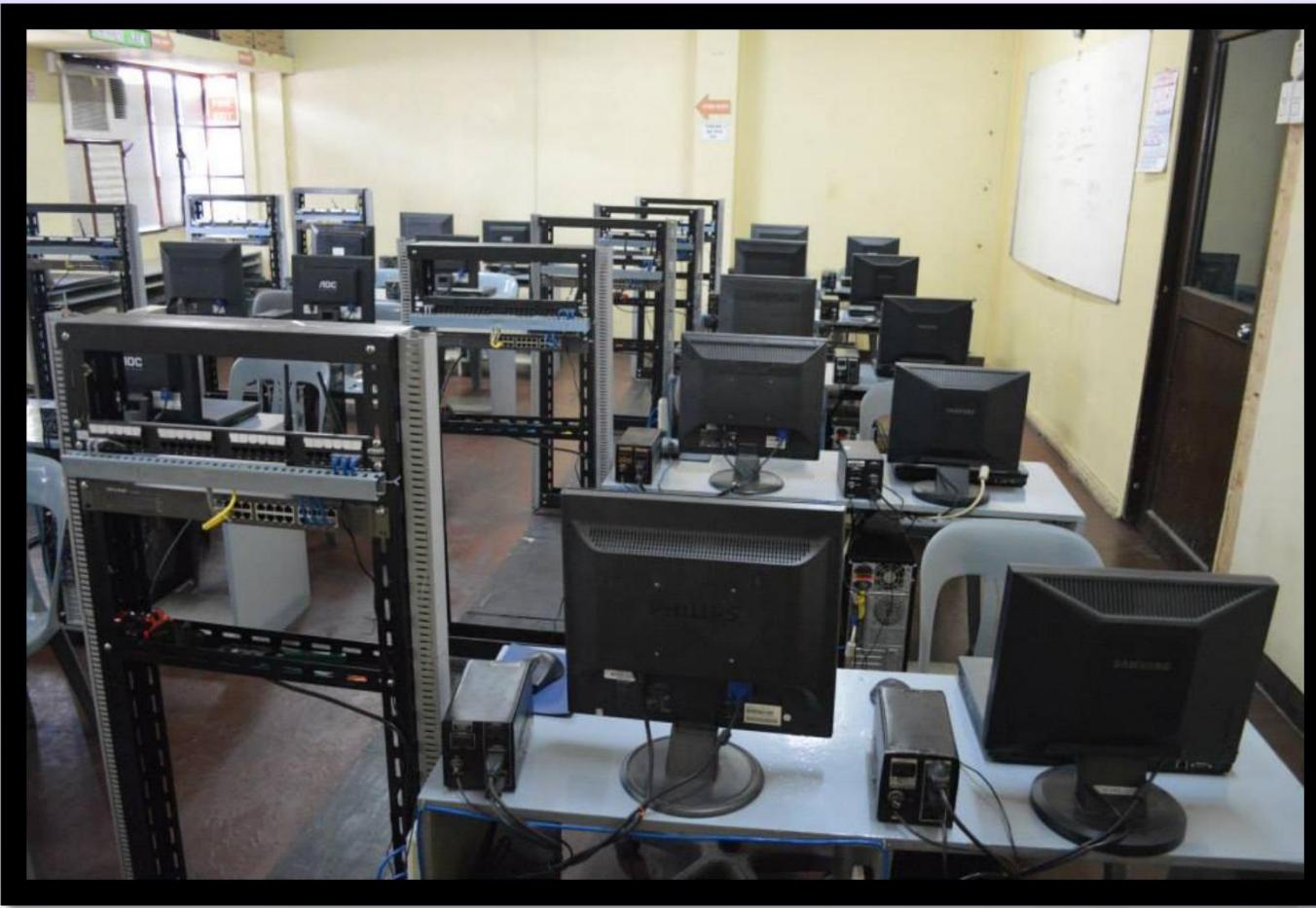
In the PowerShell window, type the following command and press ENTER:

Get-Help Import-Module

In the PowerShell window, type the following command and press ENTER:

Import-Module ServerManager





Computer Systems Servicing NC II

- *Performing Network Services*



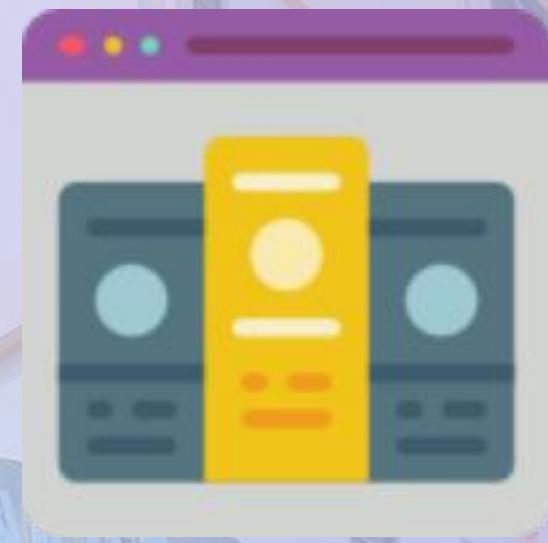
LESSON 3: Performing Network Services

Introduction

When you are managing a **NOS** or **Network Operating System**, you should know there are different network services that are available.

These services need to be configured so that communication will flow easily within the network. You are expected to learn most of these network services and configure them.

There are seven basic network services that you need to be familiar with: remote access, domain controller, web services, database services, proxy server, file services, and printer services. We will go through each of these through this lesson.



TOPIC 1: Remote Access

Remote access technology enables one to login to a system as an authorized user without being physically present at the keyboard. This is common in corporate computer networks.

One of the most common form of remote access is the **remote desktop**. This basically allows a server computer can control with the actual desktop user interface of another computer.



To setup a remote desktop, both the host and target (controlling computer and remote computer to be accessed) need to be installed certain software.



TOPIC 2: Domain Controller

This service is one of the most used on a Windows network. It enables one to realistically assess operational requirements and server performance for each computer.

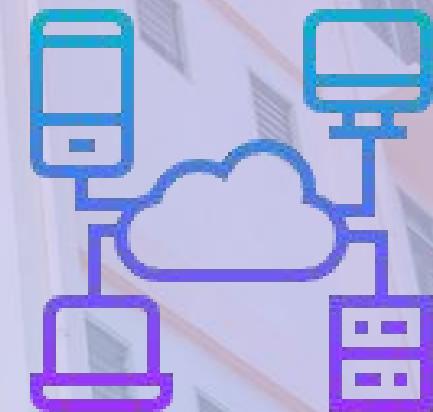
It responds to security authentication requests and the like that need verification from the host for many security and validation doors across the network.



TOPIC 3: Web Services

Having a web server enables hosting among websites and web-based applications. Both static and dynamic content can be hosted on a Web server.

Several web applications that have many roles and functions can also be hosted using ASP.NET and .NET Framework 3.0, among others.



TOPIC 4: Database Services

A database server is a computer program that offers database services to other computer programs or computers, as seen in the client-server model.

The term may also refer to a computer dedicated to running such a program. Database management systems frequently provide database server functionality.



TOPIC 5: Proxy Server

In computer networks, a proxy server is a server (a computer system or an application) that acts as a middle-ground for requests from clients seeking resources from other servers.

A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource available from a different server and the proxy server evaluates the request as a way to simplify and control its complexity.

Proxies were created to add structure and encapsulation to distributed systems.



TOPIC 6: File Services

The file services role provides essential services for managing files and the way they are made available and replicated on the network.

A number of server roles require some type of file service.

Includes these role services and subservices: File Server, Distributed File System, DFS Namespace, DFS Replication, File Server Resource Manager, Services for Network File System (NFS), Windows Search Service, Windows Server 2003 File Services, File Replication Service (FRS), and Indexing Service.



TOPIC 7: Print Services

For print servers, this resource type provides for high availability of network-attached print devices.

Printers connected directly to print servers cannot be included because there is no way to fail over control to a different server.

If a print server fails, all jobs that are currently spooling are restarted. Jobs that are in the process of spooling are discarded and must be re-spooled or reprinted to the Print Spooler resource.



TOPIC 8: Performing basic network service configuration

Steps/Procedure:

Task 1: Install DHCP and File Services

- In Server Manager, select Role; then select Add Role in the right pane
- Follow the series of steps provided in the wizard
 - a. Tick “DHCP Server” and “Files Services”
 - b. Read the installation guide and follow the steps carefully
 - c. Note: Always validate the IP Address; set the IP range after the installation



TOPIC 8: Performing basic network service configuration

Task 2: Make a Group Policy Management

- Go to “Features”, Group Policy Management, Forest, Domain
- Right click on Domains and choose Create a GPO in this domain
- Write a GPO name and click OK
- Unchecked Link Enabled
- On Security Filtering, click Add and Insert Everyone
- Close the Server Manager to refresh



TOPIC 8: Performing basic network service configuration

Task 3: Create DHCP (IP Scope)

- Select Roles, DHCP Server, (domain), right-click on IPv4 and select New Scope
- Write a new scope name
- Set your IP Address range
- Skip on IP add Exclusions
- Set Lease Duration
- Choose YES for Configure DHCP Options
- Skip on the next procedures
- Activate the scope now



TOPIC 8: Performing basic network service configuration

Task 4: Create Folder Redirection

- Select “Features”, Group Policy Management, Forest, Domains, (Domain name), right-click on Policy, choose Edit
- Choose User Configuration
- Choose Policies
- Choose Window Settings
- Choose Folder Redirection
- Choose your directory to be directed, right-click and select Properties
- Target Settings: Choose Basic
- Under Root Path, type the share name of your folder
- Click OK



TOPIC 8: Performing basic network service configuration



TOPIC 8: Performing basic network service configuration



TOPIC 8: Performing basic network service configuration



TOPIC 8: Performing basic network service configuration



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