### 1 Adres IP



## 2 Domena Active Directory

				- 🗆 ×
nager • Dashboard			• ③   🗗	Manage Tools View Help
Aager	gure this local server d roles and features d other servers to manage ate a server group nnect this server to cloud services 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Image: Second		Manage Tools View Help Hide
RR	Ager	Ager	Ager	Agger • Dashboard       Image: Control SERVER MANAGER         VELCOME TO SERVER MANAGER       Image: Control Server         Image: Control Server       Image: Control Se

🔁 S	Server Manager		
Æ	📥 Add Roles and Features Wizar	d	- 🗆 X
	Select server role	25	DESTINATION SERVER WIN-R2L1AAHASOO
i iii	Before You Begin Installation Type	Select one or more roles to install on the selected server. Roles	Add Roles and Features Wizard
	Installation lype       Server Selection         Server Selection       Active Directory Certificate Services         Peatures       Active Directory Federation Services         Confirmation       Active Directory Certificate Services         Results       Device Health Attestation         DHCP Server       Fax Server         Fax Server       File and Storage Services (1 of 12         Host Guardian Service       Hyper-V         MultiPoint Services       Network Policy and Access Service         Print and Document Services       Velower Access         Windows Server Estantias Experime       Windows Server Services         Windows Server Update Services       Windows Server Update Services	Active Directory Certificate Services Active Directory Domain Services Active Directory Indexion Services Active Directory Rights Management Services Active Directory Rights Management Services Device Health Attestation DHCP Server Fax Server Fax Server Fax Server File and Storage Services (1 of 12 installed) Host Guardian Service Hyper-V MultiPoint Services Network Policy and Access Services Remote Access Remote Desktop Services Veloume Activation Services	Add features that are required for Active Directory Domain Services? You cannot install Active Directory Domain Services unless the following role services or features are also installed. [Tools] Group Policy Management 4 Remote Server Administration Tools 4 Role Administration Tools 4 Role Administration Tools 4 AD DS and AD LDS Tools Active Directory module for Windows PowerShell 4 AD DS Tools [Tools] Active Directory Administrative Center [Tools] AD DS Snap-Ins and Command-Line Tools 1 Include management tools (if applicable)
		Windows Server Esentials Experience Windows Server Update Services	Add Features       Cancel         < Previous

- ©   🍢	Manage
 Post-deployment Configuration     Configuration required for Active Directory Domain     Services at WIN-R2L1AAHASOO     Promote this server to a domain controller	
Configuration required. Installation succeeded on WIN-R2L1AAHASOO. Add Roles and Features Task Details	

📥 Active Directory Domain Service	Active Directory Domain Services Configuration Wizard						
Deployment Conf	TA WIN-R	rget sei 2l1aaha	RVER ISOO				
Deployment Configuration Domain Controller Options Additional Options Paths Review Options Prerequisites Check	Select the deployment operation Add a domain controller to an existin Add a new domain to an existing for Add a new forest Specify the domain information for this of Root domain name:	g domain est operation egzamin.local					
Results							
	More about deployment configurations						
	< Pre	vious Next >	nstall	Cance	2		

📥 Active Directory Domain Service	s Configuration Wizard		- 🗆 X	Γ
Domain Controlle	TARGET SERVER WIN-R2L1AAHASOO	-		
Deployment Configuration Domain Controller Options DNS Options Additional Options Paths Review Options Prerequisites Check Installation Results	Select functional level of the new forest a Forest functional level: Domain functional level: Specify domain controller capabilities Domain Name System (DNS) server Global Catalog (GC) Read only domain controller (RODC) Type the Directory Services Restore Mod	and root domain Windows Server 2016 Windows Server 2016	v	
	Password: Confirm password: More about domain controller options	•••••		
	< Pre	vious Next >	Install Cancel	1



### 2.1 Jednostka organizacyjna, grupa, użytkownik



Najpierw zostanie utworzona jednostka organizacyjna (Organizational Unit), następnie użytkownik i grupa. Dalej użytkownik zostanie dodany do grupy.

x Maszyna	Widok Wejści	e Urządzenia Pomoc				Sec. 9 <sup>41</sup>	
	Active Direct	ory Users and Computers View Help 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8 2 1	🝸 🔁 🐍	Description	-	×
	<ul> <li>⇒ Saved Qu</li> <li>⇒ gzamin J</li> <li>⇒ B</li> <li>&gt; □ C</li> <li>&gt; □ D</li> <li>&gt; □ F</li> <li>&gt; □ N</li> <li>□ U</li> </ul>	Pelegate Control Find Change Domain Raise domain functional level Operations Masters	۔ iltin ۱ ۱	uype builtinDomain Container Organizational Container Container Container	Default container for up Default container for do Default container for sec Default container for ma Default container for up		
		New All Tasks View Refresh Export List Properties Help	>	Computer Contact Group InetOrgPerson msDS-ShadowP msImaging-PSP MSMQ Queue A Organizational U Driptor	rincipalContainer )s Nias Jnit		
	<	>		Printer User Shared Folder	-		

- Active Directory User	and Computers	
New Object - User		×
Create in:	egzamin.local/szkola	lesc
First name:	Jan Initials:	o iti
Last name:	Kowalski	
Full name:	Jan Kowalski	
User logon name:		
jkowalski	@egzamin.local ~	
User logon name (pre	Windows 2000):	
EGZAMIN\	jkowalski	
	< Back Next > Can	cel

Active Directory Users and Computers	
New Object - User	×
Create in: egzamin.local/szkola	escript
Password:	o items
Confirm password:	
User must change password at next logon	
User cannot change password	
Password never expires	
Account is disabled	
< Back Next > Cancel	

🕵 Create in: egza	min.local/szkola	
-		
Group name:		
kadry		
'roup pama (pro Windows 20	200).	
Group name (pre-Windows 20 kadry	000):	
Group name (pre-Windows 20 kadry	000):	
Group name (pre-Windows 20 kadry Group scope	Group type	
Group name (pre-Windows 20 kadry Group scope O Domain local	Group type Security	
Group name (pre-Windows 20 kadry Group scope O Domain local Global	Group type Security Distribution	
Group name (pre-Windows 20 kadry Group scope O Domain local Global Universal	Group type Security Distribution	
Group name (pre-Windows 20 kadry Group scope O Domain local Global Universal	Group type Security Distribution	

Active Directory Users and C	omputers	– – ×	
	kadry Properties	? ×	
Active Directory Users and C Saved Queries Saved Queries Builtin Computers Computers ForeignSecurityPrinci Managed Service Acc Users Szkola	General Members Member Of Managed By Members: Name Active Directory Domain Services	Select Users, Contacts, Computers, Service Accounts, or Groups Select this object type: Users, Service Accounts, Groups, or Other objects From this location: egzamin Jocal Enter the object names to select ( <u>examples</u> ): įkowalski	X Object Types Locations Check Names
	Add Remove	Advanced OK	Cancel

### 2.2 Zasady grupy - Group Policy Management

Zasady grupy pozwalają tak jak nazwa wskazuje na regulowania różnorodnych uprawnień dla użytkowników korzystających z domeny. W tym przykładzie pokazano jak wyłączyć wymagania dotyczące złożoności hasła w domenie.



Należy edytować domyślne zasady dla domeny.

📓 Group Policy Management								
🗾 File Action View Window Help								
🗢 🔿 🗾 📰 🗙 💽 🗊								
📓 Group Policy Management		Defaul	t Dom	ain F	Polic	ey 🛛		
<ul> <li>Forest: egzamin.local</li> </ul>		Scope	Details	Setti	ings	Delegation		
<ul> <li>Domains</li> <li>iii egzamin.local</li> </ul>		Links						
🛒 Default Domain Pol	Edit	Disalari	l:		ation:		egzamin.loo	cal
> 📓 Domain Controllers	Enforced				mains	, and OUs a	re linked to	this G
> Group Policy Object	Link Enabled							Er
> 🛅 Starter GPOs	Save Report.							No
> 🛱 Sites								
👸 Group Policy Modeling	View			>				
Group Policy Results	New Windov	v from H	ere					
	Delete				0 car	n only apply	to the follo	wing g
	Rename							
	Refresh				ers			
	Heln							
		L						
			Add			Remove	•	F
		WMLE	ilterina					





### Password must meet complexity requirements Properties



#### 2.3 Profil mobilny i folder sieciowy

Profil mobilny pozwala na automatyczne przenoszenie zawartości folderów osobistych użytkownika (np. Pulpit, Dokumenty) przy logowaniu na inne komputery. Folder sieciowy to lokalizacja sieciowa dostępna dla użytkownika po za logowaniu i dostępna w oknie Komputer. Należy utworzyć dwa foldery i udostępnić je w sieci jak pokazano poniżej. Zamiast nazwy "server" należy wpisać rzeczywistą nazwę serwera.

Active Directory Users and C File Action View Help File Action View Help Gamma Structury Users and C Song Structury Users and C Song Structury Users and C Song Structury Structury Structury Song Structury Structury Structury Structury Structury Song Structury	Jan Kowalski Properties Member Of Remote control General Address User profile Profile path: \\\\\\\\ Logon script: \ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Dalin Environment Renote Desidop Services Pro Account Profile Telepho server/ L Profile Telepho File H	? × Sessions file COM+ nes Organization ▼   Local Disk (C:) tome Share ↑ <sup>15</sup> / <sub>2</sub> → Thie D <sup>4</sup>	View						a Search Lers
	Home folder      Local path:	me folder Decad path: Connect: Permissions for mobiliny Share Permissions Group or user names: Revergine		lame Logs mobilny PerfLogs	Isk (C)  Date modified Type 12,09,2016 1335 File fold mobility Properties  mobility Properties  mobility Previous Versions Customize Network File and Folds Sharing Net Shared Network File: Net Shared Share Share Share Share		Type File folder	Size Advanced Sharing Share this folder Settings Share name: mobiliny Add Remove		×
	ок	Pemiasions for Everyone Full Control Drange Read	Add Allow 2 2 2 3 4 3 2 3 4 4 3 4 4 4 4 4 4 5 4 5 4 5 4 5 4 5 4	Remove       Deny       Image: Image of the second se	Set custom permissione, creat advanced sharing options.	Cancel	Apply	Comments: Permissions Ca	iching Cancel	Apply

Słowo %USERNAME% pozwala na automatyczną podmianę nazwy użytkownika przy kopiowaniu konta.

Member Of	Dial-in	Envi	ronment	Session	ns
Remote control	Remote D	esktop Se	rvices Profile	COI	N+
General Address	Account	Profile	Telephones	Organiz	ation
User profile					
	\				
Profile path:	\\server\mobilir	IY\&USER			
Logon script:					
Home folder					
O Local path:					
	_		tours		
Connect:	Z: ~ To:	\\server\	sieciowy∖%USE	RNAME:	

## 3 DHCP

DHCP umożliwia dynamiczne przydzielanie adresów IP komputerom w sieci lokalnej.



	Post-deployment Configuration	
	Configuration required for DHCP Server at WIN- R2L1AAHASOO	
	Complete DHCP configuration	
0	Feature installation TASKS 👻 🗙	
	Configuration required. Installation succeeded on WIN-R2L1AAHASOO.egzamin.local.	
	Add Roles and Features	
	Task Details	

📥 DHCP Post-Install configuratio	n wizard	_		×	
Authorization					
Authonzation					
Description	Specify the credentials to be used to authorize this DHCP server in AD DS.				
Authorization Summary	Use the following user's credentials     User Name: EGZAMIN\Administrator				
	O Use alternate credentials UserName: Specify				
	○ Skip AD authorization				er
	< Previous Next > Com	imit	Cancel		



P DHCP		—
File Action View Help		
• 🔶 🙋 📊 🗐 🤷 🔢 📮		
E DHCP		Actions
<ul> <li>win-r2l1aahasoo.egzamin.local</li> <li>ID:4</li> </ul>	Add a Scope	IPv4
Server Options	New Scope Wizard	
<ul> <li>iii Policies</li> <li>iii Filters</li> <li>iii IPv6</li> </ul>	IP Address Range You define the scope address range by identifying a set of consecutive IP ad	dresses.
	Configuration settings for DHCP Server	
	Enter the range of addresses that the scope distributes.	
	Start IP address: 10 . 0 . 0 . 10	
	End IP address: 10 . 0 . 0 . 20	
	Configuration settings that propagate to DHCP Client	
	Length: 24	
	Subnet mask: 255 . 255 . 255 . 0	
	< Back Next >	Cancel

You can specify th	ess for a route	lefault gatewa	ays, to be distribut	ited by this scope	
IP address:		Add		0.000 2010M.	
10.0.0.1		Remove			
		Down			



### 3.1 Rezerwacja adresu



4 Server IIS (Stron Internetowych)



Przy okazji można zainstalować serwer FTP jeśli taki jest wymagany.



		windows Accessories			
		Windows Administrative Tools ^	Windows Server		
	۲	Component Services			
	4	Computer Management		Windows	Windows
	Ľ,	Defragment and Optimize Drives	Server Manager	PowerShell	PowerShell ISE
	Ņ	Disk Cleanup	<b>.</b>	-	
		Event Viewer	Vindows		
		Internet Information Services (IIS New	Administrativ	Task Manager	Control Panel
	Q	iSCSI Initiator			
		Local Security Policy	Remote		
	(P)	Microsoft Azure Services	Desktop	Event Viewer	File Explorer
	<b>a</b>	ODBC Data Sources (32-bit)			
	<b>S</b>	ODBC Data Sources (64-bit)			
	$\odot$	Performance Monitor			
8		Print Management			
	$\odot$	Resource Monitor			
ŝ	Ċ,	Services			
Ф		System Configuration			
	þ				

📬 Internet Information Services (IIS) Manager						
← → WIN-LOAQJ1RJ	BAN ► Sites ►					
File View Help						
Connections	Sites					
Start Page ✓ · · · · · · · · · · · · · · · · · · ·	Filter:	• 🐺 Go	- Show A	II Group by: No Grouping	•	
<a> </a> Application Pools	Name	ID	Status	Binding		Path
✓ - Sites > - Or Default Web Site	🔮 Default Web Site	1	Started (ht	*:80 (http)		%SystemDrive%\inetpub\wwwroot

W zakładce Default Document można dodać do listy nazwę dokumentu domyślnego in-

nego niż standarowe. (Np. inny niż index.html)



Usuwanie domyślnych plików witryny.

·					
File	Home	Share	View		
$\leftarrow \rightarrow$	· 1	→ Thi	s PC → Local Disk	(C:) > inetpub >	wwwroot
🧩 Qu	uick access Jesktop	*	Name	^	[ 2
↓ C	)ownloads	*	iisstart		2
	ocuments	*			

Stworzenie pliku tekstowego, wpisanie prostego kodu html, zapisanie jako start.html z typem all files.

📙   🔁 📙 🖛   www.root					
File Home Share	View				
$\leftarrow$ $\rightarrow$ $\checkmark$ $\uparrow$ $\square$ $\rightarrow$ This	s PC → Local Disk	(C:) > inetpub > www.roo	t		
	Name	^	Date modified	Туре	Size
📌 Quick access	New Text Do	cument	25.04.2023 11:36	Text Document	0 KB
🛄 Desktop 🖈		current	25.04.2025 11.50	Text Document	0 KB
Downloads 🖈					
New Text Document - Notepad					
File Edit Format View Help					
Egzamin					
		Save Δs			
		$\leftarrow \rightarrow \land \uparrow \square \land \downarrow$	his PC > Local Disk (C	:) > inetpub > wwv	vroot
		Organize 👻 New fol	ler		
		🔮 Documents 🖈 ^	Name	^	Date modified
		📰 Pictures 🛛 🖈	New Text Docu	iment	25.04.2023 11:36
		wwwroot			
		💻 This PC			
		Desktop			
		Documents			
		🖊 Downloads			
		👌 Music			
		Pictures			
		Videos			
		🏪 Local Disk (C:)			
		🚳 CD Drive (D:) Vir			
		A Network			
		File name: star	.html		
		Save as type: All F	les		

Dodanie nowej witryny.

	Appli	cation Pools	Na	me	~
- <b>6</b>	Sites				
	<b>e</b>	Add Website			
	<b>*</b> 7	Refresh			
	٢	Add FTP Site			
		Switch to Content V	/iew		

Add Website	?	×
Site name: Application pool: moja Sa	elect	
Content Directory Physical path: C:\inetpub\wwwroot Pass-through authentication Connect as Test Settings		
Binding Type: IP address: Port: http V 10.0.0.1 V 80 Host name: L Example: www.contoso.com or marketing.contoso.com		
Start Website immediately		
ОК	Canc	el

Jeśli po wpisaniu adresu IP w przeglądarkę pojawia się poniższy komunikat to znaczy, że trzeba dodać nazwę domyślnego pliku do listy.



Dodawanie nazwy start.html to listy domyślnych plików.

Name	Entry Type		
Default.htm	Inherited		
Default.asp	Inherited		
index.htm	Inherited		
index.html	Inherited		
iisstart.htm	Inherited		
Add Default Document		?	×
Name:			
start.html			
OK		Cancel	

Test konfiguracji strony internetowej.



### 4.1 Konfiguracja serwera plików ftp



Add FTP Site Site Informatio	on	
FTP site name: moj	Browse For Folder Select the physical path for the new FTP site.	×
Content Directory Physical path:	<ul> <li>Local Disk (C:)</li> <li>inetpub</li> <li>custerr</li> <li>ftproot</li> <li>history</li> <li>logs</li> <li>temp</li> <li>wwwroot</li> <li>Logs</li> <li>PerfLogs</li> <li>Program Files</li> </ul>	*

Add FTP Site	
Authentication and Authorization Informati	on
Authentication	
Anonymous	
Basic	
Authorization	
Allow access to:	
All users 🗸	
Permissions	
✓ Read	
Write	

Test konfiguracji serwera ftp w przeglądarce.



Test konfiguracji serwera ftp w cmd.

```
Administrator: Command Prompt - ftp 10.0.0.1
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>ftp 10.0.0.1
Connected to 10.0.0.1.
220 Microsoft FTP Service
200 OPTS UTF8 command successful - UTF8 encoding now ON.
User (10.0.0.1:(none)): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230 User logged in.
ftp> dir
200 PORT command successful.
125 Data connection already open; Transfer starting.
                                         0 New Text Document.txt
04-25-23 11:36AM
04-25-23 11:40AM
04-25-23 11:54AM
226 Transfer complete.
                                        24 start.html
                                       266 web.config
ftp: 167 bytes received in 0.01Seconds 11.13Kbytes/sec.
ftp>
```

# 5 Konfiguracja nazwy domenowej dla strony internetowej

Jeśli nie została zainstalowana usługa DNS wcześniej (np. z usługą Active Directory) należy zainstalować ją osobno. w przeciwnym wypadku należy pominąć poniższy krok.



Należy otworzyć przystawkę DNS.



Nanstępne dwa kroki wykonuje się tylko jeśli doinstalowano DNS po instalacji Active Directory. Należy utworzyć nową strefę wyszukiwania w przód (forward)



Następnie należy nadać nazwę strefie.

New Zone Wizard	×
Zone Name What is the name of the new zone?	
The zone name specifies the portion of the DNS namespace for which this authoritative. It might be your organization's domain name (for example, or a portion of the domain name (for example, newzone.microsoft.com). not the name of the DNS server.	s server is microsoft.com) The zone name is
Zone name:	_
egzamin.local	]
< Back Next >	Cancel

Następie należy dodać nowy rekord A.

<ul> <li>DNS</li> <li>WIN-LOAQJIRJAN</li> <li>Forward Lookup Zones</li> <li>gzamin.local</li> <li>Reverse Lookup Zones</li> <li>Trust Points</li> </ul>	Name (same as parent folder) (same as parent folder)	Type Start of Authority ( Name Server (NS)	Data SOA) [1], win-loaqj1rj3an., host win-loaqj1rj3an.
> Conditional Forwarders			Update Server Data File Reload New Host (A or AAAA)

Powiązanie z domeną bieżącego adresu IP serwera. Pole Name należy pozostawić puste.



Przed testem należy upenić się, że adres DNS ustawiony jest na ten serwer czyli 127.0.0.1 (lub w tym przykładzie można też użyć 10.0.0.1)

· · · · ·	
Internet Protocol Version 4 (TCP/IPv4)	) Properties X
General	
You can get IP settings assigned autor this capability. Otherwise, you need to for the appropriate IP settings.	matically if your network supports o ask your network administrator
Obtain an IP address automatical	lly
Use the following IP address: —	
IP address:	10 . 0 . 0 . 1
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	
Obtain DNS server address autor	matically
Use the following DNS server add	dresses:
Preferred DNS server:	127.0.0.1
Alternate DNS server:	

Test konfiguracji serwera DNS.



# 6 Routing

Poniżej zostanie zainstalowana usługa Routingu umożliwiająca przekazywanie pakietów z jednej sieci do drugiej. (Z jednej karty sieciowej do drugiej)

select the role services to install for Remote Access	📥 Add Roles and Features Wizard
Role services	
DirectAccess and VPN (RAS) Routing Web Application Proxy	Add features that are required for Routing? You cannot install Routing unless the following role serv features are also installed.
	Group Policy Management RAS Connection Manager Administration Kit (CMAK Remote Access DirectAccess and VPN (RAS)
	<ul> <li>Remote Server Administration Tools</li> <li>Role Administration Tools</li> <li>Remote Access Management Tools         <ul> <li>[Tools] Remote Access GUI and Comman</li> <li>[Tools] Remote Access GUI and Comman</li> </ul> </li> </ul>
	[Iools] Kemote Access module for Windo Web Server (IIS) Management Tools
	<
	<ul> <li>Include management tools (if applicable)</li> </ul>
	Add Features

Otwieramy przystawkę Routing and Remote Access



Access WIN-LOAQJ1RJ3AN (local)	
Configure and Enable Routing and Remote Acces Disable Routing and Remote Access	ss à
All Tasks	
View	>
Delete Refresh	
Properties	
Help	
	Access WIN-LOAQJ1RJ3AN (local) Configure and Enable Routing and Remote Access Disable Routing and Remote Access All Tasks View Delete Refresh Properties Help

11
Routing and Remote Access Server Setup Wizard
<b>Configuration</b> You can enable any of the following combinations of services, or you can customize this server.
<ul> <li>Remote access (dial-up or VPN) Allow remote clients to connect to this server through either a dial-up connection or a secure virtual private network (VPN) Internet connection.</li> <li>Network address translation (NAT) Allow internal clients to connect to the Internet using one public IP address.</li> <li>Virtual private network (VPN) access and NAT Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.</li> <li>Secure connection between two private networks Connect this network to a remote network, such as a branch office.</li> <li>Custom configuration Select any combination of the features available in Routing and Remote Access.</li> </ul>
< Back Next > Cancel

Routing and Remote Access Server Setup Wizard
Custom Configuration When this wizard closes, you can configure the selected services in the Routing and Remote Access console.
Select the services that you want to enable on this server. VPN access Dial-up access Demand-dial connections (used for branch office routing) NAT LAN routing
< Back Next > Cancel

Routing and Remote Access Server Setup Wizard

	Completing the Routing and Remote Access Server Setup Wizard
	You have successfully completed the Routing and Remote Access Server Setup wizard.
Routing and	Remote Access
Start the se	ervice and Remote Access service is ready to use. Start service Cancel
	in the Routing and Remote Access console. To close this wizard, click Finish.
	< Back Finish Cancel

Routing and Remote Access	General							
Server Status	Interface	Туре	IP Address	Incoming bytes	Outgoing bytes	Static Filters	Administrative Status	Operational Status
Network Interfaces	Loopback	Loopback	127.0.0.1	0	0	Disabled	Up	Operational
Remote Access Logging & Policies	ि Internal	Internal	Not available	-		Disabled	Unknown	Non-operational
✓ 3 IPv4	Ethernet 2	Dedicated	10.0.0.1	0	52 698	Disabled	Up	Operational
General	thernet	Dedicated	Not available			Disabled	Unknown	Non-operational
Static Routes								
5 D.4								