

# ZSL

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cisco

Networking  
Academy



## Basic Router Configuration

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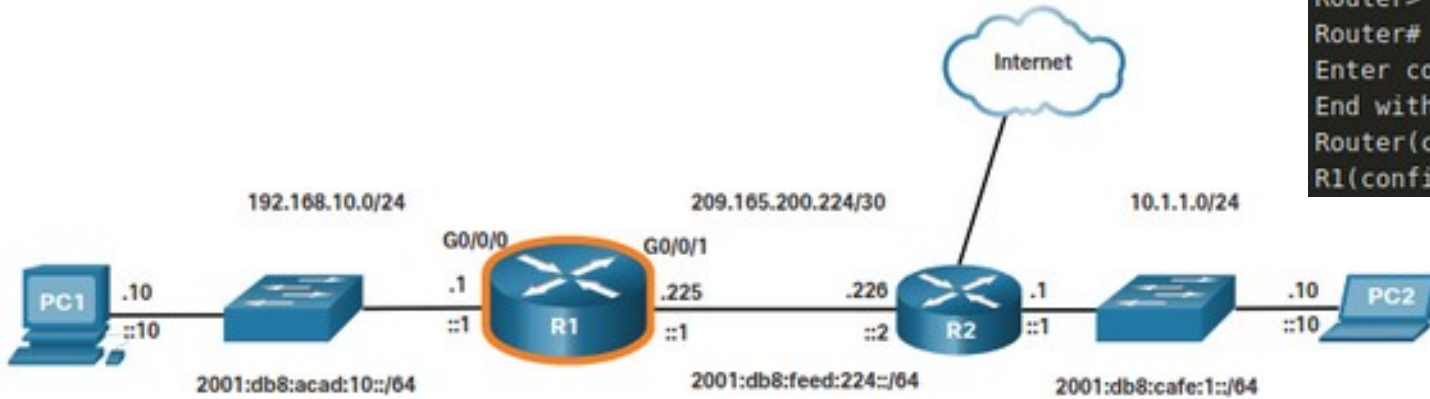
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- Den Gerätenamen festlegen:  
Router(config)# **hostname**
- Den privilegierten EXEC mode absichern:  
Router(config)# **enable secret** *password*
- Den user EXEC mode absichern:  
Router(config)# **line console 0**  
Router(config-line)# **password** *password*  
Router(config-line)# **login**
- Fernzugriff mit Telnet / SSH absichern:  
Router(config)# **line vty 0 4**  
Router(config-line)# **password** *password*  
Router(config-line)# **login**  
Router(config-line)# **transport input {ssh | telnet }**
- In der Config-Datei alle Passwörter verschl.:  
Router(config)# **service password-encryption**
- Banner einrichten:  
Router(config)# **banner motd** \$ Botschaft \$
- Die Konfiguration sichern:  
Router# **copy run start**

# Ein Konfigurationsbeispiel



```
Router> enable
Router# configure terminal
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)# hostname R1
R1(config)#
```

```
R1(config)# enable secret class
R1(config)#
R1(config)# line console 0
R1(config-line)# password cisco
R1(config-line)# login
R1(config-line)# exit
R1(config)#
R1(config)# line vty 0 4
R1(config-line)# password cisco
R1(config-line)# login
R1(config-line)# transport input ssh telnet
R1(config-line)# exit
R1(config)#
R1(config)# service password-encryption
R1(config)#
```

```
R1(config)# banner motd #
Enter TEXT message. End with a new line and the #
*****
WARNING: Unauthorized access is prohibited!
*****
#
R1(config)#
```

```
R1# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

# Syntax Checker und Packet Tracer Übung und „echte Geräte!“

Enter global configuration mode to configure the name of the router as "R1".

```
Router> enable
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# hostname R1
```

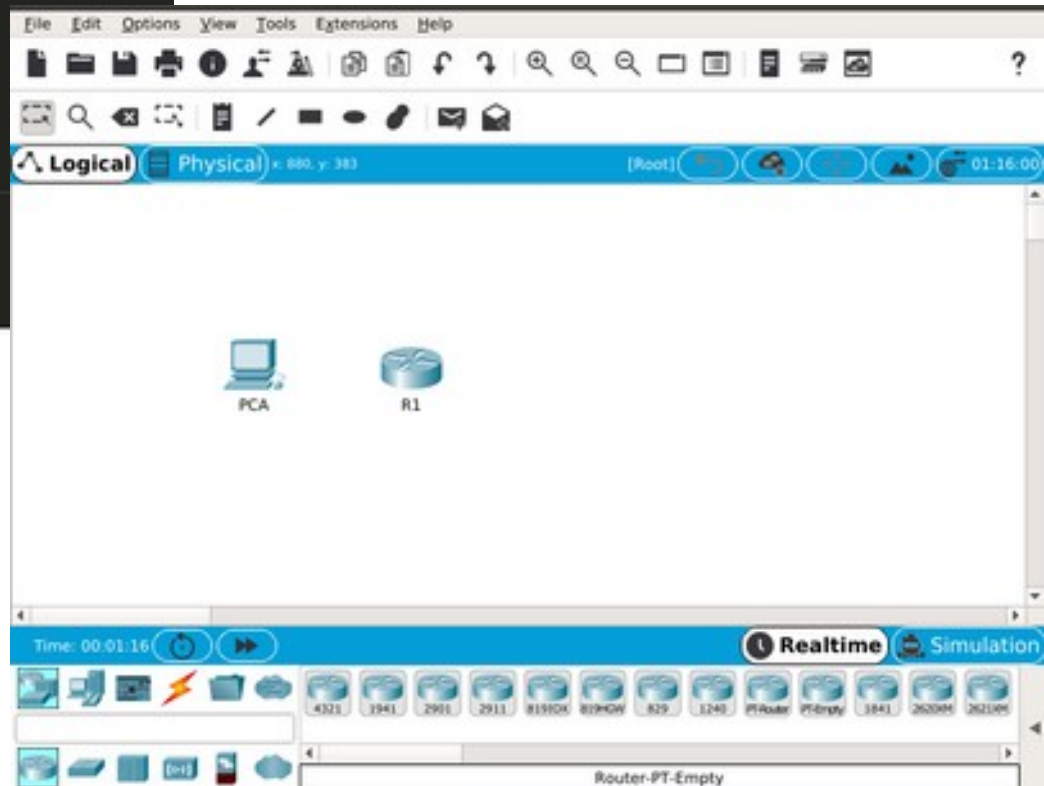
Configure 'class' as the secret password.

```
R1(config)#
```

Reset

Show Me

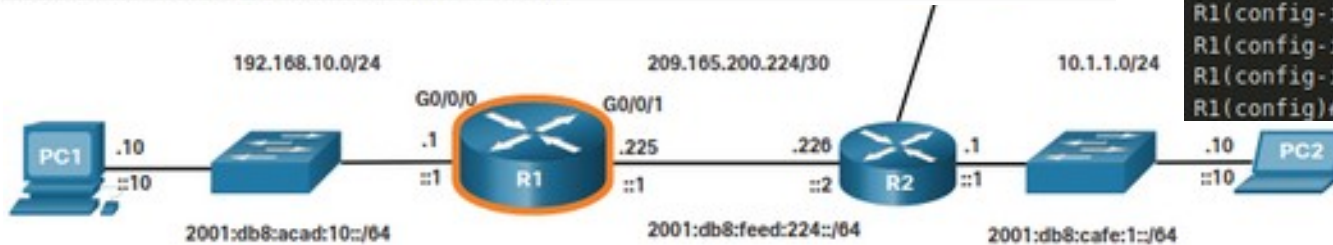
Show All





# Router Schnittstellen konfigurieren

```
Router(config)# interface type-and-number
Router(config-if)# description description-text
Router(config-if)# ip address ipv4-address subnet-mask
Router(config-if)# ipv6 address ipv6-address/prefix-length
Router(config-if)# no shutdown
```



```
R1> enable
R1# configure terminal
Enter configuration commands, one per line.
End with CNTL/Z.
R1(config)# interface gigabitEthernet 0/0/0
R1(config-if)# description Link to LAN
R1(config-if)# ip address 192.168.10.1 255.255.255.0
R1(config-if)# ipv6 address 2001:db8:acad:10::1/64
R1(config-if)# no shutdown
R1(config-if)# exit
R1(config)#
```

```
*Aug 1 01:43:53.435: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/0, changed state to down
*Aug 1 01:43:56.447: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/0, changed state to up
*Aug 1 01:43:57.447: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0,
changed state to up
R1(config)#
R1(config)#
R1(config)# interface gigabitEthernet 0/0/1
R1(config-if)# description Link to R2
R1(config-if)# ip address 209.165.200.225 255.255.255.252
R1(config-if)# ipv6 address 2001:db8:feed:224::1/64
R1(config-if)# no shutdown
R1(config-if)# exit
R1(config)#
*Aug 1 01:46:29.170: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/1, changed state to down
*Aug 1 01:46:32.171: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/1, changed state to up
*Aug 1 01:46:33.171: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1,
changed state to up
R1(config)#
```

# Die Schnittstellenkonfiguration überprüfen - Überblick

Der Befehl „show“, mit unterschiedlichen Befehlszusätzen, liefert Informationen zu allen oder einzelnen Schnittstellen.

```
R1# show ip interface brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0/0     192.168.10.1    YES manual up          up
GigabitEthernet0/0/1     209.165.200.225 YES manual up          up
Vlan1                    unassigned      YES unset  administratively down down
R1# show ipv6 interface brief
GigabitEthernet0/0/0     [up/up]
FE80::201:C9FF:FE89:4501
2001:DB8:ACAD:10::1
GigabitEthernet0/0/1     [up/up]
FE80::201:C9FF:FE89:4502
2001:DB8:FEED:224::1
Vlan1                    [administratively down/down]
```

Beispiele

Commands	Description
<code>show ip interface brief</code> <code>show ipv6 interface brief</code>	The output displays all interfaces, their IP addresses, and their current status. The configured and connected interfaces should display a Status of "up" and Protocol of "up". Anything else would indicate a problem with either the configuration or the cabling.
<code>show ip route</code> <code>show ipv6 route</code>	Displays the contents of the IP routing tables stored in RAM.
<code>show interfaces</code>	Displays statistics for all interfaces on the device. However, this command will only display the IPv4 addressing information.
<code>show ip interfaces</code>	Displays the IPv4 statistics for all interfaces on a router.
<code>show ipv6 interface</code>	Displays the IPv6 statistics for all interfaces on a router.

# Schnittstellenkonfiguration konkret abfragen Teil 1

```
R1# show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0/0 192.168.10.1    YES manual up          up
GigabitEthernet0/0/1 209.165.200.225 YES manual up          up
Vlan1               unassigned      YES unset  administratively down down
R1#
```

Durch die „brief“ Übersicht kann  
Man ein konkretes Interface  
Genau benennen und weiter  
Ansprechen.

```
R1# show ipv6 interface brief
GigabitEthernet0/0/0    [up/up]
FE80::201:C9FF:FE89:4501
2001:DB8:ACAD:10::1
GigabitEthernet0/0/1    [up/up]
FE80::201:C9FF:FE89:4502
2001:DB8:FEED:224::1
Vlan1                   [administratively down/down]
unassigned
```



# Schnittstellenkonfiguration konkret abfragen Teil 2

```
R1# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
Gateway of last resort is not set
  192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0/0
L       192.168.10.1/32 is directly connected, GigabitEthernet0/0/0
  209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C       209.165.200.224/30 is directly connected, GigabitEthernet0/0/1
L       209.165.200.225/32 is directly connected, GigabitEthernet0/0/1
R1#
```

```
R1# show ipv6 route
IPv6 Routing Table - default - 5 entries
```

```
C  2001:DB8:ACAD:10::/64 [0/0]
   via GigabitEthernet0/0/0, directly connected
L  2001:DB8:ACAD:10::1/128 [0/0]
   via GigabitEthernet0/0/0, receive
C  2001:DB8:FEED:224::/64 [0/0]
   via GigabitEthernet0/0/1, directly connected
L  2001:DB8:FEED:224::1/128 [0/0]
   via GigabitEthernet0/0/1, receive
L  FF00::/8 [0/0]
   via Null0, receive
R1#
```



# Schnittstellenkonfiguration konkret abfragen Teil 3

```
R1# show interfaces gig0/0/0
GigabitEthernet0/0/0 is up, line protocol is up
  Hardware is ISR4321-2x1GE, address is a0e0.af0d.e140 (bia a0e0.af0d.e140)
  Description: Link to LAN
  Internet address is 192.168.10.1/24
  MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not supported
  Full Duplex, 100Mbps, link type is auto, media type is RJ45
  output flow-control is off, input flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:01, output 00:00:35, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/375/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1180 packets input, 109486 bytes, 0 no buffer
    Received 84 broadcasts (0 IP multicasts)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 1096 multicast, 0 pause input
    65 packets output, 22292 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    11 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    1 lost carrier, 0 no carrier, 0 pause output
    0 output buffer failures, 0 output buffers swapped out

R1#
```

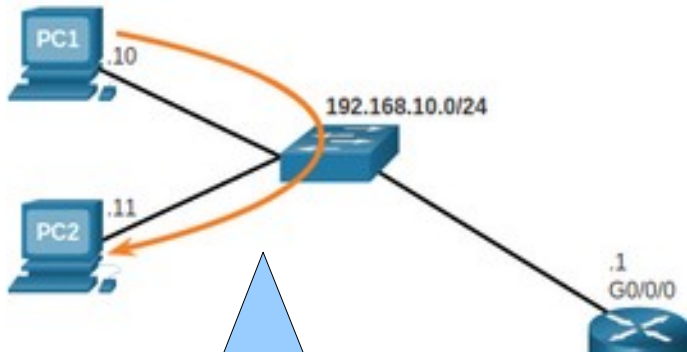
# Schnittstellenkonfiguration konkret abfragen Teil 4

```
R1# show ip interface g0/0/0
GigabitEthernet0/0/0 is up, line protocol is up
  Internet address is 192.168.10.1/24
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing Common access list is not set
  Outgoing access list is not set
  Inbound Common access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachable are always sent
  ICMP mask replies are never sent
  IP fast switching is enabled
  IP Flow switching is disabled
  IP CEF switching is enabled
  IP CEF switching turbo vector
  IP Null turbo vector
  Associated unicast routing topologies:
    Topology "base", operation state is UP
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast, CEF
```

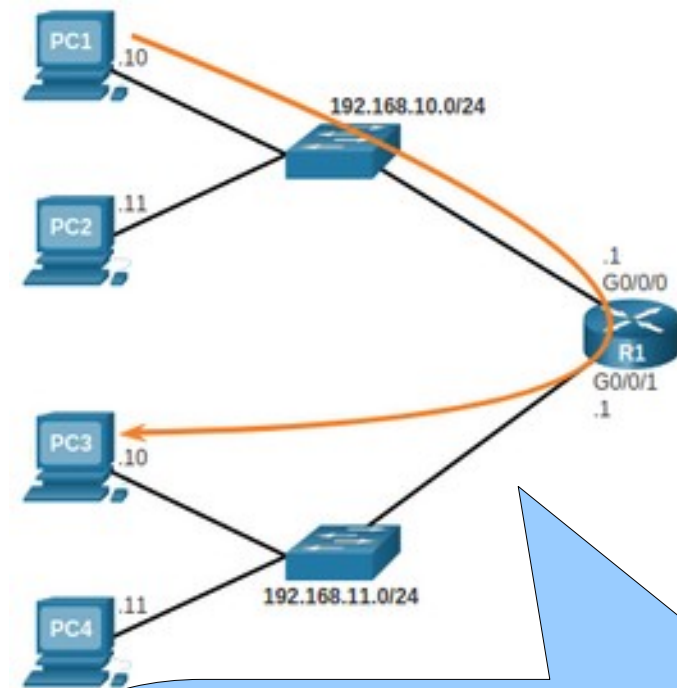
```
R1# show ipv6 interface g0/0/0
GigabitEthernet0/0/0 is up, line protocol is up
  IPv6 is enabled, link-local address is FE80::868A:8DFF:FE44:49B0
  No Virtual link-local address(es):
  Description: Link to LAN
  Global unicast address(es):
    2001:DB8:ACAD:10::1, subnet is 2001:DB8:ACAD:10::/64
  Joined group address(es):
    FF02::1
    FF02::1:FF00:1
    FF02::1:FF44:49B0
  MTU is 1500 bytes
  ICMP error messages limited to one every 100 milliseconds
  ICMP redirects are enabled
  ICMP unreachables are sent
  ND DAD is enabled, number of DAD attempts: 1
  ND reachable time is 30000 milliseconds (using 30000)
  ND NS retransmit interval is 1000 milliseconds
R1#
```

Syntax Checker 10.2.5

# Ein Default Gateway konfigurieren - beim PC



Innerhalb eines LAN-Segmentes  
(gleiches IP-Teilnetz), wird kein  
Gateway benötigt!

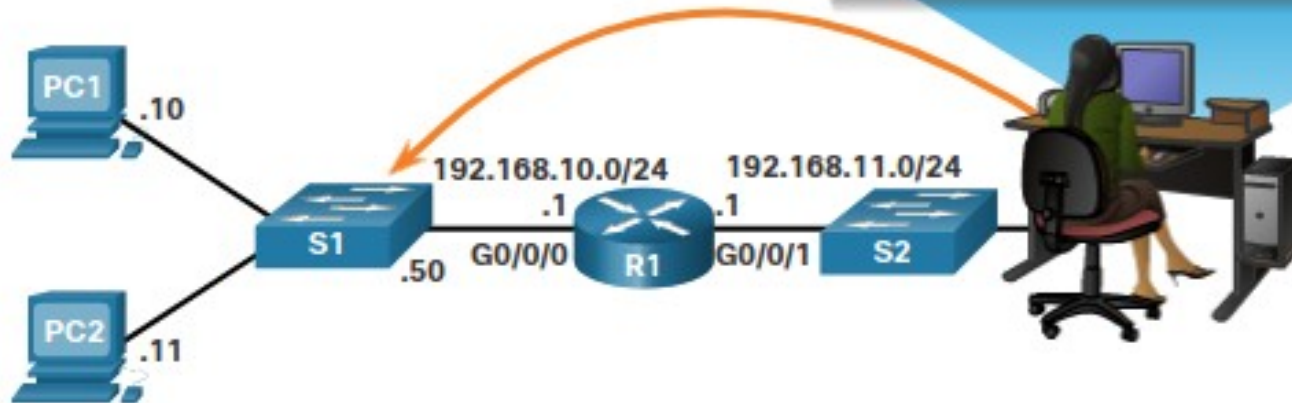


Ist das IP-Ziel in einem anderen  
IP-Teilnetz, dann wird ein  
konfiguriertes Gateway  
benötigt.

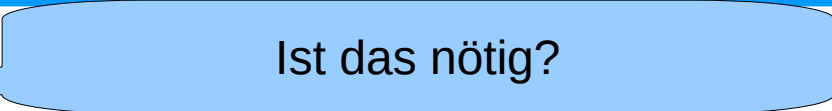
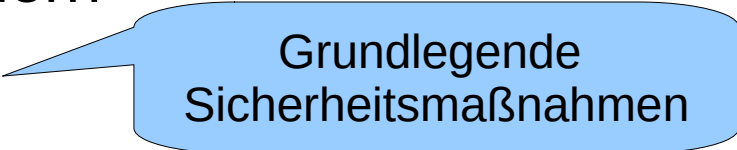
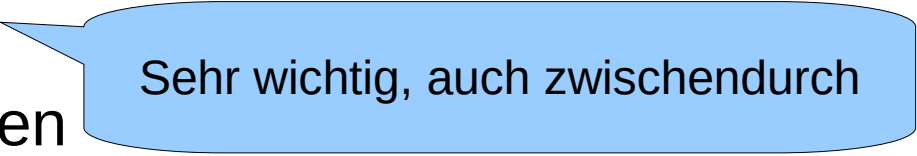
# Ein Default Gateway konfigurieren - beim Switch

S1(config)#

```
S1# show running-configuration
Building configuration...
!
<Output Omitted>
service password-encryption
!
hostname S1
!
Interface Vlan1
  ip address 192.168.10.50.255.255.0
!
<Output Omitted>
!
  ip default-gateway 192.168.10.1
<Output Omitted>
```





- Den Gerätenamen konfigurieren 
- Den privilegierten EXEC mode absichern
- Den user mode absichern 
- Fernzugriff mit Telnet oder SSH absichern
- Alle Passwörter in der Konfigurationsdatei absichern/verbergen
- Eine „Message of the Day“ erstellen
- Die Konfiguration sichern 
- Default Gateways einrichten

- Packet Tracer – 10.3.4 Connect a Router to a LAN
- Packet Tracer – 10.3.5 Troubleshoot Default Gateway Issues
- Packet Tracer – 10.4.3 Basic Device Configuration
- Modullab – 10.4.4
- Modulquiz – 10.4.6

**Fragen ...**

