





Cisco | Networking Academy® Mind Wide Open™

IP Telephony
Die Zukunft des Telefonierens
hat begonnen - verpassen Sie
den "Anschluss" nicht.



Dipl.-Ing. Stefan Gille M. H. Edu., Dipl.-Inf. (FH) Christoph Seifert







AGENDA

Cisco | Networking Academy® Mind Wide Open™

- Aufrüstung (Komponenten)
- IOS und Lizenzen
- Basic-Konfiguration
- Software
- Perspektive von IPT / Voice
- IPT Kurs
- Kurs-Angebote / Termine





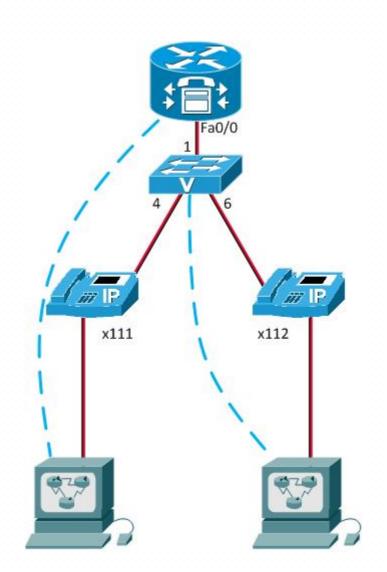




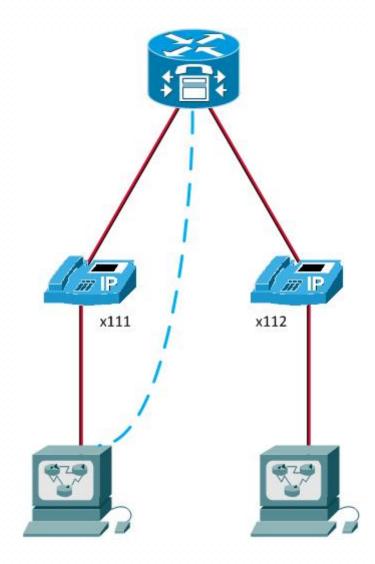
TOPOLOGIE

Basic CCNA Voice Lab

Router 2801, 2811, 2901 Switch 2960, 2960PoE IP Phone 7961, 7962



Cisco | Networking Academy® | Mind Wide Open™







Cisco | Networking Academy® | Mind Wide Open™

Komponenten...







Zentrum für Weiterbildung und Kompetenzentwicklung
Center for Training and Competence Development

ZWEK

KOMPONENTEN

Cisco Networking Academy® Mind Wide Open™

IP Phone

CP-7962G Cisco UC Phone 7962

Netzteil (optional bei PoE)







KOMPONENTEN

Cisco | Networking Academy® Mind Wide Open™

PVDM Modul

Packet Voice Digital Signal Processor Module (PVDM) Interner Hardware-Chip-Riegel

Unterstützt den DSP (digital-signal-processor)

des Systems bei der Voice/Video/Daten-Kodierung und übersetzt z.B. dabei Gespräche in andere Codecs / Protokolle (VoIP<->ISDN / Analog).

http://www.cisco.com/c/en/us/products/collateral/routers/2800-series-integrated-services-routers-isr/product_data_sheet0900aecd8016e845.html



Zentrum für Weiterbildung und Kompetenzentwicklung

ZWEK

Cisco | Networking Academy®

Mind Wide Open™

KOMPONENTEN

Analog (optional)

VIC3-2FXS/DID Two-Port Voice Interface Card-**FXS** and DID



Zentrum für Weiterbildung und Kompetenzentwicklun

ZWEK

Cisco Networking Academy®

Mind Wide Open™

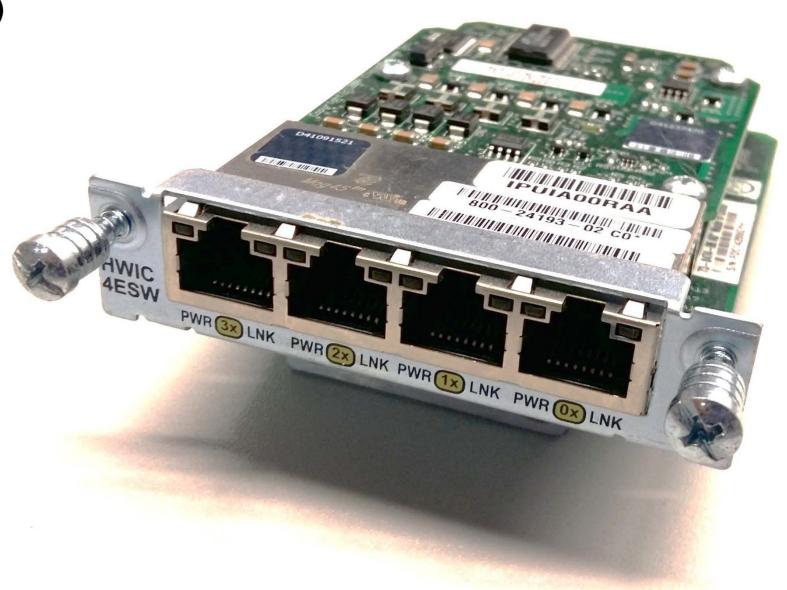
KOMPONENTEN

Interner Switch (optional)

HWIC-4ESW-POE (2800er) EHWJC-4ESG-P (2900er)

4-Port Ethernet Switch with Power Over Ethernet

Neues Netzteil für den **Router erforderlich!**



ZWEK

KOMPONENTEN

Cisco | Networking Academy® Mind Wide Open™

Netzteil für PoE (optional)

PWR-2801-AC-IP PWR-2811-AC-IP PWR-2901-AC-PoE

Erforderlich für HWIC-4ESW-POE (2800er) EHWJC-4ESG-P (2900er)



Zentrum für Weiterbildung und Kompetenzentwicklun

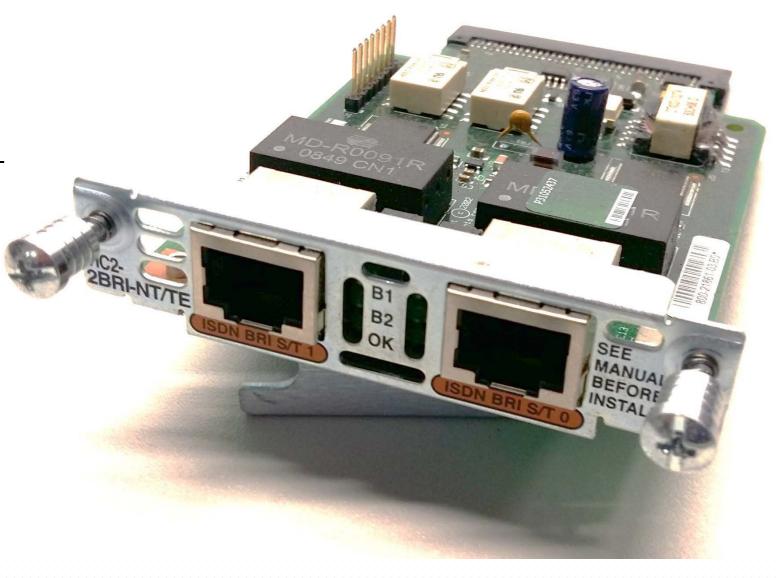
ZWEK

KOMPONENTEN

ISDN (optional)

VIC2-2BRI-NT/TE= Two-port Voice Interface Card -BRI (NT and TE)

Cisco | Networking Academy® Mind Wide Open™



Center for Training and Competence Development

Zentrum für Weiterbildung und Kompetenzentwicklung

KOMPONENTEN

Cisco | Networking Academy® | Mind Wide Open™

Einbau der Komponenten

-> Router 2801







EQUIPMENT DISCOUNT PROGRAM

Cisco | Networking Academy® | Mind Wide Open™

Last updated 12 September 2013

Program Equipment Information

NetAcad Equipment Discount Program APAC EMEA LATAM Russia Taiwan v4 2013-SEPT-12

| Bundle Name | Part Number | Part/Product Family Description | Qty. |
|--------------|--------------------|--|------|
| PILOTCCNA VO | ICE BUNDLE | | |
| | CISCO2901/K9 | Cisco 2901 w/2 GE,4 EHWIC,2 DSP,256MB CF,512MB DRAM,IP Base | 2 |
| | CISCO2911/K9 | Cisco 2911 w/3 GE,4 EHWIC,2 DSP,1 SM,256MB CF,512MB DRAM,IPB | 1 |
| | CM8.6-K9-NFR | SW CM 8.6 Appliance Not For Resale | 1 |
| | CP-7962G= | Cisco UC Phone 7962, spare | 4 |
| | CP-PWR-CUBE-3= | IP Phone power transformer for the 7900 phone series | 4 |
| | HWIC-2T= | 2-Port Serial WAN Interface Card | 2 |
| | PVDM3-16= | 16-channel high-density voice and video DSP module SPARE | 3 |
| | SW-CUP8.6-K9 | Cisco Unified Presence 8.6 Application Software* | 1 |
| | VWIC3-1MFT-T1/E1= | 1-Port 3rd Gen Multiflex Trunk Voice/WAN Int. Card - T1/E1 | 2 |
| | VWIC3-2MFT-T1/E1= | 2-Port 3rd Gen Multiflex Trunk Voice/WAN Int. Card - T1/E1 | 1 |
| | WS-C2960-24TT-L | Catalyst 2960 24 10/100 + 2 1000BT LAN Base Image | 3 |
| PILOTCCNA VO | ICE UPGRADE BUNDLE | | |
| | CM8.6-K9-NFR | SW CM 8.6 Appliance Not For Resale | 1 |
| | CP-7962G= | Cisco UC Phone 7962, spare | 4 |
| | CP-PWR-CUBE-3= | IP Phone power transformer for the 7900 phone series | 4 |
| | PVDM3-16= | 16-channel high-density voice and video DSP module SPARE | 3 |
| | SW-CUP8.6-K9 | Cisco Unified Presence 8.6 Application Software* | 1 |
| | VWIC3-1MFT-T1/E1= | 1-Port 3rd Gen Multiflex Trunk Voice/WAN Int. Card - T1/E1 | 2 |
| | VWIC3-2MFT-T1/E1= | 2-Port 3rd Gen Multiflex Trunk Voice/WAN Int. Card - T1/E1 | 1 |



ROUTER 2611

Preisliste Stand 2011

SBSK GmbH & Co. KG

Angebot Nr. 2120062

27.10.2011

| Pos. | Beschreibung | Menge | E.P. | Gesamt |
|------|---|-------------------|--------|----------|
| | FH Düsseldorf | | | |
| 1 | Cisco- Komponenten | | | |
| 1.1 | HWIC-2T= 2-Port Serial WAN Interface Card | 1 Stck. | 311,22 | 311,22 |
| 1.2 | PVDM2-16= 16-Channel Packet Voice/Fax DSP Module | 1 Stck. | 355,68 | 355,68 |
| 1.3 | PWR-2811-AC-IP= Cisco 2811 AC/IP power supply | 1 Stck. | 147,06 | 147,06 |
| 1.4 | HWIC-4ESW-POE= 4-Port Ethernet Switch HWIC with Power Over Et | 1 Stck. hernet | 255,36 | 255,36 |
| | Zwischensumme Cisco- Komponenten | | | 1.069,32 |







ROUTER 2611

Preisliste Stand 2011

SBSK GmbH & Co. KG Angebot Nr. 2110736 22.09.2011

| Pos. | Beschreibung | Menge | E.P. | Gesamt |
|------|---|-----------------------------|------------------|----------|
| | FH Düsseldorf Ihre Anfrage vom 19.09.2011 | | | |
| 1 | Cisco- Netzwerktechnik | | | |
| 1.1 | CISCO2811-CCME/K9 2811 Voice Bundle w/ PVDM2-16,FL-CCME-35,SP 36 Monate Hardwareaustausch bei Defekt 8x5xNBE End-of-Sale Date: 01.11.2011 | 1120 1202 400 1100-11011 11 | 1.904,00 512D | 1.904,00 |
| 1.2 | VIC3-2FXS/DID Two-Port Voice Interface Card- FXS and DID | 1 Stck. | 188,00 | 188,00 |
| 1.3 | VIC2-2BRI-NT/TE= Two-port Voice Interface Card - BRI (NT and TE) | 1 Stck. | 403,00 | 403,00 |
| | befristete Promotion des Herstellers vorbehaltlich jeglicher Änderung oder Abkündig | gung seiten | s Cisco | |
| 1.4 | CP-7962G= Cisco UC Phone 7962, spare | 3 Stck. | 205,00 | 615,00 |
| 1.5 | Telefonlizenz Communications Manager Express License For One | 3 Stck. e 7962G Ph | 88,00 one | 264,00 |
| 1.6 | Netzteil IP Phone power transformer for the 7900 phone ser inkl. 7900 Series Transformer Power Cord, Co | | 25,00 be | 75,00 |
| 1.7 | WS-C2960-24LT-L Catalyst 2960 24 10/100 (8 PoE)+ 2 1000BT LAN B | 1 Stck. Base Image | 584,00 | 584,00 |
| | Zwischensumme Cisco- Netzwerktechnik | | | 4.033,00 |







ROUTER 2601

Cisco | Networking Academy® | Mind Wide Open™

CISCO 2801-CCME/K9
Standard Router,
2-Port Serial WAN Interface Card

| Router type | Product | Description | Memo |
|-------------------------|---|---|--|
| Router 2801 Nachrüstung | | | |
| | PVDM2-16 16-Channel Packet Voice/Fax DSP Module | Packet Voice Digital Signal Processor Module (PVDM) Interner Hardware-Chip-Riegel Unterstützt den DSP (digital-signal-processor) des Systems bei der Voice/Vidio/Daten-Kodierung. | erforderlich |
| | HWIC-4ESW-POE 4-Port Ethernet Switch HWIC with Power Over Ethernet | Interface-Card Switch mit 4 Ports | Dann wird auch PWR- 2801-AC-IP benötigt |
| | PWR-2801-AC-IP Cisco 2801 AC/IP power supply | Einbau eines neuen Netzteils für PoE bei internem Switch | Erforderlich für HWIC-4ESW-POE |
| | VIC2-2BRI-NT/TE= Two-port Voice Interface Card - BRI (NT and TE) | Interface Card für Anschluss an die ISDN Anlage | Optional |
| | VIC3-2FXS/DID Two-Port Voice Interface Card - FXS and DID | Interface Card für Analog Telefone | Optional |







ROUTER 2611

Cisco | Networking Academy® | Mind Wide Open™

CISCO 2811-CCME/K9
Standard Router,
2-Port Serial WAN Interface Card

| Router type | Product | Description | Memo |
|-------------------------|---|---|--|
| Router 2811 Nachrüstung | | | |
| | PVDM2-16 16-Channel Packet Voice/Fax DSP Module | Packet Voice Digital Signal Processor Module (PVDM) Interner Hardware-Chip-Riegel Unterstützt den DSP (digital-signal-processor) des Systems bei der Voice/Vidio/Daten-Kodierung. | erforderlich |
| | HWIC-4ESW-POE 4-Port Ethernet Switch HWIC with Power Over Ethernet | Interface-Card Switch mit 4 Ports | Dann wird auch PWR- 2811-AC-IP benötigt |
| | PWR-2811-AC-IP Cisco 2811 AC/IP power supply | Einbau eines neuen Netzteils für PoE bei internem Switch | Erforderlich für HWIC-4ESW-POE |
| | VIC2-2BRI-NT/TE= Two-port Voice Interface Card - BRI (NT and TE) | Interface Card für Anschluss an die ISDN Anlage | Optional |
| | VIC3-2FXS/DID Two-Port Voice Interface Card - FXS and DID | Interface Card für Analog Telefone | Optional |







ROUTER 2901

Cisco | Networking Academy® | Mind Wide Open™

CISCO 2901/K9

Cisco 2901 w/2 GE, 4 EHWIC,

2 DSP,

256MB CF,

512MB DRAM,

IP Base

2-Port Serial WAN Interface Card

| Router type | Product | Description | Memo |
|-------------------------|---|---|--|
| Router 2901 Nachrüstung | <u> </u> | | - |
| | PVDM3-16= 16-channel high-density voice and video DSP module SPARE | Packet Voice Digital Signal Processor Module (PVDM) Interner Hardware-Chip-Riegel Unterstützt den DSP (digital-signal-processor) des Systems bei der Voice/Vidio/Daten-Kodierung. | erforderlich |
| | EHWJC-4ESG-P= Four port 10/100/1000 Ethernet 4-Port Ethernet with PoE | Interface-Card Switch mit 4 Ports | Dann wird auch PWR- 2811-AC-IP benötigt |
| | PWR-2901-PoE Cisco 2901 AC power supply | Einbau eines neuen Netzteils für PoE bei internem Switch | Erforderlich für HWIC-4ESW-POE |
| | VIC2-2BRI-NT/TE= Two-port Voice Interface Card - BRI (NT and TE) | Interface Card für Anschluss an die ISDN Anlage | Optional |
| | VIC3-2FXS/DID Two-Port Voice Interface Card - FXS and DID | Interface Card für Analog Telefone | Optional |







Cisco | Networking Academy® | Mind Wide Open™

IOS und Lizenzen...









WELCHES IOS WIRD BENÖTIGT?

Cisco | Networking Academy® | Mind Wide Open™

Es wird ein IOS mit dem Telefonie-Befehlssatz benötigt:

Router(config)# telephony-service
Router(telephony-service)#

Funktionierende Beispiele:

2801 IOS "c2801-advipservicesk9-mz.151-4.M9.bin"

2811 IOS "c2800nm-adventerprisek9_ivs_li-mz.151-4.M9.bin"

2901 IOS "c2900-universalk9-mz.SPA.156-2.T.bin"







WIE FINDE ICH DAS 109?

Cisco | Networking Academy® | Mind Wide Open™

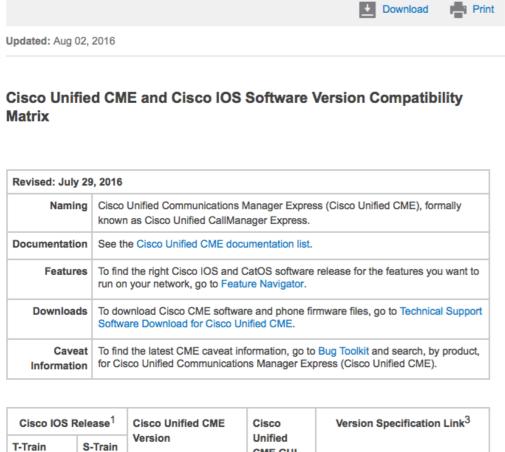




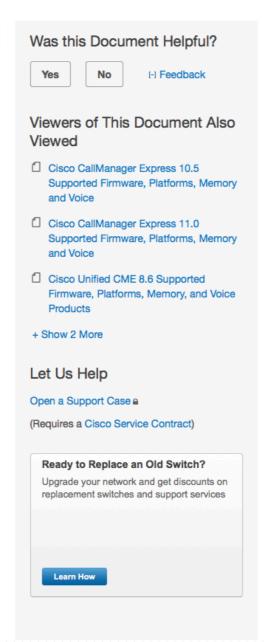
WIE FINDE ICH DAS 109?

Cisco | Networking Academy® | Mind Wide Open™

Cisco Unified CME and Cisco IOS Software Version Compatibility Matrix



| Cisco IOS Release ¹ | | Cisco Unified CME | Cisco | Version Specification Link ³ | |
|--------------------------------|----------|----------------------------------|--|--|--|
| T-Train | S-Train | Version | Unified CME GUI Version ² | | |
| 15.6(3)M | 16.3.1 | 11.5 (Recommended Version) | 11.5.0.0 | Cisco Unified CME 11.5 Specifications | |
| 15.6(1)T | 3.178 | 11 | 11.0.0.0 | Cisco Unified CME 11.0 Specifications | |
| 15.4(3)M | 15.4(3)S | 10.5 | 10.5.0.0 | Cisco Unified CME 10.5 Specifications | |





Hochschule Fulda

University of Applied Sciences



INSTITUT FÜR
WISSENSCHAFTLICHE
WEITERBILDUNG



WIE FINDE ICH DAS 108?

Support > Product Support > Routers > Cisco 2900 Series Integrated Services Routers >

Cisco 2911 Integrated Services Router

Specifications Overview

Series:

Compatibility:

Cisco 2900 Series Integrated Services

Compatible Interfaces and Modules

Routers

Product ID: View All PIDs

Status: Orderable How to Buy

End-of-Sale Date: None Announced
End-of-Support Date: None Announced

Visio Stencil (2 MB .zip file) ☐ More Specifications ∨



| Documentation | Downloads Community Content | Related Information |
|---|-----------------------------|--|
| Software on Chassis | | Product Overview Compare All Models in the Series |
| atest Release | sistant | Certifications |
| 6.3.0 Download Options | | Tools |
| 6.2.0 Download Options | | Commerce Workspace (CCW) Bug Search Tool |
| 5.1.0 | Download Options | Cisco Notification Service |
| 6.0 Download Options | | Product License Registration SNMP Object Navigator |
| All Releases CiscoWorks Campus Manager Device Package Updates | | Software Research Cisco IOS MIB Locator |
| | | Cisco CLI Analyzer |
| atest Release | | All Tools |
| 5.2.0 | Download Details | Let Us Help |
| 5.1.3 | Download Details | Technical Support |
| 5.0.5 | Download Details | Open a TAC Case Online US/Canada 800-553-2447 |
| All Releases | | Worldwide Support Phone Number |
| OS Software | | Technical Sales Questions |
| atest Release | | Contact Us for Sales Questions |
| 15.6.3M | Download Options | Call 1-866-425-5351 US/CAN 5am - 5pm Pacific |

Cisco Networking Academy® Mind Wide Open™







WIE FINDE ICH DAS 109?

Cisco | Networking Academy® Mind Wide Open™

Download Software

Download Cart (0 items) [-] Feedback He

Downloads Home > Products > Routers > Branch Routers > 2900 Series Integrated Services Routers > 2911 Integrated Services Router > Software on Chassis > IOS Software-15.6.3M

2911 Integrated Services Router



Download: Verbindung zu cisco.com Account mit NetAcad Maintenance!







LIZENZAKTIVIERUNG - ROUTER

Cisco | Networking Academy® Mind Wide Open™

IOS UCK9 für IPT freischalten

Router# show license

- ! (index 3 Feature:uck9)
- ! Activating the IPT Technology Package
- 1. Router# enable
- 2. Router# configure terminal
- 3. Router(config)# license boot module [module-name] technology-package uck9
- 4. Router(config)# exit
- 5. Router# write
- 6. Router# reload

The [module-name] in step 3 is in reference to the platform being used. e.g. c1900 or c2900

- ! Accepting the End-User License Agreement (EULA)
- 1. Router# enable
- 2. Router# configure terminal
- 3. Router(config)# license accept end user license agreement







Cisco | Networking Academy® | Mind Wide Open™

Konfiguration...











ROUTER 2601

Cisco | Networking Academy® | Mind Wide Open™

DHCP

```
ip dhcp excluded-address 10.75.0.1 10.75.0.10
ip dhcp excluded-address 10.70.0.1 10.70.0.10
!
ip dhcp pool Voice7
  network 10.75.0.0 255.255.255.0
  default-router 10.75.0.1
  option 150 ip 10.75.0.1
!
ip dhcp pool Data7
  network 10.70.0.0 255.255.255.0
  default-router 10.70.0.1
!
```

Interfaces

```
interface FastEthernet0/0
  no ip address
!
interface FastEthernet0/0.1
  encapsulation dot1Q 1 native
  ip address 10.7.0.1 255.255.255.0
!
interface FastEthernet0/0.700
  encapsulation dot1Q 700
  ip address 10.70.0.1 255.255.255.0
!
interface FastEthernet0/0.750
  encapsulation dot1Q 750
  ip address 10.75.0.1 255.255.255.0
!
```









ROUTER 2601

Cisco | Networking Academy® Mind Wide Open™

Routing

```
router eigrp 100
network 10.0.0.0
!
```

Telephony Service

```
telephony-service
max-ephones 20
max-dn 20
ip source-address 10.75.0.1 port 2000
keepalive 10
max-conferences 4 gain -6
transfer-system full-consult
create cnf-files version-stamp 7960 Aug 29 2016 11:08:17
```









ROUTER 2601

Phone directory

```
ephone-dn 1 dual-line
number 7111
description Ray's Phone
name Ray Hampton
!
ephone-dn 2 dual-line
number 7112
description John's Phone
name John Maxwell
!
```

Cisco Networking Academy® Mind Wide Open™

Phone settings

```
ephone 1
  device-security-mode none
  mac-address 2834.A2F6.10D3
  speed-dial 1 7112
  type 7962
  button 1:1
!
ephone 2
  device-security-mode none
  mac-address 001E.F7C3.30E7
  type 7961
  button 1:2
!
```









SWITCH 2960

```
interface FastEthernet0/1
  switchport mode trunk
!
interface FastEthernet0/4
  switchport trunk native vlan 700
  switchport mode trunk
  switchport voice vlan 750
!
interface FastEthernet0/6
  switchport trunk native vlan 700
  switchport mode trunk
  switchport woice vlan 750
!
interface Vlan1
  description Management VLAN Pod7
  ip address 10.7.0.4 255.255.255.0
!
ip default-gateway 10.7.0.1
```

Cisco Networking Academy® Mind Wide Open™







Cisco | Networking Academy® | Mind Wide Open™

Software (zusätzliche Informationen)









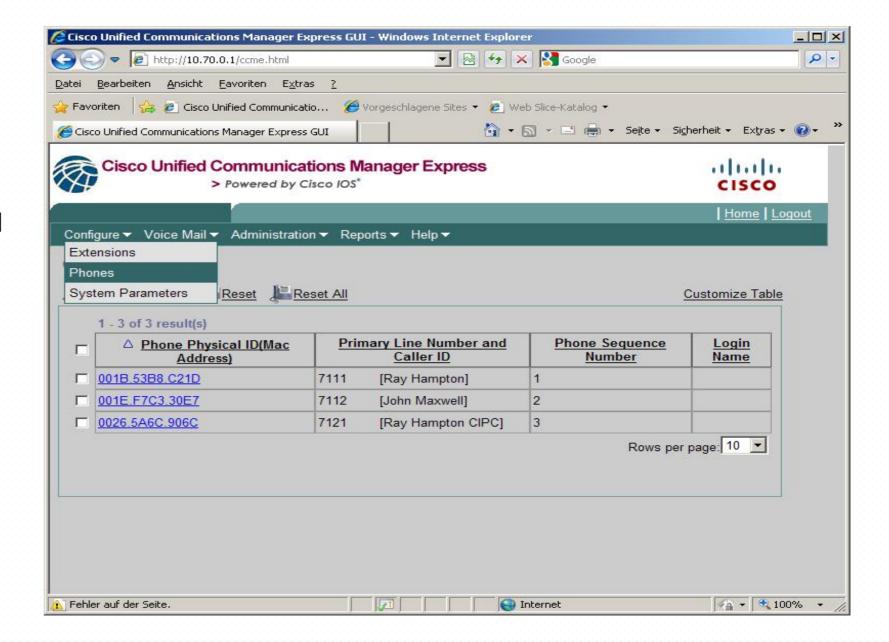
CISCO CALL MANAGER EXPRESS

Cisco | Networking Academy® Mind Wide Open™

Installiert auf dem Router (CCME)

Cisco CallManager Express
bietet für lokal angebundene
IP-Telefone eine Reihe von
häufig benutzten System- und
Low-End Telefonanlagenfunktionen.

Dazu kommen mehrere Funktionen, zu denen herkömmliche Telefonielösungen nicht in der Lage sind.





SKINNY SOFTPHONE CIPC (CISCO IP COMMUNICATOR)

Cisco | Networking Academy® Mind Wide Open™

Installiert auf dem PC (CIPC)

Cisco IP Communicator ist eine Microsoft Windows basierte Softphone-Anwendung.

Diese funktioniert mit einem Computer, als ob mit einem Cisco Unified IP-Telefon telefoniert wird.

Es ermöglicht qualitativ hochwertige Sprachdienste, sofern der Benutzer Zugriff auf das Firmennetzwerk hat.









Cisco | Networking Academy® | Mind Wide Open™

Literatur...









Cisco Networking Academy®



LITERATUR

CCNA Voice 640-461

Official Cert Guide
Jeremy Cioara,
Michael Valentine (Autoren)
Media-Kombination
51,10 €
528 Seiten
2011 | 2nd Revised edition
Cisco Press (Verlag)
978-1-58720-417-3 (ISBN)

Mind Wide Open™ 4114114 CISCO Official **Cert Guide** Learn, prepare, and practice for exam success **CCNA Voice** ▶ Master CCNA Voice 640-461 exam topics Assess your knowledge with 640-461 chapter-opening quizzes Review key concepts with exam preparation tasks ▶ Practice with realistic exam questions on the CD-ROM JEREMY CIOARA, CCIE® NO. 11727 **MICHAEL VALENTINE** ciscopress.com







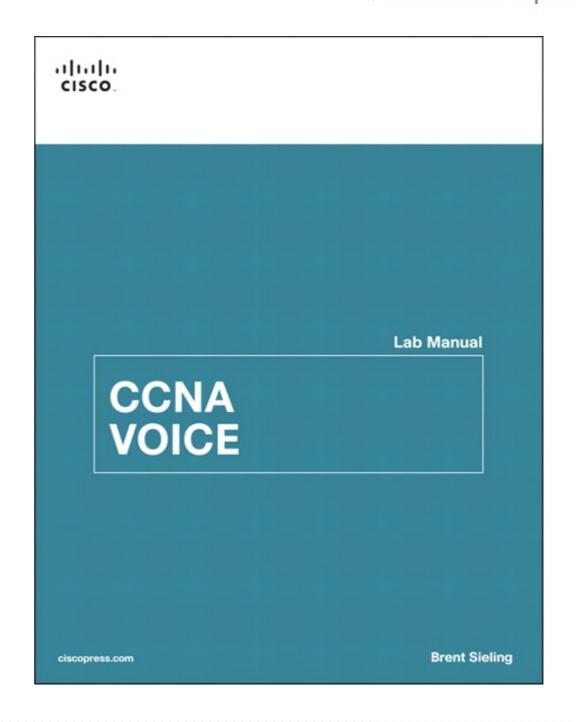


LITERATUR

CCNA Voice Lab Manual

Brent Sieling (Autor) 37,65 Euro Buch | Softcover 408 Seiten 2013 Cisco Press (Verlag) 978-1-58713-299-5 (ISBN)

Cisco | Networking Academy® | Mind Wide Open™









Cisco | Networking Academy® | Mind Wide Open™

Cisco und IPT...?









IP TELEPHONY HISTORIE

Cisco | Networking Academy® | Mind Wide Open™

2005

Start des Beta Curriculum in Valencia Manfred Wolf (Dillingen) und Christian Pape (HS Fulda)

2006

Instruktorenkurs am OSZIMT in Berlin Christian Pape und Christoph Seifert

2007 - 2009

IP Telephony Kurse an der HS Fulda Christian Pape und Christoph Seifert

2011 -

IP Telephony Kurse an der HS Düsseldorf Ständige Weiterentwicklung der Labs Stefan Gille







IP TELEPHONY HISTORIE (2014)

Cisco | Networking Academy® Mind Wide Open™



Please tell us how we can make Cisco NetSpace even better!

← Instructor Feedback Forum



CCNA Voice, the next course for netacad?

Hi,

Do you have plans to add CCNA Voice to Networking Academy?

Johnny Serrano Sanchez shared this idea · Feb 3, 2014 · Flag idea as inappropriate...



CLOSED - COLD STORAGE

· Kimberly Kupanoff responded · Feb 28, 2014

Hello

I just received an update on this. NetAcad is not planning to develop a CCNA Voice course. We will be leveraging the community-developed Collaboration Primer to enable instructors to introduce voice/collaboration technology in their classes in the June 2014 timeframe.

Thank you!

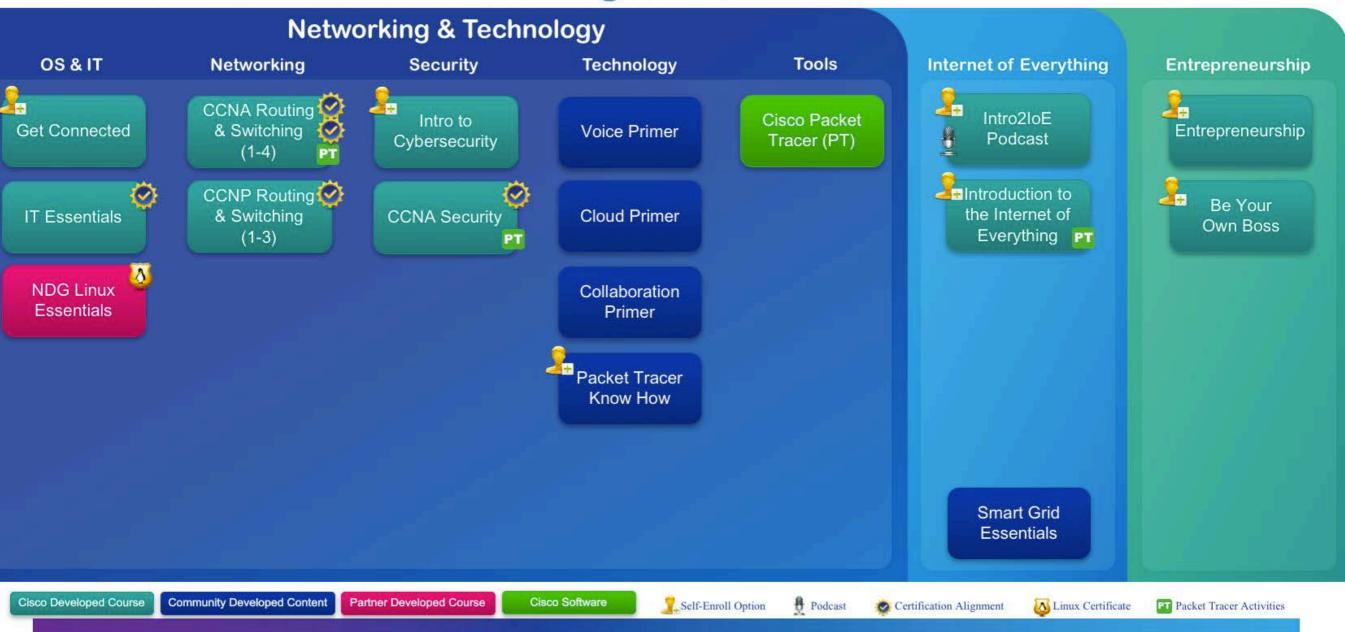
Kimberly

Quelle: https://netspace.uservoice.com/forums/168832-instructor-feedback-forum/suggestions/5467744-ccna-voice-the-next-course-for-netacad



Cisco Networking Academy® Mind Wide Open™

NetAcad Kurs-Portfolio – gestern









IP TELEPHONY PERSPEKTIVE (HEUTE)



Christoph Seifert ► Cisco Networking Academy

Donnerstag um 11:56 · 🚱

which voice aspects are planed in the future? Is CCNA Voice in the focus for netacad?



Gefällt mir



Kommentieren



Teilen

Sei der/die Erste, dem/der das gefällt.



Andy Thomson

Ccna voice is a retired certification. It's ccna collaboration now and there's been no notifications of such courses

http://www.cisco.com/c/en/us/training-events/training-certifications/overview.html

Cisco | Networking Academy® | Mind Wide Open™

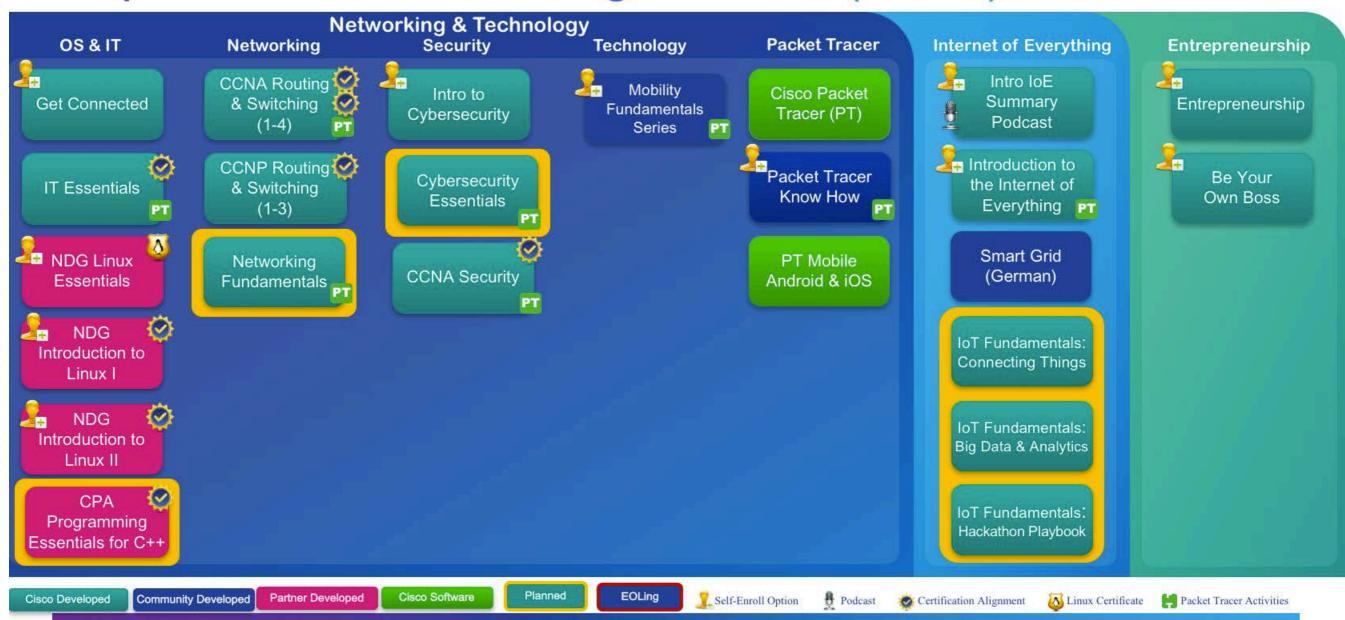


Cisco | Networking Academy®

Mind Wide Open™

Corporate Affairs Learning Portfolio (heute)

May 2016





Hochschule Fulda

University of Applied Sciences

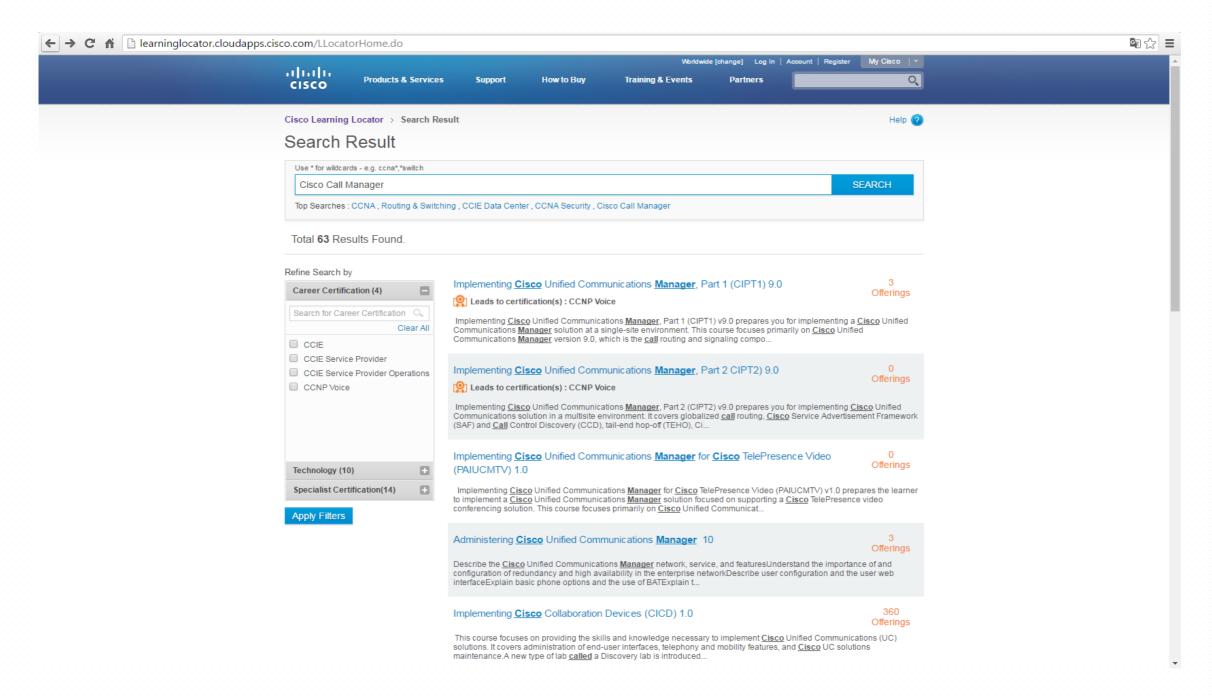


INSTITUT FÜR
WISSENSCHAFTLICHE
WEITERBILDUNG



IP TELEPHONY PERSPEKTIVE (HEUTE)

Cisco | Networking Academy® Mind Wide Open™





Hochschule Fulda

University of Applied Sciences

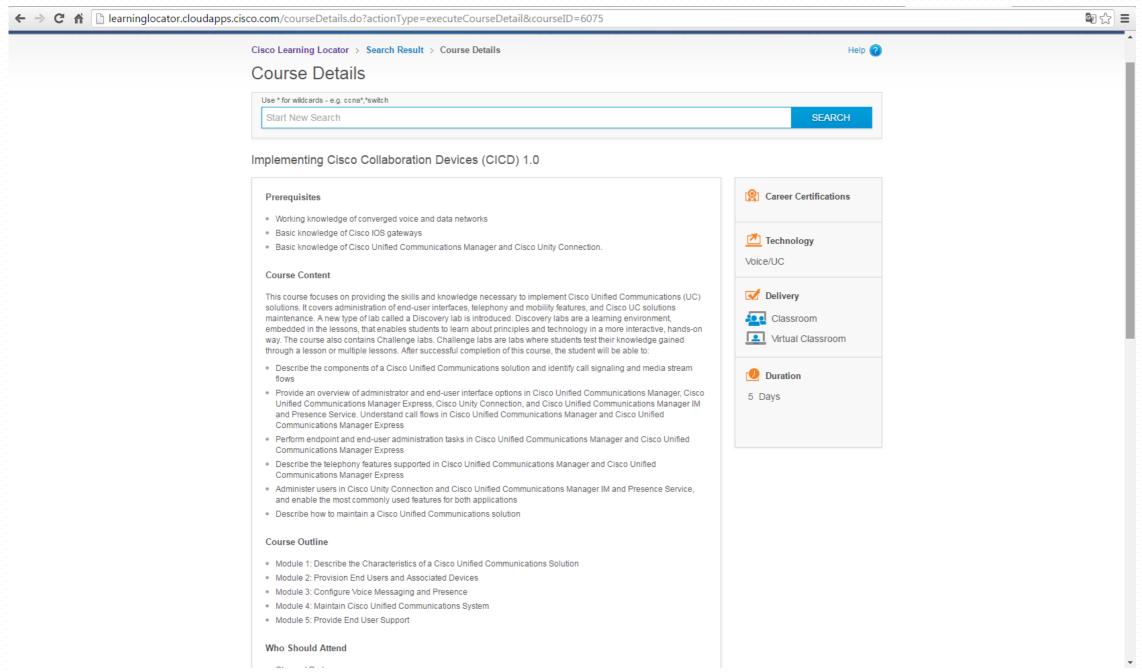


INSTITUT FÜR
WISSENSCHAFTLICHE
WEITERBILDUNG



IP TELEPHONY PERSPEKTIVE (HEUTE)

Cisco | Networking Academy® | Mind Wide Open™

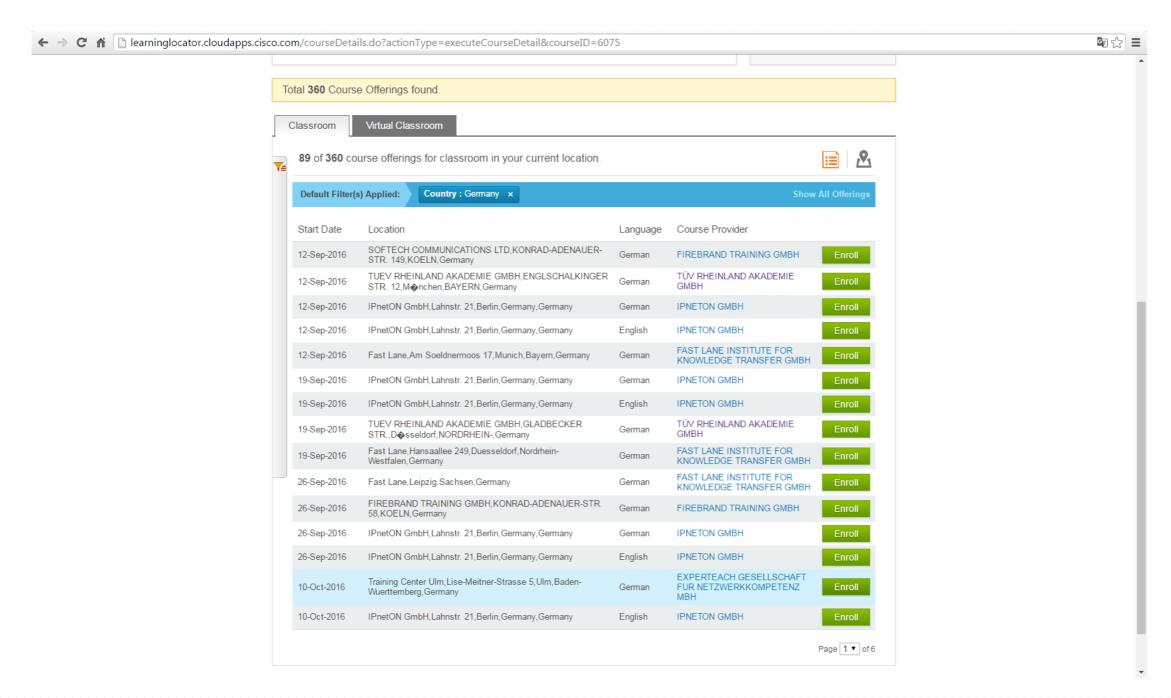






IP TELEPHONY PERSPEKTIVE (HEUTE)

Cisco | Networking Academy® Mind Wide Open™







Cisco | Networking Academy® Mind Wide Open™

Welcome to the human network

Cisco Networking Academy® Mind Wide Open™

cisco-academy@hs-duesseldorf.de http://cisco-academy.hs-duesseldorf.de







Cisco | Networking Academy® | Mind Wide Open™

IP Telephony
Course Overview



Dipl.-Ing. Stefan Gille



Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Course Structure

Fast Track (startup, 2 days):

Router and Switch, basics

IPT Course (9 days):

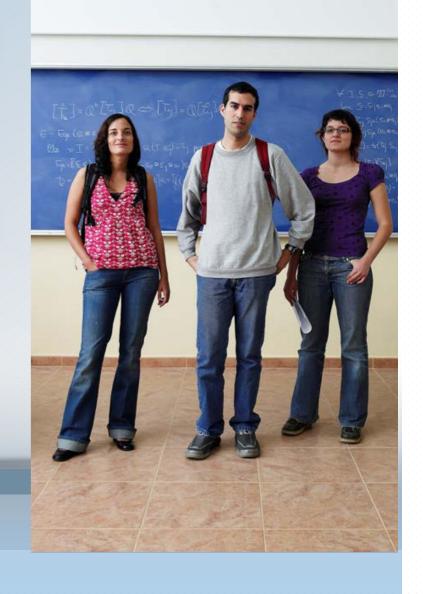
Configuration, architecture and features of Cisco "Call Manager Express"

Dial Plans

Conversion of small IP Telephony solutions

Troubleshooting

Skills Exam







Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Impressions





Zentrum für Weiterbildung und Kompetenzentwicklung
Center for Training and Competence Development

Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Impressions



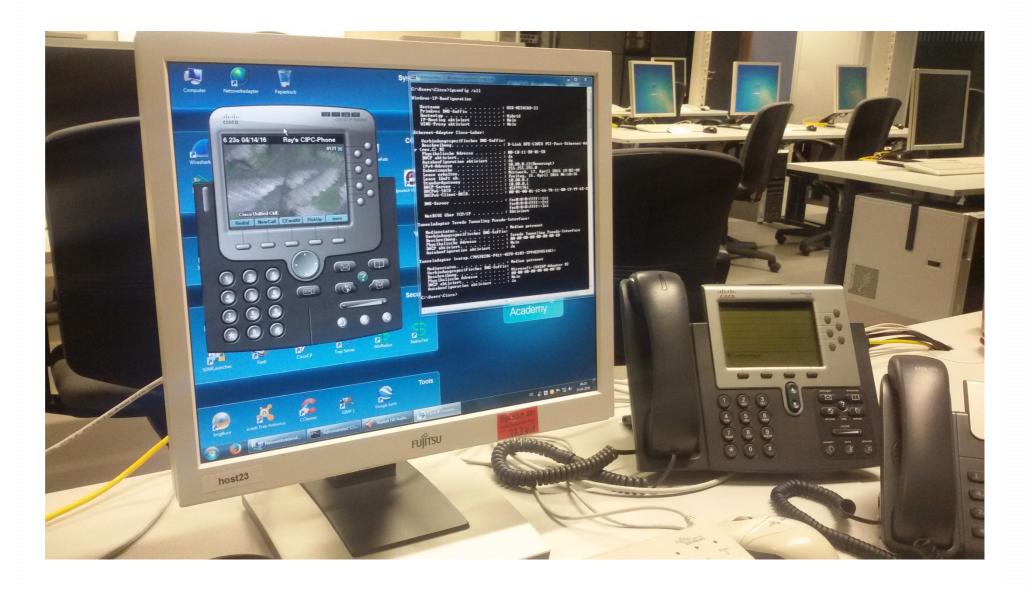




Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Impressions







Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Topology

LAN

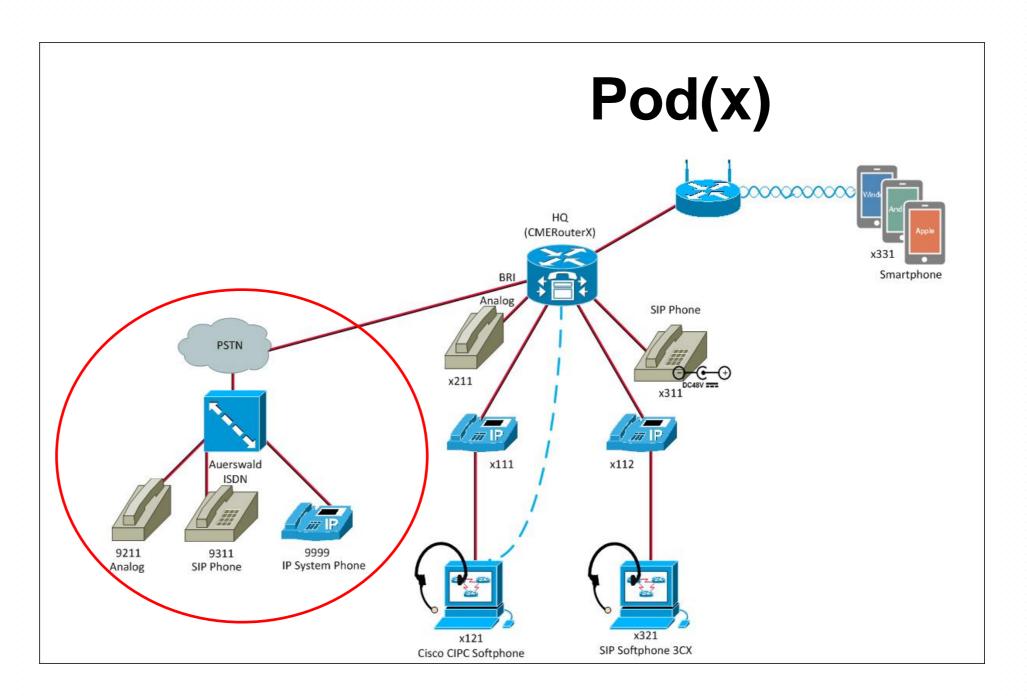
Analog

SIP

Softphones

WLAN

ISDN





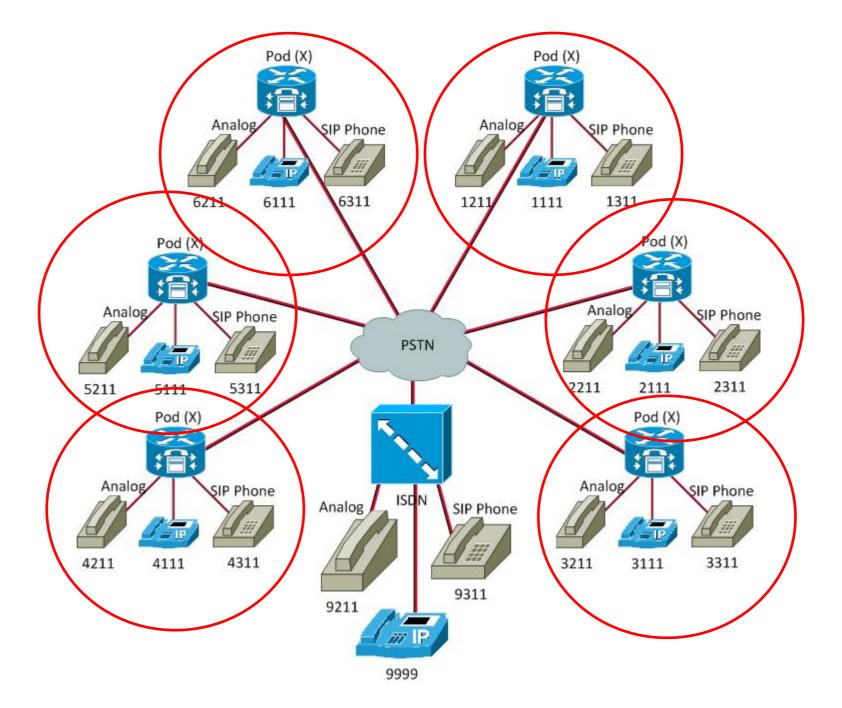


Cisco Networking Academy®

Mind Wide Open™

IP Telephony

Topology ISDN



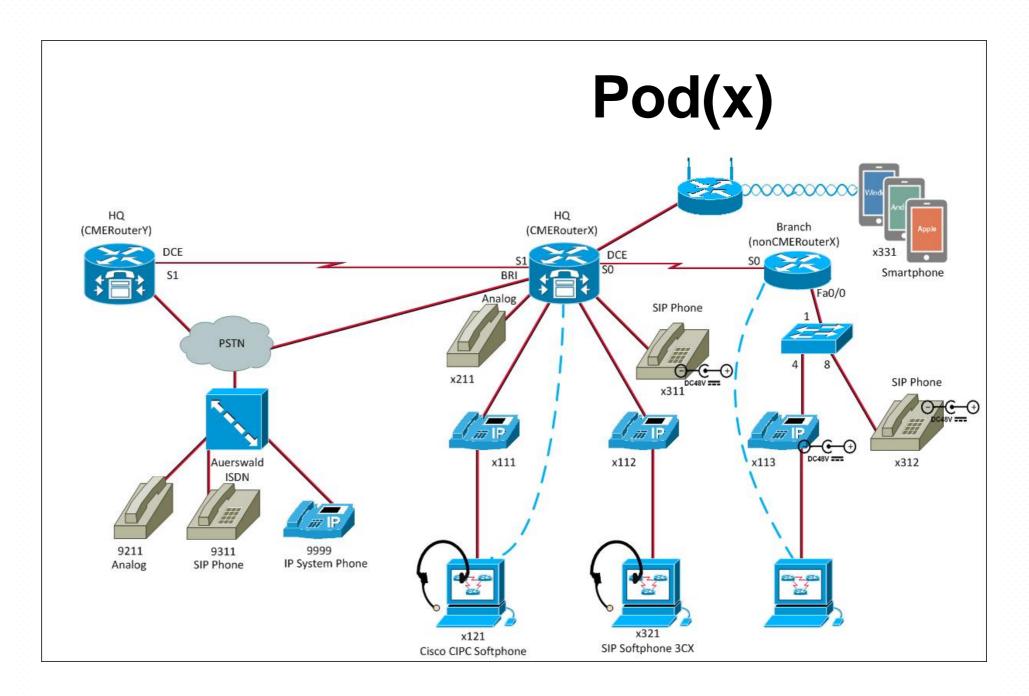


Zentrum für Weiterbildung und Kompetenzentwicklung
Center for Training and Competence Development

Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Topology
WAN
mit zwei Pods





ZWEK

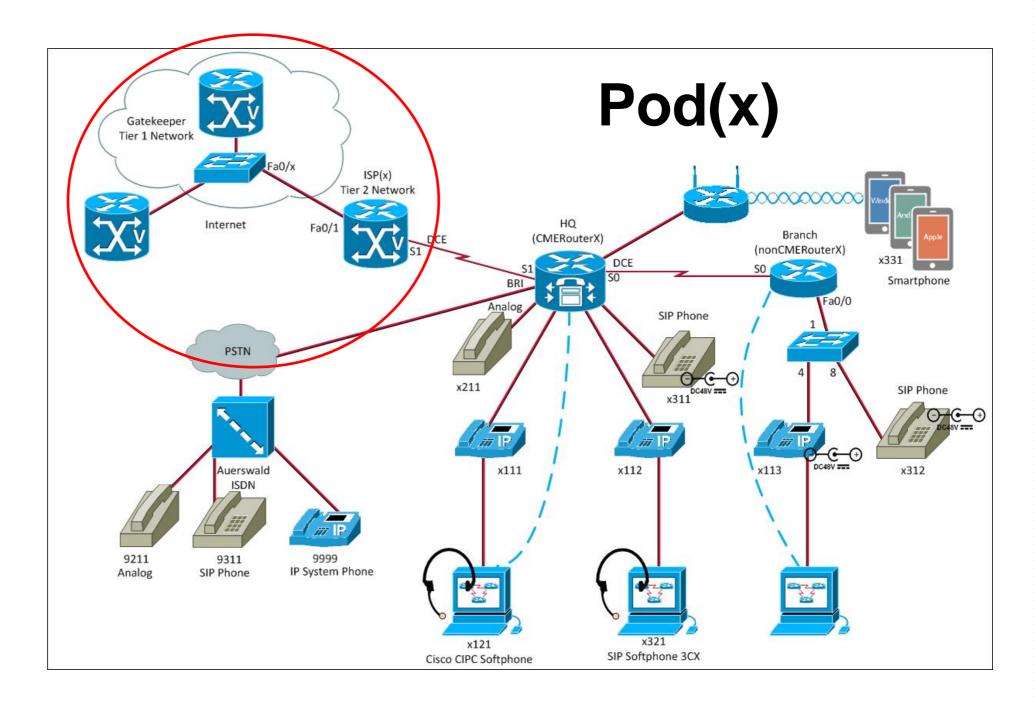
Zentrum für Weiterbildung und Kompetenzentwicklung

Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Topology

WAN
mit allen Pods
Gateway/Gatekeeper







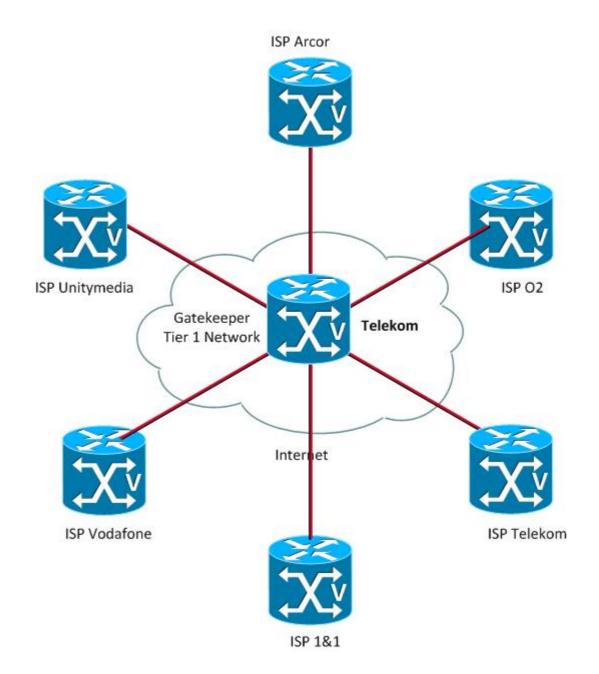
Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Topology

ISP

Gateway/Gatekeeper





ZWEK

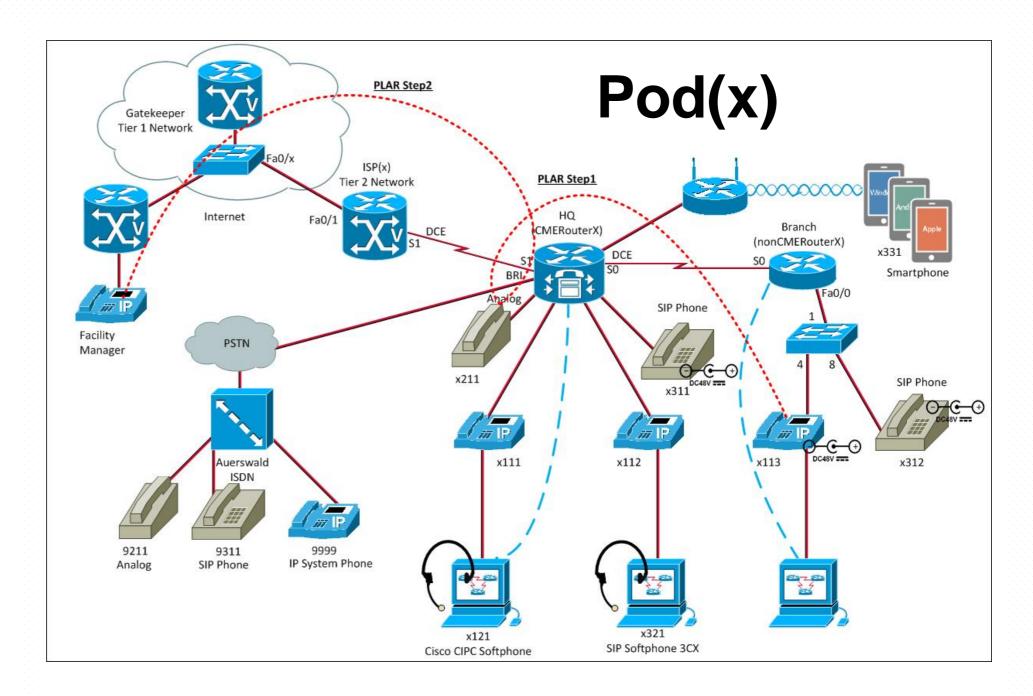
Zentrum für Weiterbildung und Kompetenzentwicklung

Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

TopologyPLAR "Bat-Phone"





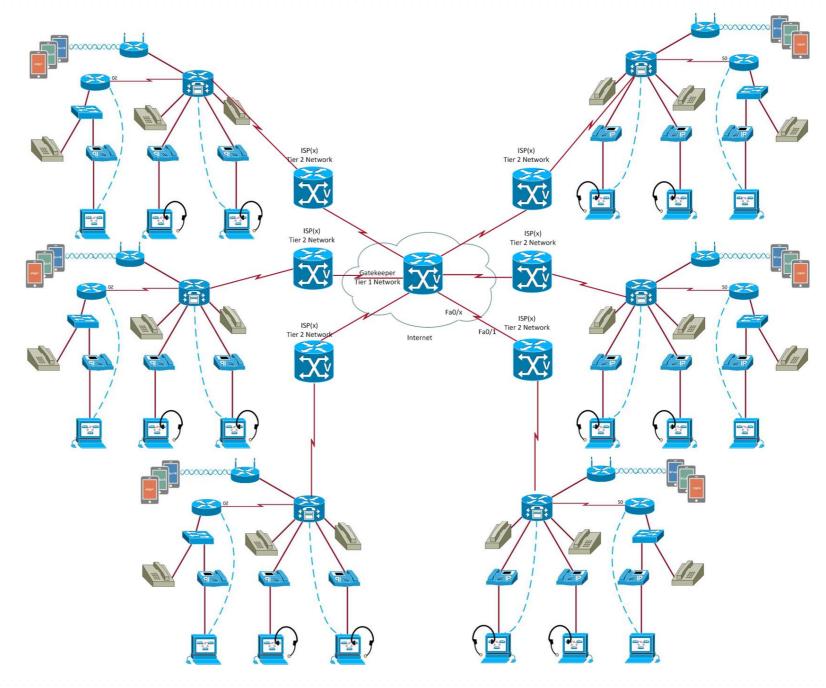




Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

TopologyThat's all







Cisco | Networking Academy® | Mind Wide Open™

IP Telephony

Summary

Goal

Configuration and administration of IP-based telephony networks

Course Material
Self study curriculum
Lab-Manuals

Exam

Skill-Based-Exam
Presentation of case study

Certificate of Completion of a registered Cisco Networking Academy







Cisco | Networking Academy® Mind Wide Open™

IP Telephony

Certificate of Training Completion



Certificate of Training Completion



IP Telephony

During the Cisco® Networking Academy® IP Telephony training administered by the undersigned instructor, the student was able to proficiently:

- Determine the relevant critical business and technical needs in order to develop a Cisco IP Telephony design framework in a SOHO environment, including the choice of signaling type and encoding methods.
- Select the appropriate hardware and software components to support a proposed SOHO IP telephony design
- Determine which high availability issues would influence the selection of network hardware and software for an SOHO environment.
- Design the appropriate dial plan to support SOHO design requirements

- Describe the similarities and differences between PSTN and VoIP including call transport, call signaling and bandwidth requirements.
- Describe the technologies used in Voice over IP and how they differ from PSTN technologies.
- · Determine how PSTN connectivity issues influence
- SOHO hardware and software selection.
- Understand and be able to configure various connection types to the PSTN.
- Explain the benefits of hierarchical and scalable dial and numbering plans

- Install an IP Telephony solution in a SOHO environment using CME
- Configure Cisco Call Manager Express to support IP
 Phones
- Secure an IP Communications network
- Describe effective troubleshooting methods to resolve issues in SOHO IP Telephony networks
- Use appropriate troubleshooting methods to determine and solve QoS issues in an SOHO IP Telephony networks

| Student's Name | |
|----------------|------------------------|
| Academy Name | |
| Location | Date |
| Instructor | Instructor's Signature |



Cisco Networking Academy an der HSD

Cisco | Networking Academy® | Mind Wide Open™

Cisco Networking Academy an der Hochschule Düsseldorf







Cisco | Networking Academy® Mind Wide Open™

Hochschule Düsseldorf
University of Applied Sciences

HSD

&

cisco

Networking Academy = 16 Jahre

Seit 2015 eingebunden in:

INSTITUT FÜR
WISSENSCHAFTLICHE
WEITERBILDUNG

&

Zentrum für Weiterbildung und Kompetenzentwicklung Center for Training and Competence Development







Cisco | Networking Academy® | Mind Wide Open™

Courses

The Cisco Networking Academy starts continuously with new courses

- CCNA Routing & Switching (1-4)
- CCNA Security
- CCNA IPT
- CCNP

Special offers (self-paced courses)

- Linux Essentials
- Internet of Everything
- Cyber Security
- Entrepreneur Ship
- Smart Grid



Zentrum für Weiterbildung und Kompetenzentwicklung
Center for Training and Competence Development

Campus Derendorf

Cisco | Networking Academy® | Mind Wide Open™

Schulungsraum 01.E.113 Gebäude 1





Zentrum für Weiterbildung und Kompetenzentwicklung Center for Training and Competence Development

ZWEK

Cisco | Networking Academy®

Mind Wide Open™











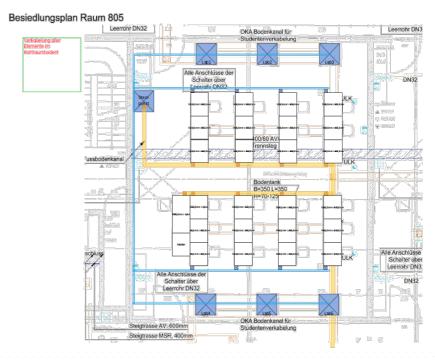
Cisco | Networking Academy® | Mind Wide Open™

Schulungsraum 01.E.113 Gebäude 1

Equipment

- 24 Schulungsplätze
- 6 Racks
 - 3 Router 2811
 - 18 Router 2801
 - 15 Router 2901
 - 36 L2-Switche
 - 8 L3-Switche
- "Netzwerk-Kreuzfeld"
- weitere Komponenten
 - 30 bis 40 Router und Switche
 - 10 WLAN-Router/Sticks
 - 50 Telefone (IP, SIP, Analog, ISDN)









Cisco | Networking Academy® Mind Wide Open™

Welcome to the human network

Cisco Networking Academy® Mind Wide Open™

cisco-academy@hs-duesseldorf.de http://cisco-academy.hs-duesseldorf.de







Kursankündigung: http://cisco-academy.hs-duesseldorf.de

Cisco | Networking Academy® Mind Wide Open™

Kurstermine jeweils Donnerstag bis Samstag

CCNA IP Telephony

22.-24. September.2016

27.-29. Oktober 2016

24.-26. November 2016

CCNA Security

03.-05. November 2016

01.-03. Dezember 2016

19.-21. Januar 2017

CCNP

CCNP SWITCH

12.-14. Januar 2017

23.-25. Februar 2017 (Karnevalswochenende)

23.-25. März 2017

CCNP ROUTE

04.-06. Mai 2017

08.-10. Juni 2017

06.-08. Juli 2017

CCNP TSHOOT

- Termin noch nicht festgelegt -



Kursankündigung:

https://www.hs-fulda.de/fachbereiche/angewandte-informatik/studierende/cisco-networking-academy/oder über https://www.hs-fulda.de/netlab

Kurstermine auch nach Absprache

CCNA R/S (Student- und Instruktorenkurse)

1+2 Frühjahr

3+4 Sommer

CCNA IP Telephony

CCNA Security (bald wieder Instruktorenkurse)

Cisco | Networking Academy® | Mind Wide Open™

CCNP (Student- und Instruktorenkurse)

CCNP SWITCH

Sommer 2015, 2018, 2021

CCNP ROUTE

Sommer 2016, 2019, 2022

CCNP TSHOOT

Sommer 2017, 2020, 2023