

# VOIP and IP telephony fundamentals

Halmstad University

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## LABs – Case studies

### Skills Exam :

- **configuration (70%)**
- **theoretical questions(30%)**
- **Grade 3 :50-70%, Grade 4: 71-90%,  
Grade 5 :91-100%**

# Examination Skills Exam - Configuration

Cisco.com

## Grade 3

- **Basic setup CME Router, Switch, IP phones (2 routers, 2 switches, 2 phones)**
- **VOIP Deal peers across a WAN link**
- **Configuring FXO & FXS**

# Examination Skills Exam - Configuration

Cisco.com

## Grade 4

- **Basic setup CME Router, Switch, IP phones (2 routers, 2 switches, 2 phones)**
- **VOIP Deal peers across a WAN link**
- **Configuring FXO & FXS**
- **QoS implementation Router and Switch**

# Examination Skills Exam - Configuration

Cisco.com

## Grade 5

- **Basic setup CME Router, Switch, IP phones (2 routers, 2 switches, 2 phones)**
- **VOIP Deal peers across a WAN link**
- **Configuring FXO & FXS**
- **QoS implementation Router and Switch**
- **Implementing WLAN with VOIP**
- **Implementing SIP Server on CME Router and connect SIP client**

# Examination Theoretical questions

- 1. Bandwidth Calculation.**
- 2. Analog-to-Digital Voice Encoding. Nyquist Theorem. Packet Loss, Delay, and Jitter. VAD. Deal Peers :POTS and VOIP. Class of restriction.**
- 3. VoIP Signaling and Call Control. Call Control Models. Centralized Call Control and Distributed Call Control. H323. SIP.**
- 4. Converged Network Quality Issues . Three QoS Models. Classification and Marking . Queuing Algorithms. Traffic Conditioners.**