VoLTE Network O&M Competence Improvement Solution
Content

› Trends and Challenge of VoLTE

› VoLTE Network O&M Competence Improvement Solution

› Case
Competence Challenges of VoLTE O&M

VoLTE is a complicated solution

Multi-Domain
G/U/LTE IMS/EPC/CS ...

Multi-NEs
eNODEB MME/S/P-GW SBC/CSCF/TAS ...

Multi-Service
Basic Services SS/IN/VAS Customized Services ...

5+
30+
50+

VoLTE is a complicated solution

Difficulty for Fault Demarcation

Difficulty for Service Quality Assurance

Solution Design

Team Co-operation

Training Target
- Service KQI Improvement
- E2E Troubleshooting Efficiency

Learning Modes
- Fault Simulation
- Case Study
- SOJT

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VoLTE Network O&M Competence Improvement Solution

Manager Training

VoLTE Key Technology and Operation Introduction

Engineer Training Phase 3: E2E O&M Competence Improvement (WN & IMS)
- VoLTE E2E KPI/KQI Improvement Training

Engineer Training Phase 2: O&M Competence Improvement by On-Job Training
- VoLTE S-OJT (IMS Specialty)
- VoLTE S-OJT (WN Specialty)

Engineer Training Phase 1: O&M Competence Improvement for Different Roles
- VoLTE Service Problem Troubleshooting
- VoLTE Technical Training (IMS Specialty)
- VoLTE Technical Training (WN Specialty)

VoLTE Basic Knowledge (MOOC)
- VoLTE Fundamental (MOOC)

Learning Modes
- MOOC
- Centralized Training (Lecture + Case Study + Scenario-based Practice)
- Lab/eLab
- S-OJT
# VoLTE Key Technology and Operation Introduction -- Help managers understand VoLTE services and technologies

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<tr>
<th>Module 1</th>
<th>VoLTE Solution Overview</th>
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<td>• VoLTE solution motivation and advantage</td>
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<td>• VoLTE network architecture</td>
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<td>• VoLTE evolution</td>
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<th>VoLTE Key Technology Overview</th>
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<td>• VoLTE basic call</td>
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<td>• VoLTE domain selection</td>
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<td>• eSRVCC</td>
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<td>• VoLTE roaming</td>
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<td>• VoLTE services</td>
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<th>Module 3</th>
<th>VoLTE Network O&amp;M and Optimization Solution</th>
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<td>• VoLTE O&amp;M challenges</td>
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<td></td>
<td>• Huawei VoLTE network high-efficiency O&amp;M solution introduction (E2E troubleshooting tools, routine maintenance, emergency handling, KPI analysis and optimization)</td>
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# VoLTE Basic Knowledge Online Learning

--- Get VoLTE basic knowledge in advance

<table>
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<th>IMS engineers</th>
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<td>WN engineers</td>
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<td><strong>VoLTE Basic Knowledge MOOC</strong></td>
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<td>MOOC</td>
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| VoLTE Solution Overview | • VoLTE solution motivation and advantage  
|                         | • VoLTE network architecture  
|                         | • VoLTE evolution  
|                         | • VoLTE Key Technology overview  |

| EPC network Principle | • EPC architecture.  
|                       | • Function of each node in EPC  
|                       | • Key signaling procedure in EPC  
|                       | • EPC voice solution overview  |

| IMS network Principle | • IMS system architecture  
|                       | • IMS network elements  
|                       | • IMS register flow and session flow  
|                       | • SIP protocol overview  |

| VoLTE Wireless network principle | • VoLTE wireless key features  
|                                    | • VoLTE QoS overview  
|                                    | • VoLTE radio dimensioning theory overview  |
VoLTE Engineer Training Phase 1: VoLTE O&M Competence Improvement for IMS Specialty

VoLTE Technical Training

- Lecture/Case/Practice

VoLTE key technologies

- VoLTE basic signaling procedure (registration/call/anchoring)
- VoLTE eSRVCC procedure
- VoLTE service provisioning
- VoLTE IP short message
- VoLTE E2E QoS
- VoLTE charging principle
- VoLTE network deployment and configuration
- VoLTE network geography solution

VoLTE Service Problem Troubleshooting

- Lecture/Case/Practice

VoLTE troubleshooting case analysis and practice

- VoLTE signaling analysis (bSRVCC/mid-SRVCC, etc)
- VoLTE E2E number analysis
- VoLTE emergency handling
- VoLTE KPI evaluation
- VoLTE service troubleshooting case analysis
- VoLTE service troubleshooting scenario-based practice
VoLTE Engineer Training Phase 1: VoLTE O&M Competence Improvement for WN(Wireless) Specialty

WN Specialty

LTE Voice Solution Training
Lecture/Case/Practice

VoLTE Technology for Wireless

- VoLTE Cross-domain signaling analysis
- LTE eRAN VoIP Solution Features
- LTE VoIP Radio Network Planning
- VoLTE radio dimensioning theory and method
- Voice Quality Evaluation and Optimization
- Troubleshooting Case study (LTE caused failure)
- Troubleshooting Practice
**Engineer Training Phase 2: VoLTE On-Job Training**

**IMS Specialty**

- **VoLTE S-OJT (IMS Specialty)**
  - OJT
    - VoLTE live network deployment practice
      - VoLTE Live network deployment and reconstruction
      - VoLTE Live network service provisioning
      - VoLTE Live network signaling analysis
    - VoLTE live network troubleshooting and optimization
      - VoLTE Live network KPI/KQI analysis and Optimization
      - VoLTE Live network service failure case study
      - VoLTE Live network service troubleshooting

**WN Specialty**

- **VoLTE S-OJT (WN Specialty)**
  - OJT
    - VoLTE feature deployment
      - ROHC/TTI bundling/DRX feature deployment
      - SRVCC feature deployment
    - VoLTE coverage evaluation
      - VoLTE Edge-Coverage-Improvement testing
      - VoLTE long duration call testing
    - VoLTE capacity & voice quality evaluation
      - VOLTE Capacity evaluation and optimization
      - VOLTE Voice Quality evaluation and optimization
VoLTE E2E KPI/KQI Improvement Training
Lecture/Case Study/Practice

VoLTE E2E KQI Improvement
- VoLTE KPI/KQI Overview
- VoLTE KQI--call setup rate optimization
- VoLTE KQI--call setup duration optimization
- VOLTE KQI--voice quality optimization

VoLTE E2E KPI Evaluation
- VoLTE KPI list in core and wireless network
- VoLTE KPI evaluation
- VoLTE E2E KPI problem analysis (registration rate, srvcc successful rate, etc)
- VoLTE KPI Optimization Case study
# E2E VoLTE Lab Environment, Cross-domain Competence Improvement

## Cover All Domain
- **Cover All Domain**: cover IMS, EPC, CS, WN knowledge
- **Cross-domain knowledge convergent**: VoLTE E2E deployment, VoLTE E2E signaling procedure, VoLTE cross-domain E2E troubleshooting case study

## VoLTE E2E Lab
- **VoLTE E2E Lab**: Practice environment, simulate the live network
- **VoLTE E2E Troubleshooting**: Scenario-based practice, improve the VoLTE service troubleshooting ability.

## Instructors & Supporting Platform
- **60+ IMS/PS/CS/WN professional instructors**
- **Various training methods**: MOOC, Case Study, Scenario-based Practice, S-OJT.
- **Abundant experience**: Successfully delivered 100+ VoLTE classes all over the world
Content

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› Case
## Success Case: Operator B VoLTE Core Network Expert Cultivation Training

--Learning and Practice, improve O&M competence and network service quality

<table>
<thead>
<tr>
<th>Challenge</th>
<th>VoLTE Cross-domain Expert training solution</th>
<th>Value</th>
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<tbody>
<tr>
<td>Troubleshooting efficiency is low</td>
<td>Cross-domain O&amp;M team building (5 days)</td>
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<tr>
<td>Network KPI/KQI need to be optimized</td>
<td>- Virtual Cross-domain O&amp;M Team building, VoLTE fault location simulation</td>
<td>Support the network service quality improvement</td>
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<tr>
<td>Network O&amp;M personnel -- lack of cross-domain knowledge</td>
<td>- Case Study</td>
<td>Shorten troubleshooting duration</td>
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<td>- Fault simulation</td>
<td>Improve call setup rate</td>
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<tr>
<td></td>
<td>Live network S-OJT (15 days)</td>
<td>Shorten setup duration</td>
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<tr>
<td></td>
<td>- Live network signaling flow analysis</td>
<td>- 12 CN engineers from EPC/CS/IMS build a virtual team</td>
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<td>- Live network script analysis</td>
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<td>- E2E troubleshooting practice</td>
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<td>Phase2 Practice</td>
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<td>Phase3 Improvement</td>
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<tr>
<td></td>
<td>Cross-domain VoLTE knowledge training (18 days)</td>
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<tr>
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<td>- Cross-domain basic knowledge</td>
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<tr>
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<td>- E2E Signaling Flow / configuration</td>
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<td>- Case study</td>
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<td>MOOC (10 d)</td>
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<td>Lecture (8 d)</td>
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Thank you

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