Contents

[PART 1. FUTURE COMMUNICATION NETWORKS AND SYSTEMS 2](#_Toc93567039)

[Chapter 1. On the Need of Computing in Future Communication Networks 2](#_Toc93567040)

[Chapter 2. Standardization Activities for Future Communication Networks 2](#_Toc93567041)

[PART 2. CONCEPTS 2](#_Toc93567042)

[Chapter 3. Network Slicing 2](#_Toc93567043)

[Chapter 4. Mobile Edge Cloud 2](#_Toc93567044)

[Chapter 5. Content Distribution 2](#_Toc93567045)

[PART 3. ENABLING TECHNOLOGIES 2](#_Toc93567046)

[Chapter 6. Software-Defined Networks 2](#_Toc93567047)

[Chapter 7. Network Function Virtualization 2](#_Toc93567048)

[PART 4. INNOVATION TRACK 3](#_Toc93567049)

[Chapter 8. Machine Learning 3](#_Toc93567050)

[Chapter 9. Network Coding 3](#_Toc93567051)

[PART 5. BUILDING THE TESTBED 3](#_Toc93567052)

[Chapter 11. Mininet: An Instant Virtual Network on Your Computer 3](#_Toc93567053)

[Chapter 12. Docker: Containerize Your Application 3](#_Toc93567054)

[Chapter 13. ComNetsEmu: A Lightweight Emulator 3](#_Toc93567055)

[PART 6. EXAMPLES 3](#_Toc93567056)

[Chapter 14. Realizing Network Slicing 3](#_Toc93567057)

[Chapter 15. Realizing Mobile Edge Clouds 3](#_Toc93567058)

[Chapter 16. Machine Learning for Routing 3](#_Toc93567059)

[Chapter 17. Machine Learning for Flow Compression 4](#_Toc93567060)

[Chapter 18. Machine Learning for Congestion Control 4](#_Toc93567061)

[Chapter 19. Machine Learning for Object Detection 4](#_Toc93567062)

[Chapter 20. Network Coding for Transport 4](#_Toc93567063)

[Chapter 21. Network Coding for Storage 4](#_Toc93567064)

[Chapter 22. In-Network Compressed Sensing 4](#_Toc93567065)

[Chapter 23. Security for Mobile Edge Cloud 4](#_Toc93567066)

[PART 7. EXTENSIONS 4](#_Toc93567067)

[Chapter 24. Connecting to the Outer World 4](#_Toc93567068)

[Chapter 25. Integrating Time-Sensitive Networking 4](#_Toc93567069)

[Chapter 26. Integrating Software-Defined Radios 4](#_Toc93567070)

[PART 7. TOOLS 5](#_Toc93567071)

[Chapter 27. Networking Tools 5](#_Toc93567072)

Chapter List

# PART 1. FUTURE COMMUNICATION NETWORKS AND SYSTEMS

## Chapter 1. On the Need of Computing in Future Communication Networks

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/01/CCN-CHP01.pptx)

## Chapter 2. Standardization Activities for Future Communication Networks

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP02.pptx)

# PART 2. CONCEPTS

## Chapter 3. Network Slicing

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP03.pptx)

## Chapter 4. Mobile Edge Cloud

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/01/CCN-CHP04.pptx)

## Chapter 5. Content Distribution

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP05.pptx)

# PART 3. ENABLING TECHNOLOGIES

## Chapter 6. Software-Defined Networks

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP06.pptx)

## Chapter 7. Network Function Virtualization

[Chapter Video](https://www.youtube.com/watch?v=elPOdM846Rk&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=2)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP07.pptx)

# PART 4. INNOVATION TRACK

## Chapter 8. Machine Learning

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP08.pptx)

## Chapter 9. Network Coding

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/01/CCN-CHP09.pptx)

Chapter 10. Compressed Sensing

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP10.pptx)

# PART 5. BUILDING THE TESTBED

## Chapter 11. Mininet: An Instant Virtual Network on Your Computer

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP11.pptx)

## Chapter 12. Docker: Containerize Your Application

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/01/CCN-CHP012.pptx)

## Chapter 13. ComNetsEmu: A Lightweight Emulator

[Chapter Video](https://www.youtube.com/watch?v=RWXaa7sKOA0&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=2)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP13.pptx)

# PART 6. EXAMPLES

### Chapter 14. Realizing Network Slicing

[Chapter Video](https://www.youtube.com/watch?v=kzw1gx2sWx4&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=3)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP14.pptx)

## Chapter 15. Realizing Mobile Edge Clouds

[Chapter Video](https://www.youtube.com/watch?v=4aDX7oTe7o8&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=4)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP15.pptx)

## Chapter 16. Machine Learning for Routing

[Chapter Video](https://www.youtube.com/watch?v=UvYVwDPdYFY&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=11)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP16.pptx)

## Chapter 17. Machine Learning for Flow Compression

[Chapter Video](https://www.youtube.com/watch?v=jsduu1nMD_E&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=5)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP17.pptx)

## Chapter 18. Machine Learning for Congestion Control

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP18.pptx)

## Chapter 19. Machine Learning for Object Detection

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP19.pptx)

## Chapter 20. Network Coding for Transport

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP20.pptx)

## Chapter 21. Network Coding for Storage

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP21.pptx)

## Chapter 22. In-Network Compressed Sensing

[Chapter Video – Part 1](https://www.youtube.com/watch?v=sBierNSrXGM&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=6)  
[Chapter Video – Part 2](https://www.youtube.com/watch?v=A8jrxg_JG24&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=7)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP22.pptx)

## Chapter 23. Security for Mobile Edge Cloud

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP23.pptx)

## PART 7. EXTENSIONS

## Chapter 24. Connecting to the Outer World

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP24.pptx)

## Chapter 25. Integrating Time-Sensitive Networking

[Chapter Video](https://www.youtube.com/watch?v=8qtwPO6fuNk&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=8)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP25-1.pptx)

## Chapter 26. Integrating Software-Defined Radios

[Chapter Video](https://www.youtube.com/watch?v=HtySybZuGA8&list=PLtngEjKSkXc2KMZ_slcnv7_trfxY1F9Le&index=9)  
[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/02/CCN-CHP26-1.pptx)

# PART 7. TOOLS

## Chapter 27. Networking Tools

[Powerpoint Slides](https://cn.ifn.et.tu-dresden.de/wp-content/uploads/2020/04/CCN-CHP27.pptx)