

CS 725/825 & IT 725

Lecture 1

# Course Introduction

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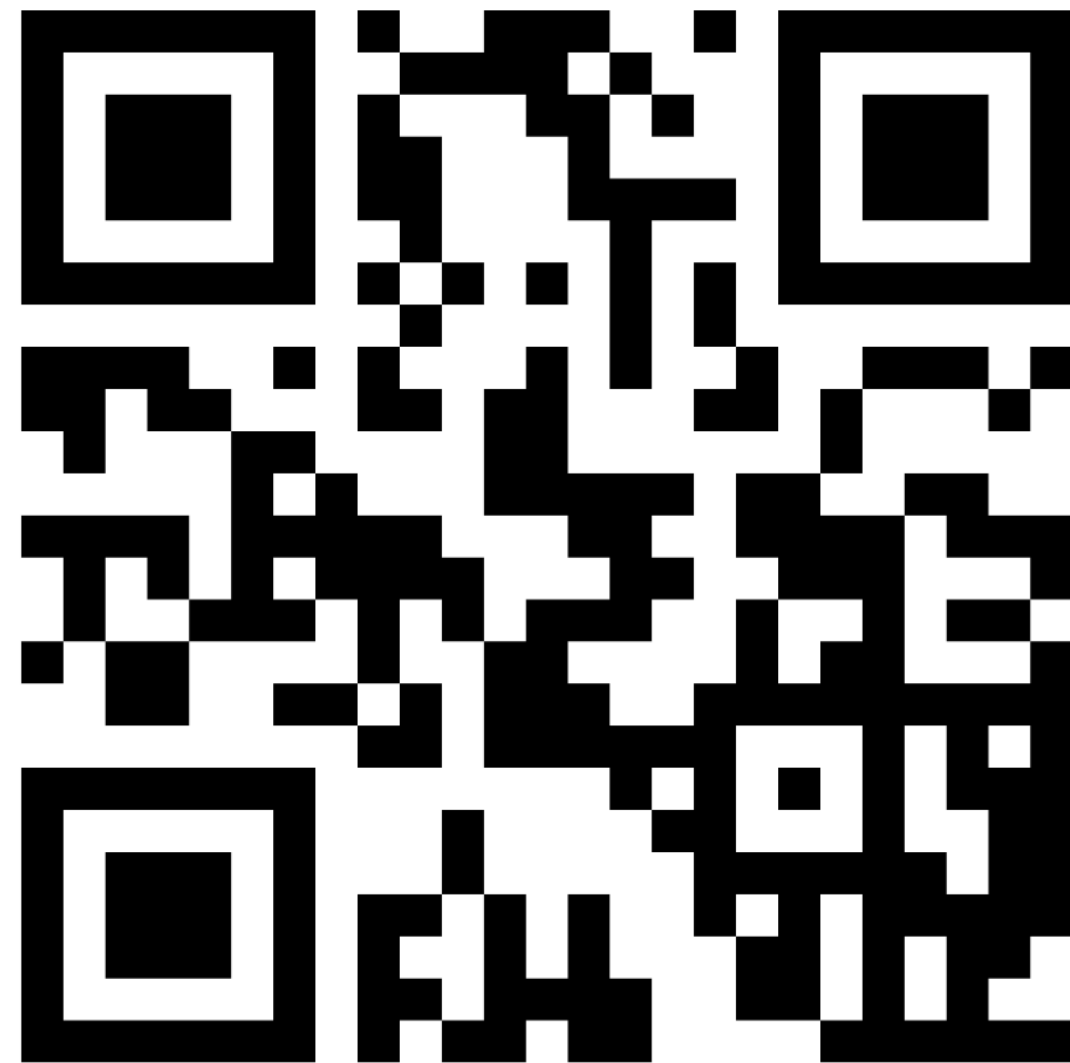
August 26, 2024

# Course website

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- ▶ The “entry point” for all aspects of the course:

<https://www.cs.unh.edu/~cs725/>



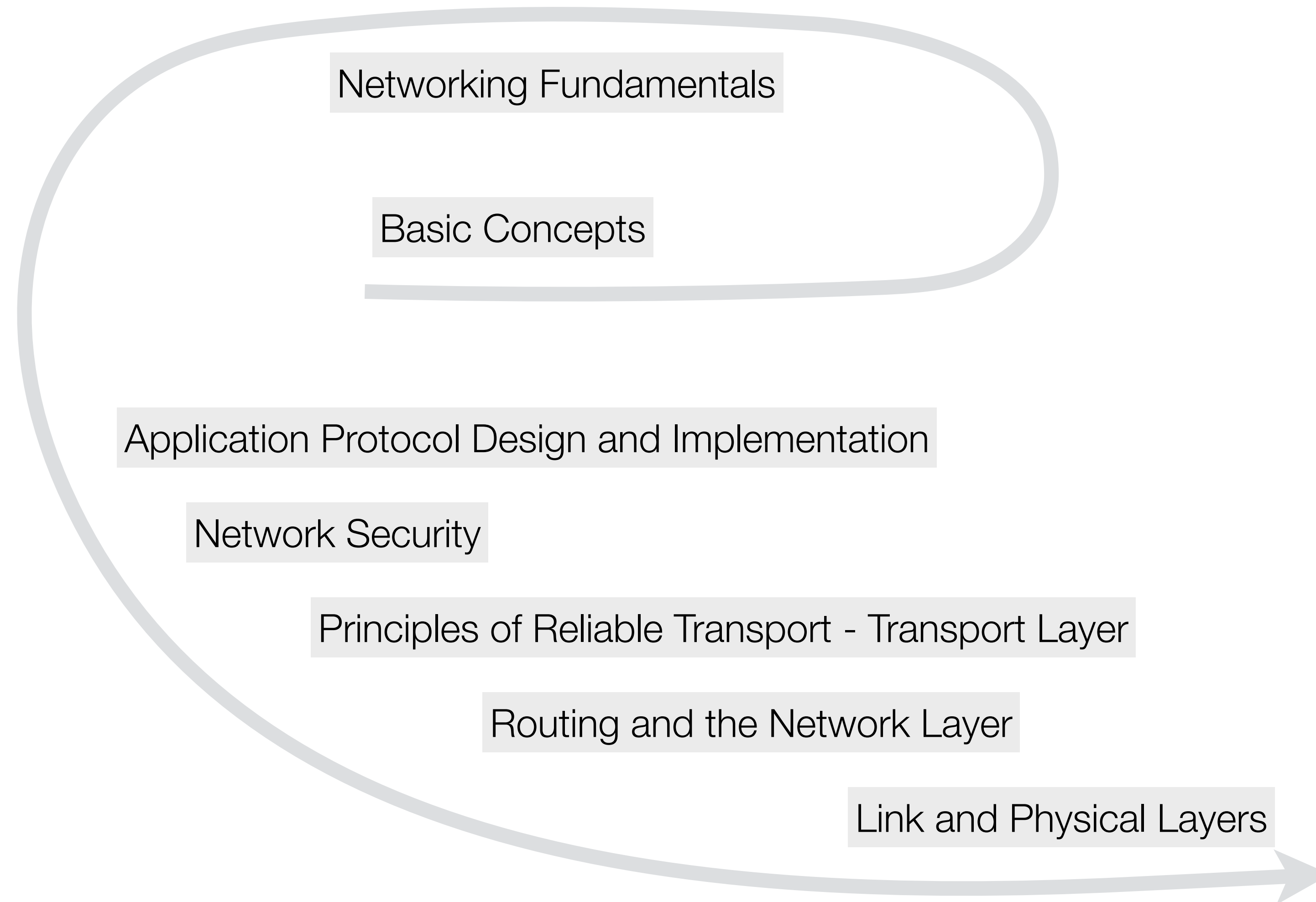
# Coursework & Evaluation

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- ▶ Five **homework assignments**: 40%
  - Assuming no major schedule disruption, assignments will be due at the start of the class (2:10 pm) on Wednesdays: September 25, October 16 and 30, November 13, and December 4, 2024
- ▶ Two in-class **exams**: 40%
  - October 09 and November 6, 2024
- ▶ **Final exam/project**: 20%
  - Take home Research paper and problem answers due December 13, 2024
- ▶ Watch out for extra credit problems...

# Course Outline

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Yes, we will visit some subjects multiple times!

# Teaching Method

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- ▶ Lectures (conceptual and practical subjects)
- ▶ Guided exploration and reading
- ▶ Paper and pencil problems
- ▶ Programming exercises
  - protocol implementation
  - protocol design
- ▶ Hands on experimentation with networks
- ▶ Network performance evaluation

# What is the question?

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- ▶ What are the **key network performance characteristics**?
  - What makes one networking technology better than another?
  - What aspects of networks we need to improve going forward?

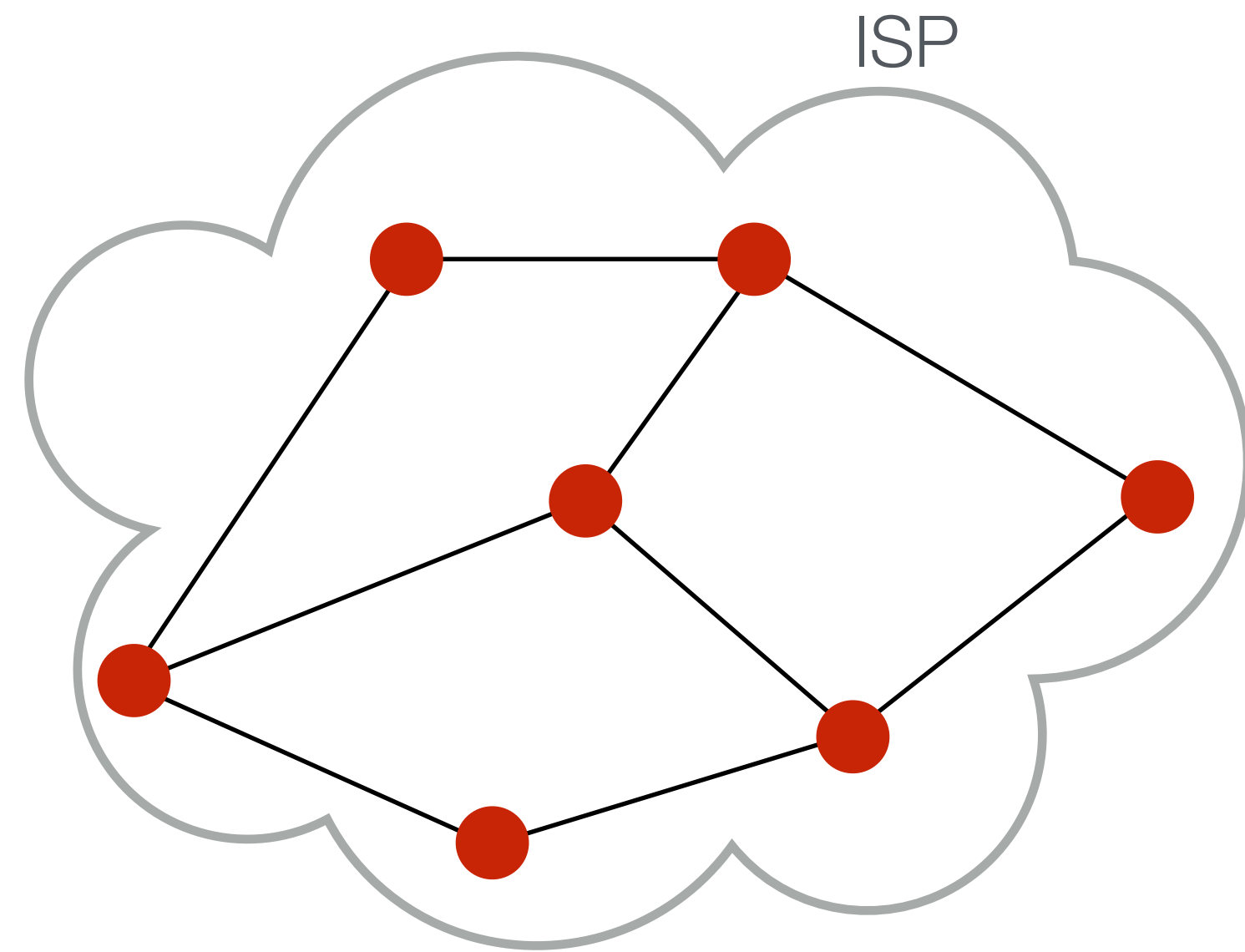
# What is the question?

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- ▶ "Faster" networks
  - Higher transmission **rate**
  - Lower **latency**
- ▶ **Security**
- ▶ Lower **error rate** (bit error rate, packet loss probability)
- ▶ Higher **availability** (reliability)
- ▶ **Ubiquity**
- ▶ Lower monetary **cost**
- ▶ Improved **user experience** (lower complexity)

# Internet...

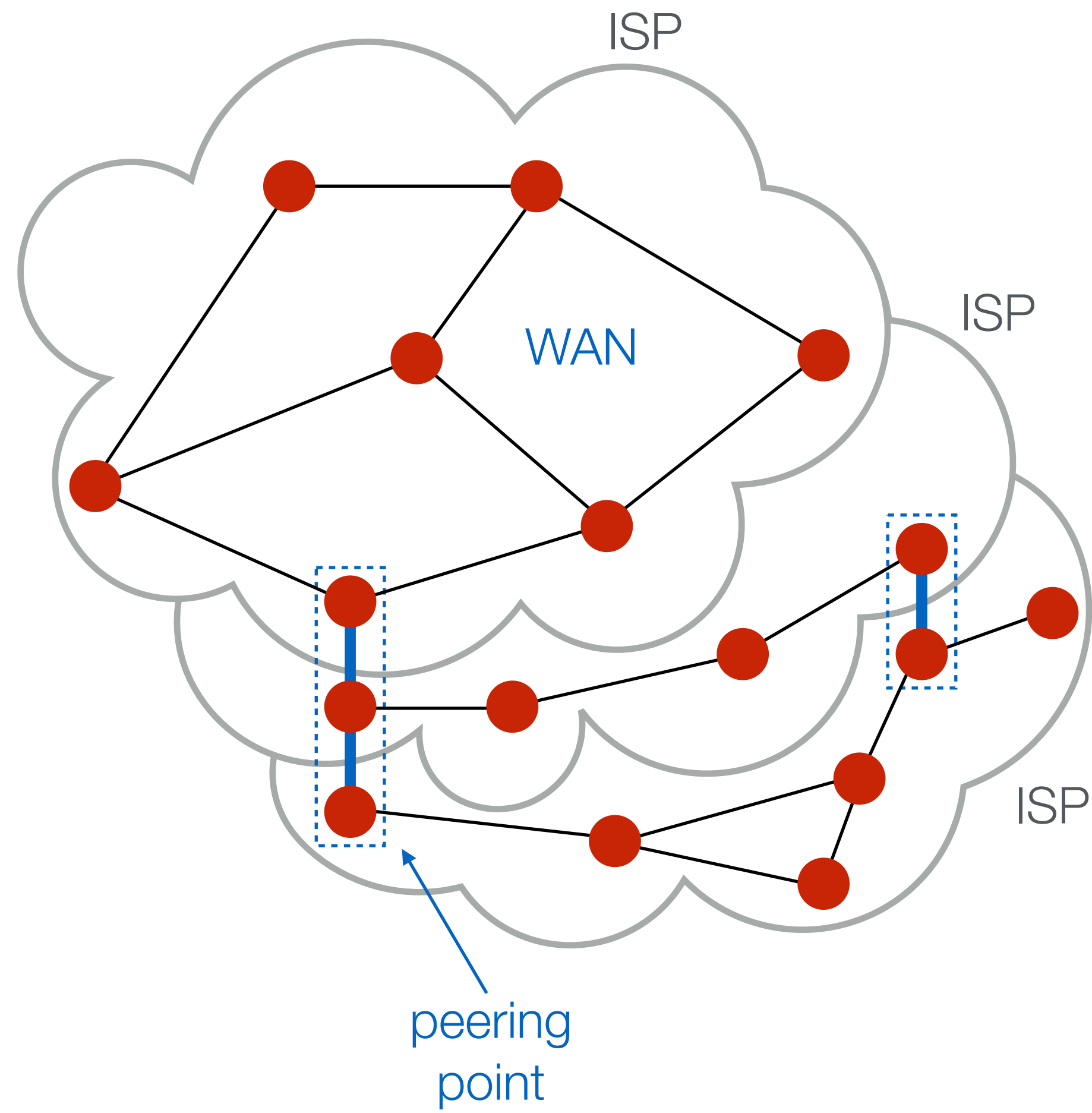
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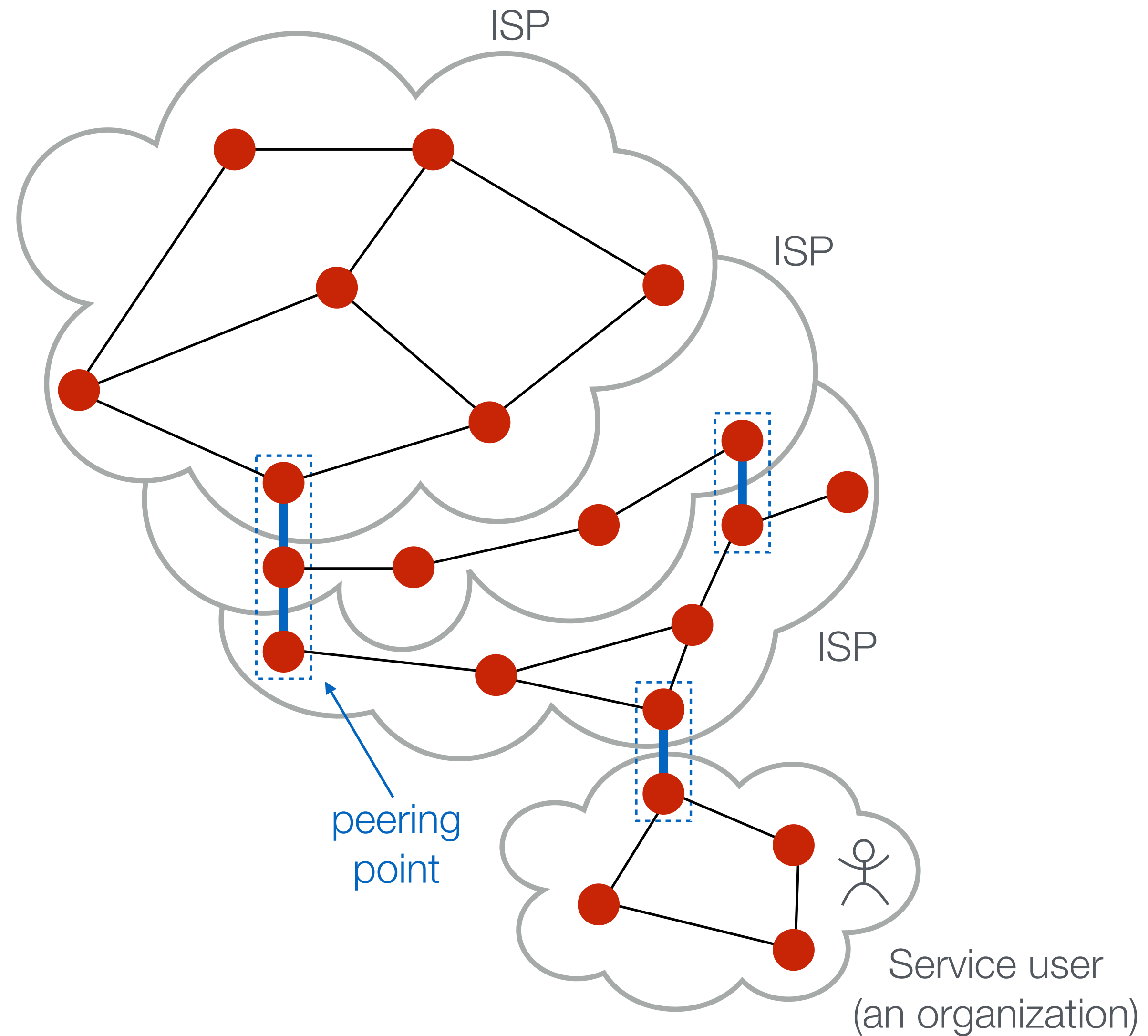
# Interconnected network

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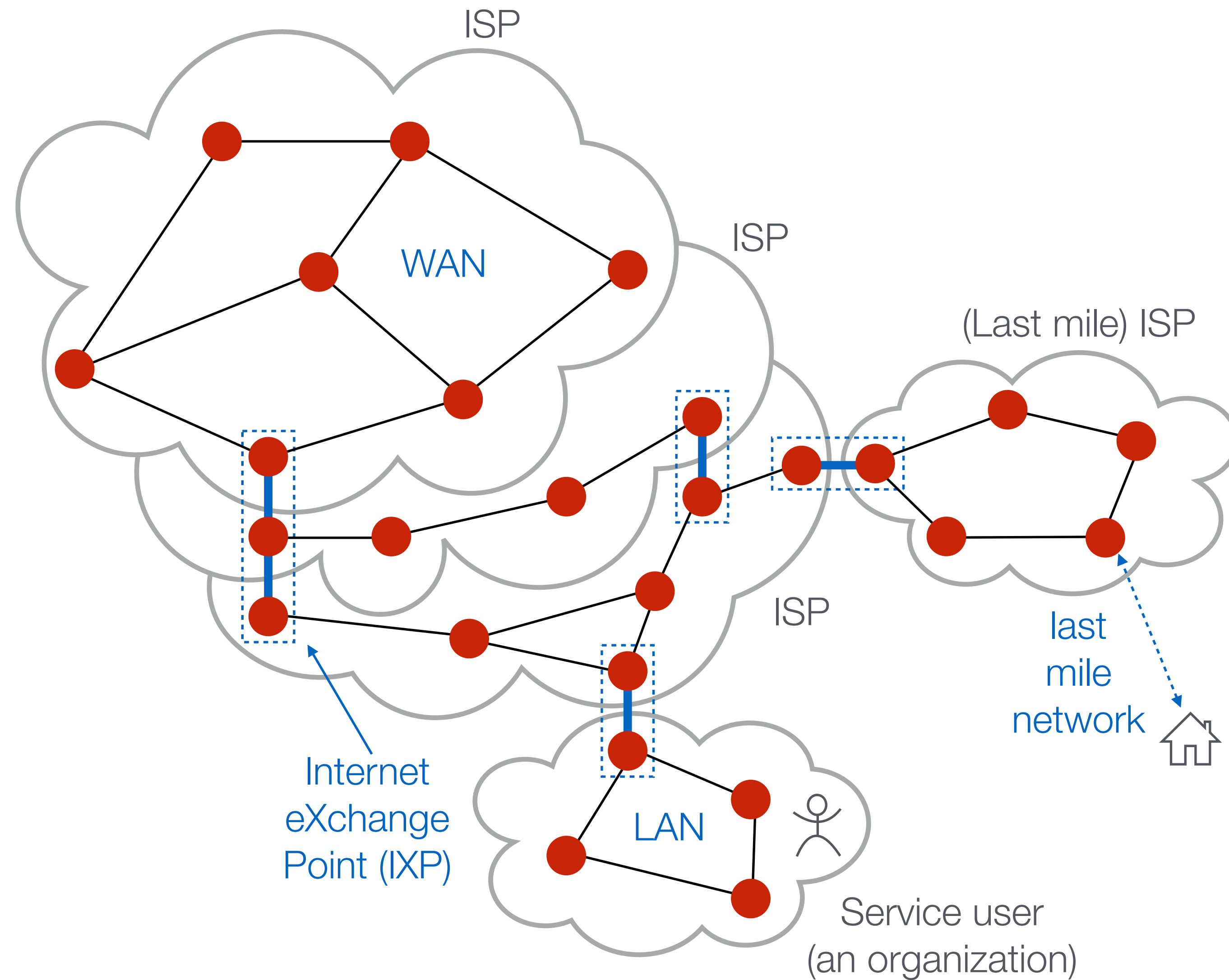
# Internet service consumer

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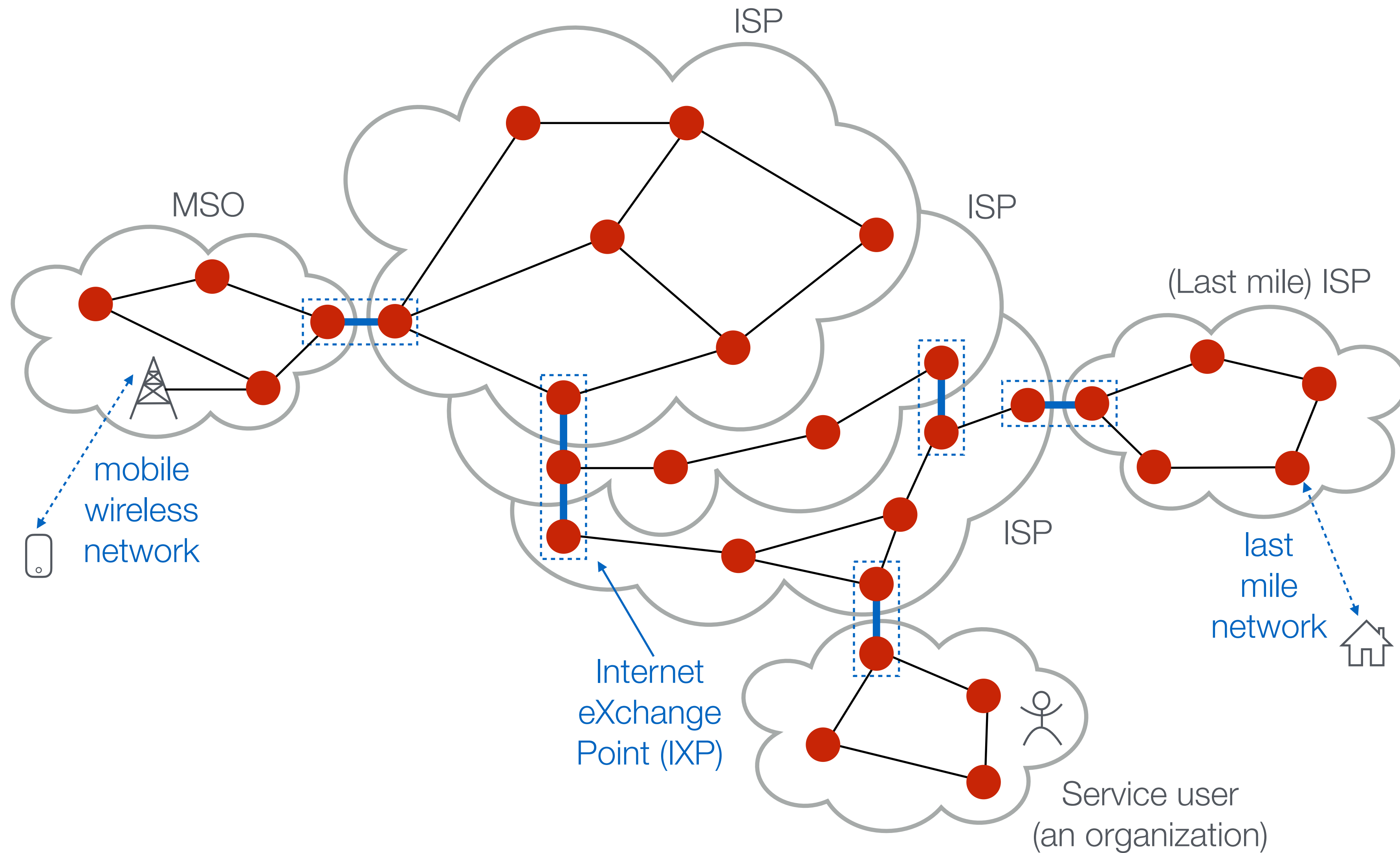


# Last-mile networks

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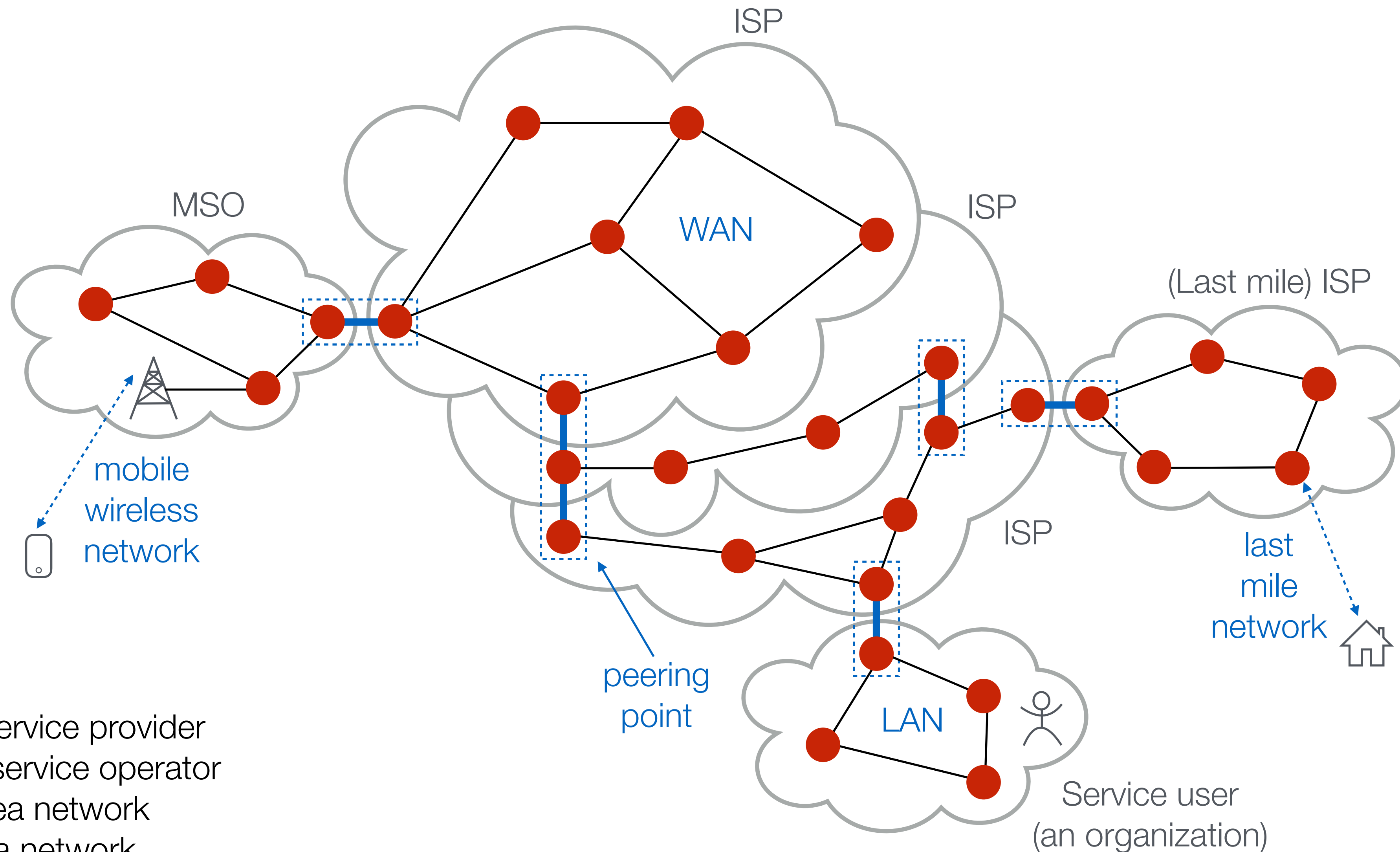


# Mobile (cell) networks



# Internet today

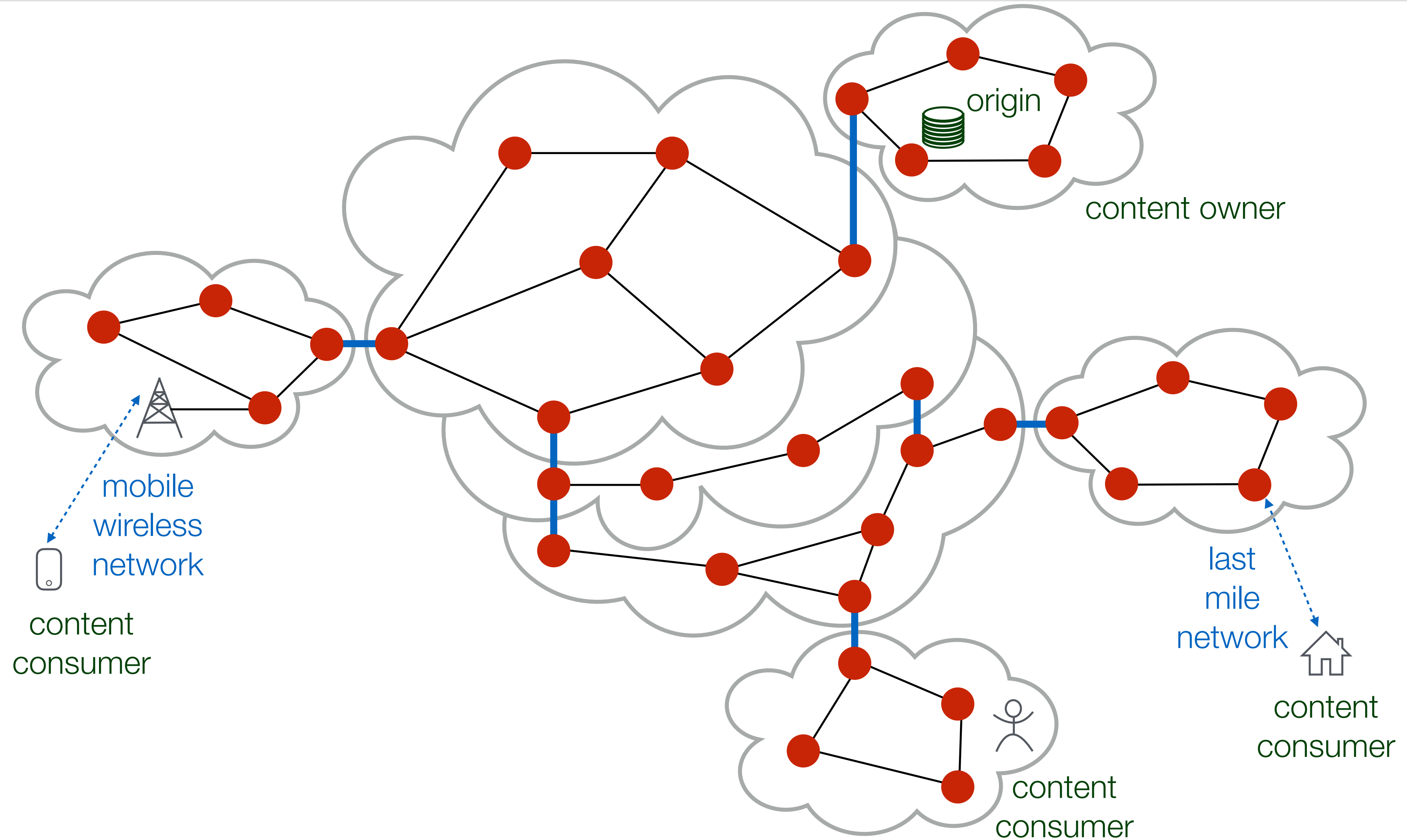
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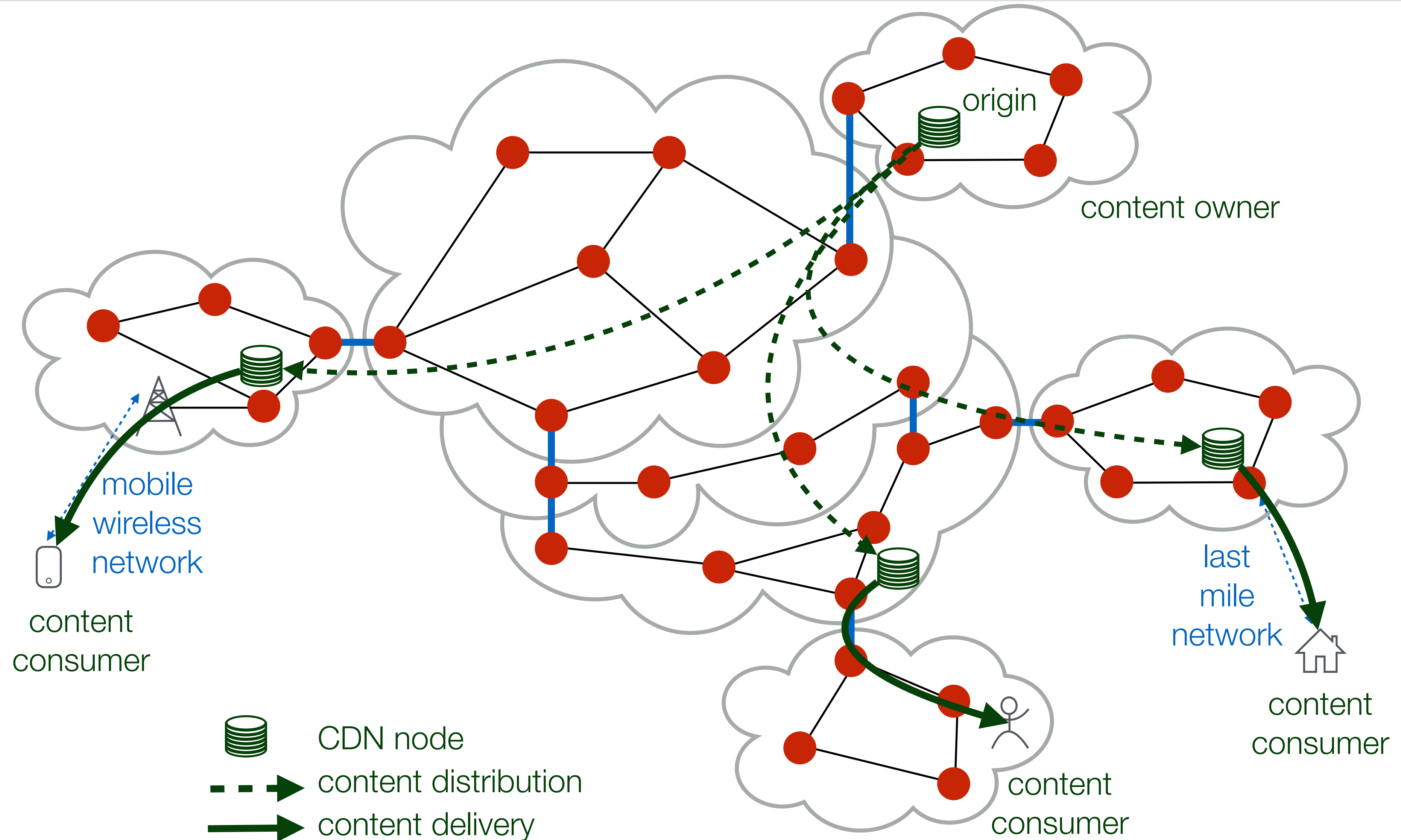
ISP - Internet service provider  
MSO - mobile service operator  
WAN - wide area network  
LAN - local area network

# Content Delivery

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# Content Delivery Network (CDN)

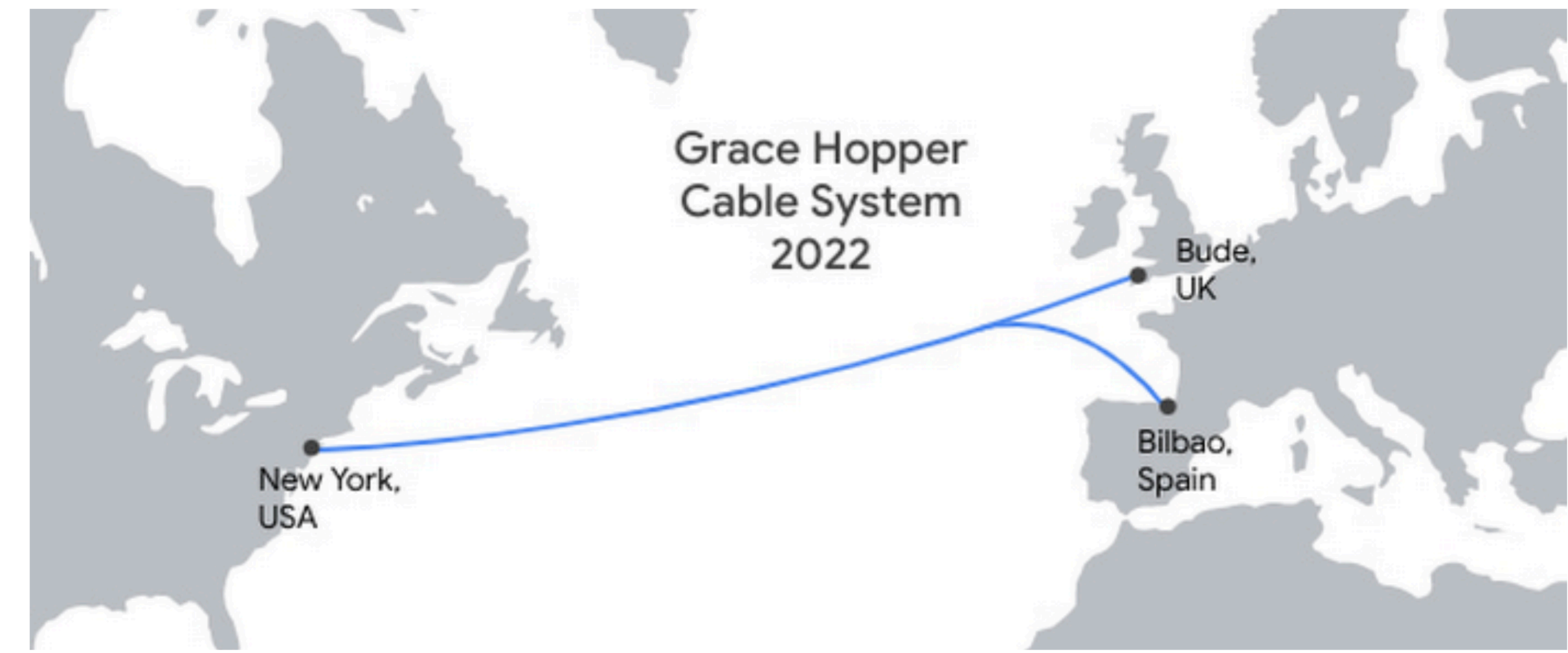


# Our Grace Hopper subsea cable has landed in the UK

Sep 14, 2021 · 2 min read

 **Jayne Stowell**  
Strategic Negotiator, Global Infrastructure, Google Cloud

Share



Last year, we [announced](#) a new subsea cable – named Grace Hopper after the



Curie cable route



Firmina cable route

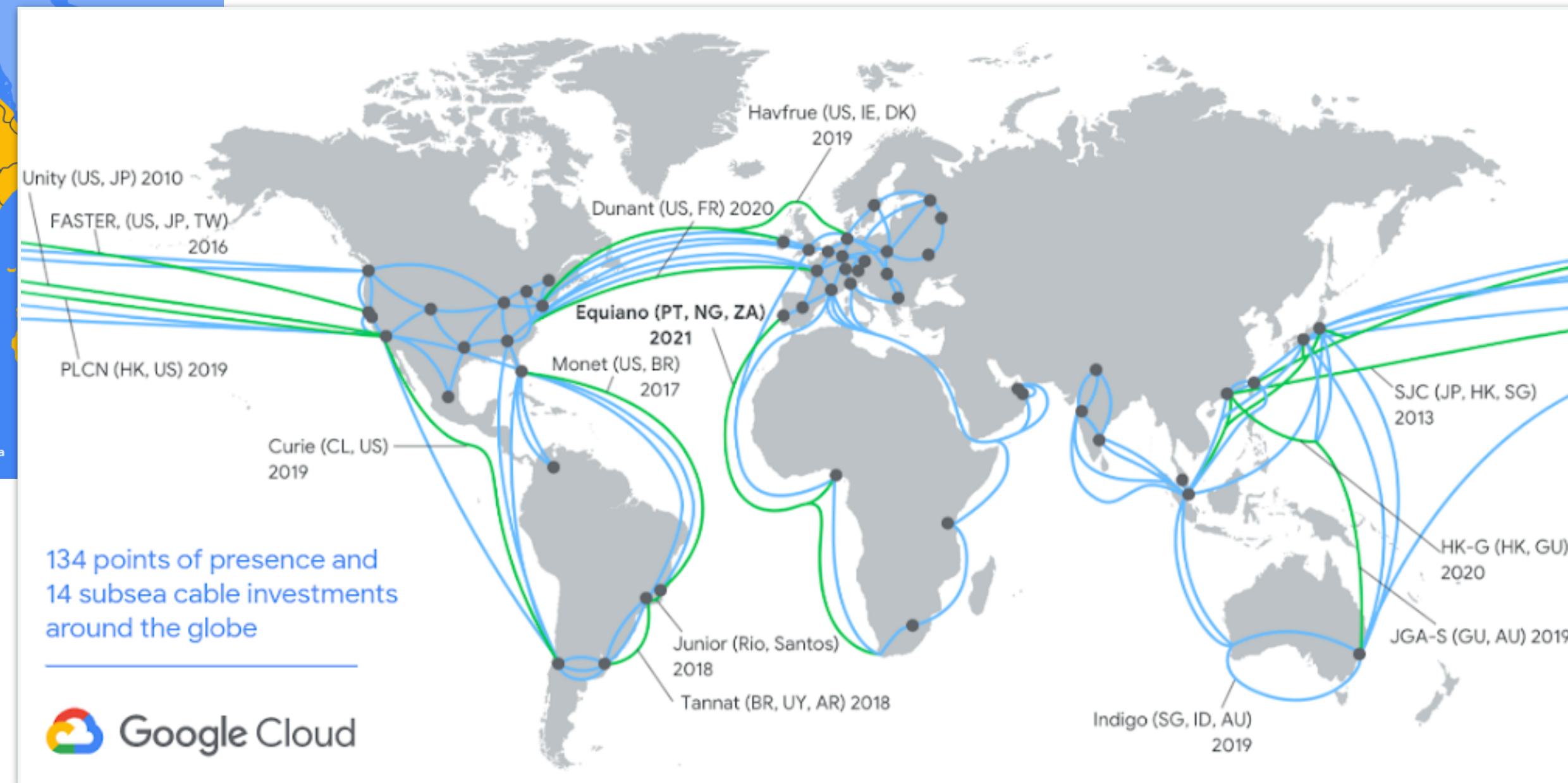
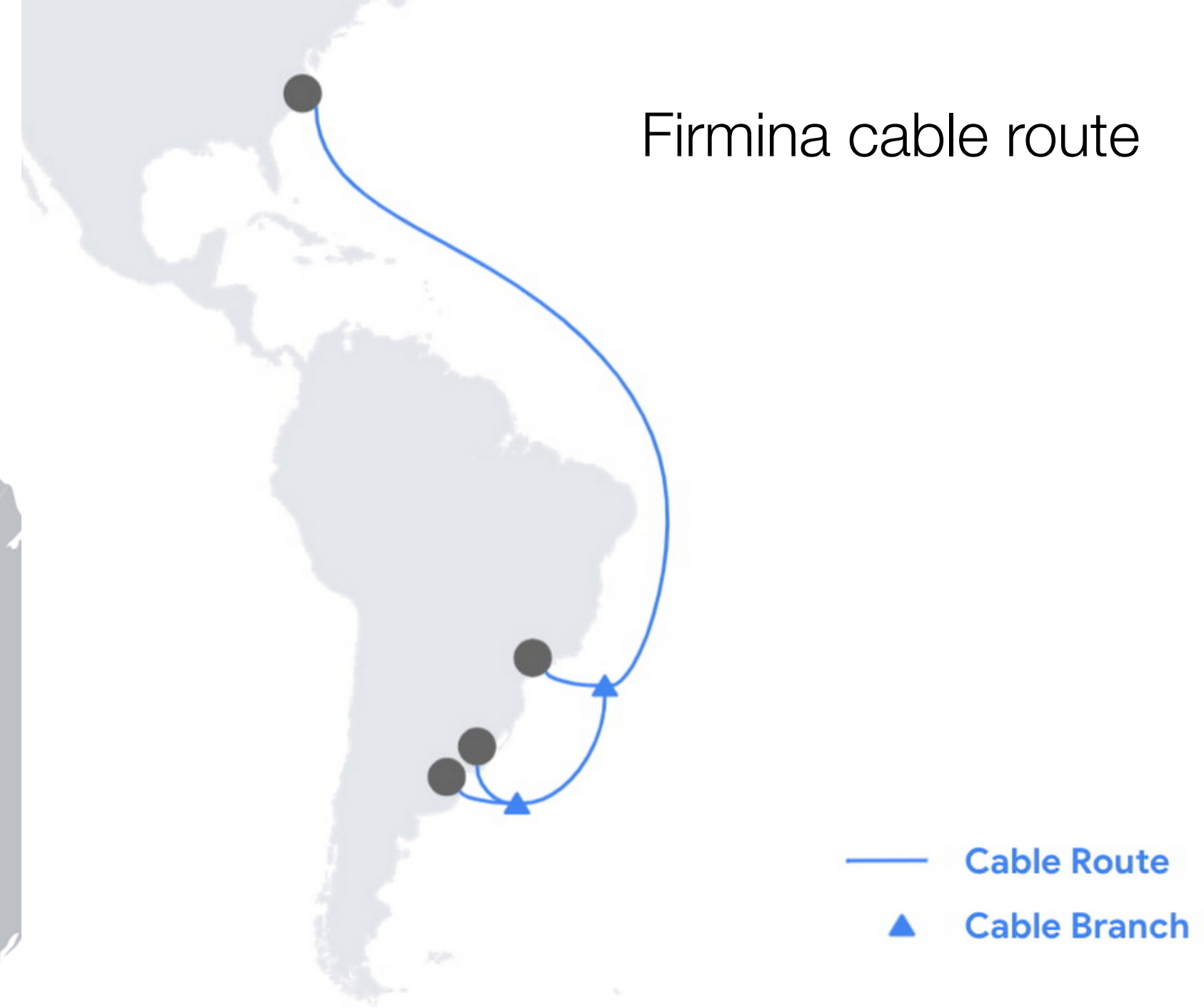


Image sources: Google Cloud Blog  
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