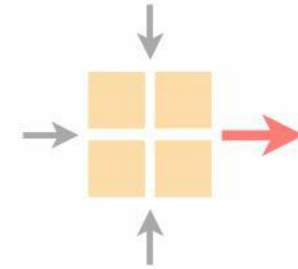


Communication Networks

Spring 2026



Lukas Röllin

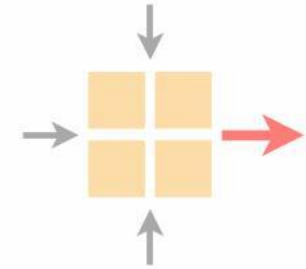
<https://comm-net.ethz.ch/>

ETH Zürich

April 2, 2026

Communication Networks

Exercise 6



Important lecture topics

Introduction to this week's exercise

Time to solve the exercise

BGP Route Propagation

Given the set of all acceptable routes for each prefix, the BGP decision process elects a **single route**

BGP is often referred to as a single path protocol

BGP Decision Process

Prefer routes...

with higher LOCAL-PREF

with shorter AS-PATH length

with lower MED

learned via eBGP instead of iBGP

with lower IGP metric to the next-hop

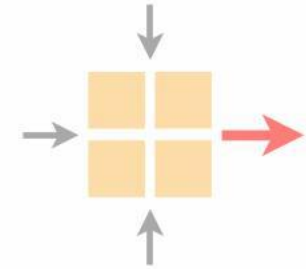
with smaller egress IP address (tie-break)

BGP policies

		<i>send to</i>		
		customer	peer	provider
<i>from</i>	customer	✓	✓	✓
	peer	✓	-	-
	provider	✓	-	-

Communication Networks

Exercise 6



Important lecture topics

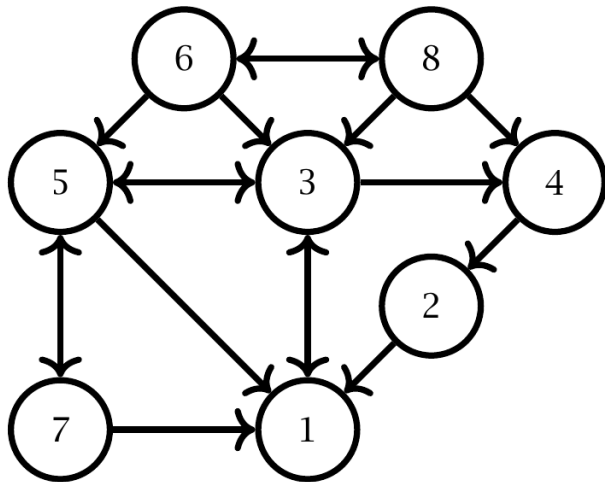
**Introduction to this week's
exercise**

Time to solve the exercise

Task 6.1 BGP Sessions

A short conceptual task about BGP Sessions

Task 6.2 Route Propagation



This task is all about how BGP propagates routes based on business policies

Task 6.3 BGP Decision Process

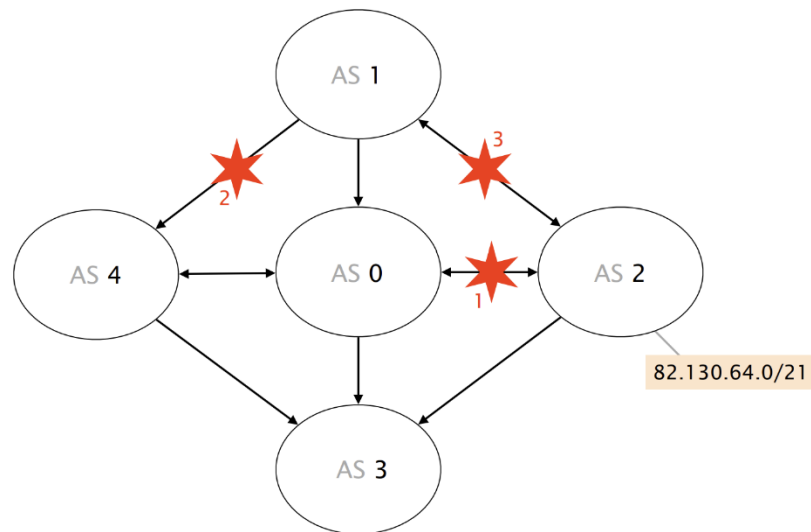
6.3 BGP Decision Process

BGP elects only one single route for each prefix using a specific priority of metrics for the decision. Please sort the routes (shown in the following table) by their precedence.

MED	AS-PATH length	egress IP	eBGP?	IGP metric	Local Pref	Order
50	5	1.5.3.2	no	8	100	
20	5	1.8.4.2	no	10	200	
10	1	1.9.1.5	yes	-	50	
50	5	3.8.4.1	no	4	100	
50	8	2.6.7.8	no	1	200	
50	3	1.2.3.8	no	4	50	
80	2	2.3.8.4	yes	-	100	
10	1	2.6.7.8	no	2	200	
50	8	1.4.4.3	no	1	200	
10	5	6.5.1.9	no	5	100	
10	1	1.5.2.2	yes	-	200	

A question to make you remember the priorities of the BGP decision process

Task 6.4 BGP under failure



Make sure to think about the BGP policies

Routes only get shared according to business relationship

BGP messages

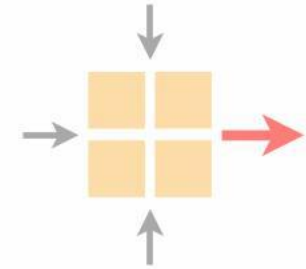
For this exercise we assume two subgroups of BGP UPDATE messages

update path: Used to inform that parts of a previously advertised path have changed

withdraw: Used to inform that a previously advertised path is no longer available

Communication Networks

Exercise 6



Important lecture topics

Introduction to this week's
exercise

Time to solve the exercise