



EduTrend Contents

EDUTECH · TECHNOLOGY · MIDDLE SCHOOL

Packets on the Move

Simulate how the internet splits, routes and rebuilds messages

Ages 11–14

Level: Intermediate

60 minutes

Groups of 6 · up to 30

Activity 03

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

ACTIVITY 03 · AT A GLANCE

Packets on the Move

Students role-play a network. A sender splits a message into numbered packets with addresses, and routers pass them along different paths. The receiver rebuilds the message using packet numbers. The teacher then removes a packet, and students design a way to detect and request missing data.

Learning outcomes

By the end of the session students can:

- explain packet switching;
- describe the role of addresses;
- explain how messages are reassembled;
- suggest how lost data is handled.

KEY WORDS

packet · router · IP address · protocol · reassemble · network

CURRICULUM LINKS

Maths: sequencing. Geography: global networks. Citizenship: digital infrastructure.

1**EXPLORE**

How does it work?

2**DECOMPOSE**

Break the problem down

3**DESIGN**

Plan the steps

4**BUILD**

Make or program it

5**DEBUG**

Find and fix errors

6**REFLECT**

Is it the right tool?

Materials (per group)

- Envelopes or cards for packets
- Address labels
- Network map
- Worksheets 1, 2 and 3

Before the session

- Draw a network map on the floor or tables.
- Prepare message cards.
- Assign roles.
- Print worksheets.

SAFETY

Move carefully between tables. Keep walkways clear.

ACTIVITY 03 · SESSION PLAN

Step by step

Remove a packet on purpose in round two to open the discussion on reliability.

Time	What happens	Say or ask
0–8 min Hook	How does a message cross the world?	<i>“One piece or many?”</i>
8–20 min Round 1	Send packets through routers.	<i>“Did they arrive in order?”</i>
20–32 min Reassemble	Rebuild using numbers.	<i>“How did you know the order?”</i>
32–48 min Round 2	A packet goes missing.	<i>“How would you know?”</i>
48–60 min Explain	Link to real protocols.	<i>“Why split messages?”</i>

CHALLENGE CARD (print or copy onto the board)

Send a message across a role-play network in packets, reassemble it and design a rule for detecting and resending lost packets.

ACTIVITY 03 · FACILITATOR NOTES

The computing know-how in brief

On the internet, data is split into small packets. Each packet carries the addresses of sender and receiver and a sequence number. Routers forward packets, which may take different paths.

The receiver uses sequence numbers to reassemble data. Protocols such as TCP check for missing packets and request them again, which makes communication reliable.

Common ideas to listen for

- “Messages travel in one piece.” They travel in packets.
- “All packets take the same route.” Routes can differ.
- “The internet is wireless.” Much of it runs on cables.

Adapting the activity

Support

Use a short message and three routers.

Stretch

Research how undersea cables carry internet traffic.

WORKSHEET 1

Packets

Name: _____

Class: _____ Date: _____

Plan your packets.

Packets

Packet no.	From	To	Data
1			
2			
3			
4			
5			
6			

WORKSHEET 2

Route log

Record each packet's route.

Route log

Packet no.	Routers passed	Arrival order
1		
2		
3		
4		
5		
6		

WORKSHEET 3

Lost packets

Design a rule.

How we detect and recover a missing packet

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

Student	Explains packets	Uses addresses	Designs a reliability rule

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Packets on the Move is a sample activity from the EduTrend Contents Edutech Technology programme (middle school, level: intermediate). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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