

Extending the Range of a LAN

10Base5

The 5 indicates that the LAN can extend 500 meters. If you want to go over a greater distance than this, how do you do it?

There are several devices that are used to do this.

Network	Routers
Data Link	Bridges, Switches
Physical	Repeaters

Repeaters

Operate strictly on the physical layer. Don't take a look at the data, but simply pass it through. Everything coming in is just a bit.

It boosts the signal level without amplifying noise. As you transmit down a bus, the amplitude is decreasing.

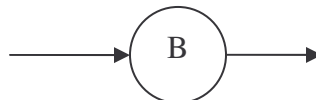
5-4-3 Rule

We can have 5 segments, four repeaters but only three segments with nodes.

Thus, the maximum length with 10Base5 is 2500 meters.

Bridges

Do more than just pass on everything that comes in. They are slightly more intelligent than repeaters. Bridges can do a little bit of filtering. Not everything that comes in will get passed on to the next segment



Forwarding Tables

Starts off empty – doesn't know where anything is.

The bridge is able to identify which “side” nodes are on by examining the source address of frames and looking at the port through which it entered the bridge.

At first, though, it will need to flood the frames to the next segment of the network because it does not know where the source location is.

Each segment augmented by a bridge is in its own “collision domain.” This means that you can have two frames being transmitted at the same time on the same LAN, but they don't collide with one another.

Bridges vs. Repeaters

	Bridge	Repeater
Which OSI Level?	2 (Data Link)	1 (Physical)
What does it transfer?	Frames	Bits
Which frames does it forward?	Only necessary	All
Can it connect at segments transmitting at different speeds?	Yes	No
Does it create collision domains?	Yes	No

Bridges use a store and forward technique.