Bus Bunching

What is it, how does it happen

Even spacing

Bus-bunching

Service gap

Potential to spread to the rest of the line...
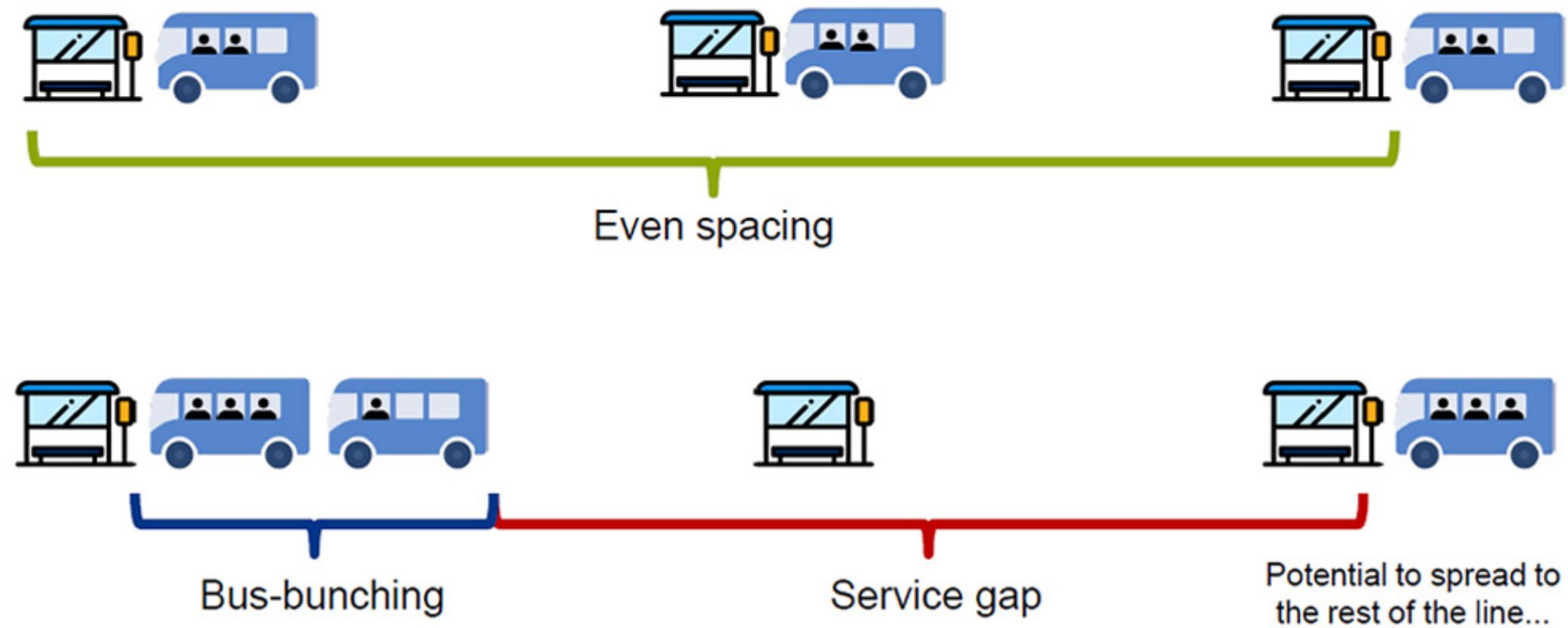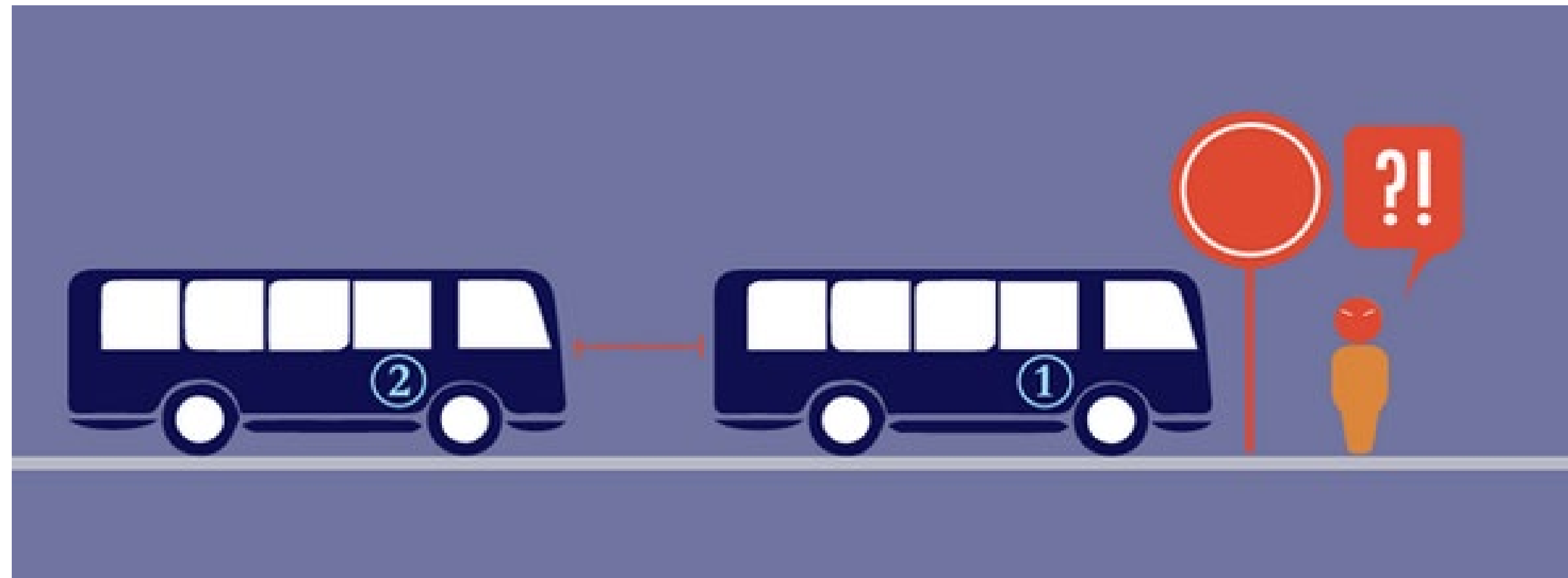
WHAT IS IT?

Bus bunching is the clumping of buses that occurs when leading vehicles on a route are unable to keep their schedule and fall behind to such an extent that trailing vehicles catch up to them.

Many factors such as rode conditions, ridership, traffic, on board incidents, etc... can cause route delays that result in bus bunching.

How Does This Happen?

A bus that is running slightly late will pick up passengers who would have taken the next bus if the first bus had not been late. These extra passengers delay the first bus even further. The bus behind the late bus now has a lighter passenger load than it should have and may therefore run ahead of schedule.

The late bus tends to get later and later as it completes its run, while the bus following it tends to get earlier and earlier. Eventually the bus behind catches up to the bus ahead and they become bunched.

Bus bunching can be demonstrated for better understanding with use of a visual simulation .

Transit Master Bus Bunching Example

Left panel

- ○ Current ● Past / Future
- ● Block ○ Run
- 9/1/2023
- **Historical Search**
- 5-3
- Show Stop Crossings
- ◄ Scroll to Current
- ℹ Details
- ↪ Notes Pane
- Overload
- Cancel Service
- Schedule Offse
- Selection
- Display

Route	Pattern	Location	Vehicle	Scheduled	Adh.	Actual	Block
5 Nod	NB	LiSN	1649	13:35	-2	13:37	5-3
5 Nod	NB	PiPt	1649	13:43	-3	13:46	5-3
5 Nod	NB	RoBl	1649	13:56	-4	14:00	5-3
5 Nod	NB	HaBa	1649	14:11	-7	14:18	5-3
5 Nod	NB	DuSt	1649	14:15	-6	14:21	5-3
5 Sod	SB	DuSt	1649	14:25	-15	14:40	5-3
5 Sod	SB	HaBa	1649	14:30	-14	14:44	5-3
5 Sod	SB	RoBl	1649	14:46	-19	15:05	5-3
5 Sod	SB	PiPt	1649	15:00	-28	15:28	5-3
5 Sod	SB	LiSN	1649	15:10	-33	15:43	5-3
5 Nod	NB	LiSN	1649	15:30	-15	15:45	5-3
5 Nod	NB	PiPt	1649	15:39	-13	15:52	5-3
5 Nod	NB	RoBl	1649	15:55	-8	16:03	5-3

Right panel

- ○ Current ● Past / Future
- ● Block ○ Run
- 9/1/2023
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- 5-5
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Route	Pattern	Location	Vehicle	Scheduled	Adh.	Actual	Block
5 Nod	NB	LiSN	1673	13:15	-9	13:24	5-5
5 Nod	NB	PiPt	1673	13:23	-12	13:35	5-5
5 Nod	NB	RoBl	1673	13:36	-17	13:53	5-5
5 Nod	NB	HaBa	1673	13:51	-21	14:12	5-5
5 Nod	NB	DuSt	1673	13:55	-22	14:17	5-5
5 Sod	SB	DuSt	1673	14:05	-14	14:20	5-5
5 Sod	SB	HaBa	1673	14:10	-14	14:24	5-5
5 Sod	SB	RoBl	1673	14:26	-31	14:57	5-5
5 Sod	SB	PiPt	1673	14:40	-38	15:18	5-5
5 Sod	SB	LiSN	1673	14:48	-45	15:33	5-5
5 Nod	NB	LiSN	1673	14:55	-44	15:39	5-5
5 Nod	NB	PiPt	1673	15:03			5-5
5 Nod	NB	RoBl	1673	15:19	-43	16:02	5-5

Bus bunching can be very problematic for both customers and transit agencies alike. Even when reported by Operators or discovered quickly by Bus Supervisors and Dispatchers, fixing the problem can be quite challenging. Finding a solution would be dependent upon the circumstance or root cause of the delay which caused the bus bunching in the first place.
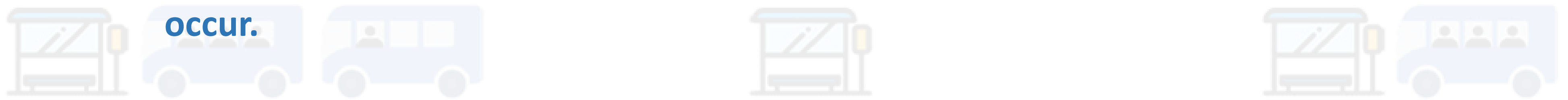
Solutions

- Each bus maintains it's schedule adherence throughout the route.

- The leading bus can drop off only, while the trailing bus runs normal and picks up.

- Transfer customers from the leading bus to the trailing bus and place the leading late bus back on schedule.

No single or combination of solutions can eliminate every obstacle that can cause route delays resulting in bus bunching, but if everyone does their part, (*follow road rules, schedule adherence, customers ready when time to board, etc..***) it would be less likely to occur.**