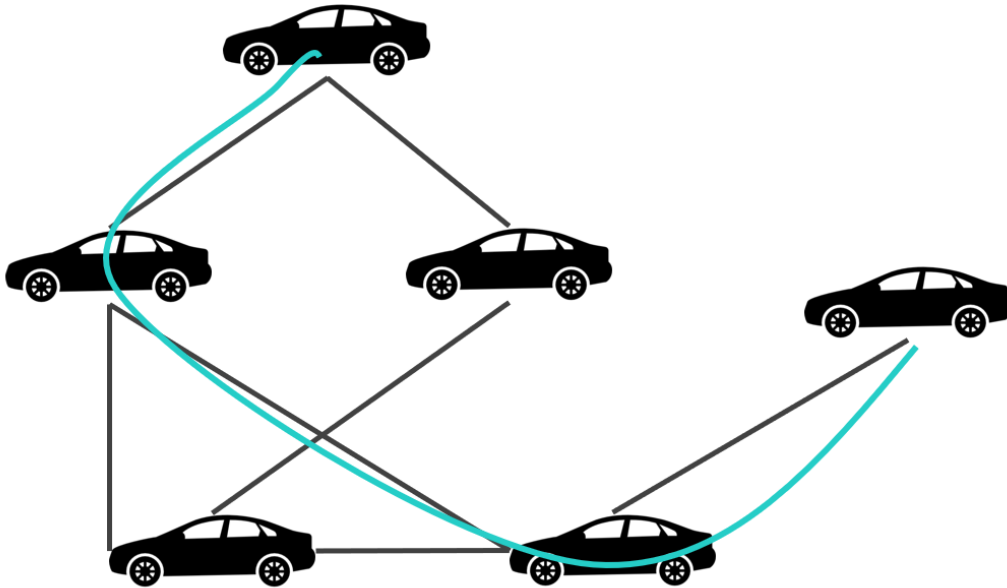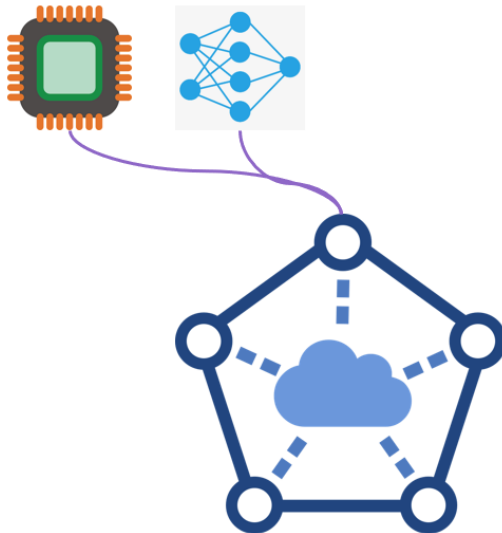# Scenarios/Attributes

Use case Attributes:

1. Stable network topology in IoV
2. Road aware, predictive, and proactive connection


## Stable network topology

Machine learning based prediction

Stable Path Scenarios:

Stable path connectivity scenarios are illustrated as shown below:

- The below figure (shown left side) is a scenario where the devices are under **same cell and in coverage**, which want to communicate. The below figure (shown right side) is a scenario where the devices are under same cell and one oft them is out of coverage, which want to communicate.
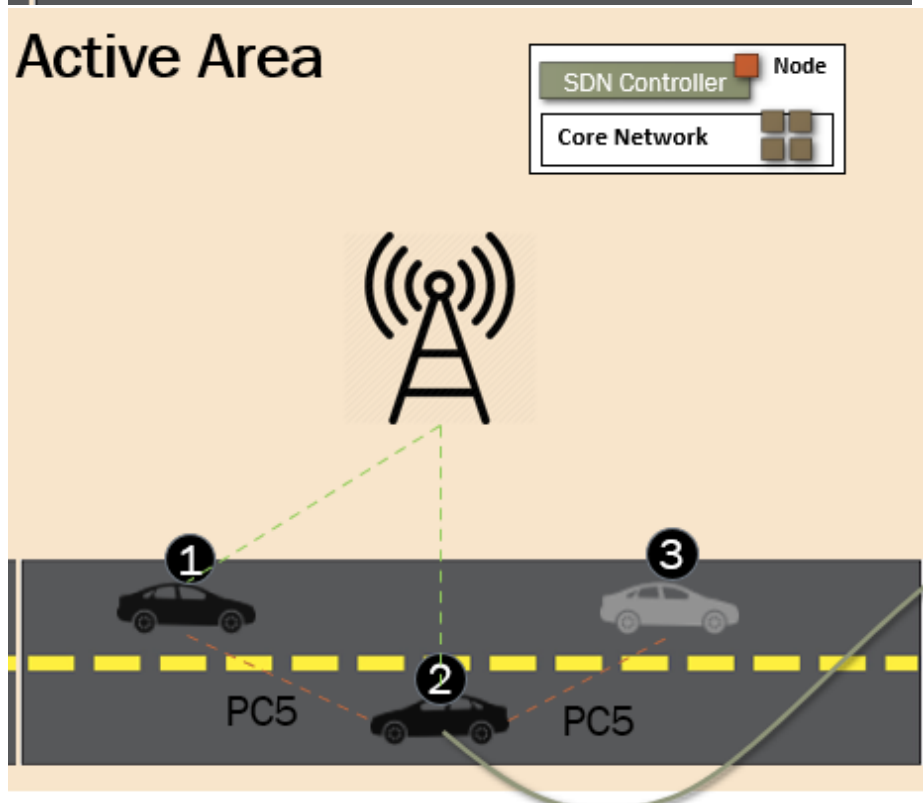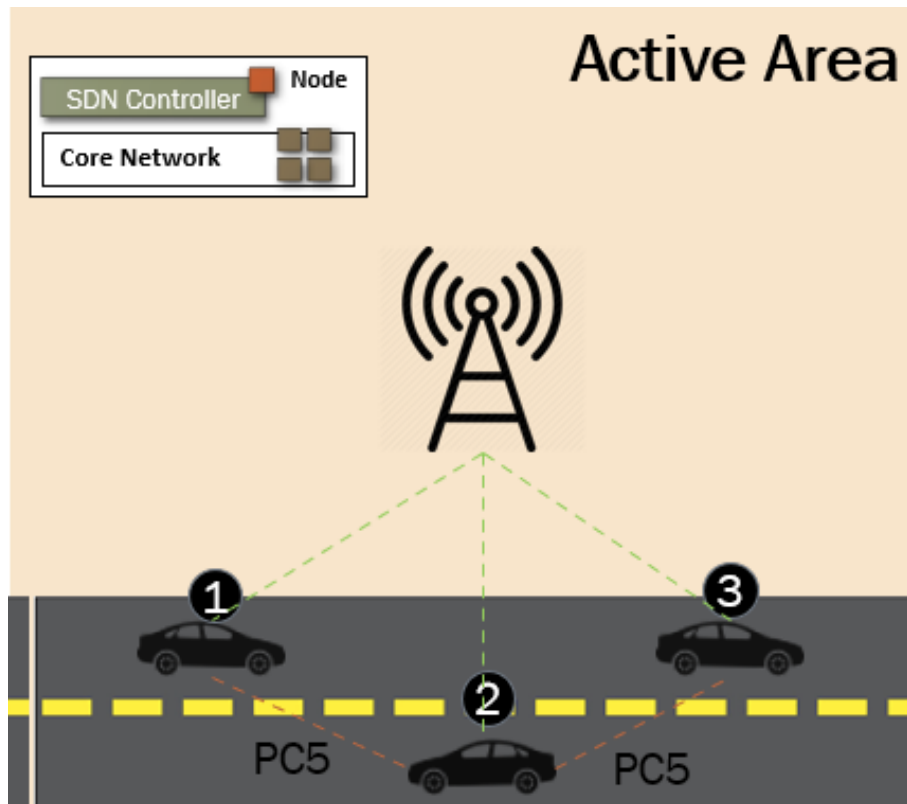
- The below figure explores the Device to Device communication where a device 1 wants to communicate device-4 and both of them reside under a different Cell node. In this case, the packet is forwarded from one edge vEPC to another. This way the connectivity is provided as follows:
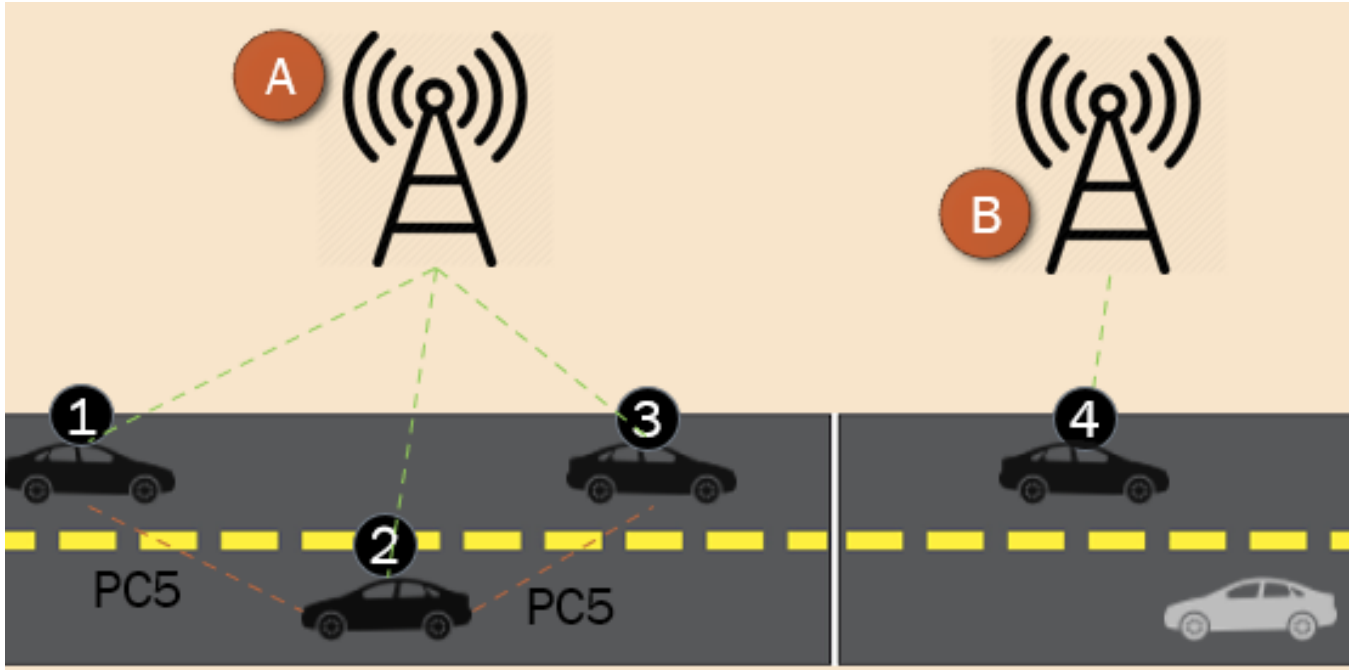
- The below scenario explains the same as immediate previous scenario but the only difference among them is that one of the device is out of coverage and proximity service plays the role of provisioning the location of such devices.
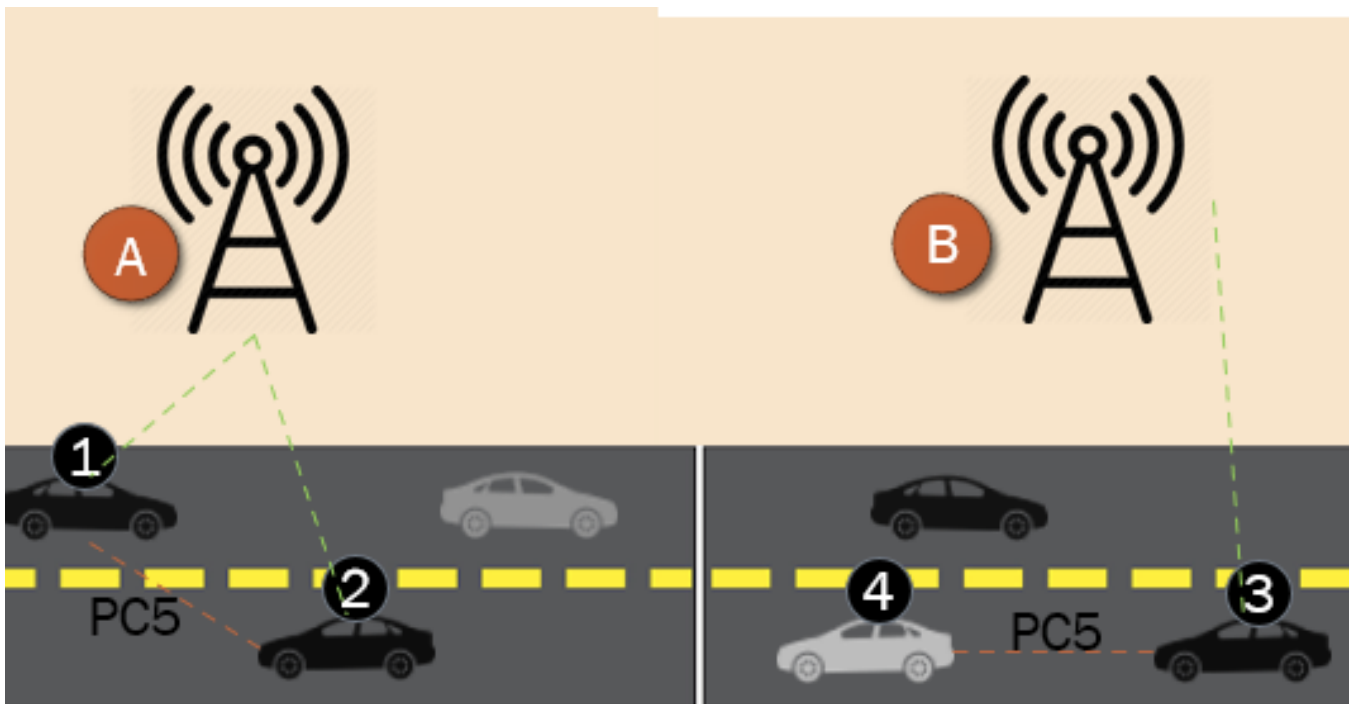
- The below figure shows the direct communication between the devices which reside under different Cells. The below path was provided as a result of proactive approach that we propose in our system. The major difference between the below two scenarios is that in such cases, we don't require the involvement of Edge vEPC in order to forward the packet to another road segment, thus reducing the latency and improving the performance in terms of bandwidth and efficient resource usage of the cellular spectrum. Both the devices are in coverage.
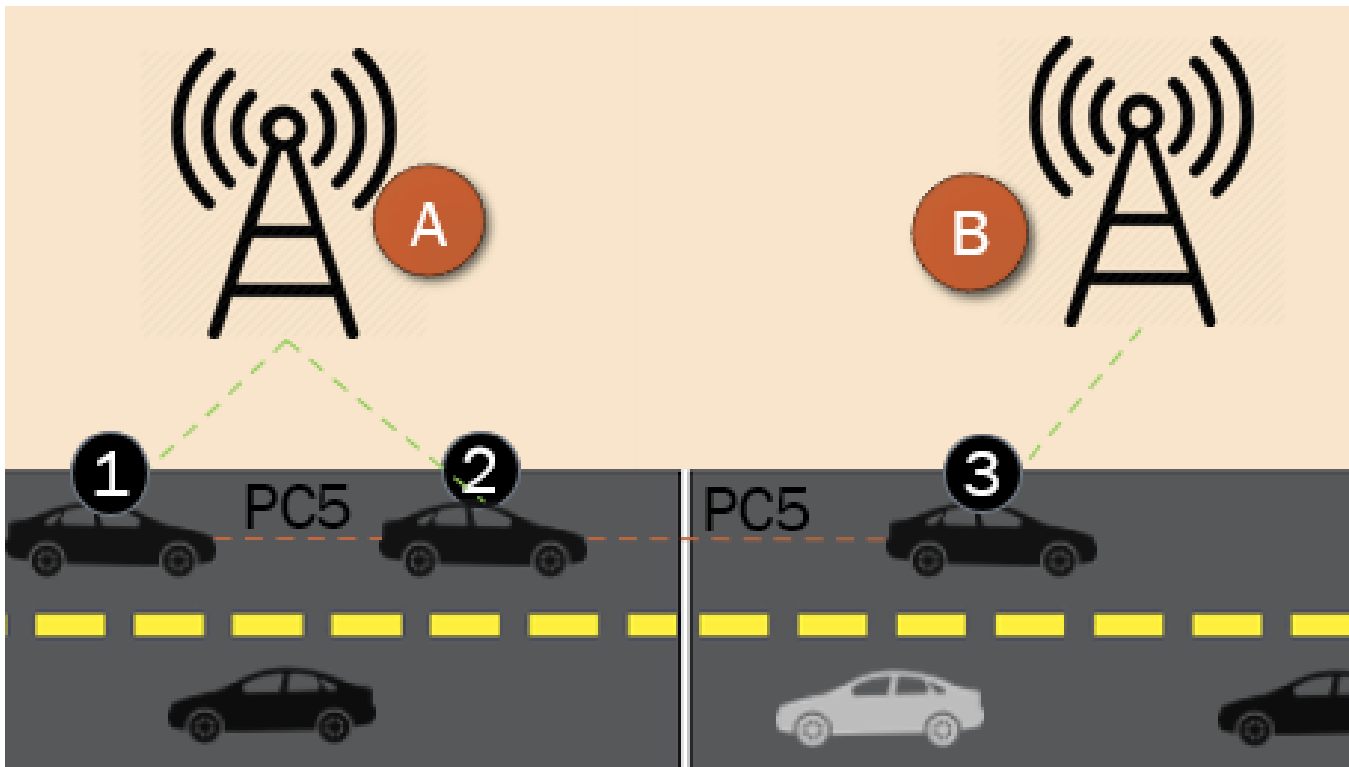
- The below figure also shows the direct communication between the devices which reside under different Cells. The below path was provided as a result of proactive approach that we propose in our system. The difference from previously mentioned scenario is that one of these devices are out of coverage. In this case also, the benefits to reduce the latency and efficient resource usage were achieved.