## Compare Cellular Bearer Services for IoT

Talk to one of our experts on 0330 056 3300 or [email](mailto:) for advice on your IoT connectivity needs.

<table>
<thead>
<tr>
<th>Feature</th>
<th>LoRa</th>
<th>NB-IoT (LTE Cat-NB1/2)</th>
<th>LTE-M (LTE Cat-M)</th>
<th>4G (LTE Cat-1 BIS)</th>
<th>4G (LTE Cat-1)</th>
<th>High Performance 4G (LTE Cat-16)</th>
<th>5G (LTE Cat-18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Standards Based</td>
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<tr>
<td>Major MNO Support</td>
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<tr>
<td>Typical Connection Speed (Up/Down)</td>
<td>Up to 0.05Mbps</td>
<td>0.07Mbps/0.03 Mbps</td>
<td>Up to 1 Mbps</td>
<td>10Mbps/5Mbps</td>
<td>10Mbps/5Mbps</td>
<td>100Mbps/50Mbps</td>
<td>Up to 1Gbps/120Mbps</td>
</tr>
<tr>
<td>Number of Antennas</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Deployment Scenarios</td>
<td>Stationary (good for indoor and underground)</td>
<td>Stationary (good for indoor and underground)</td>
<td>Mobile/Stationary (good for indoor and underground)</td>
<td>Mobile/Stationary</td>
<td>Mobile/Stationary</td>
<td>Mobile/Stationary</td>
<td>Mobile/Stationary</td>
</tr>
<tr>
<td>International Availability &amp; Roaming</td>
<td>n/a</td>
<td>Limited</td>
<td>Limited</td>
<td></td>
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<tr>
<td>Data transfer frequency</td>
<td>Intermittent</td>
<td>Intermittent</td>
<td>Frequent</td>
<td>Frequent</td>
<td>Frequent</td>
<td>Always On</td>
<td>Always On</td>
</tr>
<tr>
<td>Response Time (Latency)</td>
<td>Medium</td>
<td>Slow (~1 sec)</td>
<td>Medium (~100ms)</td>
<td>Fast (40ms)</td>
<td>Fast (40ms)</td>
<td>Fast (40ms)</td>
<td>Ultra Fast (~1ms)</td>
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<tr>
<td>Mobility</td>
<td>Handover between cells not supported</td>
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<tr>
<td>Total Cost of Ownership</td>
<td>Deployment Specific - (might have to deploy and manage gateways)</td>
<td>Deployment Specific - (low for local, medium for international)</td>
<td>Deployment Specific - (low for local, medium for international)</td>
<td>Low</td>
<td>Low-Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Power Source</td>
<td>Battery, Solar</td>
<td>Battery, Solar</td>
<td>Battery, Solar</td>
<td>Battery, Rechargeable Battery or Mains</td>
<td>Battery, Rechargeable Battery or Mains</td>
<td>Mains</td>
<td>Mains</td>
</tr>
<tr>
<td>Battery Life (not rechargeable)</td>
<td>5-10 years battery life</td>
<td>5-10 years battery life</td>
<td>5-10 years battery life</td>
<td>up to 5 years</td>
<td>up to 3 years</td>
<td>1 year</td>
<td>&lt;1 year</td>
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<tr>
<td>Power Saving Mode (PSM)</td>
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<tr>
<td>Extended Sleep Cycle (eDRX)</td>
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<tr>
<td>SMS</td>
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<tr>
<td>Two-way Voice</td>
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<tr>
<td>eSIM (eUICC) Compatible</td>
<td>n/a</td>
<td>Not Standard</td>
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</tbody>
</table>

### Comparison

- **LoRa** is not standardized, does not support major MNOs, and has limited international availability and roaming.
- **NB-IoT** supports major MNOs and has limited international availability and roaming.
- **LTE-M** supports major MNOs and has limited international availability and roaming.
- **4G** supports major MNOs and has medium to low international availability and roaming.
- **High Performance 4G** supports major MNOs and has medium international availability and roaming.
- **5G** supports major MNOs and has medium international availability and roaming.

### Additional Information

- **Response Time (Latency)**: While LoRa has medium response time, NB-IoT has slow (~1 sec) and LTE-M has medium (~100ms) response time. 4G options have fast (40ms) response time, and 5G has ultra-fast (~1ms) response time.

### Deployment Scenarios

- **Stationary**: Good for indoor and underground environments.
- **Mobile/Stationary**: Good for indoor and underground environments.

### International Availability & Roaming

- **International Availability & Roaming**: LoRa and NB-IoT have limited international availability and roaming, while LTE-M has limited availability and roaming.

### Power Source

- **Battery, Solar**: LoRa and NB-IoT support battery and solar power, while LTE-M, 4G, and 5G support battery or mains power.

### Battery Life

- **Battery Life**: LoRa and NB-IoT have a 5-10 years battery life, while LTE-M, 4G, and 5G have up to 5 years, 3 years, and 1 year of battery life, respectively.

### Power Saving Mode (PSM)

- **PSM**: While LoRa and NB-IoT support PSM, it is not always available when roaming. LTE-M, 4G, and 5G also support PSM, but it is not always available when roaming.

### Extended Sleep Cycle (eDRX)

- **eDRX**: LoRa and NB-IoT support eDRX, with LoRa supporting it although not always available when roaming. LTE-M, 4G, and 5G also support eDRX, but it is not always available when roaming.

### SMS

- **SMS**: LoRa and NB-IoT do not support SMS, while LTE-M, 4G, and 5G support SMS.

### Two-way Voice

- **Two-way Voice**: LoRa and NB-IoT do not support two-way voice, while LTE-M, 4G, and 5G support two-way voice.

### eSIM (eUICC) Compatible

- **eSIM (eUICC) Compatible**: LoRa and NB-IoT do not support eSIM, while LTE-M, 4G, and 5G support eSIM (although not in sleep mode for LTE-M).