SpaceLogistics Services
Extending the Lives of In-Orbit Satellites

SpaceLogistics provides cooperative in-orbit satellite servicing to geosynchronous satellite operators using its fleet of commercial servicing vehicles. Our initial servicing vehicle, the Mission Extension Vehicle (MEV)™ docks with customers’ existing satellites providing the propulsion and attitude control needed to extend their lives. We have now introduced our next generation system, Mission Extension Pods (MEPs)™, which is a smaller and less expensive life extension service that only performs orbit control. The MEPs are installed by a robotic servicing vehicle called the Mission Robotic Vehicle (MRV)™ which can perform all the functions of an MEV while adding new robotic capabilities for additional services.

Our life extension services are compatible with virtually all geosynchronous satellites with minimal interruption to operations. They enable satellite operators to significantly extend satellite mission life, activate new markets, drive asset value and protect their franchises. SpaceLogistics delivers life extension services that are flexible, scalable, capital-efficient and low-risk.

Our breakthrough innovations provide satellite operators unprecedented flexibility in asset deployment, enabling game-changing advances in financial and operating flexibility, and risk mitigation.

About SpaceLogistics
SpaceLogistics is a global leader in in-orbit satellite servicing systems and services for commercial and government customers. The company is a wholly owned subsidiary of Northrop Grumman.

Services Include:
• Long-term station-keeping and attitude control of customer satellites
• Relocating customer satellites into the GEO graveyard orbit
• Relocating customer satellites to different orbital slots or to different orbits
• Inclination reduction
• Rescuing satellites stranded in incorrect orbits
• Rendezvous and detailed robotic inspection and external imagery assessment
• Significant and flexible hosted payload accommodations and rideshares to GSO
• Robotic enabled repairs
Benefits

Our SpaceLogistics services are specifically designed to fit customers’ business models, as well as their technical requirements. The simplicity and cost-effectiveness of the service provides customers with access to new markets and new opportunities — and protects asset value. SpaceLogistics services provide operators with opportunities to improve financial performance, better manage cash flows, break down barriers to enter new markets and reduce risks by:

- Extending satellite life to prolong revenues or defer capital expenses
- Redeploying satellites to start new orbital roles
- Creating in-orbit backup to protect revenues
- Protecting satellite revenues from procurement delays and launch failures

Future Capability

Our vision is to establish a fleet of commercial servicing vehicles in GEO that can address most any servicing need. Northrop Grumman continues to make deep investments in in-orbit servicing and is working closely with U.S. Government agencies to develop the next generation space logistics technologies. These technologies include robotics and high-power solar electric propulsion to enable future services building upon our keep-it-simple approach to satellite life extension.

These future services are expected to include:

- Propellant augmentation
- Inspection and repair
- Replacement or enhancement of parts and systems
- Incorporation of auxiliary propulsion, navigation, power, payloads and other functions to enhance the performance or extend the satellite’s life
- In-orbit robotic assembly of space structures

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<thead>
<tr>
<th>Capabilities</th>
<th>MEP</th>
<th>MEV</th>
<th>MRV</th>
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<tbody>
<tr>
<td>Station Keeping of GEO Client Satellite</td>
<td>✓</td>
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<td>Attitude Control of GEO Client Satellite</td>
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<td>Longitudinal Relocation of GEO Client Satellite</td>
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<td>Orbit Raise of GEO Client Satellite to GEO Graveyard</td>
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<tr>
<td>Inclination Reduction of GEO Client Satellite</td>
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<td>Proximity Operations Circumnavigational Inspections</td>
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<tr>
<td>Detailed Robotic Inspections</td>
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<tr>
<td>Installation of Augmentation Modules</td>
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<td>Robotic Repairs</td>
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<td>Can Dock to Satellites Without LAE</td>
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Business Contact

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