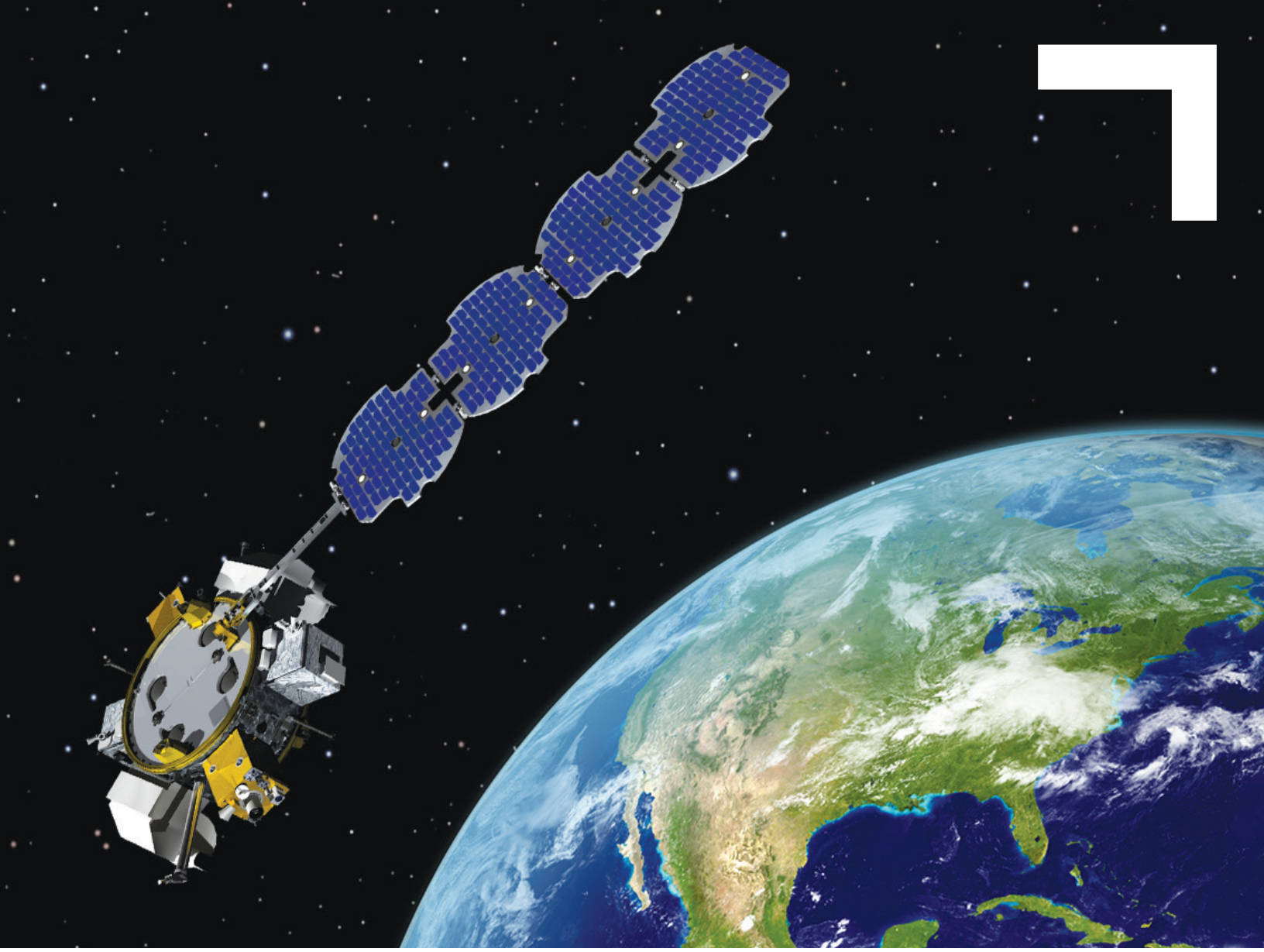


ESPASTAR™

Flexible, Affordable Access to Space

Northrop Grumman's ESPAStar platform provides a modular, cost-effective, and highly capable infrastructure resource for hosting technology development and operational payloads. The ESPAStar platform uses a customized EELV Secondary Payload Adapter (ESPA) ring as part of its structure and is capable of being launched aboard any launch vehicle that meets the Evolved Expendable Launch Vehicle (EELV) standard interface specification.

The ESPAStar platform's six payload ports are capable of accommodating combinations of hosted or separable (fly-away) payloads. The payload interface at each port has been standardized, allowing for hosted and separable payload interchangeability, late payload integration, and manifest changes. The ESPAStar platform leverages the available mass margin from any EELV launch to provide an affordable path to space for payloads. The platform is optimized for GEO missions, but is adaptable for LEO and MEO missions.

FACTS AT A GLANCE

- Accommodates combinations of hosted or separable payloads on six ports
- > 1,920 kg payload (> 320 kg per port)
- Multi-year mission life
- 1.6 Mbps downlink, AFSCN-compatible, Type 1 encryption
- Low jitter
- ≥ 400 m/s delta-V, any direction
- EELV SIS Rev B compliant
- Comprehensive payload power and data interfaces

NORTHROP GRUMMAN

ESPASTAR™

SPECIFICATIONS

SPACECRAFT

Orbit:	Optimized for GEO, adaptable for LEO and MEO missions
Targeted Mission Duration:	One to three years, single string
Dry Mass (no P/Ls):	430-470 kg (orbit dependent)
Dimensions (no P/Ls):	157.5 cm dia x 61 cm ht. (62" dia. x 24" ht.)
Fuel Capacity*:	310 kg
Payload Mass:	> 1,920 kg (> 320 kg per port)
Total Power (BOL):	1,200 W via four-panel solar array
Payload Peak Power:	Tailorable based on mission profile
Battery:	96 A-hr Li-ion
Downlink Rate:	256 kbps/1.6 Mbps via AFSCN higher downlink rates available upon request
Uplink Rate:	2.0 kbps via AFSC higher uplink rates available upon request
Payload Data Storage:	36 Gbytes non-TMR, non-volatile, 500 kbytes/day/ payload SOH
Attitude Knowledge[α]:	< 10 µrad (1σ)
Attitude Control[β]:	< 50 µrad (1σ) via 3-Axis RWA control
Jitter at Payload Interface:	< 20 µrad, (1σ), > 0.1 Hz
Slew Rate:	≥ 0.5 deg/sec
Position Control:	12x .09 N and 4x22 N REAs, 6 DoF control
Position Knowledge:	< 25 m (1σ), < 5 m typical
Avionics:	IAU, BRE440 processor, Virtex 5 FPGA, 40 GB memory

* = Fuel capacity can be increased by adding auxiliary propulsion tanks at payload ports

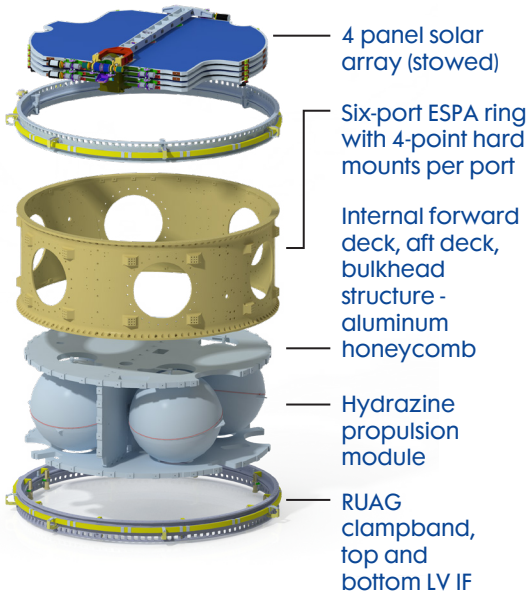
α = Assumes additional contributions to attitude knowledge error are removed by adding additional star tracker head and/or payload data

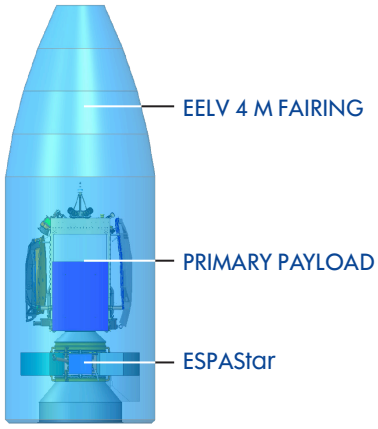
β = Assumes < 10 µrad (1σ) attitude knowledge error

MISSION SERVICES

- Mission Analysis
- Payload Integration
- Testing and Verification
- Launch Vehicle Integration
- Launch Operations
- Mission Operation
- Safety & Mission Assurance

ESPAStar PLATFORM





FOR MORE INFORMATION

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