

IP in Deep Space: Key Characteristics, Use Cases and Requirements

[draft-ietf-tiptop-usecase/](#)

IETF 125 TIPTOP WG Meeting

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<https://datatracker.ietf.org/doc/draft-ietf-tiptop-usecase/>

This is an adopted WG draft.

Github: <https://github.com/marcblanchet/draft-tiptop-usecase>

This presentation covers:

- update on progress/changes since the last meeting
- open issues + pull requests

History

Versions:

00 01

draft-many-tiptop-usecase

00 01 02

03

draft-ietf-tiptop-usecase

00

01

Feb 2025
Mar 2025

Jun 2025

Jul 2025

Jan 2026

- The document has been progressing since the original “deepspace” BoF.
- Changes have been fairly minor so far since adoption by the WG.
- Last update was between IETF 124 and now.

Thank you for your comments!

- Added more people to “Acknowledgements”:
 - Atsushi Tagami
 - Pascal Thubert
 - Carles Gomez Montenegro
 - Martin Duke
 - Xisen Tian
 - Dan York

Updates Since Last Revision

- Additional terminology descriptions:
 - Lagrange points
 - Lunar Gateway
- Additions to “requirements” section:
 - Location - Noted protocols that carry location information should support appropriate coordinate systems for solar system locations, not just e.g. WGS84 for Earth lat/lon.
 - Energy - Noted that energy is limited in general, and that there are different low energy / energy conservation modes that could result in apparent disconnections.
- Added to security considerations:
 - Cited CCSDS book on threats.
 - Noted need for efficient key agreement.
 - Noted need for post-quantum crypto.
 - Should this be stated more strongly, e.g. in the requirements section?

Open Pull Requests

#	Title	Submitted by	Status
43	Group key support	xisentian	Need to reboot this topic and find consensus on whether group key agreement is required or not. LunaNet messaging may be a motivation.
45	FS and PCS considerations	xisentian	Need to check for consensus on this. No agreement yet on whether to separate FS & PCS or tie them together as in the current PR text.
46	Asynchronous re-keying support	xisentian	Need to find consensus on this. Disagreement about requirement or “nice to have”.

Should we open these up in threads on the mailing list?

Other Open Issues

- Conjunction impacts - editors plan to add text on limits to communications windows due to solar/planetary conjunctions, and their impacts.
 - <https://github.com/marcblanchet/draft-tiptop-usecase/issues/40>

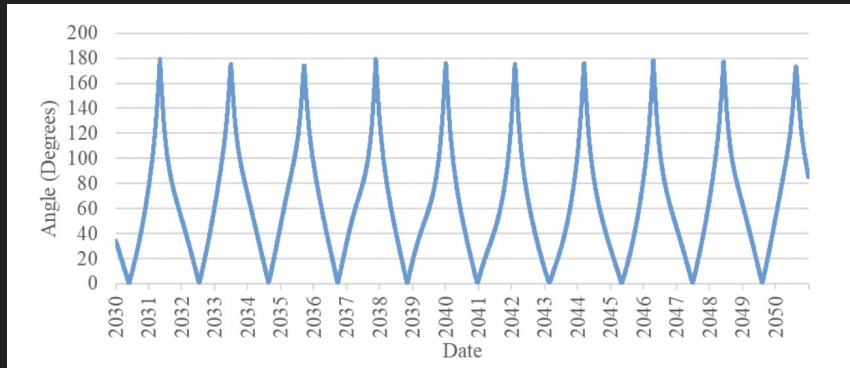


Table 1 Days below the specified angle for each year opportunity of the Sun-Earth-Mars angle.

DISRUPTION DURATION	$\leq 1^\circ$	$\leq 2^\circ$	$\leq 3^\circ$	$\leq 10^\circ$	
2034	0	9	16	60	Days
2036	2	10	16	59	Days
2038	5	11	18	63	Days
2040	5	13	21	48	Days
2043	0	14	24	89	Days
2045	7	16	25	84	Days
2047	4	12	20	70	Days
2049	0	9	17	62	Days
AVERAGE	2.875	11.75	19.625	66.875	Days

From: <https://ntrs.nasa.gov/citations/20220013418>

Next Steps

1. Work towards consensus on improved security requirements discussion, and take care of the open PRs.
2. Add text on conjunctions impact.
3. Welcoming any other inputs from the WG!