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A simple, secure and efficient authentication protocol for live monitoring of earth through satellite

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The technology of remote sensing, in particular earth observation, is continuously growing since its advent, especially in last decade it has attained remarkable advancement. The proof is that now many earth observation satellites can provide images of earth, such that we can identify objects on surface of earth with less than 0.5 meter. With this escalation in technology, the subsequent applications as well as remuneration of this technology for human life are also budding speedily. However till now earth observation satellites follow the traditional "store and later download" method for transferring captured images to ground. This method has some limitations especially from future perspective. In this paper we have identified those limitations and talked about an alternate idea, where satellite, instead of storing, broadcast encrypted data to ground as soon as they capture in space. This approach provides three unique features that traditional system lacks, first is real time monitoring of a location (surveillance) is possible, secondly the image data is directly accessible for individuals rather than only ground station, and finally this will reduce the extraordinary burden that traditional system puts on satellite for large bandwidth and appropriate fast & high data transfer protocol. For such architecture, we have proposed an authentication protocol so that only legitimate users can utilize satellite image data. We also analyzed that our protocol is not only secure, simple and efficient, but it also provides fast handover for least interrupted switching from one satellite to another.

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