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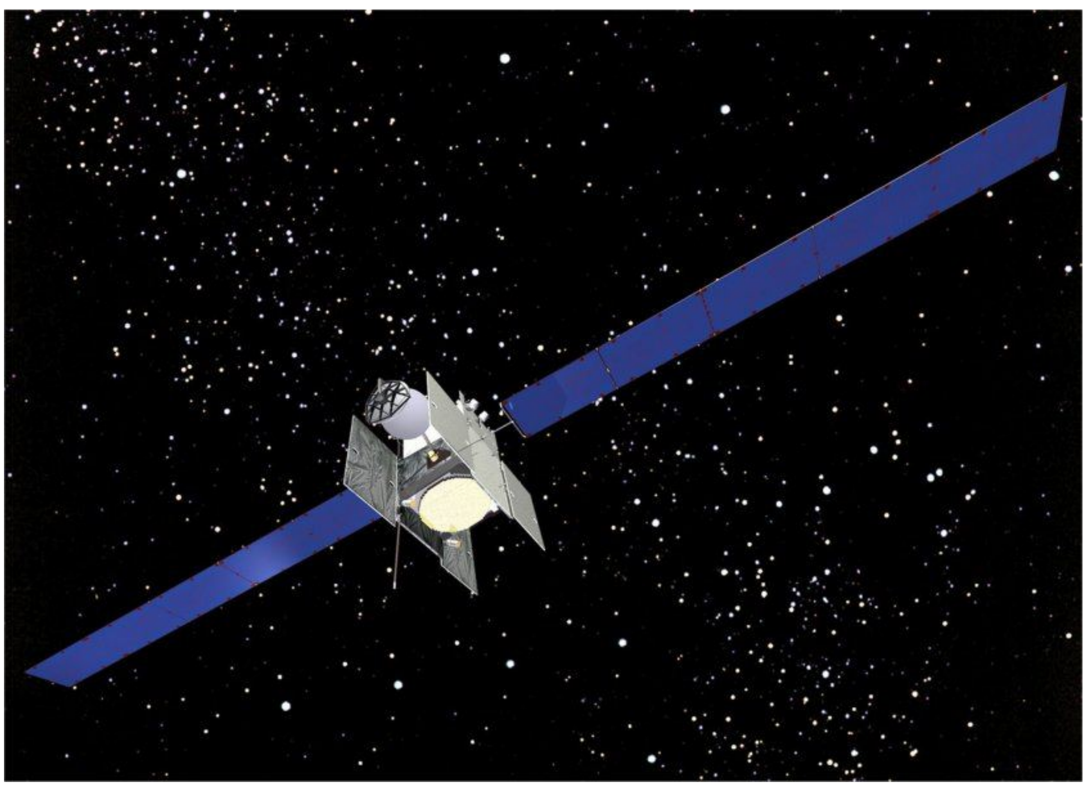
SPACEWAY 3 Takes Flight

The SPACEWAY 3 satellite was successfully launched into orbit … and the VSAT business may never be the same.

On August 14th Hughes Network Systems' Boeing built SPACEWAY 3 satellite was successfully launched into orbit on an Ariane 5 launch vehicle. If the company has its way, the VSAT business may never be the same.

Today, Hughes is the largest VSAT company in the world and claims a 55% share of the installed base of satellite terminals. This substantial user base includes over 500,000 installed Ku band sites for enterprises, small business and residential users. In turn, these sites are used to provide broadband connectivity for private networks, mixed networks and connection to the public Internet.

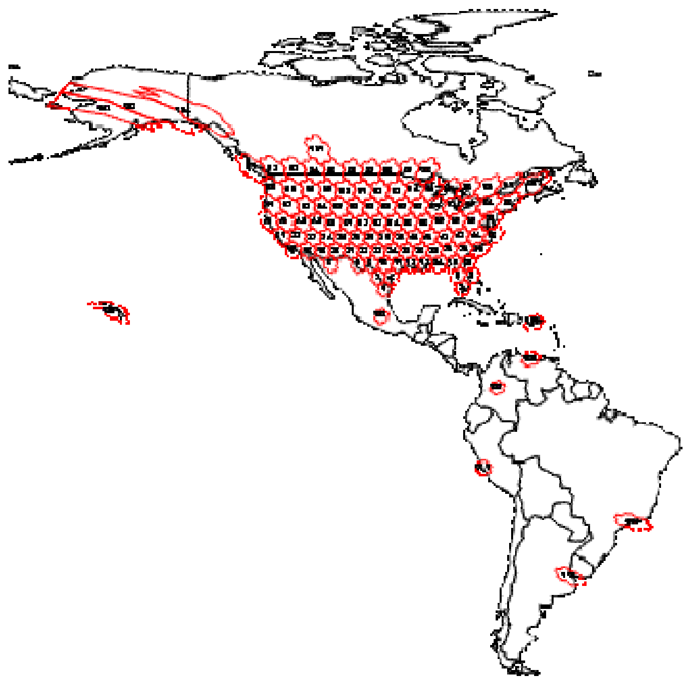
The company's business model to date consists of leasing Ku band capacity from the usual suspects on a large scale, with an estimated 90+ transponder equivalents currently in use world wide. This capacity is then used to relay IP data/content to Hughes's own or its customers' network hubs, which allocate capacity and provide connectivity to the corporate or public network. Until now, that is…



Artist's concept of SPACEWAY satellite on orbit

SPACEWAY 3 is a very different satellite, and is poised to supplant this model for many users. There are several breakthrough technical differences and a financial structure that, in turn, are going to drive new business models:

- **Hughes owns SPACEWAY 3.** It thus is migrating away from its current outsourced space segment model to a vertically integrated model – a model largely driven by the specialized nature and concomitant cost of the satellite itself.
- **Large scale use of Ka band.** While WildBlue has been offering Ka capacity from its WildBlue-1 and -2 satellites, combined these two satellites offer approximately 10 kW of Ka capacity, spread over two satellites. In contrast, SPACEWAY 3 has 13 kW of power in one satellite – which by itself would allow greater capacity.
- **Record breaking use of spot beams.** SPACEWAY 3 sports 112 uplink antenna beams and a phenomenal 780 downlink antenna beams! (For comparison, WildBlue 2 has 35 spot beams and EchoStar 8 has 50 spot beams.) More spot beams allow greater frequency reuse, and thus greater capacity. Hughes claims a workable capacity of in excess of 10 gigabits per second, nearly an order of magnitude more than a conventional satellite, which in turn means a lower cost per bit. Combined with the more conventional benefit of vertical integration, this should allow higher financial returns if other factors (i.e. terminal costs, satellite loading, etc.) don't cancel out the benefit.
- **Onboard processing and switching.** Rather than simply relaying signals from users to the hub and vice versa, the SPACEWAY satellite converts the signals into actual IP packets of data. The satellite can then direct the data, on a packet by packet basis, to whatever downlink antenna beams (any or all) that should receive the data. For SPACEWAY users competing with other SPACEWAY users, this completely eliminates the hub from the process. This doubles capacity by reducing the two hops data must complete under today's technology to one. More importantly (at least for many applications), this reduced the latency of the network by more than 50%, which speeds data transfers and helps applications like videoconferencing and VOIP. (Before some readers jump on my case, I'm deliberately not including full mesh VSAT networks, which also eliminate the second hop, but at the cost of very inefficient transponder loading).



Spaceway 3 Spot Beam Pattern

Of course, while the SPACEWAY satellite has taken flight, the SPACEWAY user terminals are as Bigfoot or the lost city of El Dorado, though hopefully not for long. With extra time from the delayed launch of their satellite and the benefits of last summer's test with SPACEWAY 2 (currently in use by DirecTv for traditional satellite broadcasting use), we expect a relatively smooth technical rollout when commercial service begins early next year.

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As Hughes loads up SPACEWAY 3 with existing and new users, we expect it to have a marked effect on Ku band transponder usage over North America, and thus pricing. The faster SPACEWAY 3 loads up, the more pronounced we expect this effect will be. In their own shareholder presentations, the company has implied that it intends to migrate over 40 transponder equivalents of traffic to SPACEWAY 3 by the end of 2009, with more thereafter. We also note that Hughes has access to additional orbit licenses, and can replicate additional SPACEWAY satellites through its existing relationship with Boeing. Any potential competitor wishing to construct a similar system to SPACEWAY would need to replicate Hughes' substantial non recurring engineering for the terminals and Network Operations Center.

Of course, the extent that any of this happens will be driven by the willingness of Hughes customers to migrate to the as yet unproven platform. While much of the technical risk appears to be wrung out of the business case for SPACEWAY, cost risk for the new terminals and execution issues in real work applications still loom. Hughes' ability to tackle these issues will determine if SPACEWAY's full potential can be realized.

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