

Via Satellite®

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Via Satellite's
**Satellite
Executive**
of the **Year**
2008

**Pradman
Kaul**

Chairman and CEO, Hughes Network Systems

**MIDDLE EAST OPERATORS OPTIMISTIC
DESPITE ECONOMIC SLOWDOWN**

**REGULATORY HURDLES
HINDERING SATELLITE GROWTH**

**SPACE-BASED SOLAR POWER
COMES TO LIGHT**

The ability of Pradman Kaul and his executive team at Hughes Network Systems to anticipate the evolutions of the satellite market has placed the company firmly atop the VSAT field and in position as one of the leaders in the growing satellite broadband niche.

BY JASON BATES

It is this ability to grow and evolve that has kept Hughes a leader in the changing marketplace and earned Kaul Via Satellite's 2008 Satellite Executive of the Year award.

"The people that started Hughes left Comsat Laboratories and had the vision to see that digital satellite communications would be the future," Kaul says. "A lot of people didn't see it that way at that time. The first digital systems used SCPC, TDMA and other technologies and were developed at Digital Communications Corp., the name of our company in the 1970s. We started in a garage in Rockville, Md., and always have been leaders in the digital space. It was a \$2 million market in the beginning, but even then we had greater than a 50 percent share."

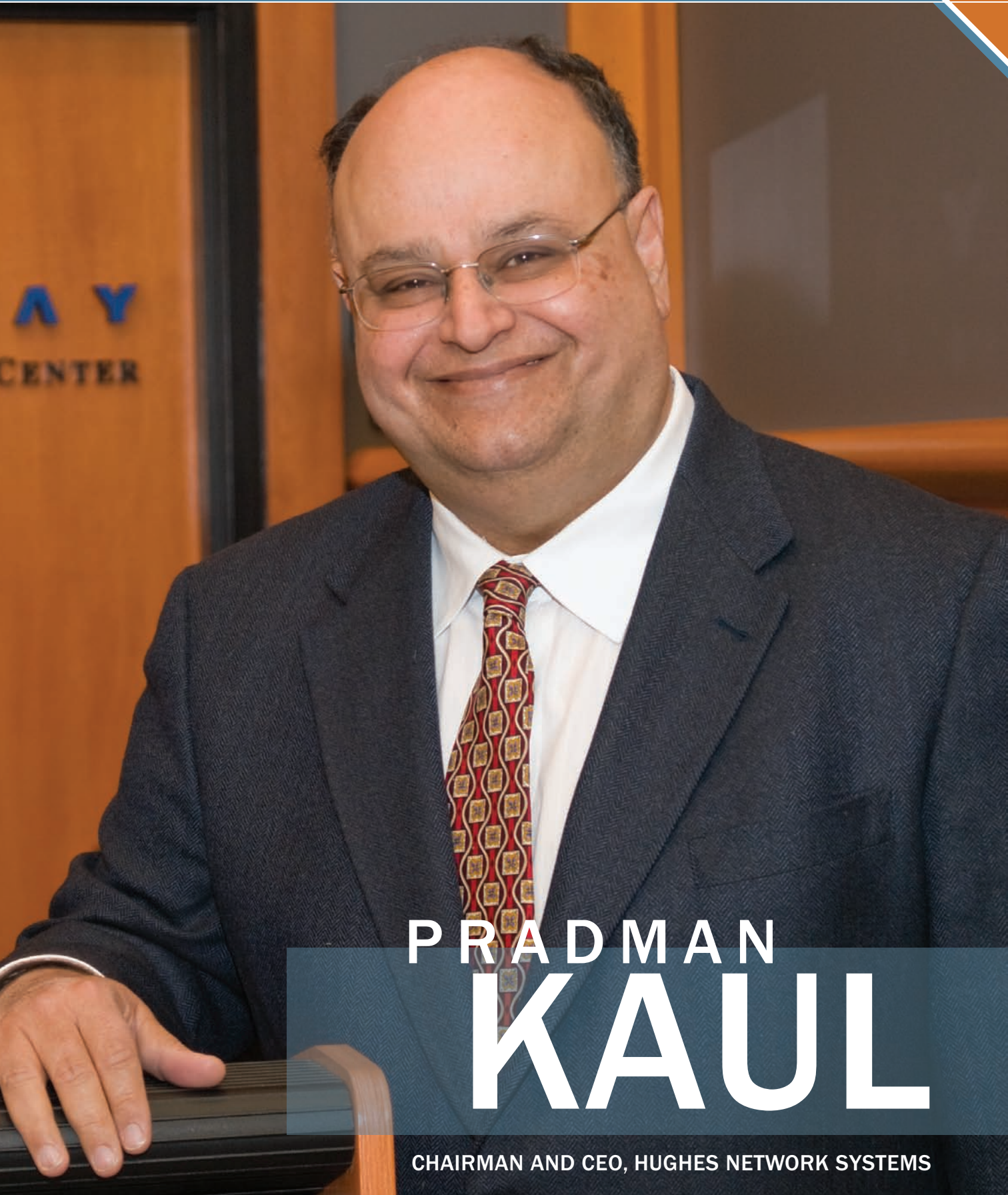
While navigating Hughes to the top of various markets often has proved to be a years-long effort, Kaul, chairman and CEO of Hughes Network Systems, performed exceptionally well in 2008. First, Kaul and Hughes saw the launch of the Spaceway 3 broadband system, an effort initiated



SPACEWAY
NETWORK CONTROL

PHOTO CREDIT: VINCE LIM

SATELLITE EXECUTIVE OF THE YEAR 2008



PRADMAN
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more than a decade ago but delayed multiple times for reasons out of the company's control. "It was almost like fate decided there would not be a Spaceway network, but we just hung in there," he says. While devoting time to the launch of Spaceway 3, Kaul also remained firmly focused on other markets. Hughes has long held more than 50 percent of the enterprise VSAT market and posted a strong series of wins in North America as well as expanded its reach internationally in 2008.

"As the VSAT business has evolved and grown, the enterprise sector presented fewer opportunities, so we evolved into the consumer business, and today, we have a consumer business in the United States that is roughly the same size as our enterprise business," Kaul says. "We became the largest supplier of set-top boxes in the world when no one thought we knew how to manufacture consumer products. We were selling in Best Buy against Sony and Panasonic, and we not only did well, we were the leader. When News Corp. took over Hughes and sold the set-top box business to Thomson, we used that knowledge and did broadband Internet access for consumers."

One of the biggest factors in Hughes' success, says Kaul, is the steady hand of a management team that has multiple members, including Kaul, with more than 25 years of experience. "My colleague, Paul Gaske, who runs North America, joined our company when he came out of college, almost 39 years ago. Bahram Pourmand, who runs our international business, also has been around 30 years. Adrian Morris, who runs our technology and engineering group, has been around 25 years."

Kaul spoke with Via Satellite Editor Jason Bates about how Hughes rose to the top of its markets and how it stays there.

VIA SATELLITE: What was the first technology development that established Hughes as a leader in this area?

KAUL: The world was beginning to see the transition to fiber for trunking programs, and people were questioning if satellite would have a role, because fiber was going to take over the world. We were able to see a new market developing for access and bypassing the phone companies. AT&T was breaking up, and people were dealing with 20 phone companies to set up a national network. It was a mess. Our first customer was Wal-Mart, which had stores spread throughout the nation. Sam Walton had a vision to connect all the stores to the headquarters in Bentonville, Ark. He thought that would give (him) an advantage over his competitors, but he couldn't get a network from the phone companies. We had the idea to bypass the phone companies completely by putting a little dish on each store and connect to Bentonville through satellite to provide voice, data and one-way video. That was the market we saw developing around the time in which Hughes acquired us. The rest is history. We've now shipped more than 1.5 million VSAT terminals to customers in more than 100 countries.

VIA SATELLITE: The next step is Spaceway 3. How long has that taken to come to fruition?

KAUL: In the mid to late 90s, we knew we had to have a next-generation satellite system. New economics to provide broadband capability at lower cost and higher connection speeds spawned the idea of Spaceway. We wanted three satellites that could provide 10 times the capacity of the bentpipe satellites of the time with mesh networks and phased array antennas, which was exotic technology at the time. For Spaceway, we had the technology and the consumer experience and we saw the need for higher speeds. I sat in front of the

GM board in 1998 and said unless we do a Spaceway kind of satellite the company would be out of business in 10 years. It was as clear as day. Terrestrial technologies we compete with don't stand still either. They are always improving, and we have to evolve the satellites and the satellite technology networking to keep pace.



VIA SATELLITE: What technology improvements on Spaceway 3 were vital to your business plan?

KAUL: The main thing we were trying to do at this stage was introduce spot beam technology in the Ka-band so we could get much more capacity per satellite. Remember in the late 90s, Ka-band satellites were not being built, and Ku-band was full. There were no slots available over the United States. We had to move to Ka-band and in doing this, create narrow spot beams so the reuse you get from the spectrum is increased significantly. It meant we could get 10 gigabits capacity at that time, and the next generation of satellites may see 100 gigabits.

Spaceway was started in 1999, but at that time, to say there were 10 gigabits in a satellite was a major thing. In order to do that, our satellite guys came up with onboard phased array antenna technology. That was the first time that we used a phased array antenna on a satellite, which allows the beams to be shaped dynamically. People had talked about demand assignments for many years, but in this case, we not only could provide on-demand bandwidth but also power. To take the next step, we put IP packet switching on the satellite. It is a simple router that had the ability to take 10 gigabits in

and put 10 gigabits out. That, on a packet-by-packet basis, allows you to route a packet from point A to point B. For the first time we've done that efficiently with a satellite. It is different from the traditional point to multipoint, and it makes sense because you only want to use a narrow pocket for your point B. We did not want to waste bandwidth trying to send the data to multiple points.

“What we are doing more and more because of economics is putting the technology enhancements on the ground, because it's too expensive to do it on the satellite. We are one of the prime pioneers in developing DVB-S2 technology, and now everybody is using it.”

VIA SATELLITE: What is the next technology step for Hughes?

KAUL: What we are doing more and more because of economics is putting the technology enhancements on the ground, because it's too expensive to do it on the satellite. We are one of the prime pioneers in developing DVB-S2 technology, and now everybody is using it. It allows us to digitally increase the capacity per hertz of bandwidth with sophisticated coding. We are continuing to make significant technology enhancements on the ground and that will continue going forward.

VIA SATELLITE: What is the next step in your satellite plans?

KAUL: Spaceway 3 is not full yet, and we're expecting to use it to add customers for the next three years. We are looking at the architecture for a next-generation satellite that will focus on even higher capacity. In three years the capacity is going to have to be much greater. Unfortunately, the amount of non-recurring engineering required to do all the technology for Spaceway 3 will be tough to afford. We more likely will have to go to a bentpipe satellite with narrow spot

beams to increase the capacity by a factor of eight to 10. The next-generation satellite probably won't have onboard routing capability but will have narrow spot beams, frequency reuse and significant capacity enhancements.

VIA SATELLITE: Will these plans keep your satellite broadband business in step with anticipated terrestrial technology development?

KAUL: Every day we worry about terrestrial advancements. If you look at the different ones, DSL was the single largest threat to the satellite business. When it was introduced, it struggled for a while, but now DSL has probably the largest number of subscribers for any single technology. But the cost of deploying DSL or cable modems in underserved areas is still very high. So what we chose as a strategy is not to compete directly with DSL at the present time. There are 10 million to 15 million households that won't be able to get DSL over the next few years, so that is a good market.

There is a trend toward wireless techniques, but if you look at WiMax, for example, the cost of deploying plans such as those of Clearwire and Sprint is still high enough that their initial plans are to go to higher density subscriber areas and compete with DSL and cable. We have three to four years before any of these technologies start attacking our markets, but in that time, we have to improve and be more competitive with our broadband speeds and drive the cost per bit down.

VIA SATELLITE: How has your VSAT business evolved?

KAUL: Six years ago, we didn't have a great deal of business internationally, but in the last six years, we've grown that business very nicely. We're looking to grow in the 15 percent range, and we've been successful because of our performance. You have to have the technology, the service and a competitive price, and you have to deliver. The strategy 10 years ago was we were only an equipment company, but we had to enter the service business to get the recurring revenue. Equipment prices were dropping, so if we remained only in equipment, we couldn't show growth. Now about 44 percent of our revenues is equipment and over 50 percent is service. We use our technology edge to give us an advantage in the service business against companies that can't offer equipment, and we use the volume of equipment that our services need to give us an edge against other hardware



providers that don't provide services. It's a circle that feeds on each other, and there is not another company that has our model, and I think that's what gives us the edge.

We're also now a managed service provider. We're not going in to customers saying we are purely a VSAT company. We use the most cost-effective technology as appropriate for different parts of the network. If you are in Manhattan, we will use DSL. If you are in rural areas, we will use VSATs. But the customer will get one point of contact and one price. The enterprise community has accepted that with glee.

VIA SATELLITE: What are the next market shifts that you anticipate?

KAUL: We have to give people more bits at a lower cost. If we do that, applications are then the next area. Providing connectivity at so many sites over the world, we have to come up with powerful digital signage applications. In India, we have about 30,000 terminal sites in rural areas. We provide connectivity, but the way to make money is not just providing Internet access but also providing value-added services. One of the most significant applications that will be of value globally is distance education. This broadband satellite connectivity we provide is the ideal delivery vehicle. Moving on, it's how do we come up with five to 10 or more value-added applications? If we can figure that out, the scaling factor is huge. That's an area where we can see significant future revenue and margin growth if we do it successfully. ▽

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