

Satellite Broadband & Other Applications... *a New Way*

3rd NGN Workshop, 23 Feb 2009, Prague, Czech Republic

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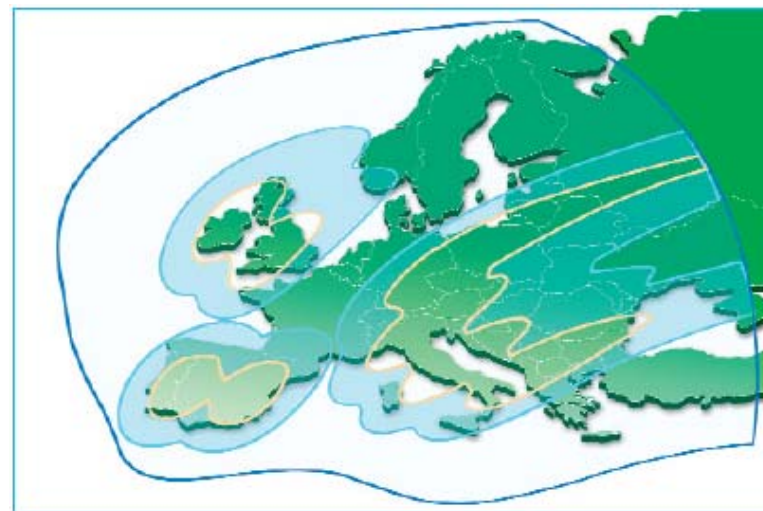


Agenda

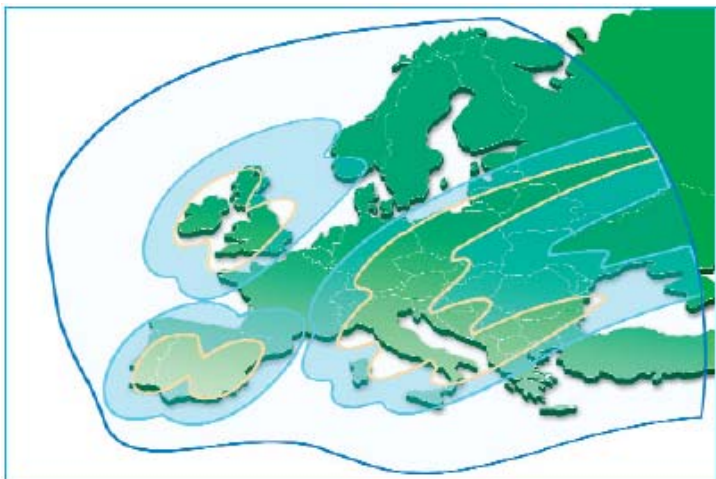
- Introduction to Avanti Communications
- What's new?
- Avanti technology Impact on Pricing
- Where satellite works - applications
- Case study: Scotland
- Integration with terrestrial networks
- Consultancy and current projects
- Questions

Avanti is an innovative UK satellite operator using latest satellite technology to meet a growing market

- 12 years experience in satellite industry and listed on the London Stock Exchange (Enterprise value £100m+; June 2008)
- Launching first European satellite, HylasOne, in 2009 – 3 more to cover EMEA & Asia by 2012
- Heritage of commercial delivery to BNSC, ESA and EC R&D projects
- Operating services for customers with satellite broadband, in-store TV and digital signage into Europe



Key: ■ Ka-band - inner beam ■ Ka-band - beam edge ■ Ku-band beam edge



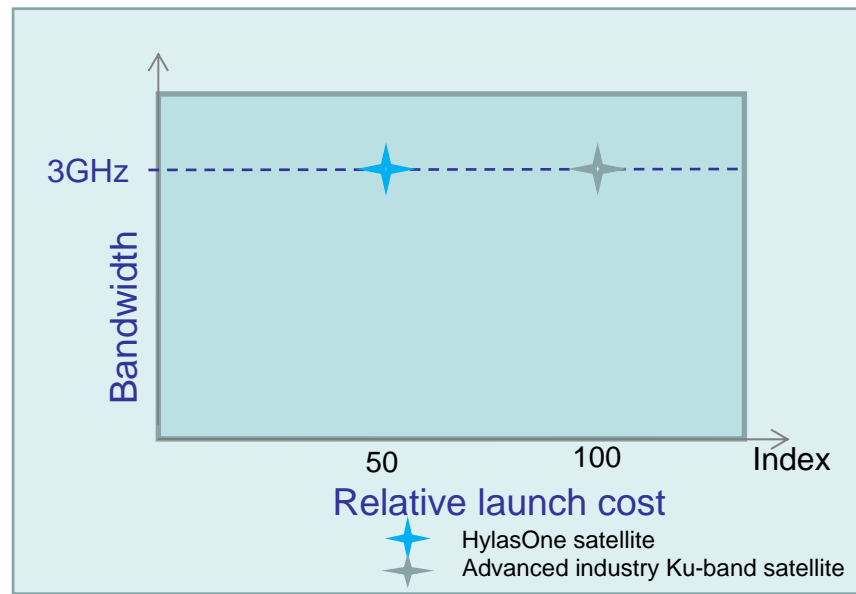
Key: ■ Ka-band - inner beam ■ Ka-band - beam edge ■ Ku-band beam edge

BENEFITS

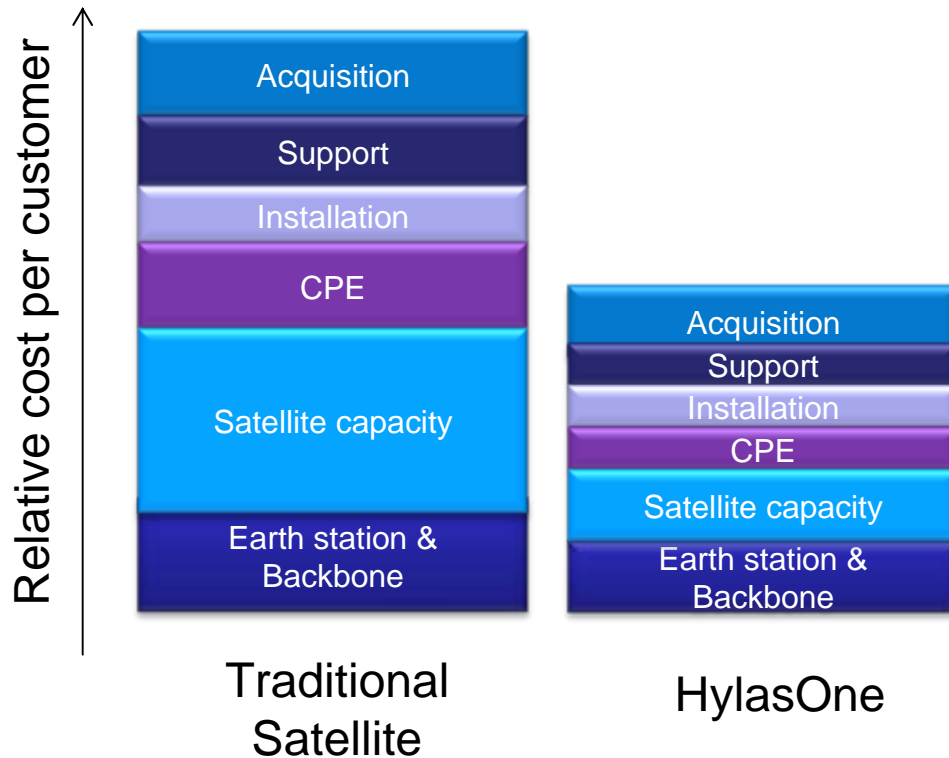
- Higher power = reduced customer premises equipment (CPE) requirements = lower costs
 - 66cm two-way antenna / 45cm receive only (broadcast)
- Higher power = higher data rates
 - 2W amplifier = >2Mbps (66cm)
- Frequency re-use = greater bandwidth resource = lower bandwidth costs

SPECIFICATION

- Very high power (62dBW) Ka & Ku band satellite = 2-3 times more powerful than any other satellite over Europe
- Up to 3GHz capacity
- 15 year lifetime



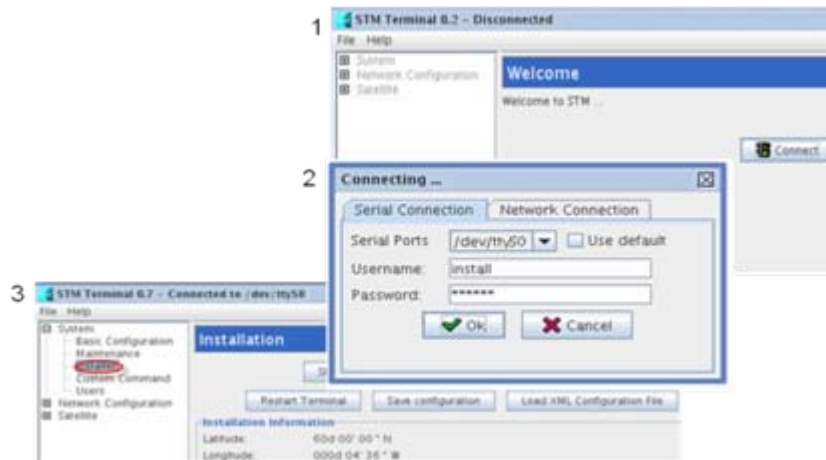
New HylasOne technology impact



- Almost all value chain cost items are reduced to provide a more competitive offering to end users
- More attractive pricing increases demand thus reducing average costs per customer
- Satellite antenna and modem cost reducing to approx. EUR 200-300 by Summer 2009

Applications - VNO

- ❑ VNO (Virtual Network Operator)
 - Key success factor – simple operating system & processes
 - Ubiquitous network with full network control and visibility
 - Use standard OSS software that can be used on any platform



Installation

Home > Devices

SIT

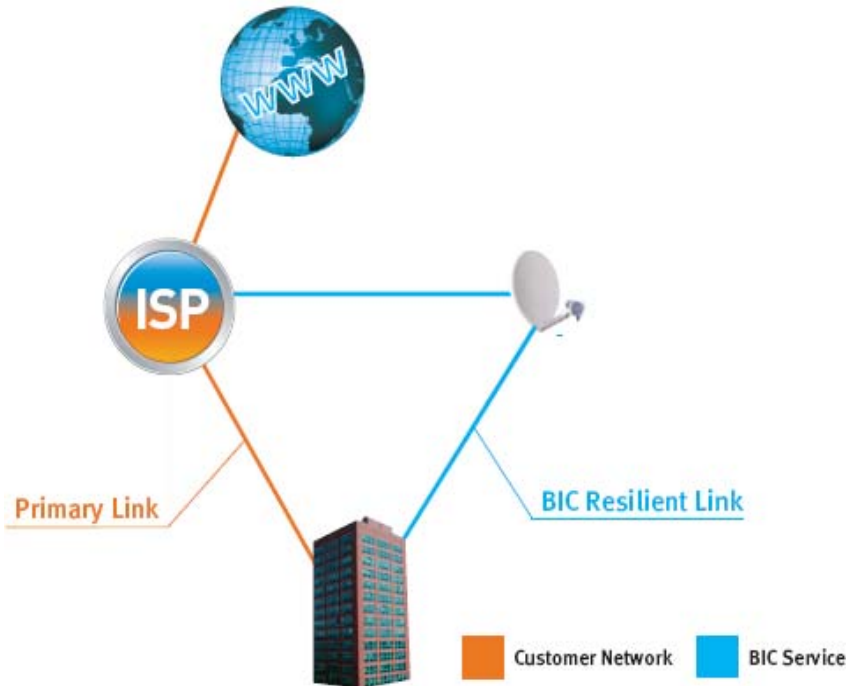
Show only where

Filter Column: Identifier Condition: Contains Value: [] Filter Filter and Keep

Total Records: 458, showing (at most) 25 per page

Identifier	Call Sign	Service Level	IP Address	Customer	Post Code	Installation Date	Installed By	Linked Devices	Run on SIT
01-00001	ABL-BPK-02-75	4M-1M	[p] 88.210.128.114	ABL000 Avanti Broadband - Network Operations	[loc]	[inst] 2006-03-01	skettle	nat - Sit Only: direct	<input type="checkbox"/>
01-00002	ABL-BPK-01-75	5M-1M	[p] 88.210.131.241	ASG002 Avanti Screenmedia Office	[loc]	[inst] 2006-06-23	dmarquez	routed - Sit Only: direct	<input type="checkbox"/>

Network overview



- Patents filed by Avanti on this service
- Instant cutover on terrestrial circuit failure
- No change in IP addresses need be communicated to web servers
- Affordable for customers
- One “install” at ISP enables all customers

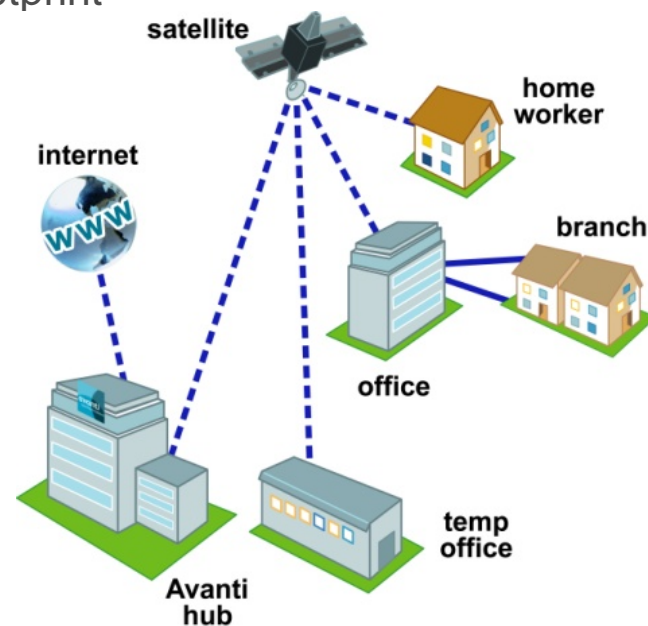
Applications

- ❑ Business continuity
- ❑ Corporate data networks
- ❑ Content delivery networks – mobile TV
- ❑ GSM / mobile network backhaul
- ❑ GSM / Telco network back-up
- ❑ DTT broadcast network back-up
- ❑ WiFi / WiMax overlay network
- ❑ Triple play DTH service

Not just a rural solution

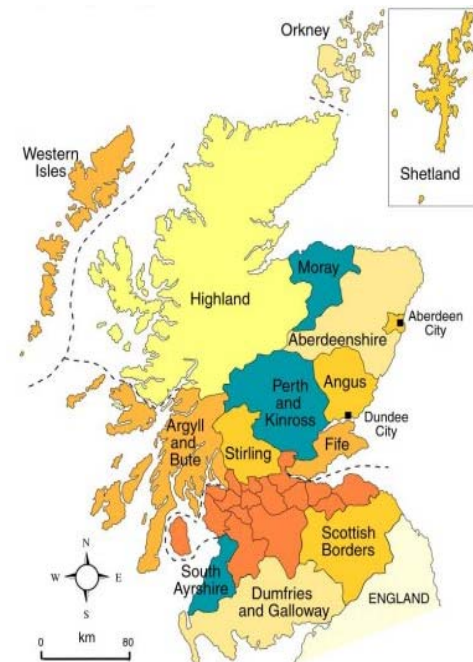
How can an ISP / Telco get started?

- Buy a VNO service for smaller network / number of users; or
- Buy an Internet trunk route in the sky on HylasOne with capability of packaging for direct access to end users
 - Capacity can be shared across all users in footprint
 - Satellite OPEX costs of about €6/user/month



Case Study: Scotland

- ❑ Working with the Scottish regional government
 - ❑ Objective: Maximise broadband coverage in Scotland
 - ❑ All exchanges now enabled with DSL but still thousands of people without broadband access
 - ❑ Funding made available for reaching 'not-spots'
 - ❑ Avanti to roll-out services in conjunction with Scottish government
 - ❑ Broadband for €25 per month (hardware and installation funded by Scottish government)
 - ❑ And now Northern Ireland...



Terrestrial & Satellite together

- ❑ Rapid roll-out across wide areas such as Europe
- ❑ Audience potential of 800 million across Europe in a single beam
- ❑ Cover areas that are not cost-effective to be connected via fibre or other terrestrial means – research suggests about 11% (24m) of European (EU-27) homes and SMEs will not be connected by 2009
- ❑ Why spend €100millions on terrestrial infrastructure to meet these geographically diverse and remote sites when satellite provides an immediate solution at a fraction of the cost

Terrestrial & Satellite together

- ❑ Complete diversity for mission / financially critical applications
- ❑ Satellite can provide business continuity for interruptions to terrestrial networks
- ❑ Avanti has launched a business continuity product (only 3 packets dropped during successful tests with major global ISP)
- ❑ Satellite can offer fast start-up and redeployment
- ❑ Ideal for terrestrial operators who need to connect a customer quickly (e.g. within 48 hours) when a local loop could take up to 60 days – the satellite terminal can then be easily removed and sent to another location
- ❑ Now we are exploring network attacks e.g. Denial of service

Terrestrial & Satellite together

- ❑ Overlay network to avoid primary network congestion
- ❑ Avoid congesting networks with streaming, broadcast and large file deliveries to allow terrestrial networks to keep primary networks for mainstay business that earns the most money
- ❑ Broadcast delivery via satellite
 - Let satellite do the 'heavy lifting'
- ❑ Satellite delivers to multi-million audiences by using the same bandwidth once

Benefits of new satellite services

- ❑ Very small, low cost (and continuing to reduce further) antenna operations
 - Only 66cm VSAT terminals required
 - Only 45cm DTH antenna
- ❑ Rapid deployment / redeployment
 - Potential to have site operational within 1 day of order
 - Equipment can be easily dismantled and redeployed at another location
 - Auto-deploying antenna (vehicle mounted or stand-alone) can have communications running within minutes of arriving at a scene
 - Ideal for disaster recovery situations
- ❑ Universal equipment and cost
 - open standard & same cost wherever in the footprint
- ❑ Bandwidth flexibility to kbps level and asymmetric
 - Use exactly the bandwidth you need (e.g. 420kbps by 150kbps) – not restricted to Telco bandwidth (e.g. 64kbps, E1, etc.)

Benefits of new satellite services

- ❑ Share bandwidth over all sites
 - bandwidth in the sky can be shared among all sites on a network and traffic priorities set for individual sites
- ❑ Already broadcast (multicast) capable by design
- ❑ Complete diversity to terrestrial networks
- ❑ Not reliant on third party networks, which can be subject to congestion and multiple SLA's with varying performance measures and technologies
 - Satellite networks always follow the same route – up and down!

Consultancy within Avanti

Avanti's Consultancy Group performs externally funded consultancy and research projects which:

- ❑ encourage the development of new applications that will utilise Avanti's communications network(s)
- ❑ create opportunities for the roll-out of rural broadband networks
- ❑ enhance the technical capabilities of Avanti's networks
- ❑ give Avanti a better understanding of potential markets, applications and services
- ❑ lead to the development of new applications and services

Satellite communications experts, but technology agnostic...

Avanti Consultancy Projects

Location Based Services / Transportation

SISTER (DG Enterprise)
VEER (Technology Strategy
Board)

Disaster / Crisis Management

TANGO (DG Enterprise)
CHORIST (DG INFSO)
Satellite Based Alarm
System (ESA)

Satellite Broadband

Rural Wings (DG Enterprise)
Broadband on Trains (ESA)
Third World Capacity Building
(ESA)

The logo for Avanti Communications, featuring the word "avanti" in a bold, lowercase sans-serif font above the word "communications" in a smaller, lowercase sans-serif font. The text is white and set against a blue square background with a subtle circular gradient.

avanti
communications

A blue banner with a wavy, ribbon-like shape, containing the text "Any Questions?".

Any Questions?

A larger version of the Avanti Communications logo, centered on a dark blue background with a starry pattern. The logo consists of a blue square with the text "avanti" and "communications" in white.

avanti
communications

www.avantiplc.com