Stratix

The Netherlands: FTTH deployment overview 4Q2006

This list provides an overview and status of all Fibre-to-the-Home, Building-and-Curb projects in the Netherlands known to Stratix Consulting. The first table lists the number of connections as at December 2006. The second table lists the plans for 2007 and announcements made in the press for rollout plans up to 2009/2010. The first two tables list deployments that require the complete wiring of the local loop into the house or flat. We finish with a description of Cable companies and Telco incumbent upgrades that do not require building new infrastructure in the homes.

Table 1 provides an overview of deployments at the end of 2006. The list contains four categories: local initiatives, GNEM activities with the housing corporations Portaal, de Alliantie and Patio, Lijbrandt networks and the initiatives of Student dormitory corporations. Lijbrandt's services for student dormitory corporations are listed in the fourth category to avoid double counting.

Table 1 *Fibre-to-the-Home, Building-and-Curb status report for December 2006*

Municipality/Region	Initiator	Operator	Tech.	Max. Bitrate up/down	Dec. 2006 connected	Dec. 2006 served
Local initiatives					**29,822**	**22,475**
Almere	Municipality	Unet	FTTH	100/100 Mbps	1,700	n.a.
Almere	KPN	KPN	FTTH	?	400	400
Amersfoort	Casema	Casema	FTTH	?	1,000	1,000
Amsterdam	Municipality/GNA	Bbned	FTTH	100/100 Mbps	u.c.	u.c.
Amsterdam	Silodam	IJ-net	FTTH	1/1Gbps	400	400
Deventer	Rentre Wonen	Y3-net	FTTH	100/100 Mbps	1,200	n.a.
Eindhoven	Onsnet Eindhoven	NEM	FTTH	100/100 Mbps	6,500	4,200
Enschede	Woonplaats/Domijn	KPN-Casanet	FTTH	100/100 Mbps	8,500	8,500
Naaldwijk	CaiW	CaiW	FTTH	30/30 Mbps	700	700
Nuenen	Onsnet Nuenen	NEM	FTTH	100/100 Mbps	7,200	6,500
Nijmegen-Hazenkamp	Glazenkamp	UCI-KUN	FTTH	100/100 Mbps	28	28
Rotterdam	Municipality	Bbned	FTTH	100/100 Mbps	1,500	n.a.
Utrecht	Lomboxnet	Lomboxnet	FTTH	100/100 Mbps	1,000	1,000
Utrecht- Leidsche Rijn	Kersentuin	Xs4all	FTTH	100/100 Mbps	94	47
GNEM					**26,800**	**855**
Amersfoort	De Velden/Portaal	GNEM	FTTH	100/100 Mbps	900	855
Amersfoort	De Alliantie/Portaal	GNEM	FTTH	100/100 Mbps	3,000	n.a.
Arnhem	Portaal	GNEM	FTTH	100/100 Mbps	3,500	n.a.
Bussum	Patio	GNEM	FTTH	100/100 Mbps	1,000	n.a.
Hilversum	Patio	GNEM	FTTH	100/100 Mbps	2,000	n.a.
Leiden	Portaal	GNEM	FTTH	100/100 Mbps	6,000	n.a.
Naarden	Portaal	GNEM	FTTH	100/100 Mbps	1,000	n.a.
Nijmegen	Portaal	GNEM	FTTH	100/100 Mbps	4,000	n.a.
Soest	Portaal	GNEM	FTTH	100/100 Mbps	900	n.a.
Utrecht	Portaal	GNEM	FTTH	100/100 Mbps	4,500	n.a.

Municipality/Region	Initiator	Operator	Tech.	Max. Bitrate up/down	Dec. 2006 connected	Dec. 2006 served
Lijbrandt					**14,150**	**12,450**
Hillegom	Lijbrandt	Lijbrandt	FTTC	20/20 Mbps	6,700	5,000
Lisse	Lijbrandt	Lijbrandt	FTTC	20/20 Mbps	u.c.	u.c.
Haarlem	Pré Wonen	Lijbrandt	FTTC	20/20 Mbps	450	450
Various towns	Housing/Care corps.	Lijbrandt	FTTB	20/20 Mbps	7,000	7,000
Student dormitories					**40,303**	**40,303**
Amstelveen	Duwo	Casema	FTTB	100/100 Mbps	3,000	3,000
Amsterdam	De Key	PinkRoccade	FTTB	100/100 Mbps	3,000	3,000
Amsterdam	Duwo	Lijbrandt	FTTB	20/20 Mbps	1,000	1,000
Breukelen	Nijenrode	Nijenrode	FTTB	100/100 Mbps	200	200
Delft	Duwo	TU Delft	FTTB	100/100 Mbps	5,000	5,000
Den Haag	Duwo	Lijbrandt	FTTB	20/20 Mbps	350	350
Eindhoven	Vestide	NEM	FTTB	100/100 Mbps	1,500	1,500
Enschede	U Twente Campus	UT - ITBE	FTTB	100/100 Mbps	2,000	2,000
Groningen	IN-Groningen	RuG RC	FTTB	100/100 Mbps	1,013	1,013
Leiden	SLS	Lijbrandt	FTTB	20/20 Mbps	3,000	3,000
Nijmegen	SSHN	UCI-KUN	FTTB	100/100 Mbps	4,000	4,000
Oegstgeest	Duwo	Lijbrandt	FTTB	20/20 Mbps	540	540
Rotterdam	Stadswonen	Bbned	FTTB	100/100 Mbps	5,500	5,500
Tilburg	Breburg Wonen	Breburg	FTTB	100/100 Mbps	400	400
Utrecht	SSHU	CapGemini	FTTB	100/100 Mbps	5,600	5,600
Wageningen	SSHW	WU FB/ICT	FTTB	100/100 Mbps	4,200	4,200
Total Netherlands					**111,475**	**76,383**

A number of the initiators and operators listed above have made public announcements about their network roll out plans for 2007 and even about subsequent plans up to 2009/2010. Table 2 lists the public plans. Naturally, we do not disclose confidential plans that have come to our knowledge.

Table 2 *Network extension plans for 2007 and company announcements for Year End 2009*

Municipality/Region	Initiator	Operator	Planned 2007	Planned YE2009
Local initiatives			**139,094**	**181,094**
Almere	Municipality	Unet	1,700	1,700
Almere	KPN	KPN	11,000	11,000
Amersfoort	Casema	Casema	1,000	1,000
Amsterdam	Municipality/GNA	BBned	37,000	37,000
Amsterdam	Silodam	IJ-net	400	400
Deventer	Rentré Wonen	Y3-net	1,200	1,200
Deventer	Y3-net	Y3-net	40,000	40,000
Eindhoven	Onsnet Eindhoven	NEM	7,700	7,700
Enschede	Woonplaats/Domijn	KPN - Casanet	25,000	25,000
Helmond	Municipality	BBned		40,000
Naaldwijk	CaiW	CaiW	900	900
Nuenen	Onsnet Nuenen	NEM	8,000	8,000

Municipality/Region	Initiator	Operator	Planned 2007	Planned YE2009
Local initiatives (continued)				
Nijmegen-Hazenkamp	Glazenkamp	UCI-KUN	500	2,500
Rotterdam	Municipality	BBned	4,000	4,000
Utrecht	Lomboxnet	Lomboxnet	1,000	1,000
Utrecht	Kersentuin	Xs4all	94	94
GNEM			**129,500**	**129,500**
Amersfoort	De Alliantie/Portaal	GNEM	10,000	10,000
Arnhem	GNEM	GNEM	60,000	60,000
Arnhem	Portaal	GNEM	6,500	6,500
Bussum	Patio	GNEM	3,000	3,000
Hilversum	Patio	GNEM	3,000	3,000
Leiden	Portaal	GNEM	8,500	8,500
Naarden	Portaal	GNEM	3,000	3,000
Nijmegen	Portaal	GNEM	13,000	13,000
Soest	Portaal	GNEM	3,500	3,500
Utrecht	Portaal	GNEM	19,000	19,000
Lijbrandt			**64,500**	**224,500**
Hillegom	Lijbrandt	Lijbrandt	7,500	7,500
Lisse	Lijbrandt	Lijbrandt	10,000	10,000
Haarlem	Pré Wonen/Lijbrandt	Lijbrandt	40,000	80,000
Bollenstreek region	Lijbrandt	Lijbrandt		120,000
Various towns	Housing/Care corps.	Lijbrandt	7,000	7,000
Student dormitories			**43,803**	**43,803**
Amstelveen	Duwo	Casema	3,000	3,000
Amsterdam	De Key	PinkRoccade	5,000	5,000
Amsterdam	Duwo	Lijbrandt	1,000	1,000
Breukelen	Nijenrode	Nijenrode	200	200
Delft	Duwo	TU Delft	6,500	6,500
Den Haag	Duwo	Lijbrandt	350	350
Eindhoven	Vestide	NEM	1,500	1,500
Enschede	U Twente Campus	U Twente - ITBE	2,000	2,000
Groningen	IN-Groningen	RuG RC	1,013	1,013
Leiden	SLS	Lijbrandt	3,000	3,000
Nijmegen	SSHN	UCI-KUN	4,000	4,000
Oegstgeest	Duwo	Lijbrandt	540	540
Rotterdam	Stadswonen	BBned	5,500	5,500
Tilburg	Breburg Wonen	Breburg	400	400
Utrecht	SSHU	CapGemini	5,600	5,600
Wageningen	SSHW	WU FB/ICT	4,200	4,200
Total Netherlands			**377,297**	**579,297**

Two main trends emerge from the data presented above. First, there is a shift from piecemeal projects in co-operation with housing corporations to city-wide projects. Secondly, a considerable ramp up in new installations is slated for 2007. The first hundred thousand lines have been constructed in ten years, although most of these have been installed in the last five

years. The first initiators were student housing corporations outfitting their first large apartment and dormitory buildings around towns with Fibre-to-the-Building as early as 1994. They proved a market and business model and were prime investors. Then private companies started to serve housing corporations and began to co-invest with them. Today, private network constructors are taking over and private equity is funding new initiatives in Haarlem/Bollenstreek, Deventer and Arnhem. In the Amsterdam GNA initiative, financing is jointly provided by the municipality, housing corporations and private equity.

Upgrade initiatives by copper and coax incumbents

Dutch fixed telephony incumbent KPN and major cable operators today have very limited Fibre-to-the-Home deployments. These are either by acquisition or technology pilot projects. They have announced different strategies and are conducting trials with electronics upgrades of current DSL and cable technology like VDSL(2), Teleste's Ethernet-to-the-Home and EuroDOCSIS 3.0 that is slated to supersede current ADSL2+ and Euro-DOCSIS 2.0 deployments. Below is the list of the current status of the various copper upgrade projects that do not require an entire overhaul of the local loop, where the expensive last 300 meters will remain in place with old technology.

Table 3 *Advanced network upgrades of copper and coax incumbents*

Municipality/Region	Operator	Technology	Max. Bitrate	Dec. 2006
Deployment location				
Zoetermeer-Noordhove	KPN	VDSL	30/13 Mbps	Trial
Boxmeer	Essent	ETTH	50/50 Mbps	3,000
Naaldwijk	CAIW	Narad	100/100/ Mbps	?
Almere	UPC	DOCSIS 3.0	30/30 Mbps	?

Table 4 provides an overview of the announced incumbent upgrade strategies. KPN's strategy is described in OPTA's 2006 All-IP consultation paper. We have quantified the phases mentioned in this paper. We will provide an explanatory note here. KPN has announced that it is dismantling its local exchanges and moving to a new network with 28,000 street cabinets containing VDSL2 start with upgrades first in the rural areas, where no competitors have installed DSLAMs in local exchanges. Secondly it will upgrade the most remote street cabinets behind the longest feeder cables. Only in the final stage will KPN upgrade the large local exchange service areas. Upon completion, KPN will have retrofitted cabinets for their entire installed base of local loops servicing PSTN, ISDN2 and ISDN30 over twisted pair, their datacommunications services, ADSL-only and leased line portfolio. Estimated on current KPN Facts and Figures, VDSL2 nodes will serve near 8 million extensions upon completion in 2010.

There are three key reasons for this uncommon deployment strategy of retrofitting in rural areas:

1. KPN is considered to be lacking in ADSL wholesale market power and is therefore allowed to charge higher rates for its services in the rural areas, where no competitor has asked for local loop access.

2. KPN and DSLAM-competitors installed ADSL2+ in the major exchanges and on the shorter local loops. This strategy therefore extends the economic life cycle of the most recent equipment investments.
3. By upgrading the remote cabinets early on, KPN boosts service for consumers who are currently experiencing the most performance limited DSL-service. Lastly, in greenfield areas/housing development projects, KPN is installing Fibre-to-the-Home from the start.

Amongst Cable operators, only UPC has already announced that it will deploy DOCSIS 3.0 in the future as its upgrade strategy. DOCSIS 3.0 allows for shared bandwidth of up to 120 Mbit/s downstream. Essent Kabelcom, recently acquired by Warburg Pincus and Cinven, is in trial with a different technology, Ethernet to the Home (ETTH), requiring upgrades of the multi-taps at the kerbside, and initially offers 10 Mbit/s symmetric access. In 2006, Essent announced that it was extending its trial from 3,000 homes to 10,000 and was going to offer higher bandwidths (up to 50 Mbit/s symmetric), however no further announcements on its rollout strategy has been made since Essent was sold. Multikabel and Casema, two other companies owned by Warburg and Cinven, have not yet announced an upgrade strategy. The same applies to Delta/Zeelandnet. Lastly, cable operator CAIW has deployed Narad Networks technology, hooked up local WiFi hotspots in Naaldwijk and connected some businesses. The current use and future deployment of this technology is however unclear, CAIW also decided to install FTTH in a new housing area.

Table 4 *Network upgrade plans for 2007 and announcements for Year End 2009 and 2010*

Municipality/Region	Operator	Technology	Planned 2007	Announced for YE 2009	Announced for YE 2010
Deployment location					
Zoetermeer-Noordhove	KPN	VDSL2	trial		
Rural areas	KPN	VDSL2	300,000	1,200,000	1,200,000
Remote street cabinets	KPN	VDSL2		1,000,000	2,500,000
Major local exchanges	KPN	VDSL2			4,300,000
Greenfield areas	KPN	FTTH	75,000	225,000	225,000
Boxmeer	Essent Kabelcom	ETTH	10,000	10,000	10,000
	CAIW	Narad	?	?	?
	UPC	DOCSIS 3.0	?	?	?

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