In-Premises Optical Fibre
Installed Base Analysis to 2007

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Content

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7. Size DMD-challenged fibres
Data Sources

- **volume shipments from BSRIA (Feb 2004)**
  - used for in-premises cabling 1999-2007
  - 62MMF, 50MMF (non-OM3), OM3, SMF
  - Europe, USA, Asia Pacific, Worldwide

- **installation trends from BSRIA (June 2002)**
  - split by campus BB/building BB/horizontal

- **installed fibre analysis by Flatman (Jul 1999)**
  - installed length distributions for campus/building
  - volume & base to 2000, segmented by fibre type
  - good segmentation of 62MMF (FDDI-grade, OM1)
  - fair segmentation of 50MMF (400/400, OM2, etc)
  - data from BSRIA, KMI, WIT plus 15 manufacturers, 60 installers, 18 large end users (in 6 countries)
  - based on ~13,000 installed optical backbone links
MMF Segmentation

Sources: Flatman (1999)  extrapolated

%age share

%age share
Optical Fibre Installed Length Distribution in Building Backbones

Source: Flatman 1999
Optical Fibre Installed Length Distribution in Building Backbones

poor in-band correlation
Optical Fibre Installed Length Distribution in Building Backbones

improved correlation

% links

<200m  201-300m  301-400m  401-500m  >500m

Flatman 1999
DiMinico 1996
Nouri 1996
UKFIA 1996
Optical Fibre Installed Length Distribution in Building Backbones

% links

- Flatman 1999
- DiMinico 1996
- Nouri 1996
- UKFIA 1996

excellent correlation <300m
Optical Fibre Installed Length Distribution in Campus Backbones

Source: Flatman 1999
Optical Fibre Installed Length Distribution in Campus Backbones

% links

- <500m
- 501-1000m
- 1000-2000m
- >2000m

Flatman 1999
DiMinico 1996
Shipment Data & Installed Base
In-Premises Optical Fibre Volume Shipment Forecast for 2007

Source: BSRIA (Feb 2004)
Europe
Where Does the Fibre Go in Europe?

Sources:
- BSRIA (Jun 2002)
- Flatman (1999)
Installed Base: European Campus Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
Installed Base: European Building Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
Installed Base: European Campus Backbones (at end 2007)

<= 250m = 79,000 duplex links (3% total campus links)
Installed Base: European Building Backbones (at end 2007)

≤200m = 830,000 duplex links (5% total bldg links)

≤ 300m = 1259,000 duplex links (8% total bldg links)

Assumption: 6% annual replacement of installed fibre links (15 year churn)
United States
Annual Shipments: US Market

Base Data Sources:
- Flatman (1999)
- BSRIA (Feb 2004)
Where Does the Fibre Go in the US?

Sources:
- BSRIA (Jun 2002)
- Flatman (1999)
Installed Base: US Campus Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
Installed Base: US Building Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
Installed Base: US Campus Backbones (at end 2007)

≤ 250m = 144,000 duplex links (4% total campus links)
Installed Base: US Building Backbones (at end 2007)

- ≤200m = 1,606,000 duplex links (9% total bldg links)
- ≤300m = 2,437,000 duplex links (14% total bldg links)

Assumption: 6% annual replacement of installed fibre links (15 year churn)
Worldwide
Annual Shipments: Worldwide Market

Assumption:
- 1990-99 shipments scaled from US market

Base Data Sources:
- Flatman (1999)
- BSRIA (Feb 2004)
Installed Base: Worldwide Campus Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
- US split for C/B backbones & horizontal
Installed Base: Worldwide Building Backbones

Assumptions:
- fibre types allocated evenly to C/B backbones
- 10% fibre wastage during installation phase
- no replacement of installed optical fibres
- US split for C/B backbones & horizontal
Installed Base: Worldwide Campus Backbones (at end 2007)

≤ 250m = 312,000 duplex links (3% total campus links)
Installed Base: Worldwide Building Backbones (at end 2007)

- ≤200m = 3489,000 duplex links (8% total bldg links)
- ≤300m = 5293,000 duplex links (12% total bldg links)

Assumption: 6% annual replacement of installed fibre links (15 year churn)
Summary
Share of Campus Backbone Links up to 250m in Worldwide Installed Base
Share of Building Backbone Links up to 200m in Worldwide Installed Base

- SMF
- 50MMF OM3
- 50MMF 500/500 OM2
- 50MMF 400/400
- 62MMF 200/500 OM1
- 62MMF 160/500

Share %

- end 2003
- end 2004
- end 2005
- end 2006
- end 2007
Share of FDDI-grade Fibre Backbone Links up to 300m in 2007 Worldwide Installed Base

Total campus backbone duplex links = 9,514,000
Total building backbone duplex links = 45,139,000
Total = 54,653,000

Total campus backbone duplex links ≤ 250m = 312,000
Total building backbone duplex links ≤ 200m = 3,489,000
Total = 3,801,000 = 6.95%

Total campus backbone duplex links ≤ 250m = 312,000
Total building backbone duplex links ≤ 300m = 5,293,000
Total = 5,605,000 = 10.25%
Contribution of Post-1999 MMF to Worldwide Installed Base of Backbone Links

Share %

- end 2003
- end 2004
- end 2005
- end 2006
- end 2007

Legend:
- 50MMF OM3
- 50MMF 500/500 OM2
- 50MMF 400/400
- 62MMF 200/500 OM1
- 62MMF 160/500