<table>
<thead>
<tr>
<th>Title</th>
<th>Handling of pictures in the prepress network.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>1995</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://hdl.handle.net/10220/1227">http://hdl.handle.net/10220/1227</a></td>
</tr>
<tr>
<td>Rights</td>
<td></td>
</tr>
</tbody>
</table>
Paper No. 11
Handling of pictures in the prepress network

Looking back

- In early eighties, prepress systems were based on proprietary hardware / software
  - Mainframes and minicomputers with dumb terminals running proprietary software was the norm
- Advent of Desk Top Publishing in 1984 changed the rules of the game
Desktop chronology

1981 - IBM PC
1984 - Apple MAC
1985 - A³ revolution
1990 - Microsoft
   Windows Ver 3

Prepress systems in the nineties are based on Standard platforms and Computer Networks
Standard hardware

- IBM PC and compatibles
  - 8088, 80286, 80386, 80486, Pentium (P5) and now P6
- Apple Macintoshes
  - Mac classic, Mac II, Quadra and now Power MAC
- Unix workstations
  - SUN, Hewet Packard, Silicon Graphics

Standard software

- Shrink wrapped, available of the shelf
- Word processing - Wordstar, Word Perfect, MS Word, Ami Pro
- Drawing & Illustration - Freehand, Illustrator
- Photo processing - Photoshop, Live Picture
- Page makeup - Quark Xpress, Pagemaker
Computer Networks

When two or more computers are connected together to share data and peripherals it becomes a network

LAN Local Area Network - in a limited geographic area
WAN Wide Area Network - over large geographic area
Dominant network technologies

<table>
<thead>
<tr>
<th>HARDWARE</th>
<th>SOFTWARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCNET</td>
<td>NOVELL</td>
</tr>
<tr>
<td>ETHERNET</td>
<td>WINDOWS NT</td>
</tr>
<tr>
<td>TOKENRING</td>
<td>APPLE SHARE</td>
</tr>
<tr>
<td>LOCALTALK</td>
<td>LAN MANAGER</td>
</tr>
<tr>
<td>FDDI</td>
<td></td>
</tr>
</tbody>
</table>

Ethernet

- Widely used in the prepress industry
- IEEE 802.3 standard
- Data rate of 10 Mb/s
- CSMA/CD access method
- 10Base5, 10Base2 and 10BaseT wiring schemes
- Limitations
  - limited bandwidth
  - poor performance under heavy load
Handling of pictures in the prepress network

- digitized image sizes are large
- sending large files across the network creates bottlenecks and affects other users
- What are the solutions available
  - OPI
  - segmenting the network traffic
  - High speed networks
OPI

- Open prepress interface
- Originally developed by Aldus
- Creates a low resolution file of the high resolution image file. The low res image is used for page makeup. When the page is output the low res image is substituted by the high res image

OPI servers

The opi server allows the preparation of different page elements independently integrating the elements during output.

Output control, page spooling and print queue management are carried out by the server. Log reports for the incoming and outgoing files are produced. Network problems are reported. Database connections can be included.

A special file with medium resolution can be produced for proofing.
Remote OPI

Most suppliers of servers support remote OPI

One OPI server is located in the remote plant. Files are sent as Postscript files

Postscript files are output automatically and cannot be altered
The configuration of back up and a remote OPI server.

The OPI server solution at Aftonbladet.
The total release times of the page make-up workstations in a 40-page tabloid newspaper (32 monochrome + 8 colour pages), using picture replacement with OPI comments or high-res pictures.

### Release Times

<table>
<thead>
<tr>
<th>Picture size</th>
<th>OPI comments</th>
<th>Low-res picture</th>
<th>High-res picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 x 10 cm</td>
<td>0.03 s + 10 s</td>
<td>2.4 s + 10 s</td>
<td>56 s + 10 s</td>
</tr>
<tr>
<td>50 kB/s (Mac)</td>
<td>0.01 s + 10 s</td>
<td>0.8 s + 10 s</td>
<td>17 s + 10 s</td>
</tr>
<tr>
<td>150 kB/s (PC, Unix)</td>
<td>0.01 s + 10 s</td>
<td>0.8 s + 10 s</td>
<td>17 s + 10 s</td>
</tr>
<tr>
<td>30 x 45 cm</td>
<td>0.03 s + 10 s</td>
<td>66 s + 10 s</td>
<td>25 min 20 s + 10 s</td>
</tr>
<tr>
<td>50 kB/s (Mac)</td>
<td>0.01 s + 10 s</td>
<td>22 s + 10 s</td>
<td>8 min 30 s + 10 s</td>
</tr>
<tr>
<td>150 kB/s (PC, Unix)</td>
<td>0.01 s + 10 s</td>
<td>22 s + 10 s</td>
<td>8 min 30 s + 10 s</td>
</tr>
</tbody>
</table>

### Amounts of Data

<table>
<thead>
<tr>
<th>Picture size</th>
<th>OPI comments (1500 characters)</th>
<th>Low-res picture (72 dpi, RGB)</th>
<th>High-res picture (300 dpi, CMYK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 x 10 cm</td>
<td>0.0015 MB</td>
<td>0.12 MB</td>
<td>2.8 MB</td>
</tr>
<tr>
<td>30 x 45 cm</td>
<td>0.0015 MB</td>
<td>3.3 MB</td>
<td>76 MB</td>
</tr>
</tbody>
</table>

Table 1. The theoretical release time of the workstation when transmitting OPI comments, a low-res colour picture, or a high-res colour picture. 10 seconds is the time needed by the workstation to establish a network connection.
High speed networking

- High speed ethernet - two competing standards
  - Fast Ethernet
  - 100VG-AnyLAN
- FDDI
- ATM

Fast Ethernet
also called 100 BaseT
supported by 3Com, Synoptics, Intel etc
offers 100 Mbps speed
bacward compatability
supports category 5 cabling

100VGAnyLAN
proposed by HP and IBM
can use existing cabling infrastructure
supports demand priority
FDDI

Fibre Data Distributed Interface
Data rate of 100 Mbps
Uses token passing scheme
Quite expensive
Mostly used as backbone

ATM - Asynchronous transfer mode

Implements a type of fast packet switching, where data is carried in fixed length cells of 53 octets
Can be used for both LANS and WANS
Potential to become an universal networking protocol
Support high speeds like 155 and 622Mbps
Technology not yet mature
Standards being developed