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Worldwide

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Developers

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Conference





# Printing Under Rhapsody

*Paul Danbold*

**Yellow Print Team**

# Printing Under Rhapsody

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## *What we'll cover...*

- **Printing on OpenSTEP today**
  - AppKit
  - PrintKit
  - Spooling and print queues
- **Printing on Rhapsody**
  - What's going to change
  - What to expect for Premier and Unified



# Printing with the AppKit

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## *AppKit classes...*

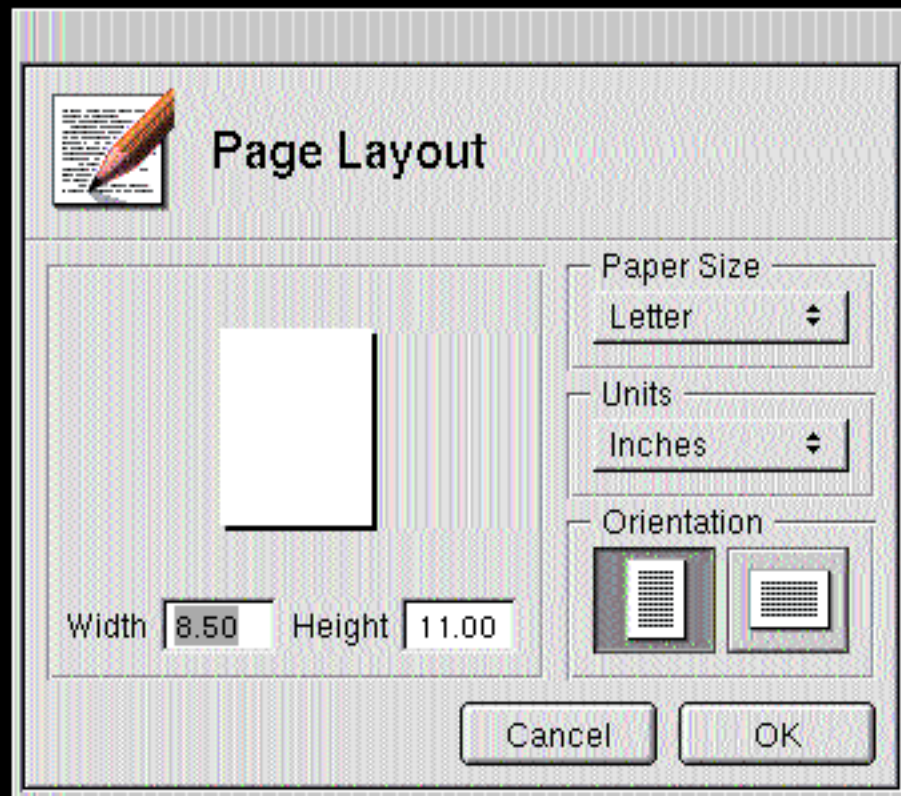
- **NSPageLayout**
- **NSPrintPanel**
- **NSPrintInfo**
- **NSPrintOperation**
- **NSView**
- **NSPrinter**





# Printing with the AppKit

- **NSPageLayout**



# NSPageLayout

---



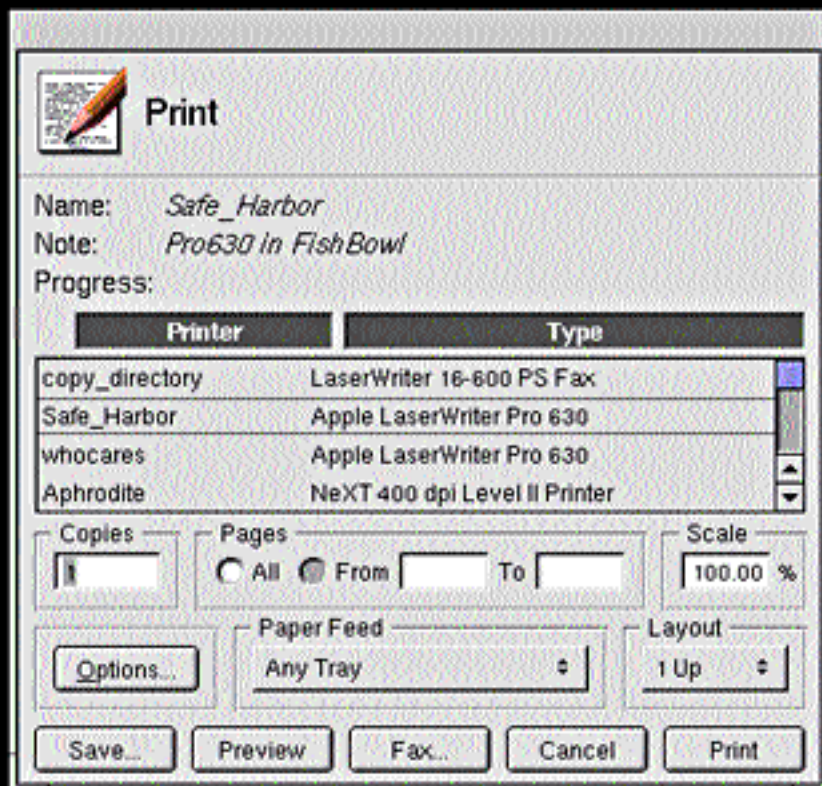
*To do:*

- Overhaul UI
- Format for...printer type
- PPD-based paper list
- Custom page sizes
- Show margins in thumbnail



# Printing with the AppKit

- NSPrintPanel



# NSPrintPanel

---



*To do:*

- Overhaul UI
- List preferred printers
- More n-up options and borders
- PPD-based feature constraints
- Save as pdf, tiff, jpeg, gif, png





# Printing with the AppKit

- **NSPrintInfo**

```
printer
name (letter, legal, A4, ...)
size (height, width)
orientation (portrait, ...)
margins (left, right, ...)
center (horizontal, vertical)
scale
n-up
first, last page to print
copies
collate
paper feed (input slot)
disposition (print, fax, disk)
...
```



# Printing with the AppKit

- **NSPrintOperation**

```
%!PS-Adobe-2.0
%%Title: (Rhapsody Demo)
%%Creator: (DemoApp: ...)
%%CreationDate: (2:15 PM ...)
%%For: (Paul Danbold)
%%Routing: (mailto:\ ...)
%%Pages: 1
%%DocumentFonts: Helvetica
%%DocumentNeededFonts: Helvetica ...
%%DocumentSuppliedFonts:
%%DocumentData: Clean7Bit
%%PageOrder: Ascend
%%Orientation: Portrait
...
```



# Printing with the AppKit

- **NSView**

```
...  
gsave  
0 0 492 420 rectclip  
1 nxsetgray  
0 0 492 420 rectfill  
/Helvetica findfont 12 selectfont ...  
90  
exch  
defineuserobject  
90 execuserobject setfont  
0 nxsetgray  
6 48 moveto (rhapsody) show  
...  
showpage
```





# NSView

---



*To do:*

- Optimize generated PostScript
- Update DSC comments
- Protect feature invocation code
- Support PS Level 3
- Support ColorSync



# Printing with the AppKit

- **NSPrinter**

```
*PPD-Adobe: "4.3"  
*% Adobe Systems Post ...  
*% Copyright 1987-1996 ...  
*% Apple Computer Inc ...  
*% All Rights Reserved.  
*% Permission is granted ...  
*% End of Copyright statement  
*FormatVersion: "4.3"  
*FileVersion: "1.1"  
*LanguageEncoding: ISOLatin1  
*LanguageVersion: English  
*PCFileName: "APLWMGS1.PPD"  
*Manufacturer: "Apple"  
*Product: "(LaserWriter)"  
...
```



# NSPrinter

---



*To do:*

- Save parsed PPD data
- Upgrade to PPD Spec version 4.3
- Error handling for bad PPDs





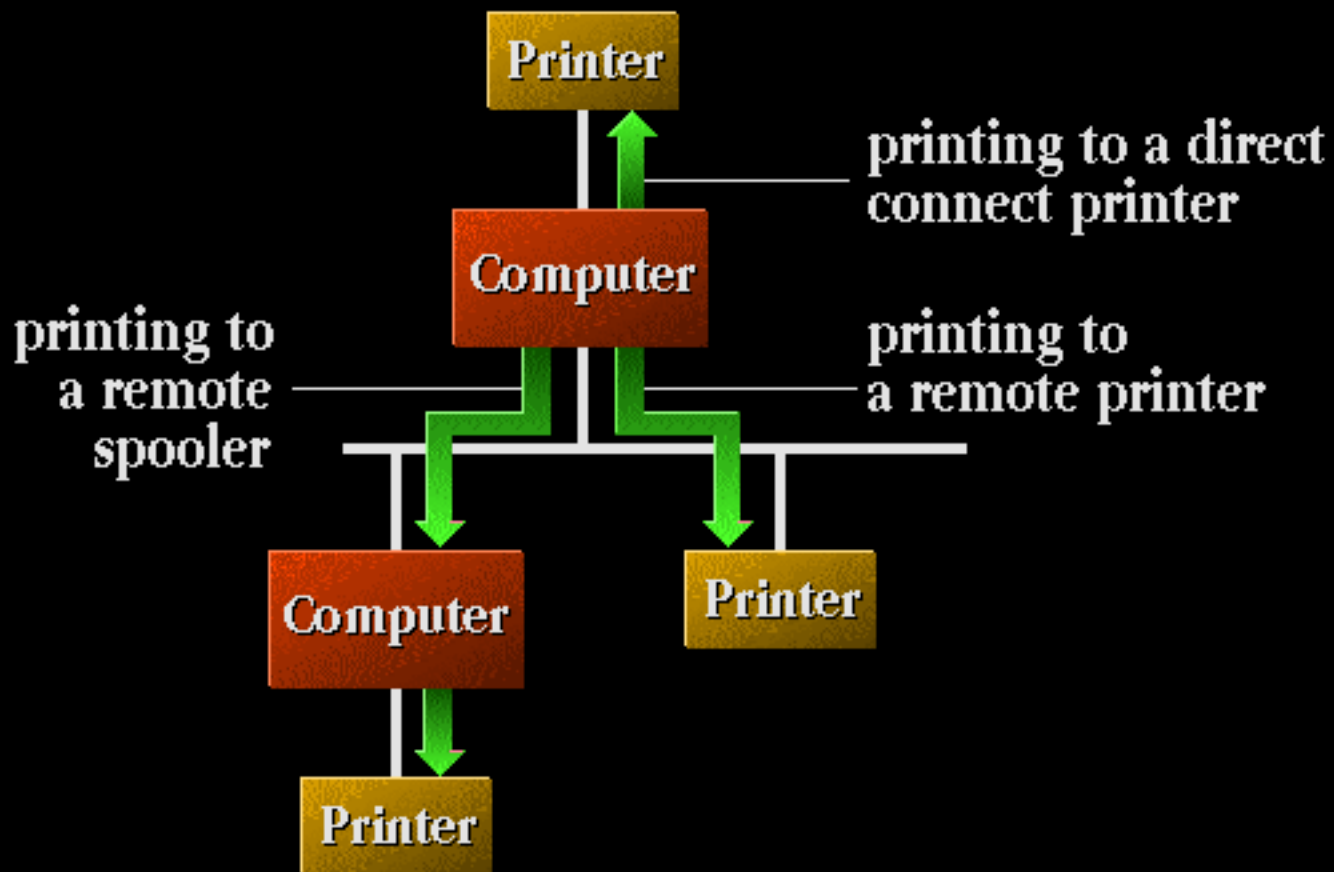


Kurt Werle

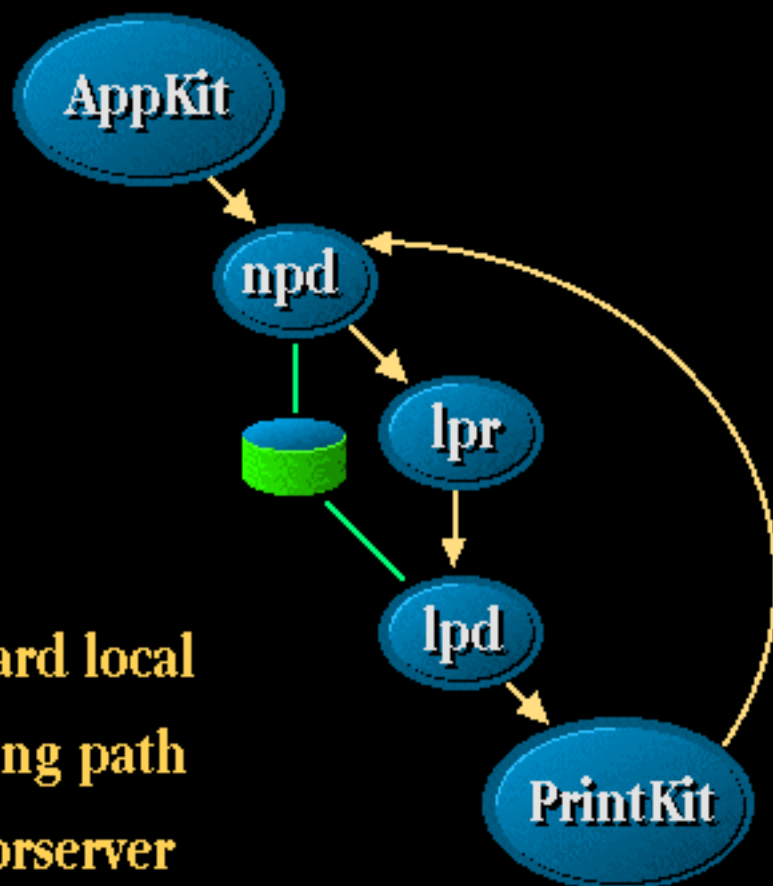
*Yellow Print Team*

Demo

# Spooling the Print Job



# Spooling the Print Job

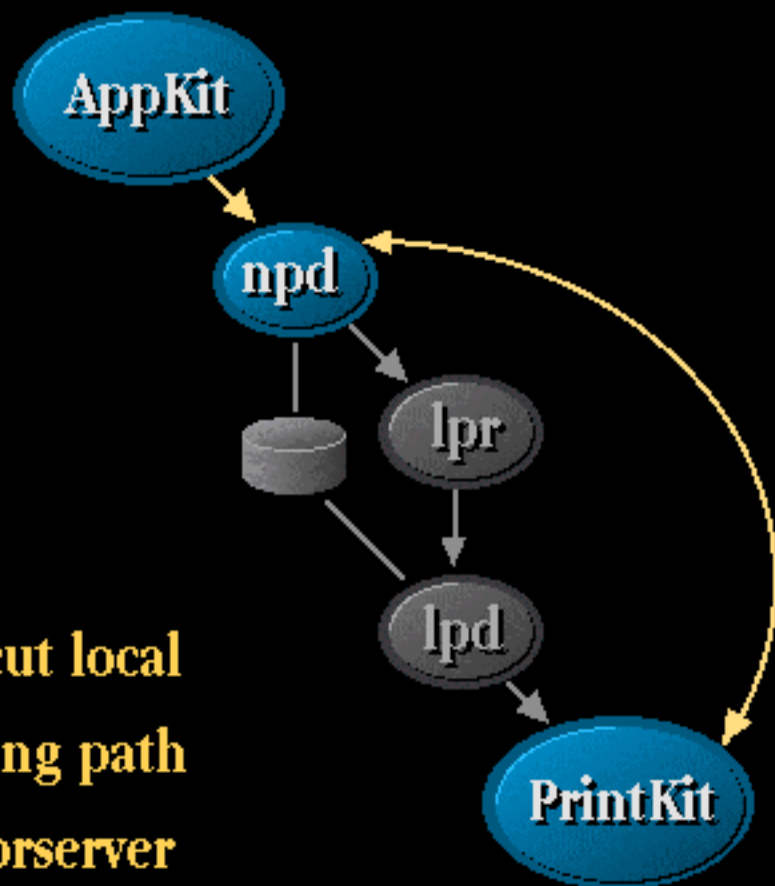


standard local  
spooling path  
runs prserver





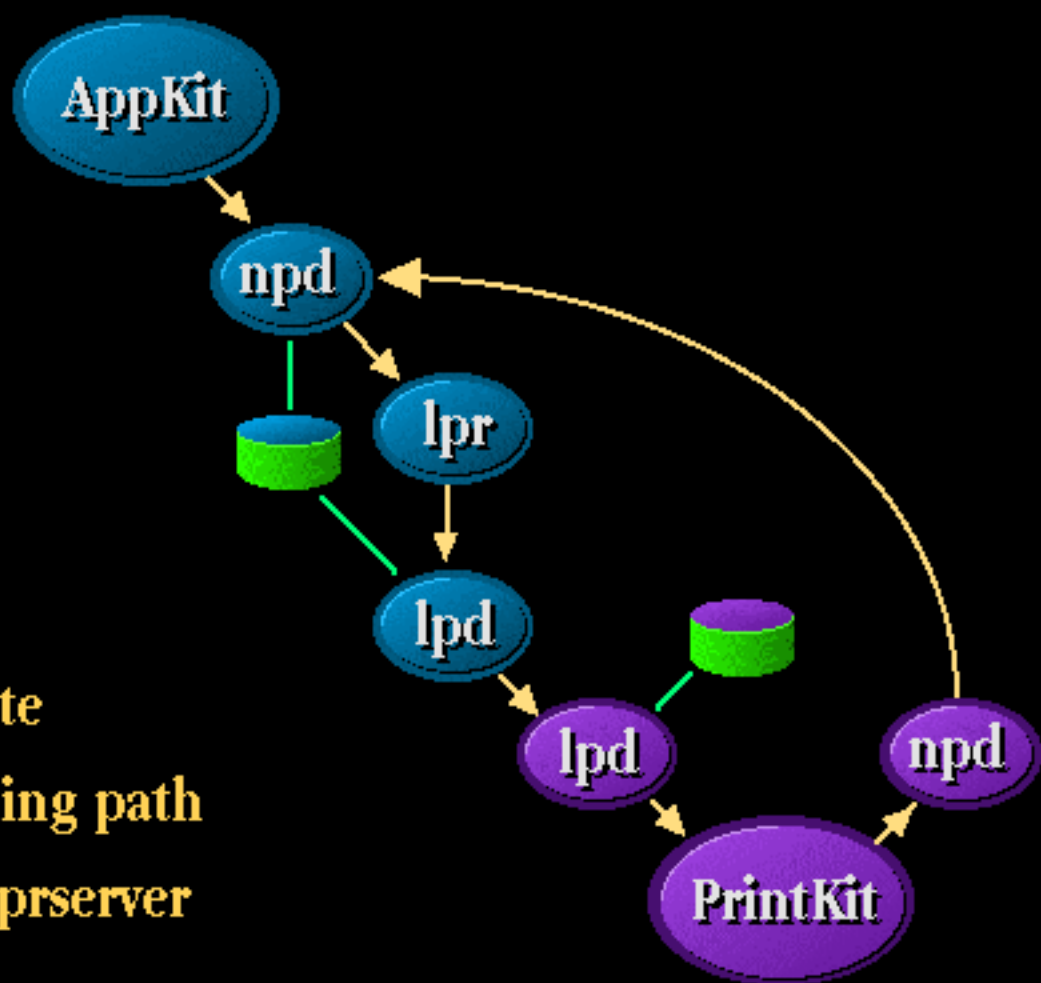
# Spooling the Print Job



shortcut local  
spooling path  
runs prserver



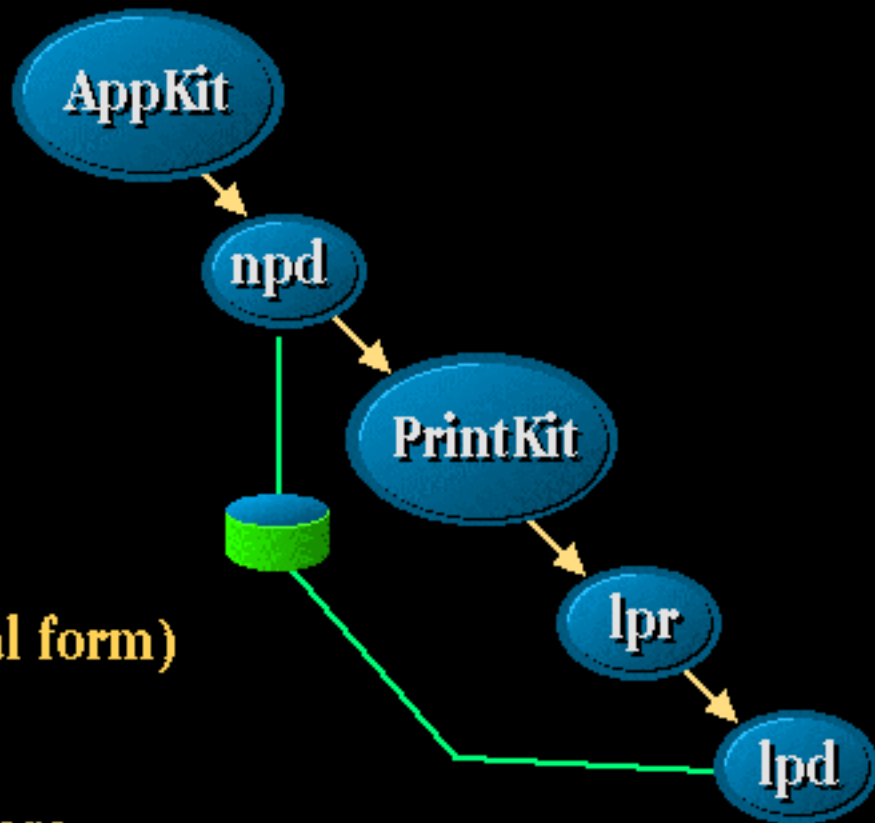
# Spooling the Print Job



remote  
spooling path  
runs prserver



# Spooling the Print Job



remote (final form)

printing

runs psprepare





# Spooling the Print Job

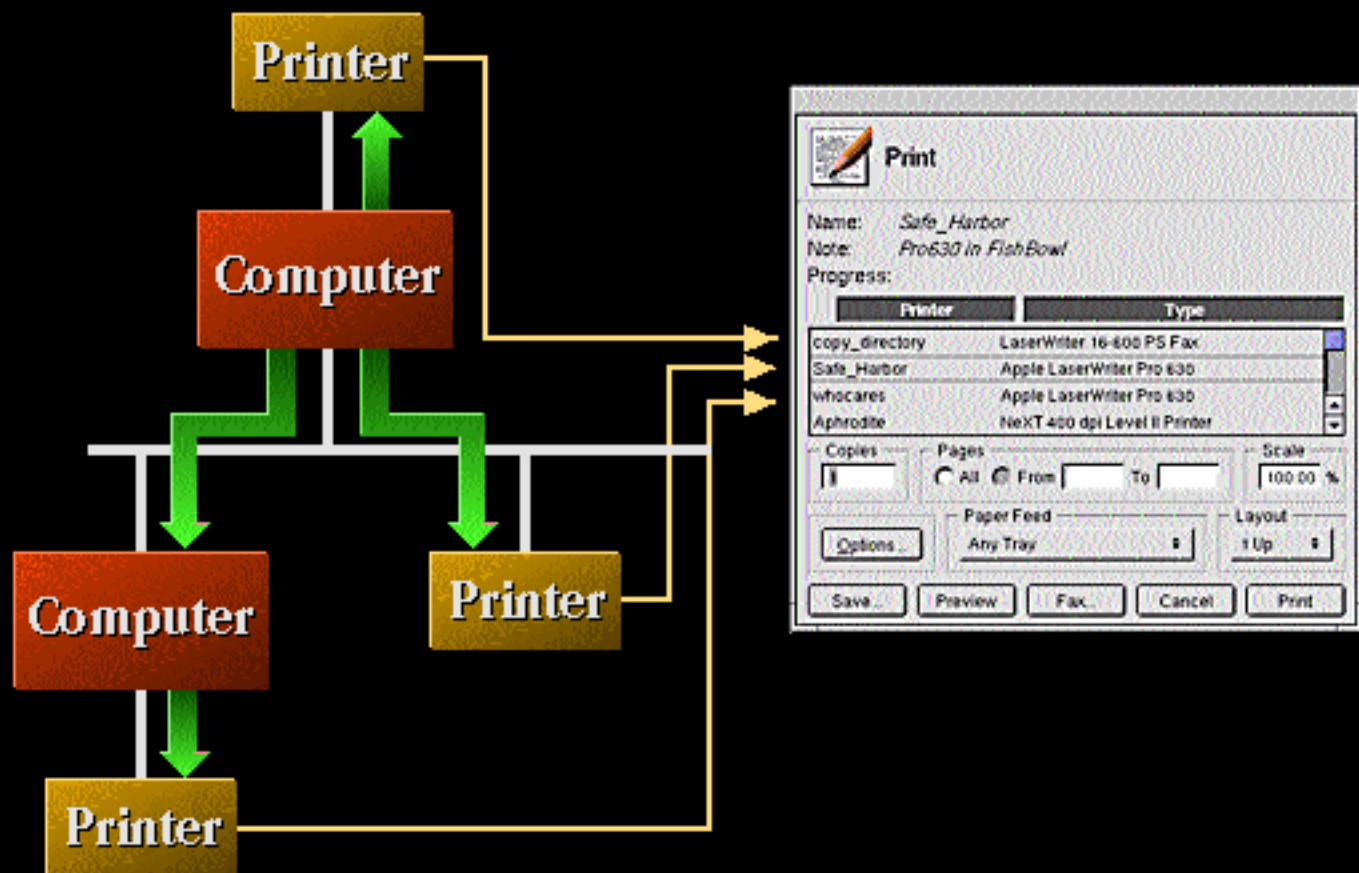


***To do:***

- PAF server for Blue Box
- NBP support for Yellow Box
- Single-pass PS printing
- Queue management (drag and drop between queues, hold job in queue, reorder jobs...)



# NetInfo



# NetInfo

---

```
sd      name of the spool directory
lf      name of error log file
lp      device name to open for output
rm      machine name for remote printer
sf      name of output device
mx      maximum file size
...
ty      printer type (PPD)
name    local printer name
sharedAs name of the exported printer
sharedTo domain in which printer is
exported
note    comment field (location)
...
```



## NetInfo (*cont.*)

---

**DriverClass** name of PrintKit driver

...

**CommClass** name of PrintKit comms subclass

**CommType** serial, parallel, TCPIP

...

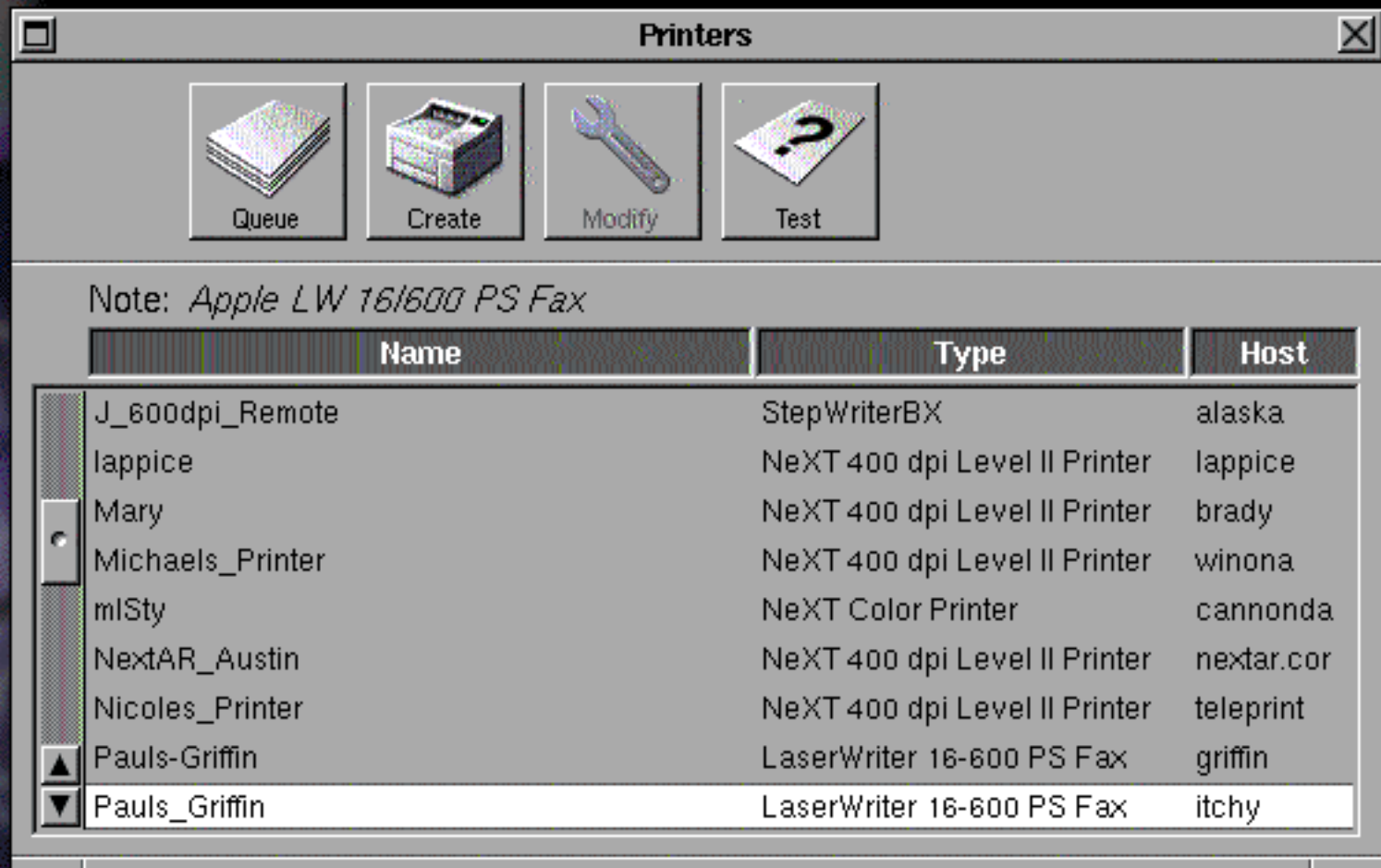
**CoverSheet** print a cover sheet!

...





# PrintManager



# PrintManager



## Create New Printer

Local Name:

Remote Name:

Note:

Type

- Apple LaserWriter Plus
- Apple LaserWriter Plus v42.2
- Apple LaserWriter Pro 600
- Apple LaserWriter Pro 630
- Apple LaserWriter Pro 8 10
- Apple LaserWriter Pro 8 10 with Fax Card
- Apple LaserWriter Select 6 10
- Apple LaserWriter-Select 3 10

Access

Public

/b 141/scratchy

Communications

HP JetDirect

Host Name of Printer

IP Address: 128.8.16.2



# PrintManager

**Create New Printer**

Local Name:

Remote Name:

Note:

Type

- Apple LaserWriter Plus
- Apple LaserWriter Plus v42.2
- Apple LaserWriter Pro 600
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- Apple LaserWriter Pro 8 10
- Apple LaserWriter Pro 8 10 with Fax Card
- Apple LaserWriter Select 6 10
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Access

Public

/b 141/scratchy

Communications

HP JetDirect

Host Name of Printer

IP Address: 128.8.16.2

\*NextDriver: "NXstyleWriter"



# PrintManager

---



*To do:*

- Rewrite it!
- Add AppleTalk support
- Auto bind PPDs
- Logical search for PPDs
- Extensible comms interface





# The PrintKit

---

*prserver is responsible for*

- PostScript comment parsing
- Text to PostScript conversion
- PostScript rendering
- Printer communications
- Alerts for printing errors



# The PrintKit

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- **PostScript comment parsing**
- **Text to PostScript conversion**
- **PostScript rendering**
- **Printer communications**
- **Alerts for printing errors**



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# The PrintKit

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*prserver is responsible for*

- PostScript comment parsing
- Text to PostScript conversion
- PostScript rendering
- Printer communications
- Alerts for printing errors



# PrintKit Bundles

---

*Include some or all of the following...*

- **Driver object**
- **Communications object**
- **PostScript initialization code**
- **NetInfo template**
- **PPD file**

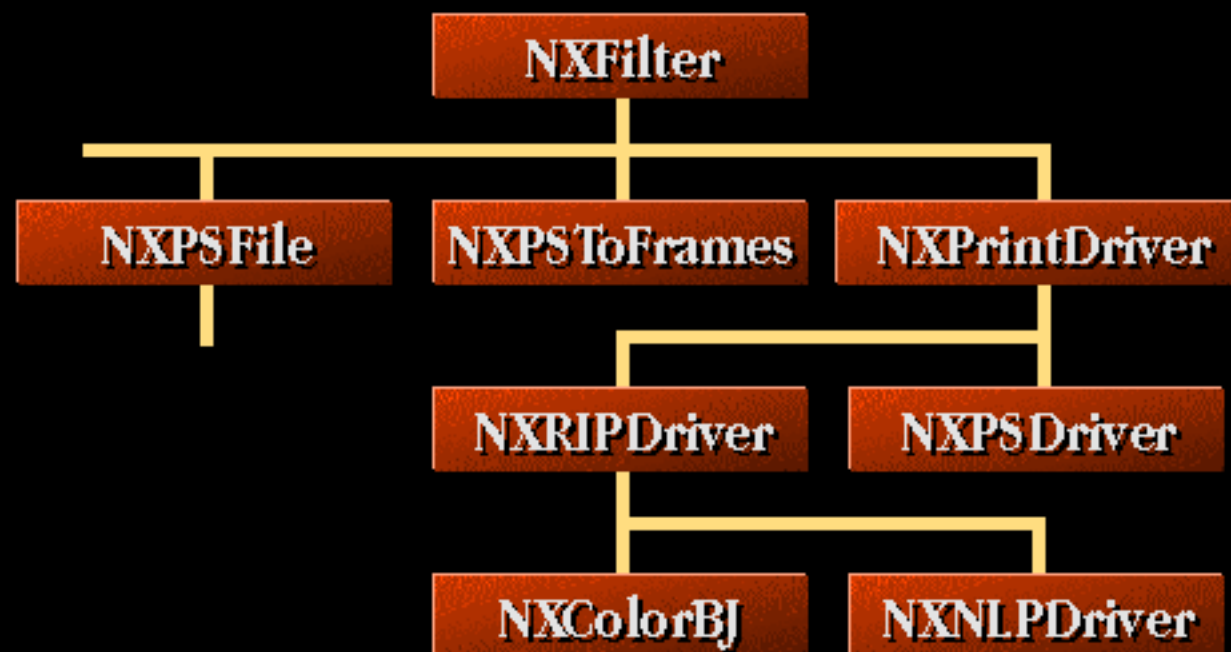




# PrintKit Bundles

*Include some or all of the following...*

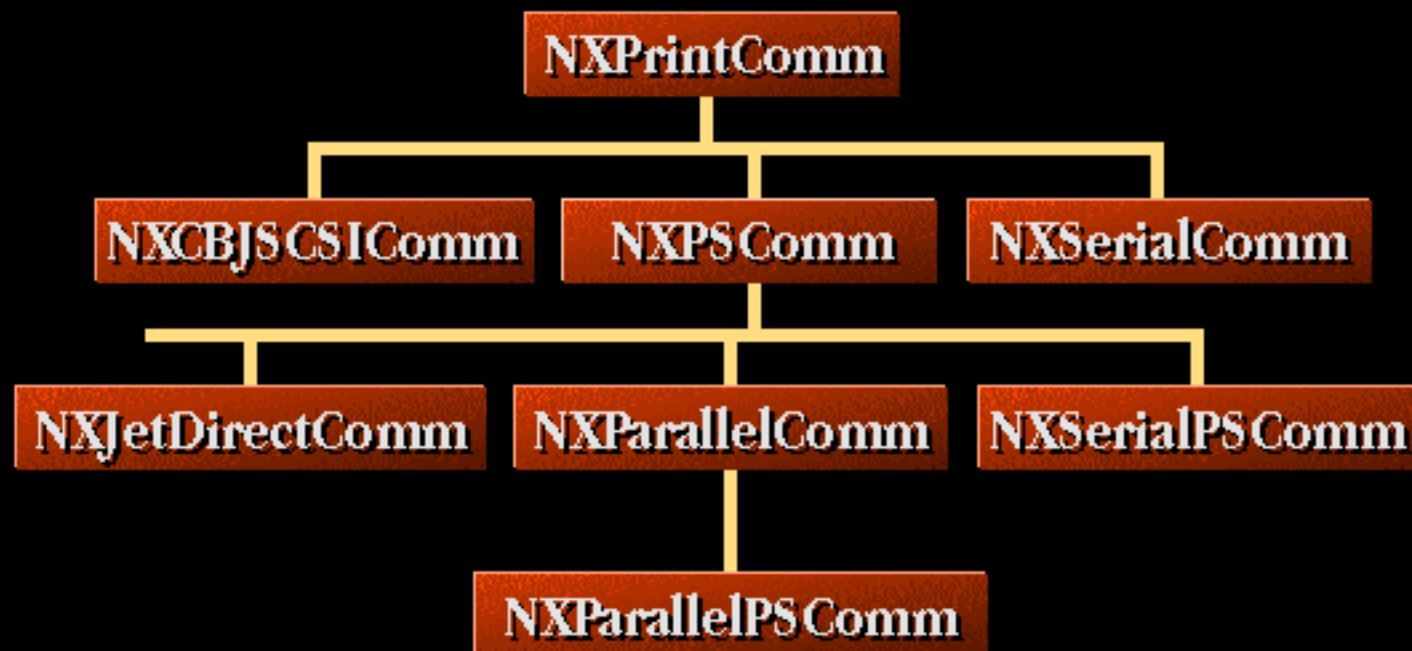
- **Driver object**



# PrintKit Bundles

*Include some or all of the following...*

- **Communications object**



# PrintKit Bundles

---

*Include some or all of the following...*

- Driver object
- Communications object
- PostScript initialization code
- NetInfo template
- PPD file



# PrintKit Bundles

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# PrintKit Bundles

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# PrintKit

---



*To do:*

- Download binary fonts
- Subset large fonts
- Better reporting of queue status
- NIB files for PPD features
- Handle >2-way feature constraints



# Fax

---

- Well integrated into printing system
- Shares AppKit, spooling and PrintKit capabilities
- Fax driver, loaded by prserver, provides fax modem support



# Fax



*To do:*

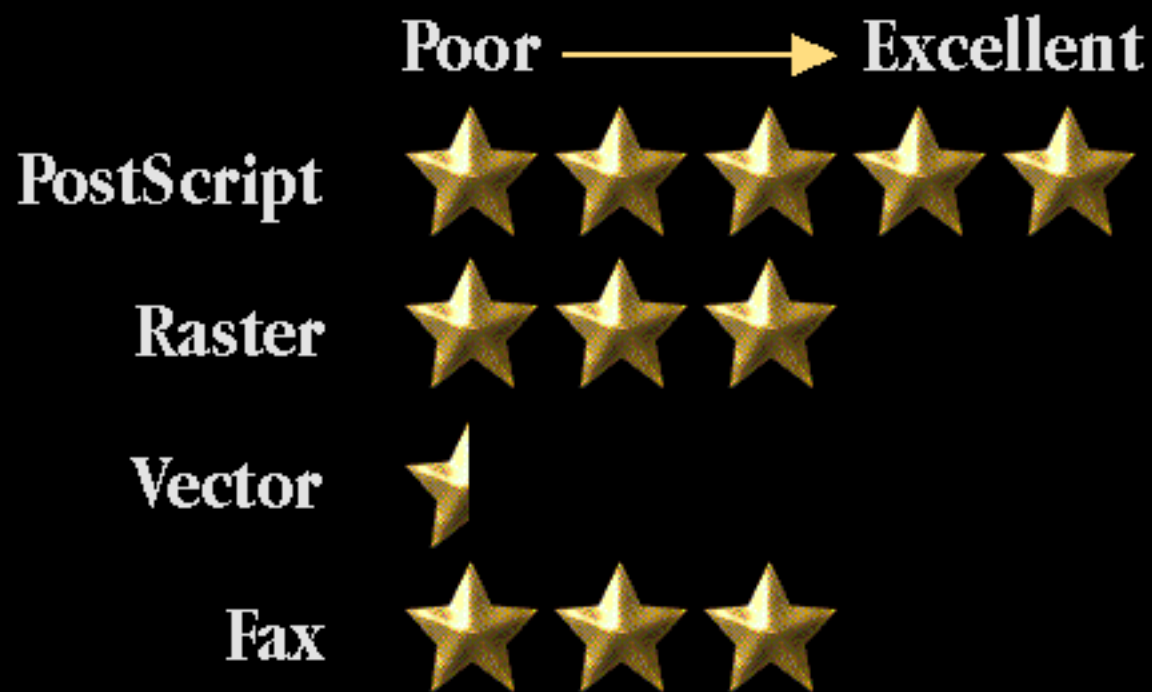
- Support more fax modems
- Improve phone book support
- Enable faxing from the Blue Box





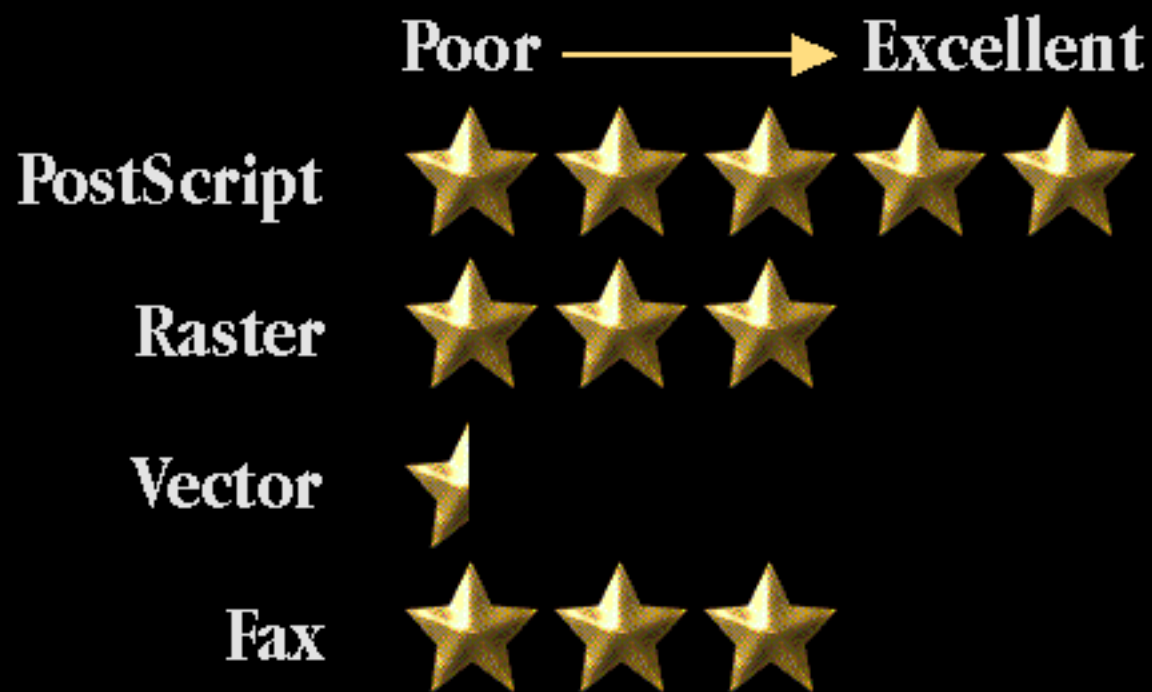
# Summary

OpenStep today...



# Summary

Rhapsody tomorrow...



# Summary

Rhapsody tomorrow...



# Summary

Rhapsody tomorrow...





# Summary

Rhapsody tomorrow...



# Contact Us

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- [rhapsody-dev-feedback@apple.com](mailto:rhapsody-dev-feedback@apple.com)
- [devsupport@apple.com](mailto:devsupport@apple.com)
- <http://www.devworld.apple.com/>





Q&A



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Conference