
Problems & Solutions from the CDSI Support Archives

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Problem Agenda

“How can we”

- implement remote access for DataFax?
- satisfy our IT security folks concern about modems on their network
- configure modems for fax receive only?
- fax from our Windows desktop?

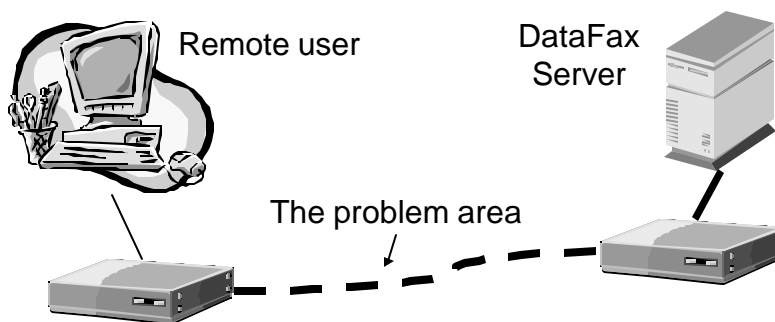
Problem: Remote DataFax Access

- “We need to give some users remote access to DataFax.”
 - This statement needs MUCH more clarification!

Defining the Problem

- What type of users?
reviewers? telecommuters? external partner companies?
- What kind of access?
Reports only? read-only (DFlite)? full DataFax? full LAN access?
- What kind of connectivity?
permanent? On demand? dial-up?

The Picture



Issues

- **Bandwidth**
How much data do we need to be able to transfer per second?
Answer depends on approach
- **Security**
How do we protect this data?
- **Cost**
How much extra hardware/software/connectivity will you need?

Issues – Bandwidth

- Main performance problem is the images

Average size is 25K

- 33kBps modem 7.6 seconds
- 128kBps ISDN 2.7 seconds
- 1.5MBps T1/cable/ADSL link 0.2 seconds

A page flip in the validation tool may require two images (CRF and background)

X-Windows image format isn't as compact as SunRaster – images may expand to 200K!

Compression and caching can help a lot!

Issues – Bandwidth 2

- Fortunately bandwidth is pretty cheap these days
 - Cable and ADSL modems deliver 1 – 3MBps
 - Many hotels are now offering high-speed Internet jacks in rooms
- Latency may be an issue

Issues –VPNs

- Virtual Private networks allow you to use the Internet for private links between sites by encrypting the traffic
- They extend your LAN so you need to think about what else remote machine is connected to and who has access to it
- Performance is not guaranteed or consistent

Issues - Security

- **Authentication**
We need to be able to identify who is getting access
- **Access control**
We may not want them to have access to everything
(e.g. Your external partners probably shouldn't have full access to your LAN)
- **Privacy**
We need to keep data confidential particularly over Internet connections
Encryption required unless the connection is a direct dial-up or leased line

Authentication

- DataFax authentication piggybacks on the Unix authentication system
 - Users will need Unix accounts and appropriate DataFax permissions for all approaches except WWW reports
- WWW servers and network links (dial-up or VPN) will have their own authentication mechanisms

Access Control

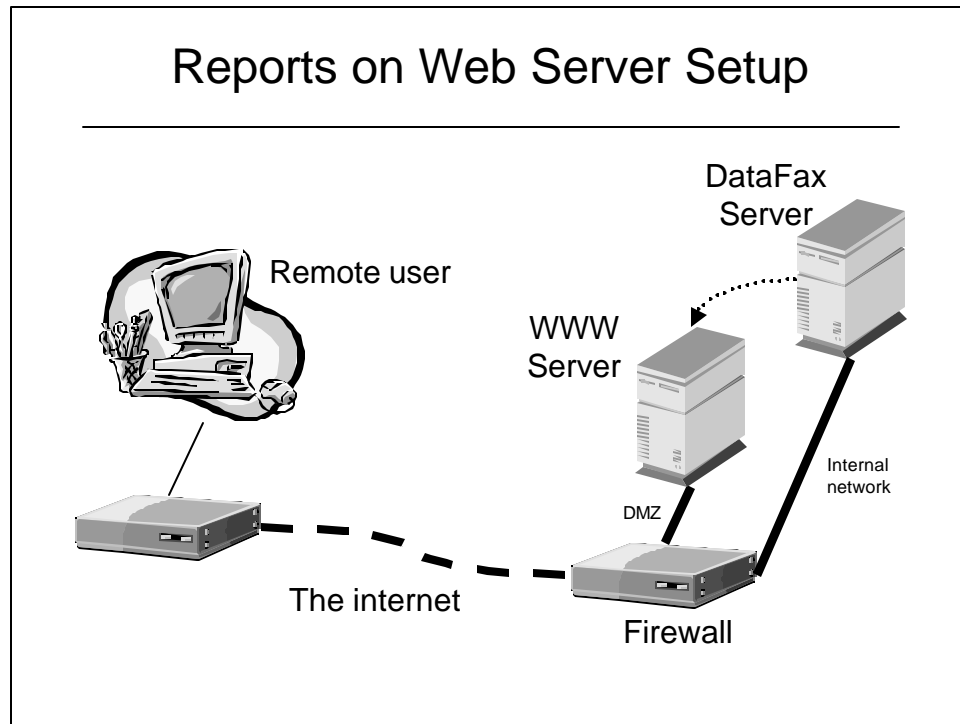
- How much access to services on your LAN do you want to give?
- Access can be restricted at the network level by using filters on a router
- Consider all access possibilities given to a user (e.g. shell access)

Privacy

- There are spies, teenagers and other hostile people on the Internet!
You will want to protect your data!
- On a web server, use secure web pages (SSL) with 128bit encryption
- On network links, use a VPN in conjunction with your firewall (you have one right?)

Approach 1 – Reports on Web server

- Easy to do/low cost – uses existing resources
- Suitable for external partners who require status reports
- Use a cron job to automatically produce the reports and place them on the web server
- Bandwidth – fairly low



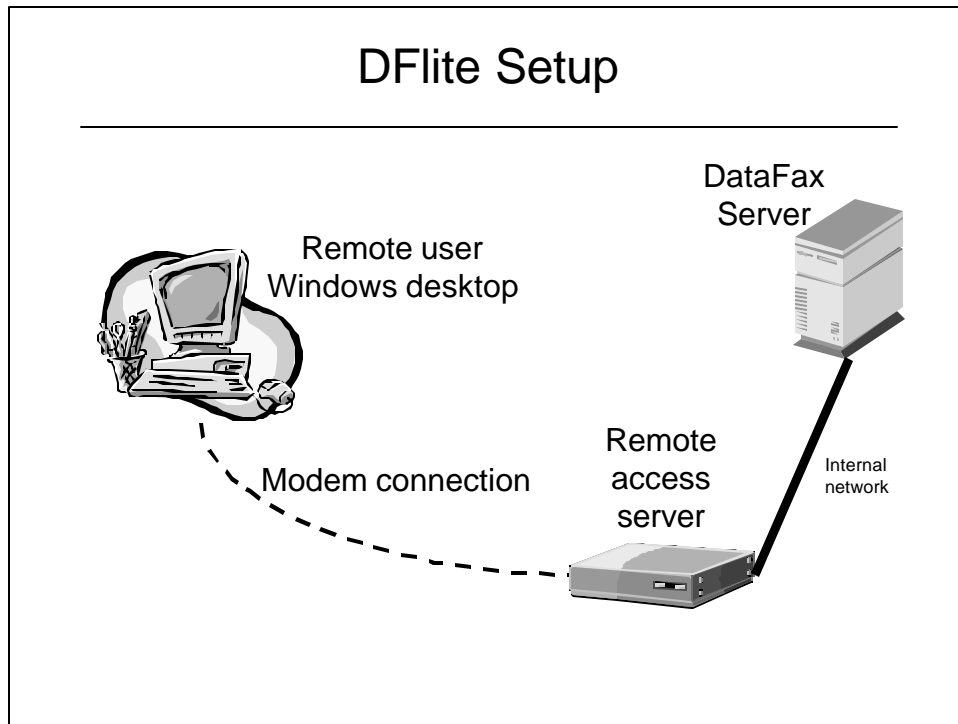
- ### Reports – Software/Hardware
- **Software**
 - Web server
 - **Hardware**
 - Web server
 - Internet connection

Reports – Advantages/Disadvantages

- **Advantages**
 - Low cost/easy to set up
 - Easy to secure for static content
 - Can print output
 - Remote site not required to be at fixed location
 - Access control easy
- **Disadvantages**
 - Reports only, perhaps PDF files of CRFs
 - Can do dynamic content, but this requires more thought about whether web server should be able to access DataFax directly

Approach 2 – DF lite

- Read-only access to images and data
- Useful for low bandwidth review of CRFs
- Can be run over a regular modem
- Bandwidth – 28kBps



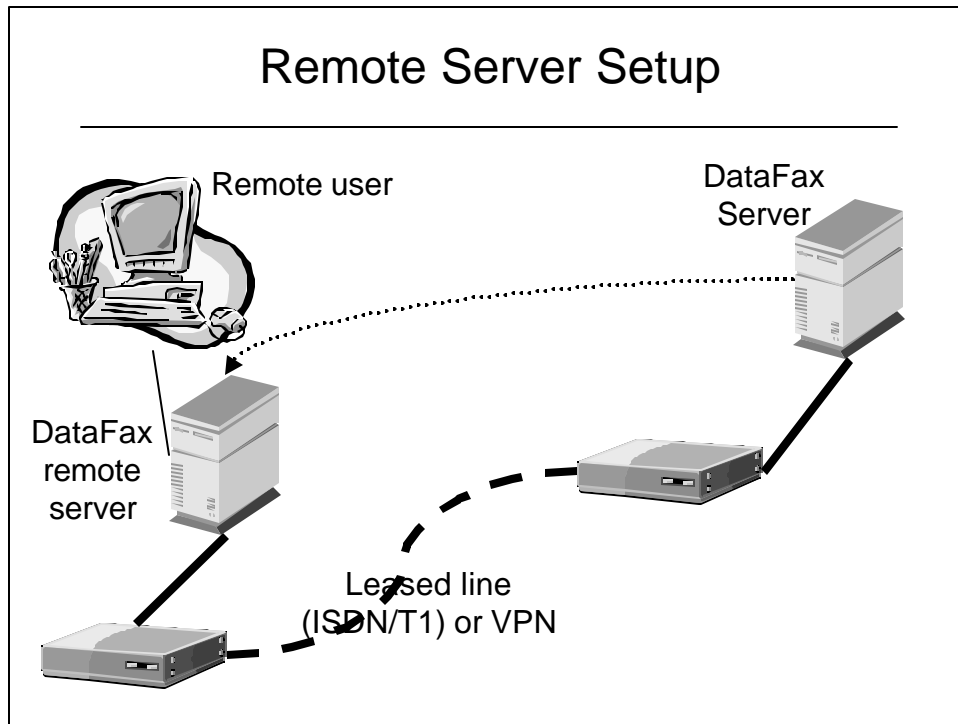
- ### DFlite – Software/Hardware
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- **Software**
 - DFlite on PC
 - **Hardware**
 - Remote access server
 - Dialup modems

DFlite – Advantages/Disadvantages

- **Advantages**
 - Fast/Low cost
 - Windows based
 - Can print
 - Can restrict access with packet filter
 - Allow TCP port 1234, UDP port 53, deny everything else
 - Remote site not required to be fixed
 - Can't change data
- **Disadvantages**
 - Can't change data
 - Only provides data and CRFs – no reports
 - No encryption built in – use VPN if required

Approach 3 – Remote server

- Full DataFax access
- Useful if you have a remote site with multiple users (e.g. remote office)
- Use cachefs to cache images
- Use leased lines or VPN
- Bandwidth – varies, min 128kBps?
- See Steve Degner's talk from DFUG 2000



Remote Server – Software/Hardware

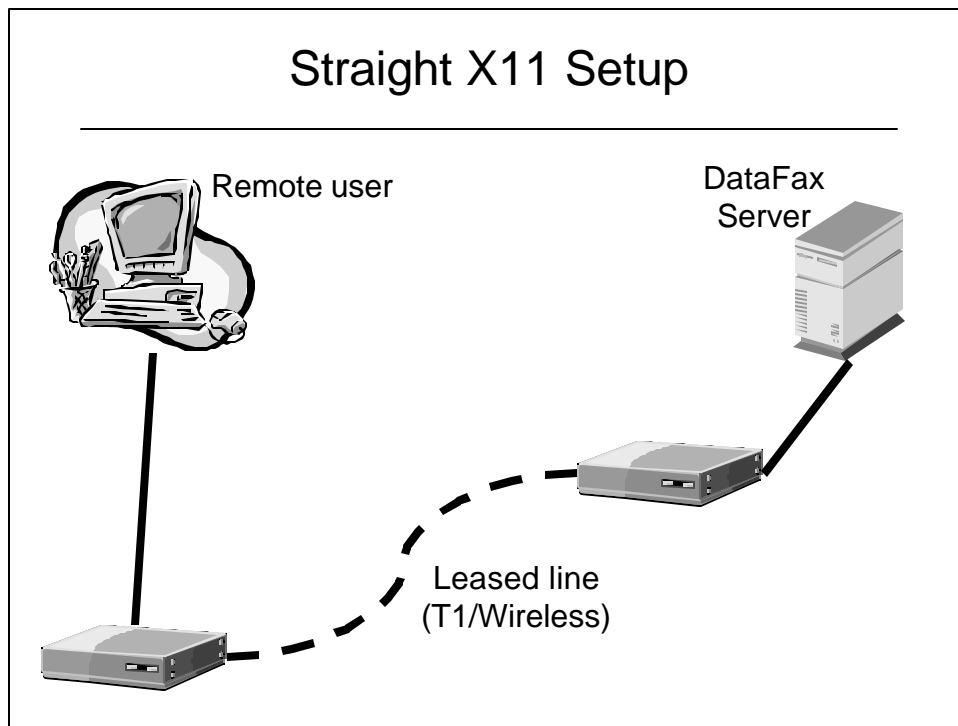
- **Software**
 - Solaris for remote host
 - X Window software on PCs (Reflection/Hummingbird)
- **Hardware**
 - Remote Unix server
 - Routers
 - ISDN line/T1

Remote server – Advantages/Disadvantages

- Advantages
 - Full DataFax access
 - Printing is possible with remote printer
- Disadvantages
 - Cost - requires remote Unix server, administration
 - Access control is difficult
 - Remote site is at fixed location

Approach 4 – Straight X11

- Full DataFax access
- Really only useful for high speed networks (e.g. running DataFax between two buildings)
- X Windows is a chatty protocol and generates lots of network traffic
- Latency (amount of delay the link introduces) affects performance
- Bandwidth requirements > 1.5MBps



Straight X11 – Software/Hardware

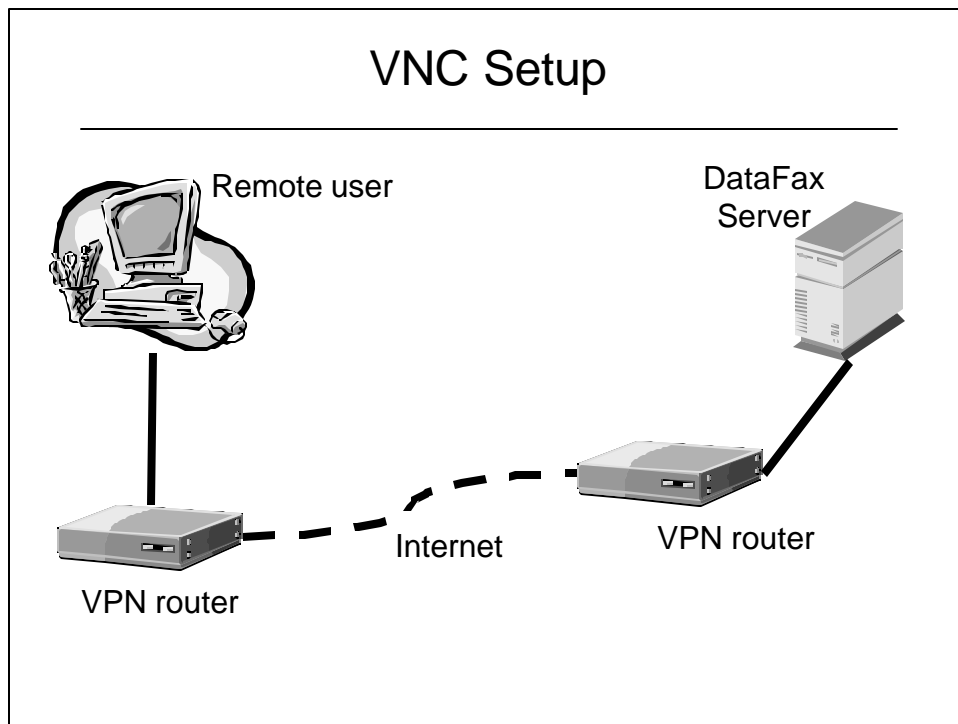
- **Software**
 - X Window software on PCs (Reflection/Hummingbird)
- **Hardware**
 - Routers
 - T1/Wireless link

Straight X11 – Advantages/Disadvantages

- **Advantages**
 - Full DataFax access
 - Printing possible with remote printer
- **Disadvantages**
 - Access control is difficult
 - Requires a lot of bandwidth!
 - Latency makes response sluggish
 - Remote site is at fixed location

Approach 5 – VNC

- Similar to Microsoft Terminal Services
- Full DataFax access
- Useful for telecommuters with ADSL or cable modems at home
- Free (www.tightvnc.com)
- Translates X Windows protocol to very efficient RFB protocol
- Access your desktop anywhere
- Bandwidth – 56kBps



VNC – Software/Hardware

- **Software**
 - VNC client software (free)
 - VNC server software (free)
- **Hardware**
 - VPN routers (can be FreeBSD/Linux machines with IPSEC software)

VNC – Advantages/Disadvantages

- Advantages
 - Full DataFax access
 - Low cost
 - Printing possible to do if site is at fixed location
- Disadvantages
 - Printing not possible if remote site not fixed
 - Access control more difficult
 - Desktops may need to be pre-configured

Tools

- TightVNC (www.tightvnc.com)
- FreeBSD (www.freebsd.com)
- Linux

Problem: Fax modem security

- Some companies have very strict rules about modems on their network
- Concern is that modems can be used to dial into the network and thereby bypass the firewall

FaxMode-Only Modems

- Multitech has a special modem called MT1932ZDX-FAXONLY part number 935-19353
- Does not do DATA mode at all
- Special order item
- Available from Modem Express (800) 736-4107 (US) or SAKDATA at (905) 670-5071 (Canada)
- Order by Part number!!

Problem: How do we make HylaFAX receive-only modems?

- By default HylaFAX will use all modems for sending faxes (e.g. at QC report send time)
- This can tie up all modems so that it is not possible to receive faxes during that time

Receive Only Configuration

- HylaFAX supports modem classes for sending
- Default class name is 'any' and contains all configured modems
- Class 'any' can be redefined to include only a subset of modems
- Anything not in class 'any' is receive-only!

Receive Only Configuration 2

- Let's assume you only want to fax out on modems /dev/term/3 and /dev/term/5 only
- Edit the /var/spool/fax/etc/config file and add the line:
ModemClass: "any:term_[35]"

Problem: Faxing from Windows

- How can we leverage our HylaFAX setup so that we can fax directly from our Windows desktops?

WHFC (Windows HylaFAX Client)

- WHFC <http://www.transcom.de/whfc>
- Provides a Windows print device that talks directly to the HylaFAX service
- Can use ODBC database for phonebook entries

Faxing from Windows

- On the HylaFAX server, edit
`/var/spool/fax/etc/hosts`
- Add entries for machines that are allowed to use this facility:
 - IP address (e.g. 192.168.3.2)
 - Machine name (e.g. pc101.datafax.com)
 - Domain name (e.g. datafax\.com)

Summary

- There are a variety of different ways of implementing remote access
- Use the special fax-only modems if the IT department is concerned about modems
- ModemClasses can control which modems are used for sending
- WHFC extends HylaFAX services to the desktop