Deploying Global Support for RDC 4.5 in Graphical PDF Mode for Remote Sites

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Goals

- Examine site-related support issues specifically related to RDC's Graphical PDF Mode deployment.

- Examine Citrix 4-tier deployment as a possible solution for some of these support issues

- Suggest some longer-term support-friendly deployment solutions for RDC Graphical PDF Mode in the future.

Current RDC 4.5.0 PC Configuration

- RDC 4.5.0 Graphical PDF Mode Requires the following components installed in the following order:
  - Internet Explorer 6.0 SP 1
  - Adobe Acrobat or Adobe Reader 5.0.5 to 6.0.x (or Acrobat Reader 7.0.x if iPatch 4.5.0.44 is installed).
  - Oracle J-Initiator 1.1.8.21
  - OPA PDF Plug In 4.5.0.26.5 (updated to 4.5.0.44 to support Acrobat Reader 7.0.x)
- In addition to the installation of the PC components, there are some specific configuration settings that are required for each component.

Configuration for IE

Excerpted from RDC 4.5 Users Guide, pages 30 and 31

Also, Verify that in IE, Tools -> Internet Options -> Connections -> LAN Settings -> Advanced button -> Exceptions has <W2K_Middle_Tier.Domain> listed.

Also, in IE => Tools => Internet Options => General => Settings, verify "Check for newer versions of pages" is set to automatically. This sometimes helps with the %FDF error when opening PDF files in IE.

Microsoft Internet Explorer 6

Ensure that Microsoft Internet Explorer is configured according to the following sections.

Default browser Microsoft Internet Explorer must be designated as the default browser on your computer. To ensure this:

1. Open Microsoft Internet Explorer 6.
2. Select the Tools=>Internet Options menu command.
3. Select the Programs tab.
4. Select the check box for the "Internet Explorer should check to see whether it is the default browser" setting.

When you next access an Internet browser, if the system displays a message window that states Internet Explorer is not the default browser, select the check box that sets it as the default.

Configuration settings Ensure that the following configuration settings are present in your Microsoft Internet Explorer 6 installation. To view these settings:

1. Open Microsoft Internet Explorer 6.
2. Select the Tools=>Internet Options menu command.
3. Select the Advanced window tab.
   a. In the Browsing section, ensure that the "Reuse windows for launching shortcuts" is selected.
   b. In the Browsing section, ensure that the "Reuse windows for launching shortcuts" is selected.
   c. In the Security section, ensure that the "Do not save encrypted pages to disk" setting is not selected.

Third-party browser software If there is third-party add-on software designed to block pop-up advertisements installed on the computer, you must disable its functionality. "Pop-up Blocker" application do not allow RDC to function correctly.

Firewall software If a firewall application is installed on the RDC computer, you must either disable it or configure it for RDC to function correctly. Refer to the firewall application documentation and/or your system administrator for assistance.

Configuration Requirements for IE on XP

- Verify Pop-Up blocker is disabled as shown right.

- For XP SP2, the following message will appear when displaying PDF mode Data Entry forms in RDC. Click the Yellow Bar and answer Yes to the dialogue box shown below for each page.
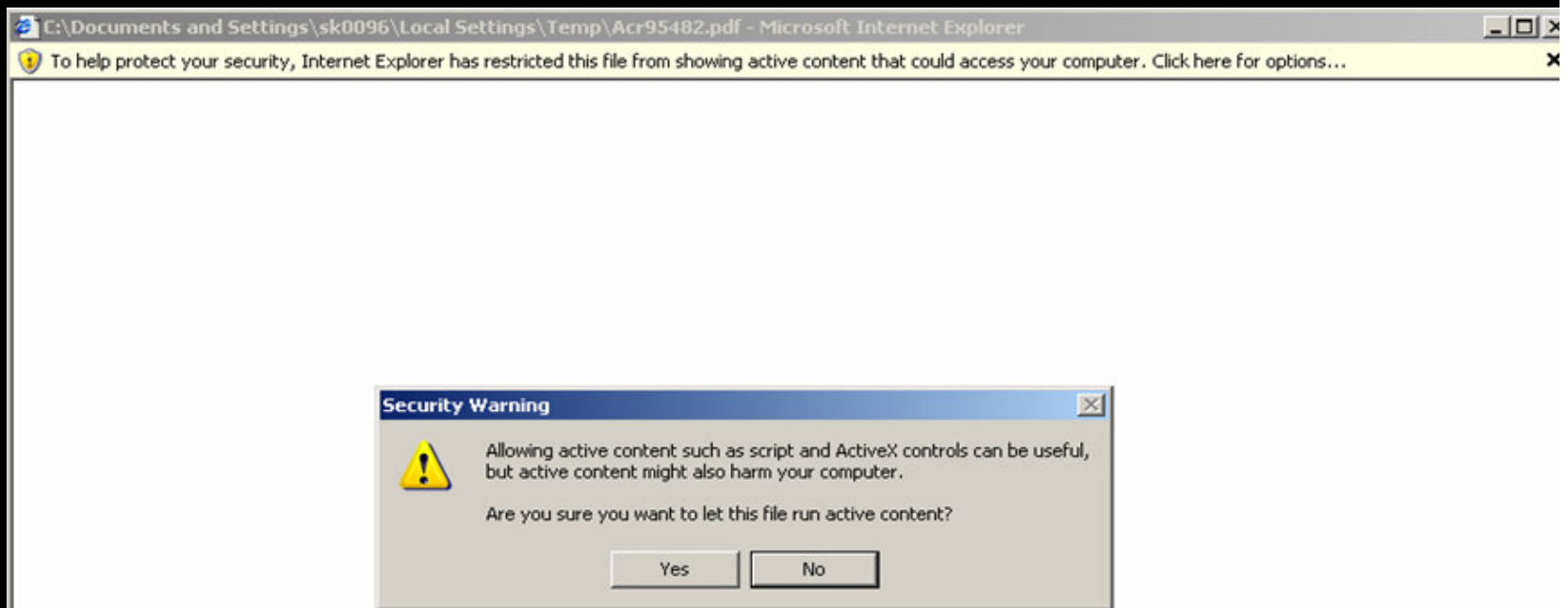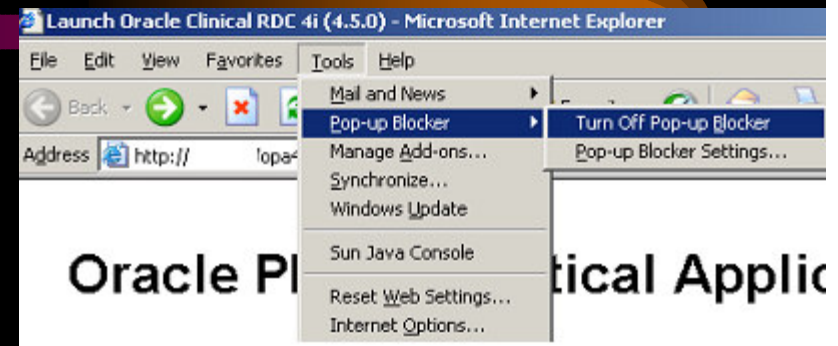
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Configuration Requirements for Acrobat Reader 5.0.5 and 5.1

- Excerpted from RDC 4.5 Users Guide, page 31.

Adobe Reader

In order to properly view CRFs in either Adobe Reader or Acrobat, certain configuration options must be set in a particular way. There are differences in certain settings and functionality between version 5.1 and 6.0. Use the section that is appropriate for your installation.

Note that this section is applicable to RDC sessions in PDF mode.

Reader 5.1 Ensure that the following configuration settings are present in your Adobe Reader installation.

1. Edit=>Preferences, select Options in the Category pane
   - ensure that the "Display PDF in Browser" checkbox is selected
   - ensure that the "Certified Plug-ins Only" checkbox is clear
   - ensure that the "Use Page Cache" check box is clear

2. Edit=>Preferences, select Forms in the Category pane and ensure that the "Keep Forms Data Temporarily on Disk" check box is clear.

   The application may display a message window that asks you to confirm this choice. Click the OK button to confirm the setting.

   Note: Adobe Reader 5.1 selects this checkbox by default each time the application opens. Therefore, you must clear this checkbox when you start an RDC session and you are going to work in the PDR data entry window.

Configuration Requirements for Acrobat Reader 6.0.x

- Excerpted from RDC 4.5 Users Guide, pages 31 and 32.

- For Acrobat Reader 6.0.2 and 6.0.3, Edit => Preferences => "Display PDF in Browser" must be **unchecked**, otherwise a "%FDF. File is corrupted and being repaired" error may result. However, PDF Mode Data Entry will still properly display the PDF in the Browser.

Reader 6.0 Ensure that the following configuration settings are present in your Adobe Reader installation.

1. Edit=>Preference, select Startup in the Category pane

   - ensure the "Use Page Cache" check box is clear
   - ensure the "Use only certified plug-ins" is clear

2. Edit=>Preferences, select Forms in the Category pane, in the Auto-Complete section, ensure that "Off" is selected in the drop-down list box

3. Edit=>Preferences, select Forms in the Category pane, in the General section, ensure that:

   - the "Keep forms data temporarily available on disk" check box is clear
   - the "Show text field overflow indicator" check box is clear.

4. Edit=>Preferences, select Internet in the Category pane, ensure that the "Display PDF in browser" setting is selected.

5. Edit=>Preferences, select Search in the Category pane,

   - ensure that the "Enable fast find" check box is clear
   - click the "Purge Cache Contents" button.

Installation of J-Initiator 1.1.8.21

- The J-Initiator install should accept all of the default installation parameters.
- After the installation, two settings must be changed to enable PDF Mode Data Entry. The Configuration for the JInitiator Control Panel is located in Start -> Programs -> Jinitiator Control Panel 1.1.8.21
- Set the Network Access to "Unrestricted"
- Set the Java Run Time Parameters to –mx128m instead of –mx64m (the default).

- Optionally, check the "Show Java Console" to enable debugging of any LAN client RDC 4.5 connectivity issues.
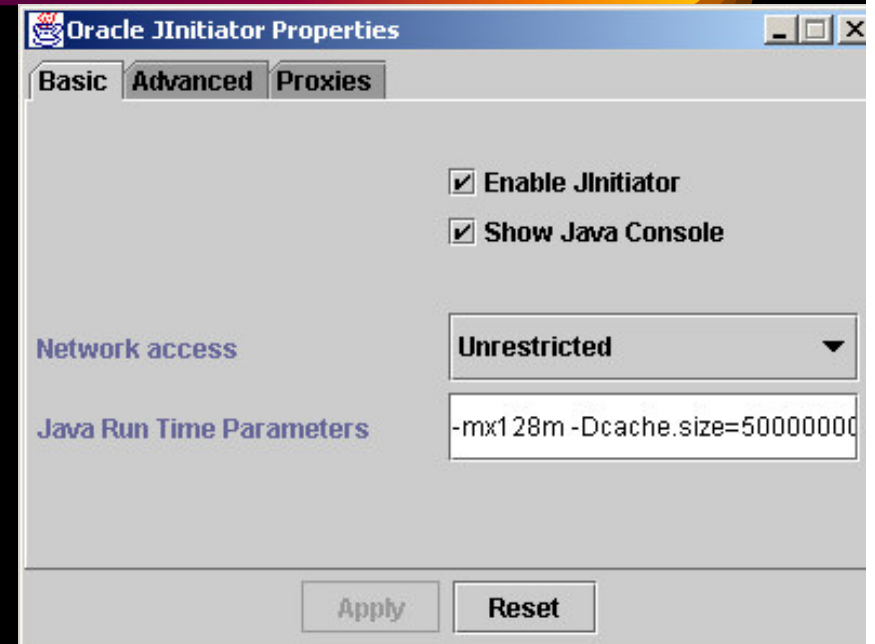
Installation of J-Initiator 1.1.8.21

- On some PCs, the J-Initiator Control Panel will not start or not be installed due to conflicts with other JREs (JAVA Run-Time Environments) on that specific PC. In these cases, edit the following file and make the changes as listed below:
 - `%SYSTEM_DRIVE%\Documents and Settings\%user%\.java\properties`

   `javaplugin.proxy.forallprotocols=false`

    `javaplugin.jre.params=-mx128m -Dcache.size=50000000`

    `javaplugin.version=1.1`

    `javaplugin.jar.cache.size=100`

    `javaplugin.jre.path=Use JInitiator Default`

    `javaplugin.enabled=true`

    `appletviewer.security.mode=unrestricted`

    `javaplugin.proxy.usebrowsersettings=true`

    `javaplugin.console=false`

    `javaplugin.debug.mode=false`

Installation of the OPAPDF Plug In

- The OPA PDF Plug In should install with the default settings

- The third form during the installation on the right might be confusing , but generally the default of "No PDF Caching on local machine" should be used based on the Middle Tier registry key OPA_PDF_FILE_SOURCE = SERVER by default

- The successful installation of the OPA PDF Plug In can be verified by the existence Adobe Reader Oracle Clinical menu and the Help -> About Third-Party Plug-Ins -> Oracle Clinical menu the as shown right.

- If confronted with the message that states the PC has the wrong version of XML (i.e., XML 3.0 is required), install the XML toolkit from the Microsoft website. There will be a file for download of the form xml3.0\msxml3.cab. Install this toolkit by double-clicking from Windows Explorer. The PC should be rebooted after this operation.
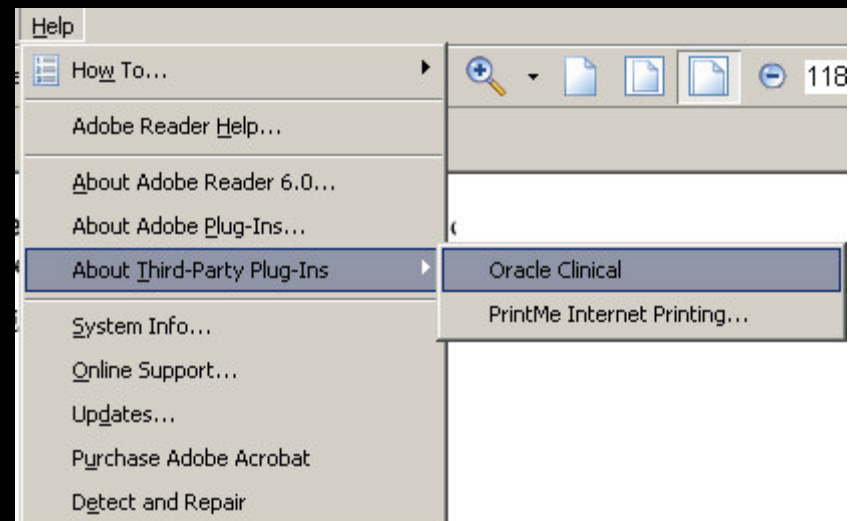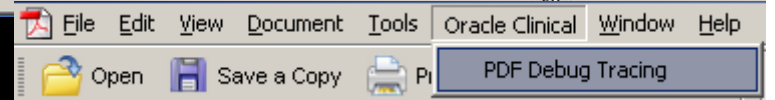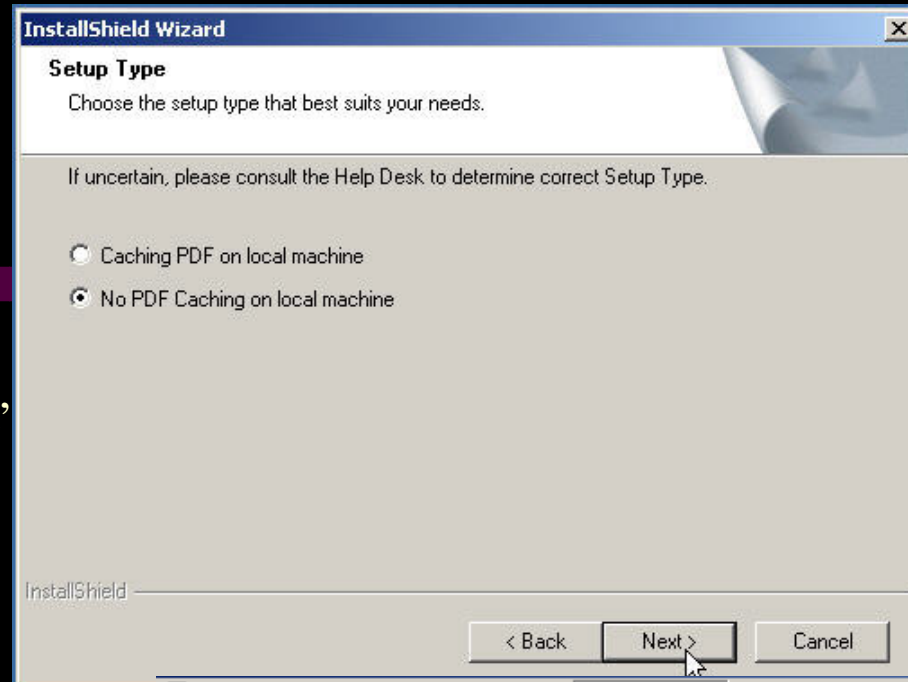
Some Possible issues which occur in RDC 4.5.0 Graphical PDF Mode related to incorrect PC configuration

- If the network access in the J-Initiator console is not set to Unrestricted, then an Init-JS type of error will occur when attempting to open a PDF Data Entry form.

- If the OPAPDF Plug-In is not installed, an OCLN.PDF error results when attempting to open a PDF Data Entry form. This is likely for new users since the OPAPDF is **not** self installing.

- If the user installing the J-Initiator or the OPAPDF is not part of the local Administrators group on that PC, neither component can be successfully installed.

- If a connection is made via https though some types of internet proxy configurations, it is not possible to connect to RDC (bug# 4235580)

PC Configuration for Graphical PDF Mode can be difficult for some sites

- Given the number of components, and the complex configuration of each component, and the ensuing errors which can result if a component is not installed or configured incorrectly, it may be difficult for some sites to deploy and maintain an environment which can run the Graphical PDF Mode.

- This might be true if:
  - The Remote Site is very small and does not have any type of Desktop support.
  - The Remote Site is larger, but does not have the available resources or the skills to maintain their desktop environment carefully.
  - The Remote Site does not have full control or administrative resource to completely manage their network environment.

How can Sponsors assist RDC Sites with Graphical PDF mode related issues?

1. Increased RDC site desktop support for IE, Acrobat Reader, J-Initiator and OPA PDF plug-in maintenance and deployment;

2. Increased collaboration with network administrators at the RDC Site with respect to the RDC site's network configuration policies;

3. Increased collaboration with RDC site's desktop support groups to coordinate deployments of Desktop Windows Operating Systems, IE, J-Initiator, and Acrobat reader, and options associated with these packages;

4. Provide methods of analysis and remote diagnostics for RDC site's data entry or data management issues in Graphical PDF mode

Methods of Increasing Desktop Support at the RDC Site

- Provide Desktop machines or laptops which are preconfigured and tested directly for the RDC site to use. Provide a "hot swap" service to allow RDC sites to ship a defective or non-working machine into a central desktop support facility, and ship out a working machine simultaneously; and/or

- Provide training to the existing RDC Site's desktop support staff on the specific required configuration for use of Graphical PDF Mode RDC, and also provide training on known issued; and/or

- Create a traveling desktop RDC support role where a group of technical resources periodically travel to the RDC sites to assist with RDC-related desktop issues; and/or

- Outsource the PC/desktop related support for the Graphical PDF Mode to local or global RDC application support providers.

Methods of Increasing collaboration with network administrators at the RDC Site

- Provide dedicated leased lines or dedicated IPSEC tunneling to the larger RDC sites

- Provide VPN access vs. public internet access to a centralized RDC environment if deploying RDC to a smaller number of sites

- Advise Network Administrators about network requirements for J-Initiator and bugs regarding https access through Proxy servers

- Coordinate URL, server/hostname, and domain name changes with RDC Site network administrators in advance of any planned upgrades or server/firewall configuration changes, such as IP address or public DNS name.

- Conduct initial and periodic network performance tests to insure the internet/VPN or dedicated network connectivity is performing well enough to allow RDC to continue to function and perform within acceptable limits. Roundtrip millisecond times should not typically exceed 320ms for stable RDC Graphical PDF Mode performance.

Methods of Increasing collaboration with RDC site's desktop support groups

- Publish schedules of outages and upgrades to RDC in advance to the RDC Site's desktop support group, especially releases which will potentially affect a desktop component, such as a patch to the OPAPDF plug in

- Distribute a "master" of components for the desktop PC, especially the J-Initiator, as this may take a very long time to download for each user. Provide a deadline date for deployment of these components on the RDC user's PCs

- Provide a periodic bulletin of known RDC Desktop related issues to the RDC Site's desktop group, based on issues and findings from the central sponsor.

Provide methods of analysis and remote diagnostics for RDC site users

- While RDC application support is often considered at the user level when deploying to an RDC site, desktop configuration support is sometimes not considered as carefully.

- Require that remote access to each RDC users PC (such as WebEx, NetMeeting, etc) is **mandatory** for **all** RDC site users, and that this connectivity must be established to the central RDC support group. The central RDC support group can be a help desk or support center within the sponsor's facilities, or it can be an outsourced support group.

- Train and qualify the RDC support to be knowledgeable about the known PC-related configuration, as well as the known PC-related configuration issues for RDC Graphical PDF Mode.

Consideration of Citrix 4-Tier architecture to deploy RDC Graphical Mode

- Citrix can be used to provide a standard published application where the Citrix server acts as the desktop tier at the central Sponsor facility.

- This allows a link, usually https, to be published to a Citrix server to display the screen display only of a desktop session which is actually running on the Citrix server.

- This type of deployment strategy has several advantages and disadvantages which must be carefully considered before making such a decision.

Advantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode

- Single Desktop configuration on the Central Citrix server, no individual PC component stack, significant reduction of PC-related configuration deployment issues related to RDC 4.5.0 Graphical PDF Mode

- Lower bandwidth utilization when compared to a standard http/https deployment

- Elimination of distribution of PC components to RDC sites, such as J-Initiator, OPAPDF Plug in, Acrobat Reader, and IE
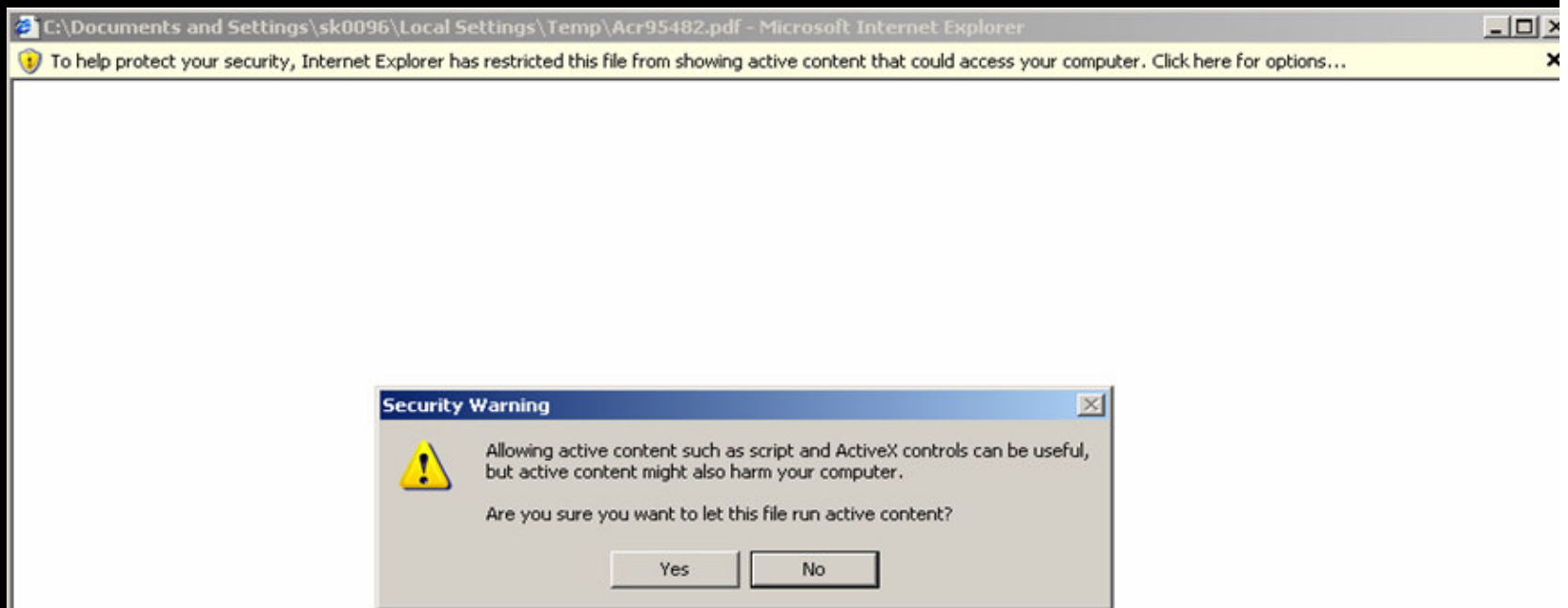
Advantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (2)

- Central maintenance of the PC Desktop tier on the Citrix Server instead of at each RDC site desktop

- Ability to view Citrix sessions directly to provide support to specific users

- Optionally, there can be a separate logon for increased security to access RDC through public links

- For RDC Sites with intermittent or unreliable internet connectivity, Citrix can allow a disconnected user to reconnect to the **same** RDC session without any loss of work. Normal RDC deployments can not resume connectivity at the same exact point if there is a network interruption.

- Printing is more easily configured with remote RDC Site users to their local desktop printers

Advantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (3)

- Ability to deploy on platforms and clients not currently supported by RDC 4.5.0, such as Macintosh or Windows XP SP2
  - Elimination of the "Internet Information Bar" error in Windows XP SP2 as shown below

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Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode

- Additional and strict costs for licensing. Citrix has a fixed number of connections based on licensing without any flexibility, so licenses must be purchased in advance for anticipated load

- Requires additional hardware for the Citrix server, capable of running several simultaneous RDC Graphical PDF Mode sessions

- Requires internal expertise in the maintenance and deployment of Citrix applications

Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (2)

- Either an additional login is required to connect to the Citrix Server, or if Anonymous logins are used, the following two messages will appear periodically for the Citrix users, which only appear once for a Desktop PC user when running Adobe Acrobat 6.0.x (shown right).

- The 2nd message is a violation of GCP if the **default** of Yes is clicked and requires user training.

Adobe Reader

Adobe Reader does not save the data that you enter into form fields. When you've completed this form, you may be able to submit it for further processing or print it. To save the data that you enter into form fields, please complete the form using Adobe Acrobat 6.0 Professional or Adobe Acrobat 6.0 Standard, or later, instead of Adobe Reader.

☐ Do not show this message again

OK

Adobe Reader

The Auto-Complete feature can remember entries you type and can help save time when filling out similar forms. Turning on this feature may not be appropriate for computers in a public setting (e.g., a library or Internet cafe) because previously entered information could be displayed. Would you like to turn on this feature?

Preferences for the Auto-Complete feature are found on the Forms panel of the Edit > Preferences dialog.

Yes   No

Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (3)

- Some known bugs regarding https connectivity through an Internet proxy server with Citrix VPE.

- Citrix will publish a batch file which will set the properties for J-Initiator for that specific session and also run IE as an application with a direct link to the RDC login.

  - However, running IE through a Citrix server can present some serious security issues to the Citrix server itself. So the Citrix Server **must** be in a DMZ to prevent further exposure of the internal network.

Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (4)

- To limit possible security breaches of the Citrix Server itself, IE must be executed in either:
  - Kiosk Mode using the iexplore –k option, such as;

    iexplore –k
    http://<Production_Middle_Tier.Domain>/servlet/f60servlet?config=rdc45; or

  - In a configuration where the Internet Explorer Administrator's ToolKit (IEAK) is used to disable the menu options except File -> Exit in the IE browser itself. A license cost is incurred in this configuration, and requires knowledge of the use of this tool.

Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (5)

- **Only** if the RDC Application is published with IE running in Kiosk Mode, then keyboard commands must be taught to the users to

  – Close the application using ALT+F4, and;

  – To set focus to the RDC surround if it is lost behind the calling IE window or by invoking Help with RDC, by using SHIFT+F2

- There is no formal support from OPA for a Citrix 4 Tier configuration for RDC

Disadvantages of a Citrix 4-tier Deployment for RDC Graphical PDF Mode (6)

- There are no documented special configuration parameters for a Citrix server deployment, such as:

  – Disabling the Acrobat Reader Plug-Ins upon launch of a PDF Mode DE form

  – Increasing the number of simultaneous users from 10 to 99 on a single Citrix server by changing HKEY_LOCAL_MACHINE => SOFTWARE => ORACLE => OPA_PJC_PORT_NUMATTEMPTS from 10 to 99 on the RDC Middle Tier.

Suggestions to enhance supportability of RDC Graphical Mode at Sites

- Provide formal OPA support for Citrix 4-Tier deployments for RDC Graphical PDF Mode

- Provide self-installing OPAPDF plug in, which will automatically start the installation of itself if it is missing when attempted to perform RDC PDF Mode Data Entry for the first time.

- Provide a true "lightweight" RDC client which does not require a J-Initiator plug in, which will also be more flexible about the versions of Acrobat Reader, Windows XP Service Packs and Internet Explorer (or other browsers) it is compatible with.

Conclusions

- Deployment of RDC 4.5.0 in Graphical PDF Mode requires especially more consideration of PC Desktop configuration and Desktop support.

- Additional support planning and additional resources and considerations are required when deploying RDC Graphical PDF Mode to remote RDC sites

- Citrix can help to mitigate some of these desktop related support issues in the context of the RDC Graphical PDF Mode, if the limitations and requirements of Citrix deployment are well understood also.

Additional Questions ?

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- Electronic copies will be posted on the OCUG Intranets Site and www.clinicalserver.com