Best Practices in Terminal Server/RDP Environments

Since the release of BS&A Software's .NET software suite, many of the most common impediments to remote access have been lifted.   For this reason, and in response to customer demand, BS&A now offers a hosted version of its application.   "BS&A Cloud Services" is an additional service now available to those who have converted to the .NET version of their software.

With the proliferation of adequate broadband and Microsoft's Remote Desktop technologies, many customers are interested in some form of remote access. This paper will discuss best practices and common issues that need to be overcome when implementing a remote access version of the software. It should be noted that there are major structural differences between the .NET and the legacy versions of the software. This paper and its recommendations refer only to the .NET versions of the software.   The legacy/Pervasive versions of the software are substantially less functional in Terminal/RDP environments; such implementations are strongly discouraged.

Basic Architecture

The first recommendation is that the terminal environment remains a completely separate operating space from the database server. This recommendation is made for both performance and data safety/security.

This can be accomplished in small locations by allowing remote access to their local workstations, and in larger environments by setting up a separate terminal server for access to the client application.

Licensing Concerns

BS&A's software is licensed to a given municipality.   If the appropriate municipality/locality has paid its licensing fees to BS&A, there are no limitations as to the number or type of installations that can be done.

Microsoft SQL, which is required for running the .NET software, has its own licensing limitations.   In the aforementioned terminal server configuration, the terminal server can be considered an additional workstation with additional users.   This may or may not affect the licensing required for Microsoft SQL, depending on which version and licensing model was chosen when SQL was purchased.   This should be reviewed to verify compliance.

A Word About Hosted Services

"BS&A now offers a hosting service for their applications. This private cloud solution offers centralized remote access to professionally managed servers.

All maintenance, security, software updates, and backups are included in this service."

"There are many advantages to remote application access: from the flexibility to work anywhere with an internet connection, to reduced hardware and maintenance costs. This can be an exciting and popular technology. Limitations outlined in this paper are not intended to dissuade its adoption in any way."

Various portions of the BS&A Software suite of applications work in conjunction with third-party applications. Examples of these third-party applications include, but are not limited to: Microsoft Office (specifically Word, Excel, Outlook), Apex Sketching software, Esri ARC-GIS, Pictometry. While these software packages are not required to run BS&A .NET, end users may demand their functionality. While most of these software packages seem to work in RDP environments, individual vendors should be consulted for best practices and additional licensing requirements.

Special note about Letter Writer – Since the Letter Writer feature in UB and Community Development works off of integration with MS Word, they will have to have Word installed on the Terminal Server in order to use this. Installation on their local machine will not work. There are licensing issues that go along with this, and they will typically need to have a separate license purchased for each terminal session.

Technical Concerns

Despite the improvements in software architecture, there are still some technical hurdles that will need to be addressed when it comes to an RDP environment:

- **Peripheral/USB Devices**

  - **Receipt Printers/Cash Drawers**

    All of these peripheral devices are expecting to be plugged directly into the machine that is running the software. In the case of a terminal server environment, they would be plugged into the remote machine/terminal. Getting these devices and their associated drivers to work through the terminal session is a challenge, if it can be done at all.

  - **Printers**

    When running in a terminal services environment, the setup of printers changes dramatically. Networked printers work best; USB printers tend to be inconsistent at best. Further, certain printers - especially multi-function printers - are not designed to run on server operating systems. Driver/software compatibility is a big concern. The more basic/common networked laser printers (HP LaserJets as one example) work much better.

  - **Scanners/Copiers**

    Just as with the CR hardware, attaching images from a scanner directly is expecting the scanner to be hooked up to the network or local machine, not to the remote machine. There are additional steps necessary to make this process work. Typically, network scanners work best. This requires a couple of extra steps for the end user, namely saving information to a shared drive then manually attaching the images through the program.

– **Updates**
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    When running in a terminal server environment, all of the users are connecting to the same physical host server.   These users are sharing the same installation, which cannot be updated when in use. Before running updates on the terminal server, all terminal sessions must be closed.   One user cannot be updating an application while another user is simultaneously using the same application. Standard update practices will have to be modified to accommodate this fact.

  ` **The "BS&A Share"**

    This is a common shared directory that the applications use for updates, configuration files, and storage of large attachments and backups.   This network-available folder will need to be available to users of the terminal sessions, as well as to the more typical "thick client" PCs.

– **File Access/Transfer**

  Features such as attaching photographs or scanned documents will require transmission to a commonly accessible file share.   That is to say, the file share will need to be accessible both from the PC/device that houses the file and the from the terminal server/session that will attach it to the database. An assessor (as an example) who has taken a picture of a house will want to attach that picture to a particular property in the program.   Thus, a mechanism must be put in place whereby the picture can be transmitted from the camera to a location accessible by the terminal server, so it can be attached to the record/property in question.

  ` This can be accomplished through local drive access within the terminal session...

  ` ...or a network file share.   This is probably moderately more secure, but also likely requires additional training of the end user.

– **Resource Utilization/Sizing**

  ` The .NET applications are large, complicated, resource-intensive applications.   Under-sizing the host terminal machine can result in poor performance and even failure of the application.

  ` Individual database sizes vary based on the size of the unit and how actively they are used, but a general guideline for server sizing would be 4GB of RAM + 2GB of RAM for each additional terminal user.   It is strongly recommended that you contact BS&A Technical Support to discuss your specific needs, as this recommendation may or may not be appropriate for every location.

  ` Because this is by design a shared resource environment, end users should always remember that performance can fluctuate dramatically depending on precisely how other people are using the software.

– **Accessing the remote server from the internet**

  ` VPNs are strongly recommended for the security of your data.

  ` Complex passwords with forced password changes are also recommended.

Best Practices

- Contact BS&A Technical Support for sizing recommendations. This will depend on:
    - ` Number of users (terminal and otherwise)
    - ` Size of the databases
    - ` Specific applications in question

- Simplify and standardize on common network-connected printers
    - ` HP LaserJet is a good choice
    - ` Avoid multi-function printers
    - ` Verify the drivers are compatible with the host server
    - ` Keep printer names/shared devices names short; avoid using spaces and special characters in device names

- Allow for local drive access through the terminal session or discuss alternative file transfer procedures before implementation

- Review licensing requirements for third-party software

- Test peripheral devices for capability/determine which, if any, will be used

There are many advantages to remote application access: from the flexibility to work anywhere with an internet connection, to reduced hardware and maintenance costs.   This can be an exciting and popular technology. Limitations outlined in this paper are not intended to dissuade its adoption in any way.   Rather, it is always the goal of BS&A Software to ensure a proper implementation.   Planned and executed appropriately, optimal performance can be assured.   Questions regarding these or other technologies can be directed to:

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