



Web Server Installation Guide

SurveyPro 5 Web Server Installation Guide

January 18, 2011

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Chapter 1: Introduction

SurveyPro is a client-side Windows application for designing questionnaires, facilitating the capture of data, and analyzing results. The questionnaires can be professionally designed for paper, kiosk and/or web surveys. Control over colors, fonts and logos allow emulation of your main site's branding. The reporting and analysis engine creates the graphs and statistical tools expected for surveys in a multi-page document format with titles and footers.

NetCollect is a web server-side application for conducting on-line surveys with a variety of login options, pause-resume, branching, data piping in and out, must answers and administrative tools. It handles a variety of survey scales like checkboxes (single or multiple answer), likert and rating scales, written answers, numbers and dates with validation.

Together these two are a specialized CMS (content management system) for web-based survey research.

Survey researchers tend to conduct multiple web surveys over time, often with more than one running concurrently. SurveyPro and NetCollect are architected so projects can be installed and managed on the server by the SurveyPro users without compromising security or requiring frequent IT support. The NetCollect server installation should be a one-time event with the occasional simple revision upgrade.

This manual deals with installing the server application on your own web server and providing the required configuration to the SurveyPro client user to connect to it. The systematic step-by-step approach below works best for installation and will reduce troubleshooting time if you follow the sequence. In most cases it can be done and verified in about a half hour on an established web server. However please ask the SurveyPro user to allow time before their survey needs to go online to resolve issues if any crop up.

Note: QuestionWeb is a cloud service with the software pre-installed and maintained by Apian on secure servers. It is an option which does not require the installation procedure in this Guide. If for any reason your organization chooses not to do the server installation, your users can still take advantage of the full range of SurveyPro features by renting space on Apian servers with the QuestionWeb service.

Chapter 5 covers the typical case where the SurveyPro web surveys will be hosted on an existing production server. Chapter 8 on the other hand shows exactly what must be done to bring up a Server 2008 dedicated survey system from scratch; it allows us to show all of the screens and dialogs involved as an explicit example. Chapter 9 on using localhost for early end-user's survey development is sometimes useful for advanced end-users who want a way to draft surveys for content approval before transferring them to a production server.

SurveyPro client-side Windows installation is very straightforward, designed to be done by end-users assuming they have application installation permissions. However they will need certain information about the web server configuration for the SurveyPro publish, upload and data download. Chapter 6 on ServerVerify will provide this information in the form required.

We assume the server and client will be different computers when a survey goes “live”, with each optimized for its role. There are occasionally production situations when it may be appropriate to run both on one system; contact Support regarding these configurations because they require special care to prevent loss of survey data. The other exception is for early survey development to be tested using localhost mentioned above.

NetCollect has been optimized for minimal server load impact so almost all surveys can be handled comfortably on straightforward single server configurations back to Windows 2000. There are built-in protections against high respondent demands with duty-cycle limits for the occasional complex page services, though with modern server hardware these are rarely the concern they were 5-10 years ago. See the Advanced Topic appendix for more on this.

Contact Apian Software support on behalf of the SurveyPro owner as required for the server installation: 800.237.3758 (US and Canada), 206.547.8392, support@apian.com.

Chapter 2: Requirements

Compatible with IIS 5 Server 2000, IIS 6 Server 2003 or IIS 7 Server 2008.

Surveys operate under standard HTTP and HTTPS ports (SSL is only used if the survey designer specifies it in the paths).

The server application is a set of ASP 2.0 Classic scripts and two 32-bit DLLs that provide compiled support for efficient use of server resources.

If the server does not have the required VB6 Runtime module installed, the installation program will add it to the system.

NTFS files are required for survey data and management. Interfacing with SQL for pipe-in or pipe-out is optional (see Embedded surveys in NetCollect40UserGuide.pdf)

The SurveyPro client users will need to be able to upload survey files and download data files either through UNC shares, mapped drives or FTP.

SMTP connectivity is not required (unless using the Respondent Emailer client utility which is covered in its own documentation).

To unlock the NetCollect server application you will need the end user's SurveyPro serial number.

Chapter 3: Versioning and Upgrades

This Guide is compatible with SurveyPro 5.0 builds starting January 2011.

To minimize server maintenance, the NetCollect server application changes versions less frequently than the desktop client software, and thus the version names are different. For example the client side might be 5.0A while the server side might be A20. Server version control is by .asp and .dll file names so a survey underway can continue with one revision while a new survey is supported by the next one.

The SurveyPro and NetCollect must be compatible builds. You can either pick up the NetCollect installation files from the SurveyPro end user's installation or download the latest of both from our web site and install in parallel. Visit <http://apian.com/downloads/> to see the latest versions or contact Apian Software support: 800.237.3758 (US and Canada); 206.547.8392 or support@apian.com

Going from the demo version to a licensed version is effectively an upgrade installation for both client-side and server-side. It is convenient to evaluate the web survey capability of the SurveyPro Demo using QuestionWeb as your server, deferring installation on your own server until you have the licensed serial number. You are protected by a 30-day money-back guarantee to cover the Server Application installation and testing.

When you want to upgrade this server application (scripts and DLLs), you can install the new version in the same folders as the existing revision. All the files are named with their version so they will not over-write earlier scripts, and any surveys currently running will continue on the version for which they were published. If instead you choose to put each version in its own CGI folder, you'll need to give each SurveyPro user a new server configuration for each revision so they can update their publish settings. The upgrade steps are:

- Install the new Server Application (p 24)
- Run ServerVerify (p 17)
- Install new SurveyPro client-side versions and add a new web server definition for this revision (p 24)

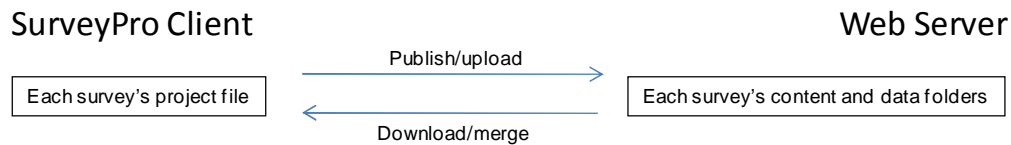
If you are upgrading you can uninstall the earlier revision Server Application, *but only if there are no live web surveys using it*. On the client-side the new revision replaces the old one but will download and merge data from earlier server versions.

When the user publishes and uploads their surveys, SurveyPro checks with the Web server to make sure the scripts loaded on the server match those the survey pages are expecting. This is one of the advantages of using the upload and download functions built into SurveyPro rather than a third party FTP program or Windows Explorer.

Upgrades from NetCollect 2.0 or 3.0 should be viewed as a new installation for the server as the folder architectures and other aspects were redesigned. Upgrades moving from Server 2000 or 2003 to 2008 also deserve a fresh look at the folder structures.

Chapter 4: Folder Architecture

The idea behind the NetCollect architecture is to make installing the server application and permissions setup a one-time event for the server administrator, after which SurveyPro users can publish whatever surveys they require safely. Keeping a set of files and folders for each survey project is the norm:

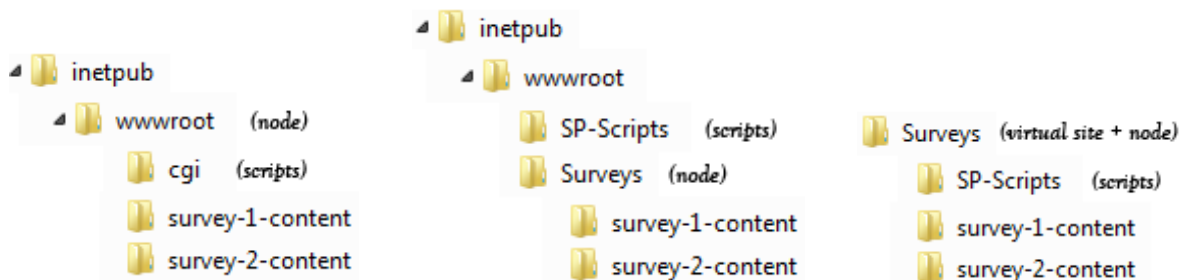


Four file locations on the server will be required for NetCollect:

- (1) *Scripts folder*: location of the supporting .asp VBScript files called by survey .asp pages
- (2) *DLL folder*: location of the two support .dll files which the scripts call
- (3) *Surveys Content Node folder*: a “root” node under which the individual survey folders reside with their web page files like .asp, .htm, .css, .gif or .jpg
- (4) *Projects Data Node folder*: a “root” node under which the individual survey data folders reside with file extensions like .sdh, .st3, .csv, .txt, .log or .pin.

From an administrative perspective, the recommended approach is to set up folder nodes (3) and (4) which have the appropriate permissions, and then SurveyPro users can create sub-folders for individual surveys. In the server setup dialog these are referred to as “Nodes” but you can think of them as a root—a base location under which folders for individual surveys are added. This has proven to be the safest and most reliable for the SurveyPro end users.

The scripts and survey content folders may be under the server’s default web site (wwwRoot), or the survey content may be a virtual web site with the scripts folder under it. Examples might be:



The advantage of the virtual site is isolating the survey projects from other web sites handled on this server, isolated physically, for permissions maintenance and application pool separation. On the other hand making wwwRoot also your content node is the shortest path for respondents and simpler to setup. The survey designers should make the names like “survey1 content” into something understandable to respondents since it is part of the URL respondents see.

All the script revisions can go into one folder because the names are different, which also is the easiest to maintain.

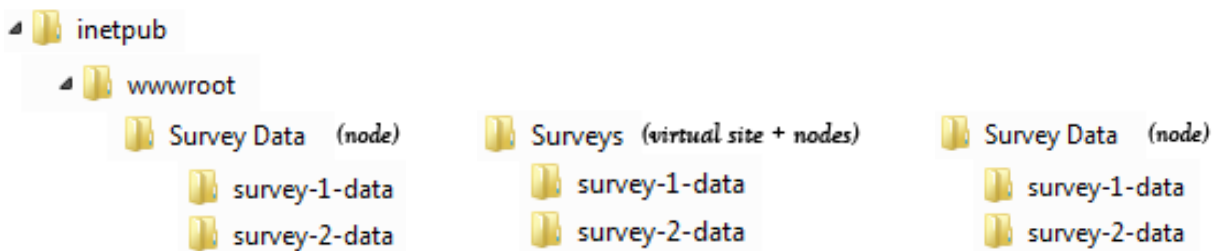
The SurveyPro user needs to create, delete and upload to the content folders using LAN or FTP.

Normally each survey project should go into its own sub-folder under the nodes or roots. This keeps data files from different projects isolated and allows the SurveyPro user to take advantage of the built-in tools for reliable project upload and download. There are some complex custom survey designs that can require combining folders, however this most often results from a misunderstanding. Please have SurveyPro users contact Apian support before doing so.

The DLL folder can be anywhere that IIS has permission to execute, normally on the c: drive. On most systems placing a NetCollect folder under the Windows default \Program Files or \Program Files (x86) area is easiest. All DLL revisions can be in the same folder because the .dll names are different.

The project data can be anywhere that IIS script execution can access quickly through the file system and that the SurveyPro user can create, delete, upload and download using LAN or FTP. This can be a path to another server if you're running a separate data box, such as when you're using load balanced front-end servers.

As with the survey contents, each project's data goes into its own folder, such as:



While not technically required, we recommend the project data node *should not* be the same as the “public” survey content node because you cannot leave the survey node locked down to read-only while the project data node needs almost all file permissions.

In a large organization it may be advantageous to configure different survey content and project data nodes by department or even to individuals. Otherwise establish some naming convention so people can tell what belongs to whom.

Upgrades from SurveyPro 3.0 should be treated as a new installation in all respects except for the web site main URL. The design of the server application changed dramatically after 3.0. Tightening security environments might also require reviewing your old folder structures.

For FTP access from SurveyPro both Surveys Content and Projects Data nodes must be physical or virtual folders under the one FTP root. With LAN connections you can create one share which has both nodes as sub-folders or make the two nodes separate shares.

SurveyPro publish limits URLs to 80 characters for maximum web compatibility, so keep the server path length well below that to allow for the end-user's folder name and at least a couple

dozen query characters. Keeping the visible URL path short is advantageous for respondents too. Also remember that access to files by SurveyPro on both client and server involves concatenating survey sub-folder and files names to the Contents and Projects node paths, and the total must be under 255 characters.

NetCollect makes no assumptions about the folder names other than Windows and Web legality and length limits, so you have full control over their naming and level within your server's folder architecture. Even though most of these paths are not visible to the respondents completing the surveys, for security purposes we advise using names other than any examples in this Guide, just as one will often move IIS from the default path when hardening a server.

To recap for planning the access will be:

To folder:	By:	Respondents	ASP Scripts	SurveyPro user
Scripts		No	Yes via includes	No
DLL		No	Yes via VB objects	No
Survey Content		Yes via web URL	Yes file read-only	Yes up/download
Project Data		No	Yes file read-write-modify	Yes up/download

Chapter 5: Installing on Existing Server

This section assumes you have a functioning Windows web server (IIS) available with web connections, NTFS files and a way for SurveyPro clients systems to upload/download files via LAN or FTP. It assumes you have Administrator access through the server Console, Terminal Services or Remote Desktop, and are familiar with the server and IIS management tools. For explicit step-by-step examples see the examples for a standalone production Server 2008 (p. 28) or a development localhost setup (p. 41).

You will be adding capabilities and permissions which should generally not conflict with other uses of an existing server since you will not be taking things away, but obviously please keep potential conflicts in mind as you go through these instructions.

Generally speaking the setup of Server 2000 or Server 2003 with IIS 5 or 6 are similar, sharing the philosophy that the system starts out with permissions fairly open unless you lock them down. Server 2008 with IIS 7 differs by starting out tightly locked and by having a different management interface and feature set.

For Server 2008 with IIS 7, there is a complete example with all the screens for setting up a standalone server which new administrators or those upgrading from Server 2000 to 2003 may find helpful.

Installation on an existing server should not require any server reboots. However in rare cases an IIS restart might be required which would interrupt web traffic for about 30 seconds.

❑ **Classic ASP:**

IIS 5/6 usually have Classic ASP (ASP 2.0 and VBScript 5+) installed by default.

For IIS 7 start the Server Manager. Install the **Server Roles** of **ASP**, **ISAPI Extensions** and **Security Request Filtering**. Also confirm that **Static Content** and **Default Document** are installed. *CGI*, *ASP.NET* or other roles are not required for NetCollect but will not conflict.

❑ **32-bit DLL:**

64-bit Server 2008 installations require the **Application Pool** for surveys have **Enable 32-bit Applications** set **True** in IIS Manager's Advanced Settings.

❑ **Default Document:**

SurveyPro assumes "index.htm" is a default document on your Web server.

Go to the Start menu, Administrative Tools and Internet Information Services (IIS) Manager.

In IIS 5-6 select the Documents tab. In IIS7 select the Default Document icon.

If **Enable Default Document** is not turned on for IIS 5-6 or **Default Documentation** is not installed in IIS7, find the person who configured the server and go over this requirement with them. If **index.htm** is not in the list, add it now. It can be placed at the end so far as NetCollect is concerned.

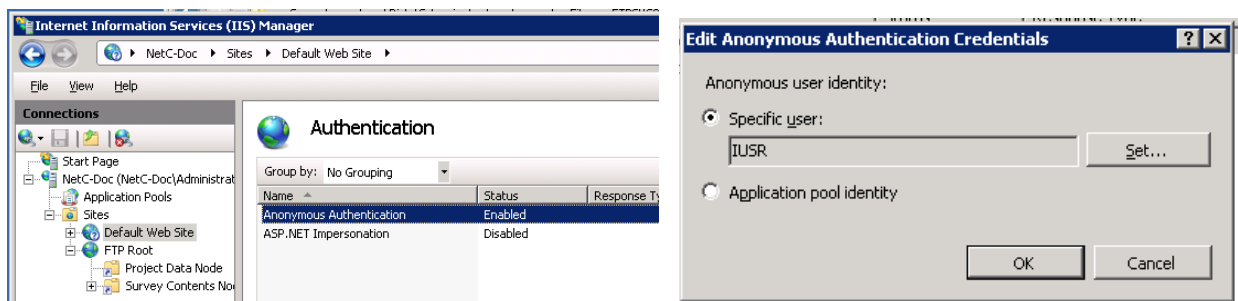
You can optionally add index.asp to the list above index.htm to save some redirects. On an established server with other uses you might risk the wrath of a web designer who has depended on the previous order so be sure it is safe to add anywhere other than the end.

❑ Web Anonymous User:

Survey respondents will normally be anonymous users who access survey .asp pages that call the NetCollect .asp scripts and DDLs. Thus the script file permissions are inherited from the anonymous user or user group. You will need to determine who that is before setting file permissions.

IIS 5/6 by in the Internet Information Services console, right-click on the **Web site root** and select **Properties**. Select the **Directory Security** tab and under **Anonymous access** and authentication control, click **Edit**. Under Anonymous access, click **Edit** again.

IIS 7 for classic ASP normally makes IUSR the web anonymous user, which is by default under the NTFS Users group policy. (Note this is not the same as asp.net applications where it would usually be the IIS/IUSRS group.) To see how this server is configured select **Authentication** in the IIS Manager, be sure the **Anonymous Authentication** is **Enabled**. Click **Edit**:



For all IIS versions jot down the name of the web anonymous account

here _____ . Then cancel out.

❑ **Create Folder Structure:**

The discussion starting on p. 8 covers the reasoning behind the folder structures to support SurveyPro and NetCollect. Presuming you have decided on your folder structures it is time to create or confirm them:

- (1) The *Scripts Folder* can either use an existing \cgi folder under the web root or you can create its own \NC_Scripts folder. All NetCollect revisions can reside in one folder for convenience. Create this folder and write its path-name:

- (2) The *DLL Folder* is easiest when installed under the Windows 32-bit \Program Files or 64-bit \Program Files (x86) folder, which the installation will default to. Otherwise you may need to set special permissions and handlers so the IIS web anonymous user can execute the DLLs when the .asp pages call them. If you are going to use something different than the installer default write it here:

- (3) The *Surveys Content Node* can be the inetpub\wwwroot or a folder under the root. That will be easiest because it would normally inherit the permissions it needs. You can also create a folder outside the web root and make it a virtual server, which is sometimes better for security reasons or to shorten the respondent URL. Write the node folder path-name here:

- (4) The *Projects Data Node* may be anywhere local to the web server, including a dedicated data server. While it technically can be the same as the Survey Content Node, generally management is easier and security better when the data is separated. Create the data node folder now and write its path-name:

❑ **Setup SurveyPro Client Access:**

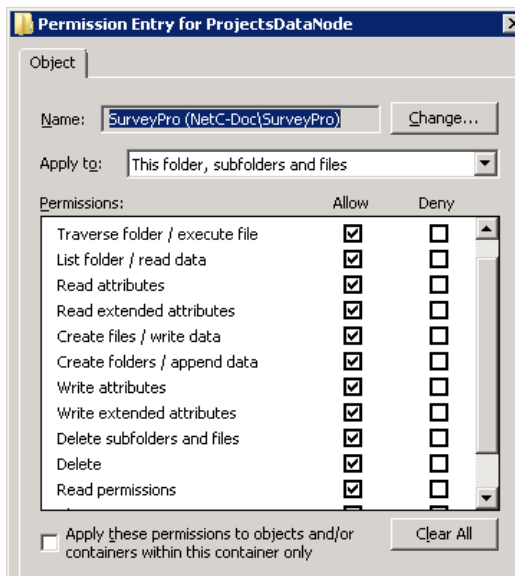
The SurveyPro users will need access to the Surveys Content Node and Projects Data Node folders in order to upload the surveys they publish and download the data collected. This can be via FTP or LAN file sharing. At this point you should define the user name or names required and access method. The access permissions for the users will be set in the next two steps.

❑ **Set NTFS Permissions:**

Permissions are by far the most common challenge for setting up a server, so we recommend following these settings closely. Some of your folders, such as a CGI folder or data area, may have more generous permissions than those specified here. That's fine by NetCollect, all it cares about is its minimum needs.

NTFS Permission	Minimum Permissions Needed by NetCollect 4.0							
	Survey Content		Survey Project/Data		ASP Library Scripts		DLLs under Program Files	
	IIS User	SP User	IIS User	SP User	IIS User	SP User	IIS User	SP User
Traverse Folder/ Execute File		Allow	Allow	Allow			Allow	
List Folder/ Read Data	Allow	Allow	Allow	Allow	Allow		Allow	
Read Attributes	Allow	Allow	Allow	Allow	Allow		Allow	
Read Extended Attributes	Allow	Allow	Allow	Allow	Allow		Allow	
Create Files/ Write Data		Allow	Allow	Allow				
Create Folders/ Append Data		Allow	Allow	Allow				
Write Attributes		Allow	Allow	Allow				
Write Extended Attributes		Allow	Allow	Allow				
Delete Subfolders and Files		Allow		Allow				
Delete		Allow	Allow	Allow				
Read Permissions	Allow	Allow	Allow	Allow	Allow		Allow	
Change Permissions								
Take Ownership								

Go to the file explorer, **right-click** each of the **nodes**. Go to the **Permissions** tab, select **Security**, add the SurveyPro users name(s) and set their permissions, for example:



Check **Effective Permissions** if the tab is visible to be sure some Group Policy has not denied access. Rather than change the group structure you will probably need to move the denied node out to its own area, and in the case of the Surveys Content node make it a virtual web site.

❑ Set IIS Permissions:

In IIS 5/6 there are execution permissions to set under IIS in addition to those under NTFS. In the IIS Console, **right-click** on each folder whose permissions you are setting, and select **Properties**. On the Directory tab, using the checkboxes and the Execute Permissions dropdown, set each folder per the second column of the following table.

Folder	IIS Permissions
Surveys Content Node	Read Execute Permissions: Scripts only
Projects Data Node	Read Execute Permissions: None
Scripts ASP Library	Read Execute Permissions: Scripts only

In IIS 7+ the permissions tabs are the same as those in NTFS where execute has already been set.

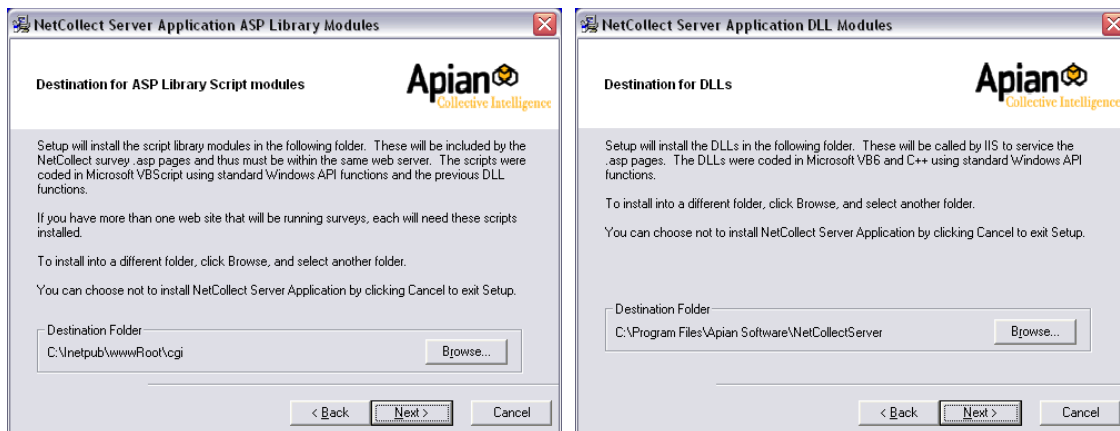
❑ Install Server Application (NetCollect):

The installation program with a name like “InstallNetCollectServerA2O.exe” can be found in the SurveyPro client program files under ..\Web Server Installation\ASP\. It can also be downloaded from the www.apian.com; if you go this route make sure your SurveyPro client users are on the matching revision. Note that the demo version and the licensed version are different builds and installations.

The DLL and .asp script names include the revision, in this case “A2O” (letter, number and letter).

If you are upgrading the revision you can uninstall the earlier NetCollect *if there are no live web surveys using it*. See Versioning and Upgrades Chapter 3.

The installation is straightforward. It will request the (1) Scripts and (2) DLL folder information on p. 13.



If the installer asks for a re-boot or says it is unable to overwrite, then the DLLs are probably already be installed and loaded into IIS. Try cancelling out of the installation and run the verification to confirm it is OK.

❑ Check and Document with ServerVerify:

Follow the instructions in the next chapter to check your setup. This will also provide the documentation for the SurveyPro users to configure their upload/download.

Chapter 6: ServerVerify to Confirm Setup

This utility has two purposes:

- It makes sure the NetCollect application is ready for use and properly linked
- Provides documentation because the entries are in the format that SurveyPro users need to complete their Web Site Definition

The utility ServerVerify.exe will be found in the same place you found the NetCollect installation exe (Its default directory is C:\Program Files\Apian Software\SurveyPro 50\Web Server Install\ASP). It can be copied onto any system or run from temporary storage. It is compatible with both 32 and 64 bit Windows. It is only needed to verify installation, not for NetCollect operation.

The last part of the verification checks the upload/download paths; if these differ for SurveyPro users you would install SurveyPro on their client system and then run Verify from there. A screen shot will provide them a proven web setup to copy into SurveyPro.

If you have installed previous versions which used DllTest for a portion of these checks, it still exists as a standalone script. However its use is now incorporated into the ServerVerify tests.

Note that ServerVerify does not create the survey content, project data, script or DLL folders; it expects them to exist and confirms them. It does write temporary test folders and files with names like "ServerVerify_P_j323-rfyp-d4w", where the naming code is random and changes for each test pass. The folders and files are deleted by Verify when it is done (assuming it has permission to do so).

Remember that this dialog is the generic server context for all the SurveyPro user's surveys. This means you should not be including any folders here which are specific to just one survey project — everything should be at the "node" or "root" level above that. If your situation has created nodes for different departments or users to isolate them from each other then you will want to verify each node's connections.

ServerVerify Main Screen:

SurveyPro © Verify Web Server Installation

Demo Installation Revision of server application verified: A20

Web Server: QuestionWeb Local/LAN Disk Remote FTP

(A) Respondent's Browser Site URL

Web Root http or https: Test Server Install

Survey Contents Node Sub-URL:

Library Script Virtual Sub-URL:

(B) Script File References on Server

Survey Contents Node Absolute Path: Test Script Permissions

Project Data Node Absolute Path:

(C) File Transfer Upload/Download

Survey Contents Node Folder: FTP Connection

Project Data Node Folder: Test File Transfers

Save File Open File Copy to Clipboard Exit

The *Demo Installation* checkbox applies to the NetCollect demonstration installation, which generally behaves like the full product except with a few restrictions appropriate to a demo.

Revision of server application verified will have a pulldown list when more than one revision is supported. Revisions are a letter-number-letter.

Web Server specifies the three ways SurveyPro can upload or download files:

- *Question Web* is a cloud service we provide that is pre-configured to support web surveys for SurveyPro users who do not have or chose not to use their own server. Disabled, not applicable here.
- *Local/LAN Disk* is for SurveyPro users who can transfer files directly, over a LAN or VPN to drive letter or UNC locations.
- *Remote FTP* is when the user will transfer files through the FTP access in SurveyPro or with their own FTP software.

Save File and *Open File* apply to these settings, which normally use the .spwd extension.

The *Copy to Clipboard* button captures the settings which you can paste into a word processor for printing, for your records or to email to a SurveyPro user. From the example above:

- (A) Respondent's Browser Site URL:
Web Root http or https: http://184.106.145.155/
Survey Contents Node Sub-URL:
Library Script Virtual Sub-URL: NC_Scripts/
- (B) Script File References on Server:
Survey Contents Node Absolute Path: c:\inetpub\wwwroot\
Project Data Node Absolute Path: c:\ProjectsDataNode\
- (C) File Transfer Upload/Download:
Survey Contents Node Folder: Survey Contents Node/
Project Data Node Folder: Survey Projects Node/
FTP Connection:
Address: ftp://184.106.145.155/
User ID: SurveyPro
Password: *****
Passive Mode: Yes

(A), (B) and (C) are for the three ways the survey folders need to be accessed:

(A) *Respondents Browser Site URL* are for web anonymous user access via IIS, which applies not only to respondents but also the survey administrator's control panel (dashboard) and people accessing online survey reports. *Web Root http:// or https://* should be the site URL, usually the IIS default site ending in .org or .ca, without any sub-folders. It can be a DNS name or an IP address. The *Sub-URL* paths, if any, for scripts and the survey content node will be appended to the site URL.

(B) *Script File References on Server* are the *Surveys Content Node* and *Projects Data Node* folder locations as seen by the scripts servicing the survey web pages. For security and safety they must be absolute paths, either beginning with a physical or mapped drive letter or a UNC share name, not IIS virtual folder paths, as viewed by the web anonymous user.

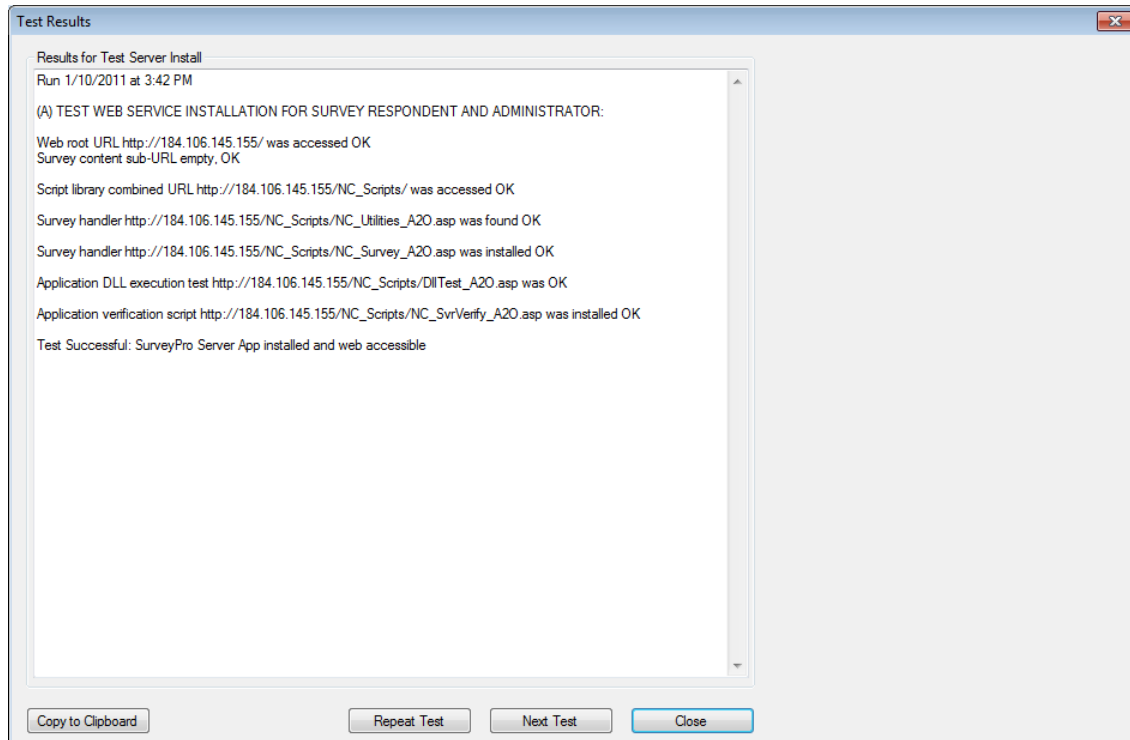
(C) *File Transfer Upload/Download* are the same node folder locations, but now as viewed by the SurveyPro user's client system. For LAN or VPN access they must be full paths on a physical drive, hidden drive or UNC share. For FTP access they will be the real or virtual folder below the FTP root. (See FTP Connection p. 23 for setup).

These paths will be normalized into a consistent format before use. URLs will be set to use forward slashes and files will use back slashes. Paths will terminate in a slash and sub-paths will have leading slashes removed.

You test these three views in order because (B) requires (A) to work and (C) requires (A) and (B), plus the FTP connection if applicable. You can test (A) and (B) from any system with web access to the server (including the server itself). The test for (C) must be performed from a client system which has access to the paths being tested.

The (A) *Test Server Install* button will perform a sequence of tests through the URL to verify the scripts and DLLs are installed as specified and have sufficient NTFS and IIS permissions. It will ask several of the .asp scripts to execute as part of the process, including the DllTest from previous releases.

After you run the test a results dialog appears showing step-by-step what was done:



The area on the right may fill in for certain script errors to show exactly what the asp server returned to aid your troubleshooting.

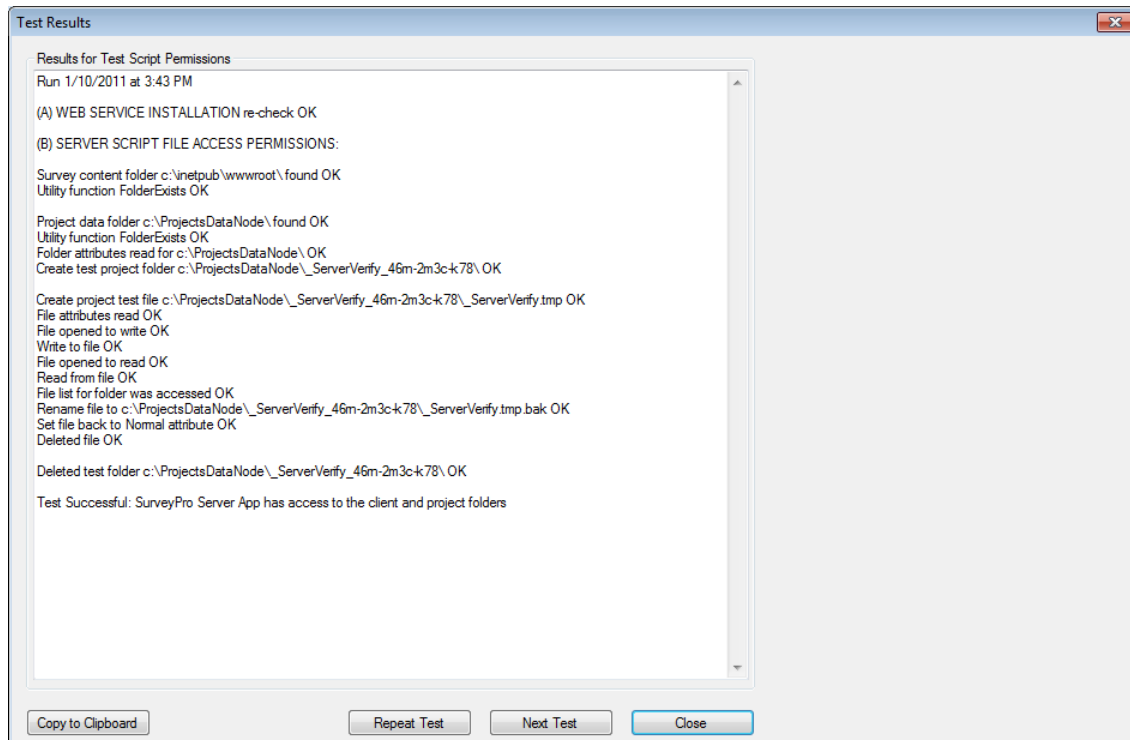
You can *Copy to Clipboard* to transfer to a word processor for printing or your records.

You can make changes to the server and click *Repeat Test*, or if this test was successful you can go to the *Next Test*, or *Close* the dialog to return to the main screen.

Troubleshooting server installation errors:

- First carefully check the (A) URL entries for typos, or with 404 errors check for mismatches with your server setup
- If it is unable to run the survey script, do the Revision and demo settings match the NetCollect you installed?
- If it is unable to run the DLL test (such as error 403 or 500) this may be an NTFS or IIS permissions issue, or the Application Pool 32-bit applications are not enabled, or classic ASP is not available
- If you are installing A2O and it cannot find the NC_SvrVerify.asp then you may not have a post December 2010 NetCollect build installed. Verify was not available for A2N and earlier.

The (B) *Test Script Permissions* button executes the NC_SvrVerify.asp script which does a trial creation, manipulation and deletion of a test data folder under that Node, and does a read on the survey node.

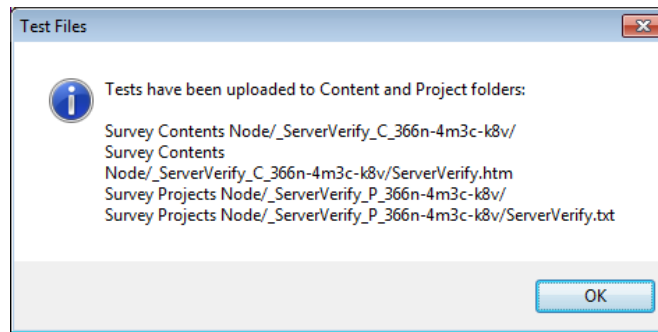


Troubleshooting script permissions typically involves:

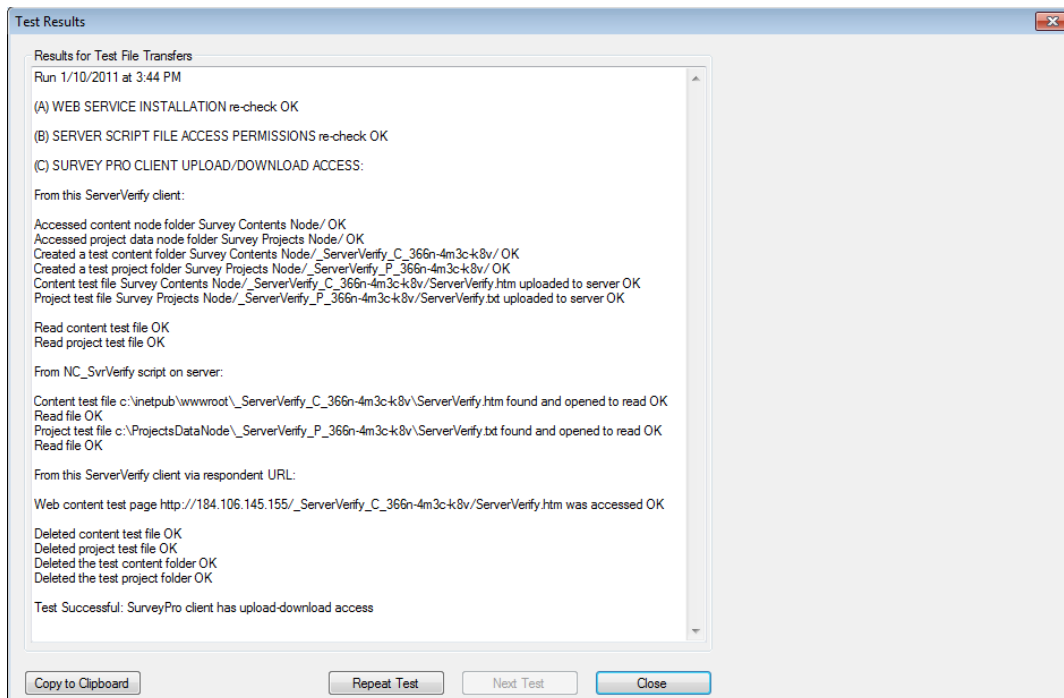
- Typos or mismatches in the (B) paths
- Permission issues where the web anonymous user is not able to execute the file operations
- If you get a “Utility function FolderExists” error, please contact Apian Support

The *FTP Connection* button will pop the dialog below for its setup and a quick test option.

The (C) *Test File Transfers* button verifies the upload and download settings are functional. Remember this test must be run from a client system where the paths and permissions apply. It first uploads a content and project data folder under the respective nodes like SurveyPro would, each with a small test file, and confirms the client has access to them. Next it asks the NC_SvrVerify.asp script if it can read both files and finally goes through the respondent URL to see that the content test file executes. It then stops so you can scan the server if you want to check the test files which can be an aid to finding errors in typing path names.



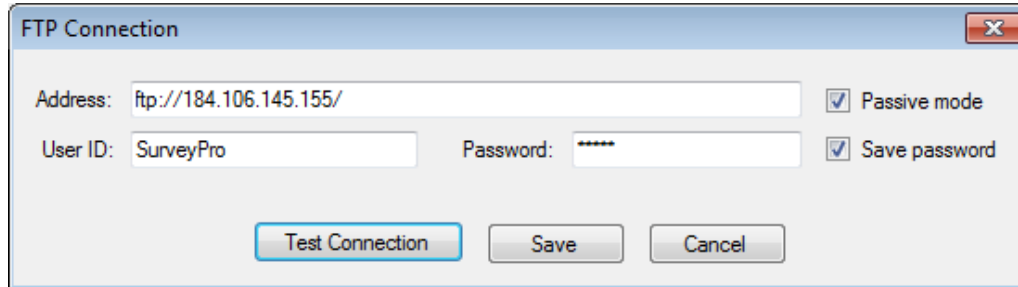
When you click OK the test files and folders are removed and a report screen generated:



Troubleshooting should look for:

- Typos or mismatches in the (C) client paths
- Trying to run ServerVerify from a client system that does not match the intended SurveyPro client configuration for file access
- FTP connection setup undefined, invalid or does not have the correct permissions, or the FTP root given is not a parent to both the content and data nodes (see next section)
- Client does not have sufficient LAN/Disk file permissions
- The three ways of reaching the Surveys Content and Projects Data Nodes do not actually point to the same places on the server

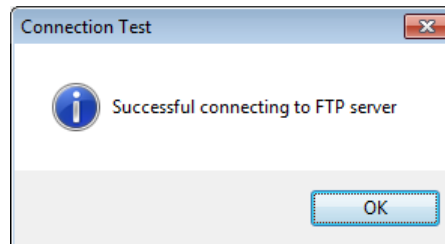
Verify FTP Connection:



Address is the FTP root, which can either be a DNS name or an IP. For SurveyPro use this should not include any sub-folders, but point to the root only. The default is port 21 but you can append a different port with a colon. Secure `ftps://` is supported.

User ID and *Password* are for the client system access.

The *Test Connection* button asks for a directory listing on the FTP root to verify the connection settings and basic read permissions. Hopefully you get this confirmation:



Troubleshooting problems:

- Check for typos or incorrect entries or entries that do not match the FTP server setup, including use of `ftps://` when the server requires SSL login
- Try with and without Passive mode. Note that some FTP clients set to passive mode will try passive and then fallback to not passive and connect which can be misleading when troubleshooting.
- Check that FTP ports are not blocked by the firewall on either end, and the the firewall rules are entered correctly.
- The SurveyPro user does not have permission to “see” the FTP root
- FTP requires authentication beyond the user/password login, in which case your SurveyPro users will require a standalone FTP program for upload/download

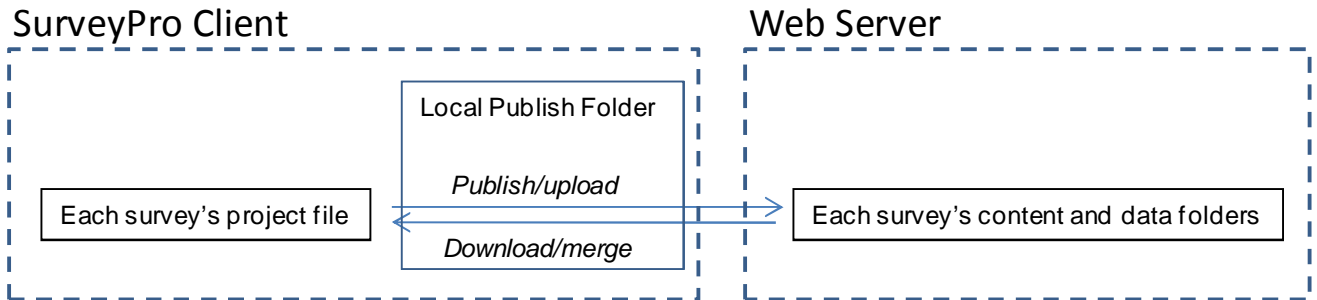
Next Steps:

The server should be ready to go!

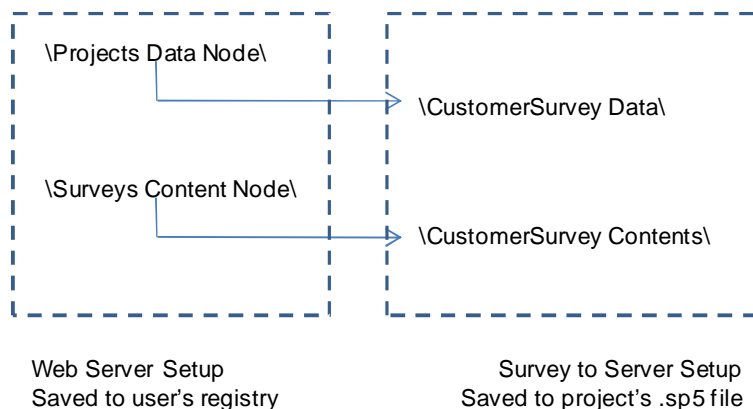
The client machines will need SurveyPro installed, covered in the next chapter.

Chapter 7: SurveyPro End-User Setup

The SurveyPro client-side user develops the survey design, publishes it as a web survey to a local folder and then uploads it to the content and data areas you have prepared on the server. There is a Control Panel (dashboard) used to finish the survey launch and monitor it during the data collection phases. Data from the respondents is downloaded and merged with the survey project file for analysis. The main client-side project file holding a survey's design, data and reports has the extension .sp5.



In order to prepare the server content and do the transfers, SurveyPro needs the server path information confirmed by ServerVerify for that client system. These *root paths* are stored in the user's registry by SurveyPro because they are common to all the surveys that user prepares, yet may be unique to that specific user depending on how the server folders, shares and authentication are structured. On the other hand the *sub-paths* to the server-side folders for each survey project are specific to that project, regardless of client system, and are saved in the .sp5 file. These survey sub-paths are concatenated with the server paths. Keep in mind when naming paths that the content sub-path will be in the respondents URL. Otherwise the names are internal to your organization.

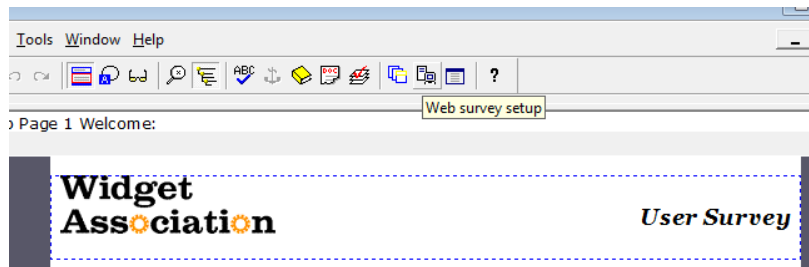


Once SurveyPro is installed, the end-user can wait to set the web server path descriptions following the publish instructions in the SurveyPro NetCollect help or User Guide. They will simply need a screen shot of the ServerVerify screen. On the other hand you may want to do the setup and confirm it when SurveyPro is installed using the following procedure. Either way the setup is required only once per server.

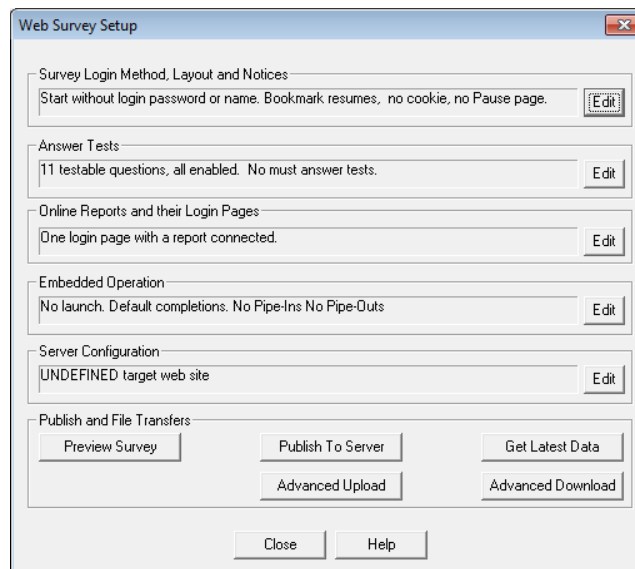
Launch SurveyPro when logged in as the end-user, not the administrator, so the settings go to the correct registry and document locations. Supply anything as the Session ID if requested; it will not be used here.

For the purpose of getting the server paths configured any web survey file will do, such as the sample file NC4 Tutorial - Layouts End.sp5. The samples can be found either under *username\My Documents\SurveyPro Projects\ SurveyPro Samples* or wherever the program files were installed such as *c:\Program Files (x86)\Apian Software\Survey Pro 50\ SurveyPro Samples*. After **File Open** you will be asked to save a working copy of the sample to preserve the original. Close the File History dialog. Select the 1: Widget Web tab so the survey displays on the main screen.

Under the **Document** menu, select **Web Survey Setup** or click the toolbar button:

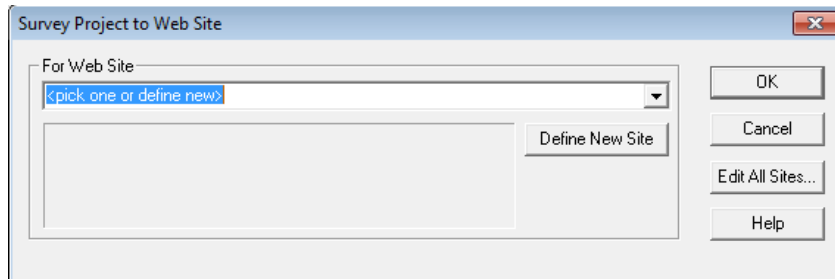


This brings up the Web Survey Setup dialog:

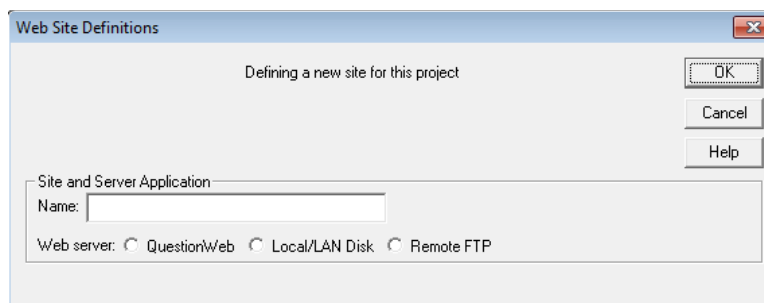


Next to the **Server Configuration** undefined target web site, click **Edit**. If prompted to unlock for editing, click **Yes**.

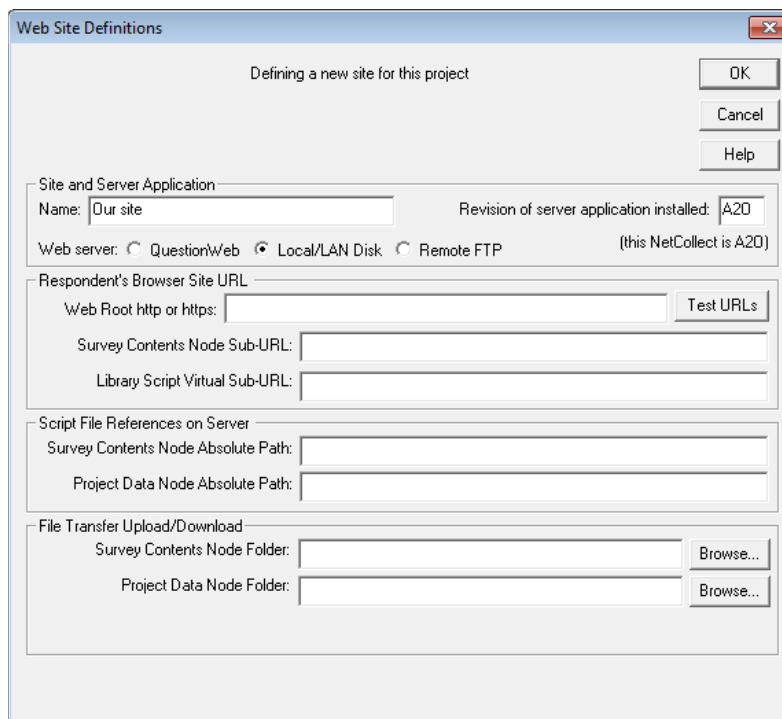
This first screen is where the sub-paths for a particular survey project are set:



Click the **Define New Site** button for this screen.



Give it a **Name** which reflects the generic server definition, such as the public domain or private server name. NetCollect will automatically add indicators for the version and connection method. Indicate how the SurveyPro user will connect for uploads and downloads, either LAN or FTP to show the full settings:



Now you have the same screen layout as the ServerVerify screen shot. Copy the paths exactly. Click the **Test URLs** button to verify the URL based portions are OK.

For FTP users, click **Set FTP Connect** and enter their username and password. If you mark Save Password (recommend) it will only be saved to the current Windows user's registry. Click the Connect password while you're in that secondary dialog to confirm it is working.

Both FTP and LAN users, click the **Browse** buttons to verify you're connecting and that you've got the locations right for uploads/downloads.

Click **OK** to save the new server definition, and **Close** the Web Site Definitions dialog. Everything you just defined should be generic to your Web server; it should work for any survey project posted by this user. The server setup is complete and saved to this user's registry for their survey projects.

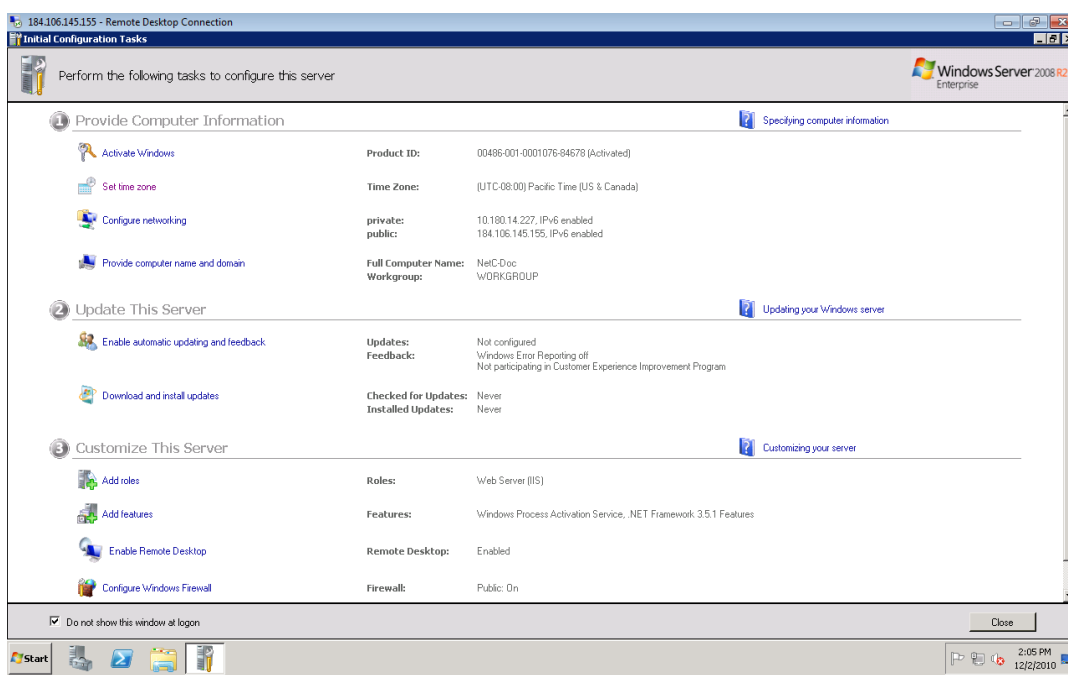
You can exit SurveyPro if you wish, or you or the end-user could continue through the full life-cycle with this sample survey – publish, launch, play respondent for a survey or two and download the data. If so please follow the instructions in the NetCollect40UserGuide.pdf in its Chapter 17.

Note: The Survey Project to Web Site dialog will ask for a local folder to publish the survey to before uploading. Generally the production server will be a different system than any of the SurveyPro clients, which is why SurveyPro maintains this local copy of its project files. There are exceptions such as the localhost configuration where the client and server are the same system; in these cases it is essential that the local publish folder NOT be the same as the server folders.

Chapter 8: Configuring a Dedicated NetCollect Server 2008

This is a specific step-by-step example of a complete from-scratch server build. We started with a “bare” cloud 64-bit Server 2008 R2 (from Rackspace Cloud). The vendor supplied web connections, control panel and console for basic access to this remote server. We interfaced to it with both Windows XP Professional and Windows 7 Ultimate client laptops. It had a static IP 184.106.145.155 which we have used throughout the example.

It came with only the IIS 7 web Role installed and a few Features enabled. The startup screen via Remote Desktop Connection was:

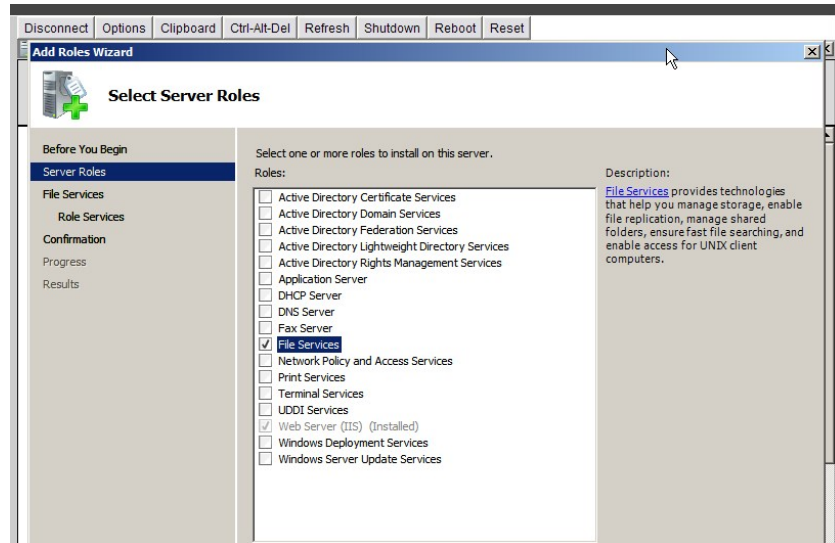


We set the time zone and updated the default Administrator password. Since this was to be a standalone server we left it in Workgroup mode rather than enabling Active Directory Domains.

We checked **Do not show this window at login** and closed it. The Server Manager already had a shortcut in the task bar. If yours does not, look in **Start | Administrative Tools** for the **Server Manager** entry and **right-click drag** a shortcut onto the desktop.

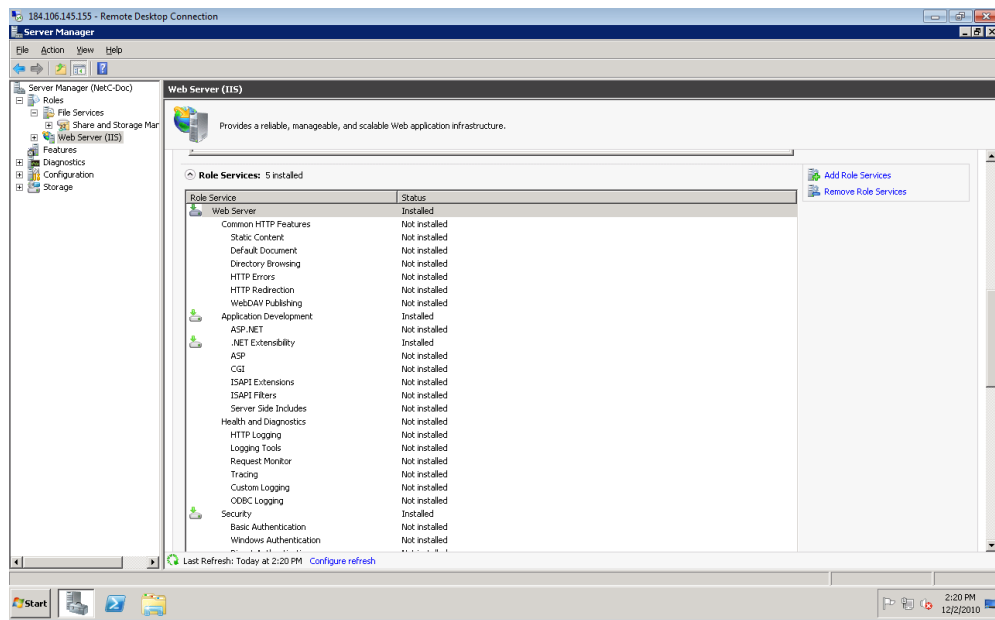
Add Role Services:

Opened Server Manager, clicked **Add Roles** to install the **File System** (aka NTFS).



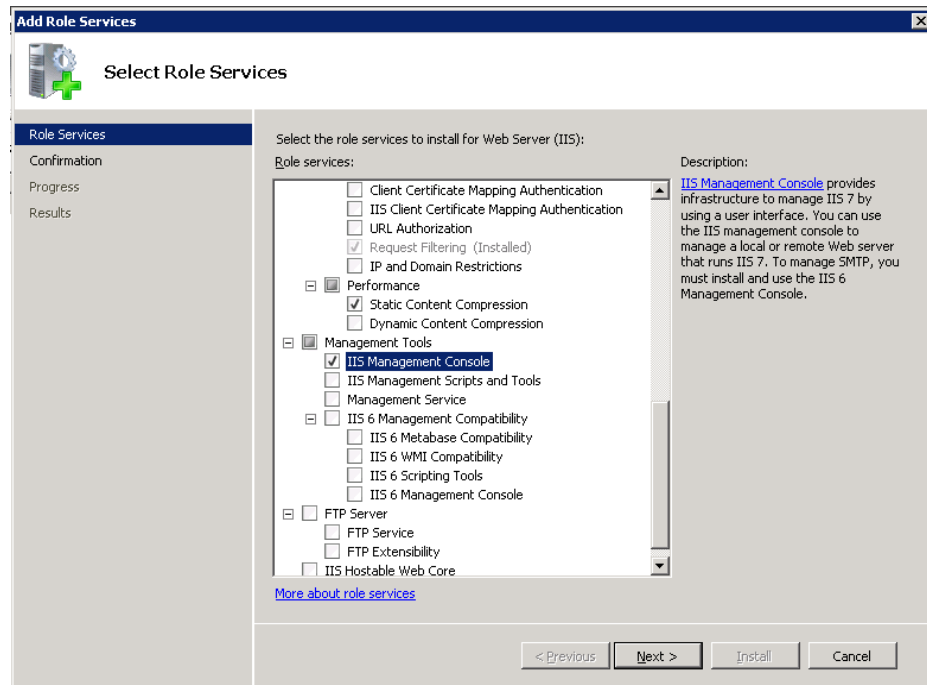
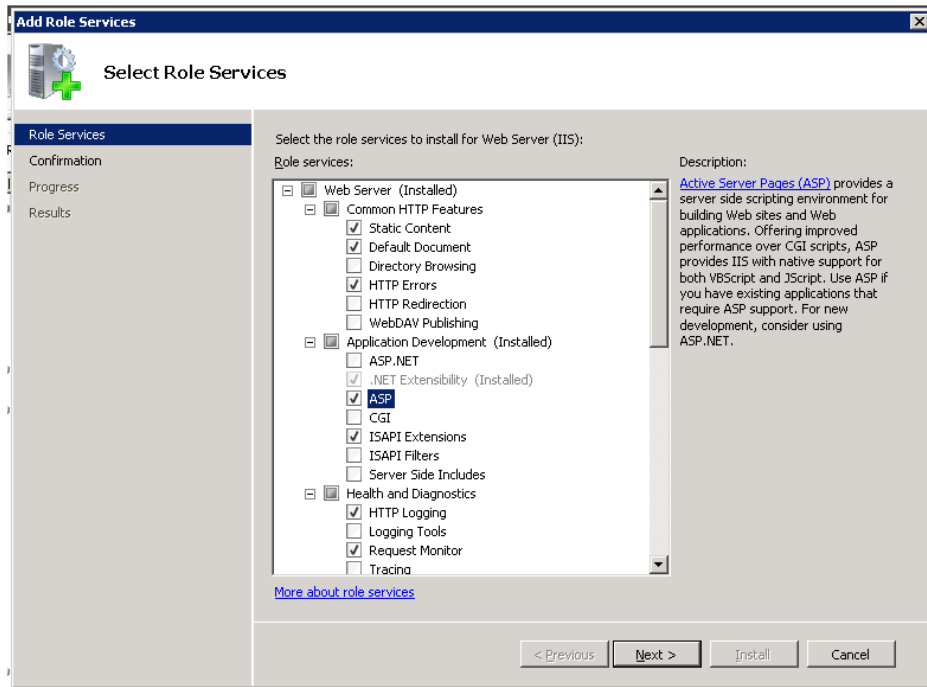
By following the wizard steps, which did not require any additional services, NTFS was confirmed and installed.

Back in the Server Manager we selected **Web Server (IIS)** from the **Roles tree** at the left to show the Role Services currently installed.



Note that not even Static HTML pages was turned on. Browsing a client to our IP returned a blank page with a completely empty `<body>`.

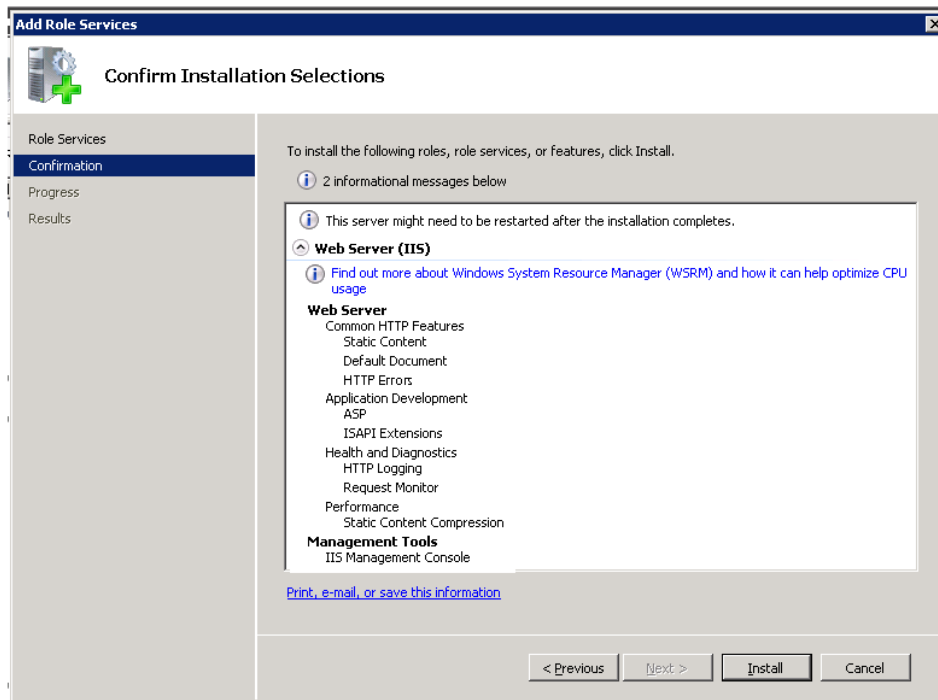
We went into **Role Services** to enable what NetCollect would need:



□ Classic ASP:

NetCollect uses **ASP Classic**, which requires **ISAPI Extensions** and **Request Filtering**. It also uses **Static Content** and **Default Pages**. It does not need ASP.Net or CGI although there is no harm turning on any additional services you might want for other purposes. We added **Static Content Compression** but did not enable *Dynamic Compression* because it would reduce performance. We added the **IIS Management Console** to simplify administration. We added **HTTP Errors** so basic web page error messages like 404 will be sent to browsers. We *did not* add the FTP Server from this services list because this is the older version. Refer to FTP installation below for more.

Clicked **Next** and the confirmation page was:

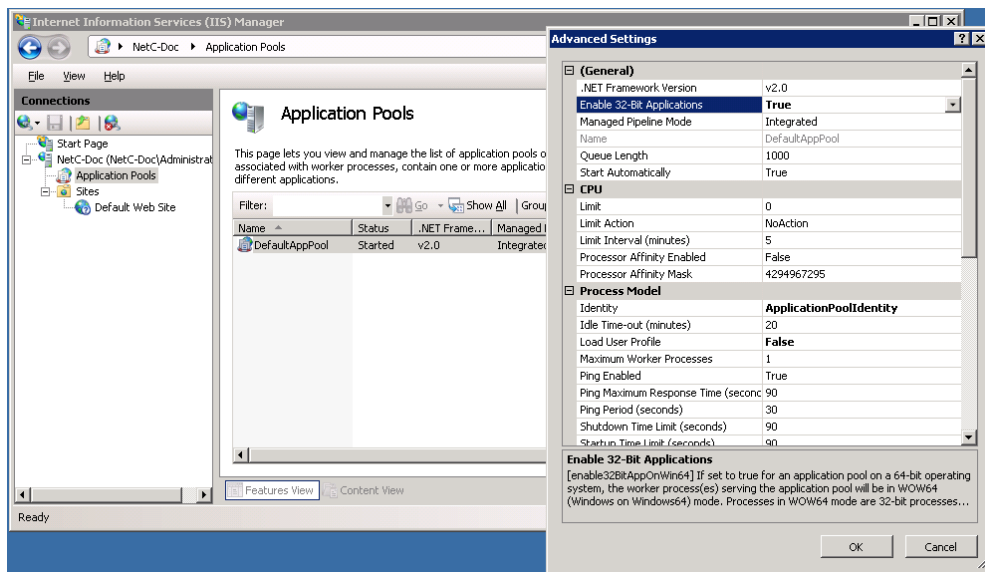


Clicked **Install**. Installation was completed OK, clicked **Close**.

At this point we placed shortcuts to IIS Manager and the c:\ file system on the desktop for convenience.

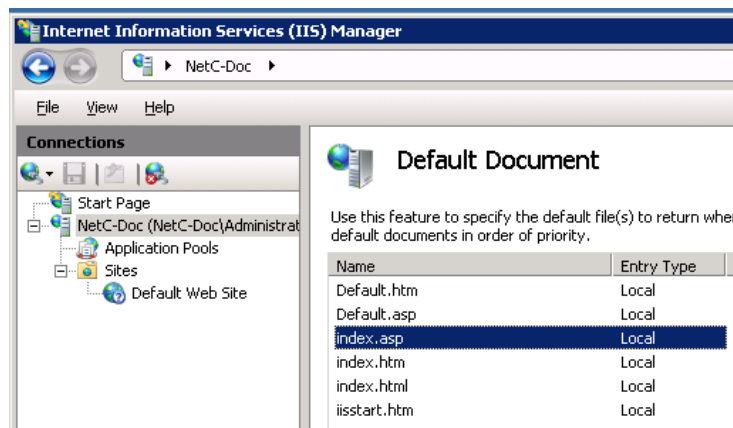
❑ 32-bit DLL:

Since this was a 64-bit system, in IIS Manager we selected **Application Pools** in the tree and the **DefaultAppPool** to set **Enable 32-bit applications to True**:



❑ Default Document:

In IIS Manager we went to the **Default Document** and found the required **index.htm** already there. We added the optional **index.asp**. Since there were no other applications dependent on the order, we placed **index.asp** above **index.htm** for a slight performance edge:

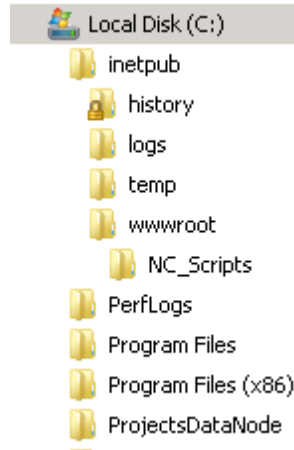


❑ Web Anonymous User:

This was known to be IUSR in Users Group by default on Server 2008 with ASP Classic.

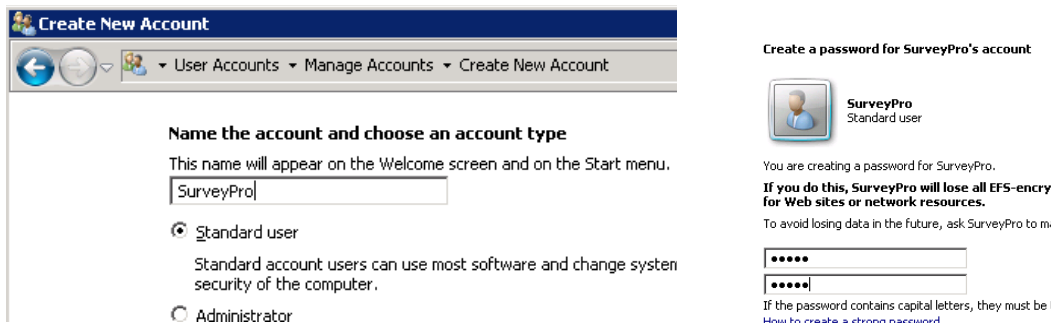
❑ Create Folder Structure:

Assuming this server is only going to be used for surveys, then there was no reason to create a \Surveys\ contents node under wwwroot. However in the interests of security and administrative clarity we **created separate folders** for the scripts and the projects data node, **c:\inetpub\wwwroot\NC_Scripts** and **c:\ProjectsDataNode** respectively.



❑ Setup SurveyPro Client Access:

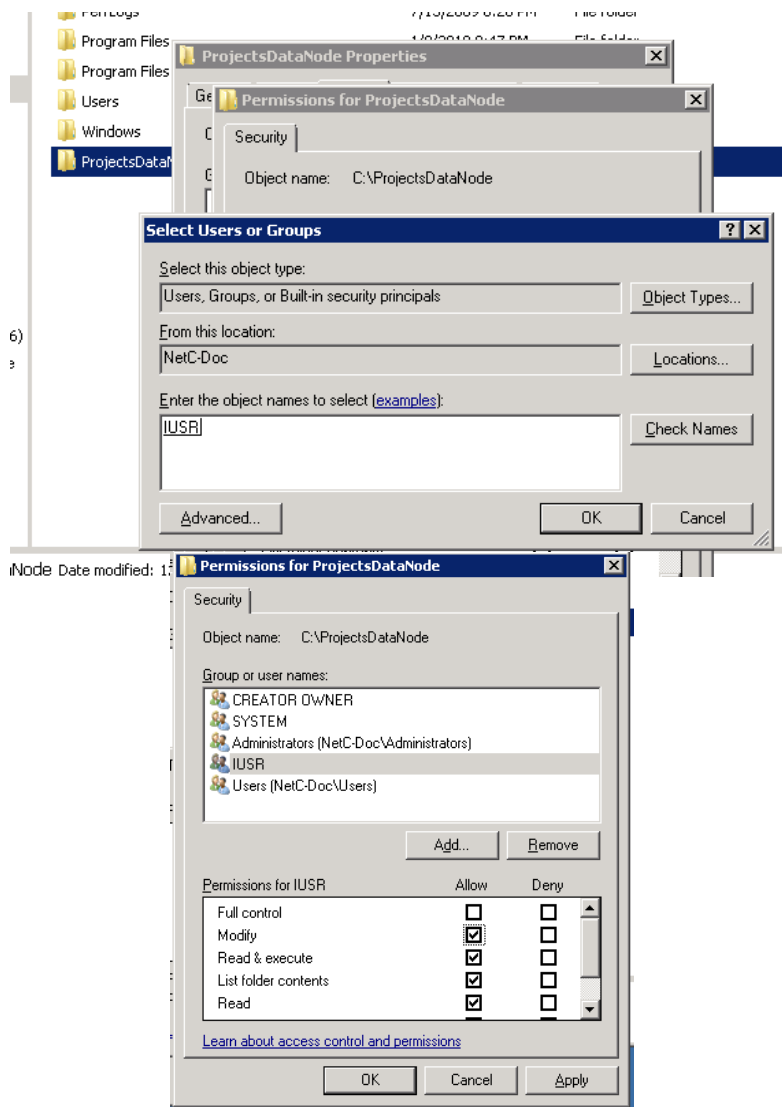
To limit access by the SurveyPro users to just the surveys content and projects data nodes, we first created a new user named SurveyPro for file upload-download purposes in the Control Panel User Accounts **Create new account**, then gave it a password:



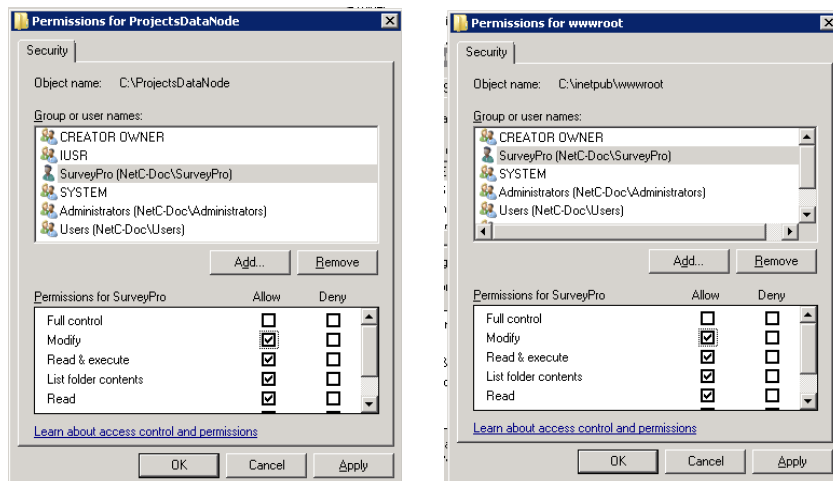
❑ Set NTFS Permissions:

Users, including the web anonymous user for classic ASP which defaulted to IUSR, had sufficient read-execute access to the survey content and script folders by default. However we had to give the Users group, or preferably just IUSR, permission to Modify the projects data folder so the respondent's survey results can be saved.

We **right-clicked** the folder, selected **Properties**, went to the **Security tab**, and clicked **Edit** under the users list to get the **Permissions dialog**. Under its Group or user list click **Add**, enter **IUSR** and click **OK**. Back in Permissions clicked to **Allow Modify** and clicked **OK** and **OK** to save the changes.

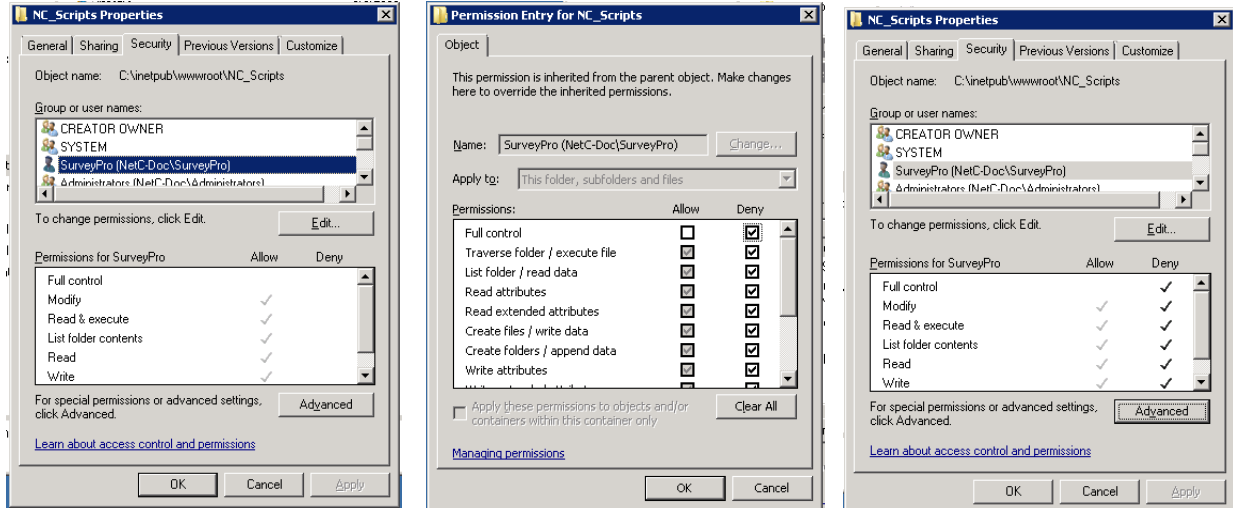


We gave the **SurveyPro** user **Modify** access to the c:\inetpub\wwwroot\ folder (our surveys content node) and the c:\ProjectsDataNode folder in the same way as done for IUSR above:



When the SurveyPro client creates new folders under these nodes for new projects they will inherit these permissions.

For security let's deny SurveyPro users permission to access the scripts which they otherwise inherit from wwwroot. Drill down to the **Advanced Permissions** for the **SurveyPro** user and **deny everything**:



Note that if you decide to add other web activities under wwwroot you would need to explicitly deny SurveyPro access to each one of them, which is an argument for creating a surveys content node as a virtual site instead.

❑ Set IIS Permissions:

A Separate setting is not required in Server 2008; it's part of file permissions above.

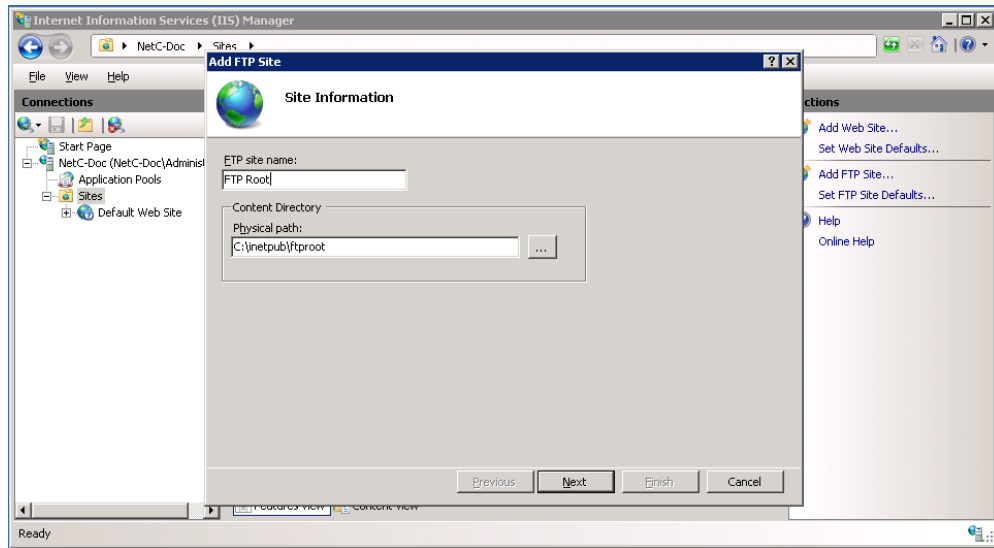
FTP Setup:

The next thing needed was a way to move files to our cloud server, first to install the NetCollect application and later as a method for SurveyPro to upload and download files for users. The next section covers FTP setup for these purposes. (In an existing server this may use LAN or VPN access instead).

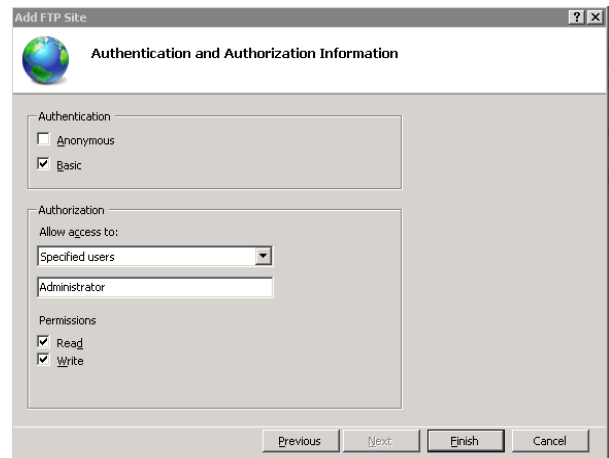
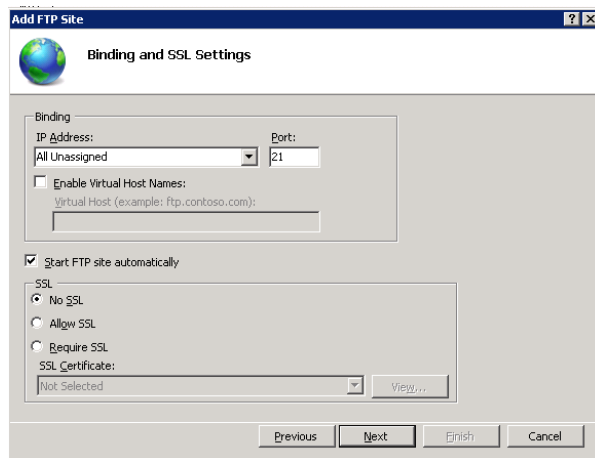
You may see a FTP Publishing Service under Role Services section – *we did NOT select this* -- it was the outdated version.

First we went to the **IIS Manager** tree and **right-clicked** on the **Sites** node. If the pulldown list has both *Add Web Site* and *Add FTP Site* options then the latest version is already installed. Ours did not so we went to the Microsoft site <http://www.iis.net/download/FTP> to **download and install FTP 7.5 or later** to our server. Since Internet Explorer is highly locked down by default we had to give it permission to download files and access the download site URLs. (You can also go to the Server Manager, Server Security, click Configure IE ESC and turn off Enhanced Security for Administrators). We needed to **close and reopen** IIS Manager to get the *Add FTP Site* option to appear.

In **IIS Manager** select **Sites** in the tree and click **Add FTP Site**:

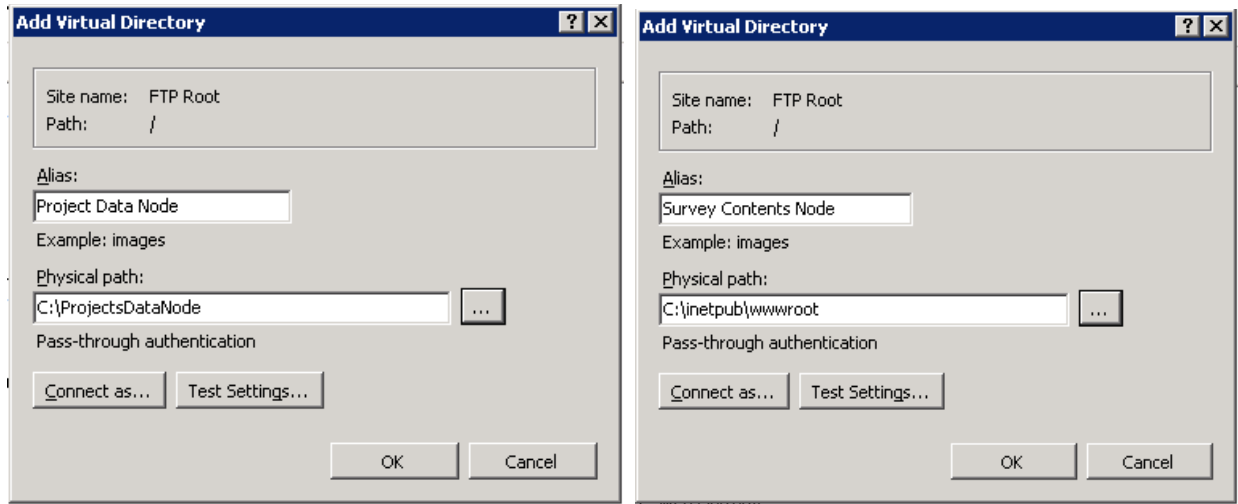


Click **Next** after entering the site name and directory. We did not have an SSL certificate so we disabled that option and clicked **Next**:

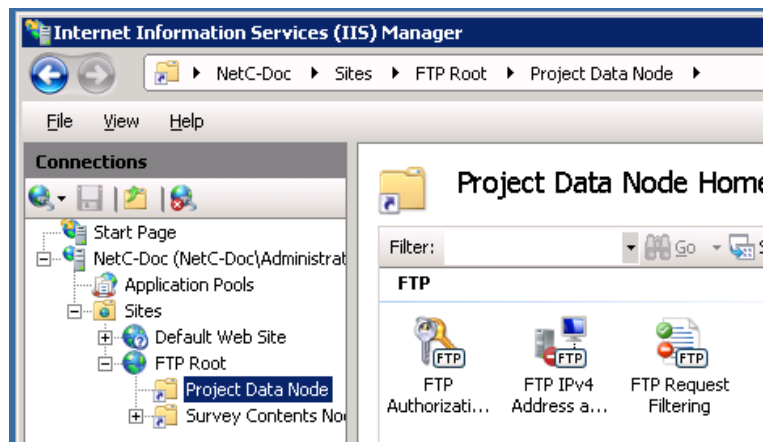


We selected **Basic Authentication** with access for the **Administrator** to **read** and **write** to the root, and clicked **Finished**.

Back in **IIS Manager**, we **right-clicked** the **new FTP Root** and selected **Add Virtual Directory**. We did one for the **Projects Data Node** and one for the **Surveys Content Node** which is **wwwroot**.

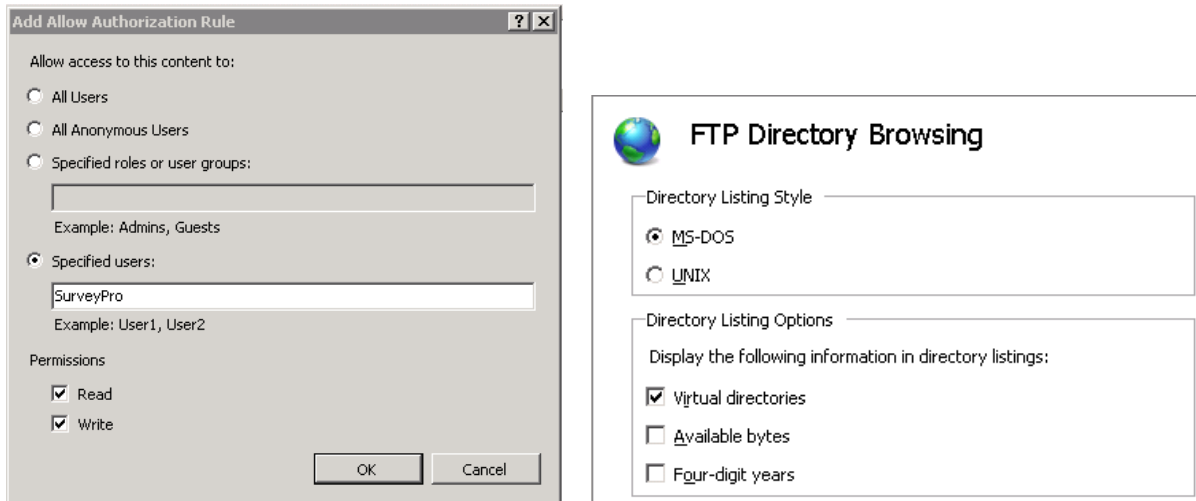


The result was:



We had already given the SurveyPro user Modify file permissions. However we had not yet given FTP authorization to the SurveyPro user (note that you have to give access to the ftp root rather than confining access to the two virtual directories).

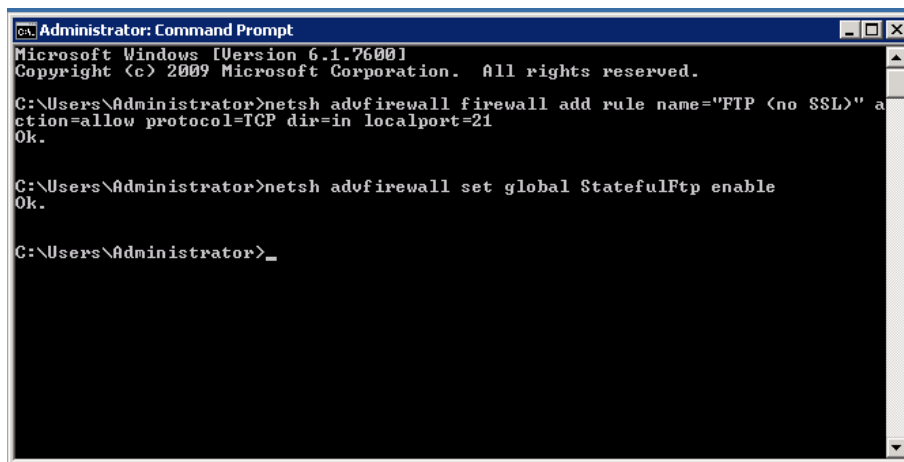
For the **FTP Root** we selected **FTP Authorization** which showed the allow rule for the Administrator set initially. We clicked **Add Allow Rule** and set it for the specified **SurveyPro user** to **read** and **write**. Also give the FTP client **Directory Browsing** access to the two **Virtual Directories** for the FTP Root:



We next gave the FTP site a test run from a client. It failed to connect and the most likely issue is the server's Windows firewall wanting SSL. We **added two new firewall rules** by starting the **Accessories | Command Prompt** window and executing two rules:

```
netsh advfirewall firewall add rule name="FTP (no SSL)" action=allow protocol=TCP dir=in localport=21
```

```
netsh advfirewall set global StatefulFtp enable
```



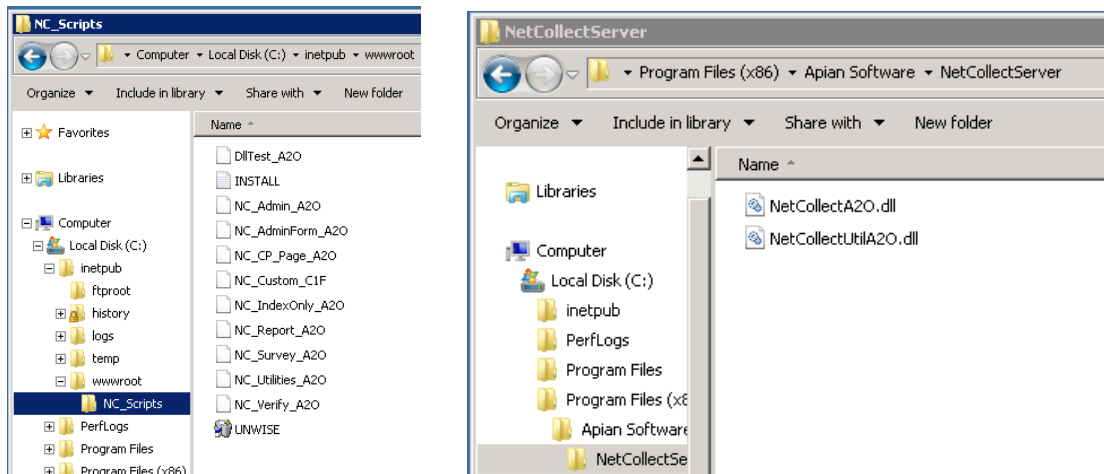
We also found a problem in the default Windows Firewall setup that caused a passive mode error. The built-in rule was for program location `c:\windows\system32\svchost.exe` which did not work, so we added a rule for `%windir%\system32\svchost.exe` which did.

This worked and we were now ready to **upload** the appropriate revision of the NetCollect server application install, **InstallNetCollectServerA20.exe**, to the FTP root. We left it there but you could move it to a downloads folder if you wish.

❑ Install NetCollect Server Application:

We **executed** the InstallNetCollectServerA2O.exe file where A2O is the revision. We **entered** the **SurveyPro serial number**, read and accepted the license agreement, and accepted the **default location for the DDLs** in c:\Program Files (x86)\Apian Software\NetCollectServer\.

We **changed the script location** to c:\inetpub\wwwroot\NC_Scripts\ (without the default \cgi\)) and confirmed it was OK to use the existing folder. After installation we found these had been installed:



If we did not have the NC_SvrVerify_A2O.asp script then our installation build would have been before January 2011. If you encounter this problem please contact support for a copy or download the latest install build.

❑ ServerVerify:

We were now ready to verify the installation by using ServerVerify.exe (instructions p. 17). The first two verify steps could be done from any system including the server itself, but the last step must be done from a client system where the upload/download VPN or FTP locations are valid.

See the next page for the settings.

These were the settings for this server configuration:

Verify NetCollect Server Installation

Demo Installation Revision of server application verified: A20

Web Server: QuestionWeb Local/LAN Disk Remote FTP

(A) Respondent's Browser Site URL

Web Root http or https: http://184.106.145.155/ Test Server Install

Survey Contents Node Sub-URL: _____

Library Script Virtual Sub-URL: NC_Scripts/

(B) Script File References on Server

Survey Contents Node Absolute Path: c:\inetpub\wwwroot\ Test Script Permissions

Project Data Node Absolute Path: c:\ProjectsDataNode\

(C) File Transfer Upload/Download

Survey Contents Node Folder: Survey Content Node/ FTP Connection

Project Data Node Folder: Project Data Node/ Test File Transfers

Save File Open File Copy to Clipboard Exit

FTP Connection

Address: ftp://184.106.145.155/ Passive mode

User ID: SurveyPro Password: ***** Save password

Test Connection Save Cancel

With the ServerVerify complete our server was ready to go.

□ **SurveyPro Client-side Setup:**

We could then go to the client system where SurveyPro was installed, start a web survey project and when we were ready to publish we added a new web site which we named "A2O cloud server" and entered the setup information exactly as shown in the ServerVerify screens. This process is covered in Chapter 7 above.

Chapter 9: Configuring a Windows 7 localhost

If you have Windows 7, you can install a local copy of the Windows Web server on your personal computer to act as a local survey development system. This website will be accessed as <http://localhost/> directly without going out on a network. This is very handy if you:

- Don't have direct access to your production (live) Web servers, and have to ask someone to post your surveys each time they change
- Want to confirm that a problem you're encountering on your production server is due to an issue on that particular server and not part of your survey design
- Want to try advanced features involving database connections or custom programming which are not enabled on QuestionWeb
- Need a test system which works without an Internet connection

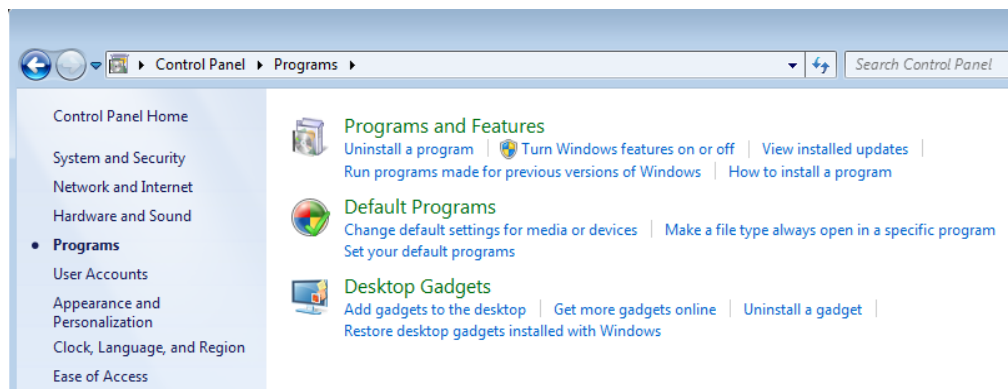
The instructions here walk you through the minimum a SurveyPro web server needs to run.

Important: These instructions are to set up a *testing* Web site accessed *by you* on your local system. This locally installed server is by default not accessible by any other computer or user on your network. If instead you plan to run real Web surveys from your local computer, which we do not usually recommend, use the installation instructions earlier in Chapter 5 for a production server. These instructions assume the system is not going to be connected to the public web so it does not need the tight security that a true web server would require.

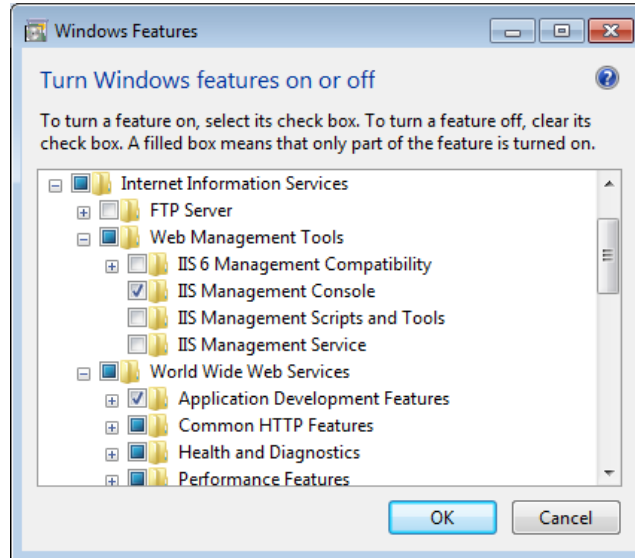
We are also assuming yours is a fairly "vanilla" Windows configuration. If your IT department has applied special configurations you might want to check with them before turning on localhost.

If you are running Windows XP then you will find the installation for localhost in [NetCollect40UserGuide.pdf](#) or in the SurveyPro help files.

To begin enter the **Windows Control Panel** and chose the **Programs** selection for:



Selecting **Turn Windows features on and off** gets you to:



These are the minimum items you should have to service survey pages, but there is no problem if your system has more features enabled.

Under **Web Management Tools** enable the **IIS Management Console**

Under **World Wide Web Services** turning on all the **Application Development Features** is easiest (at a minimum you need *ASP* and *ISAPI Extensions*).

Under **Common HTTP Features** you need a minimum of **Static Content**, **Default Document** and **HTTP Errors**.

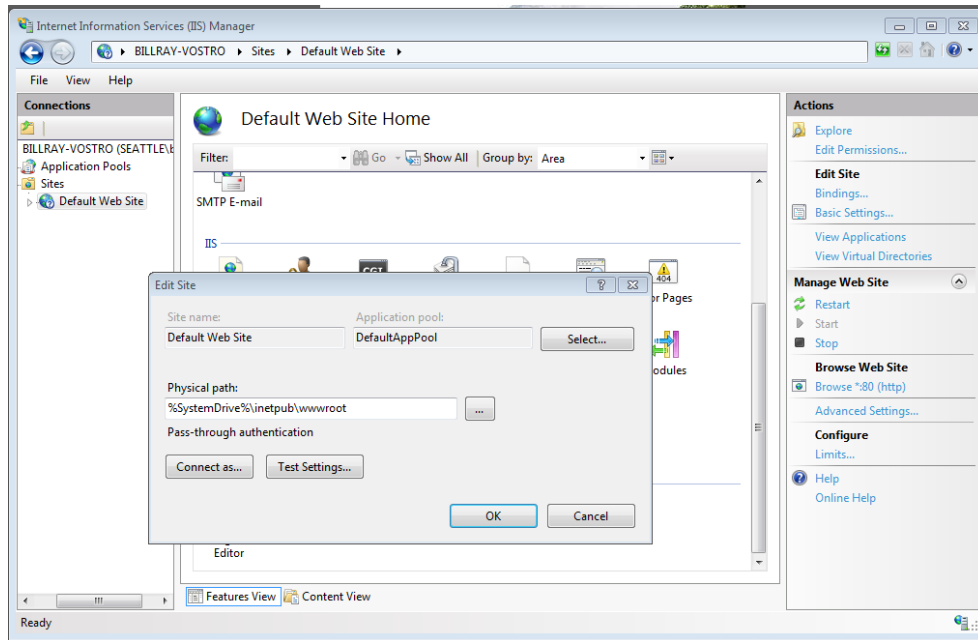
Under **Health and Diagnostics** you want at least **HTTP Logging** and **Request Monitor**.

Nothing is required under *Performance Features* or *Security*.

Click **OK** and deal with any Windows dialogs to get any new roles and features installed.

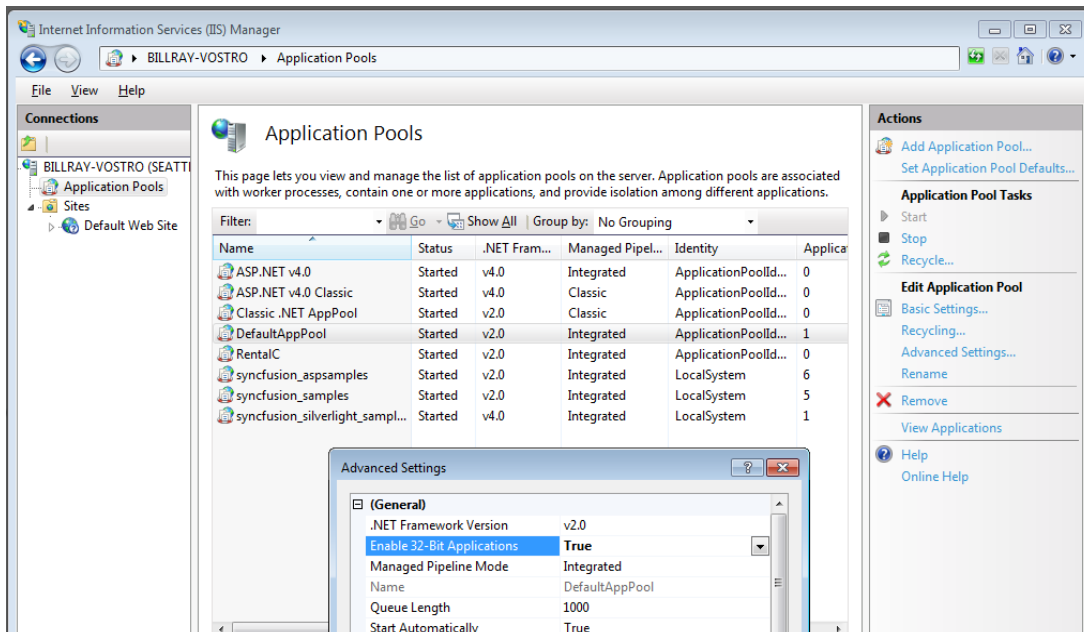
Go to **Start | All Programs | Administrative Tools** and you should find the Internet Information Systems (IIS) Manager listed. You will probably want to put a shortcut somewhere for this.

Open the **IIS Manager**, select the **Default Web Site** and click **Basic Settings** and make note of the **Application Pool** assigned which is normally the **DefaultAppPool**:



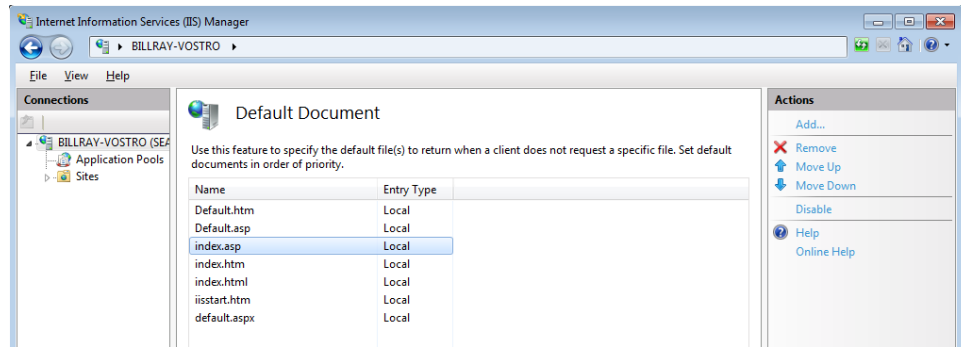
Cancel out of the Edit Site dialog.

If this is a 64-bit computer: select **Application Pools** and then the **pool** noted above, select **Advanced Settings**, and set **Enable 32-bit Applications** to **True**.



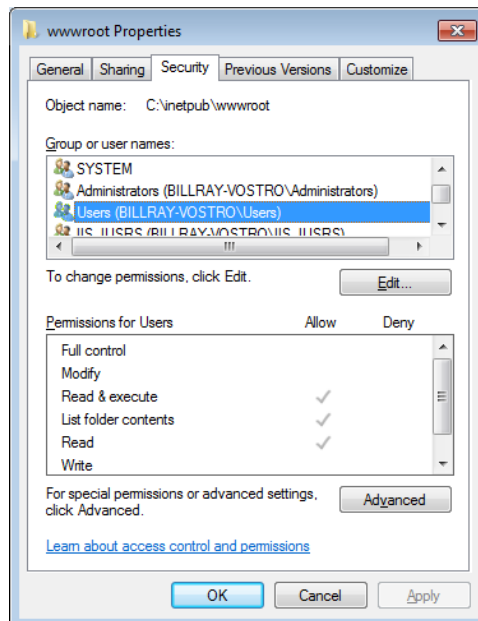
Click **OK** to make the change.

In the **left-hand tree** select the top level in the tree and double-click **Default Document**:



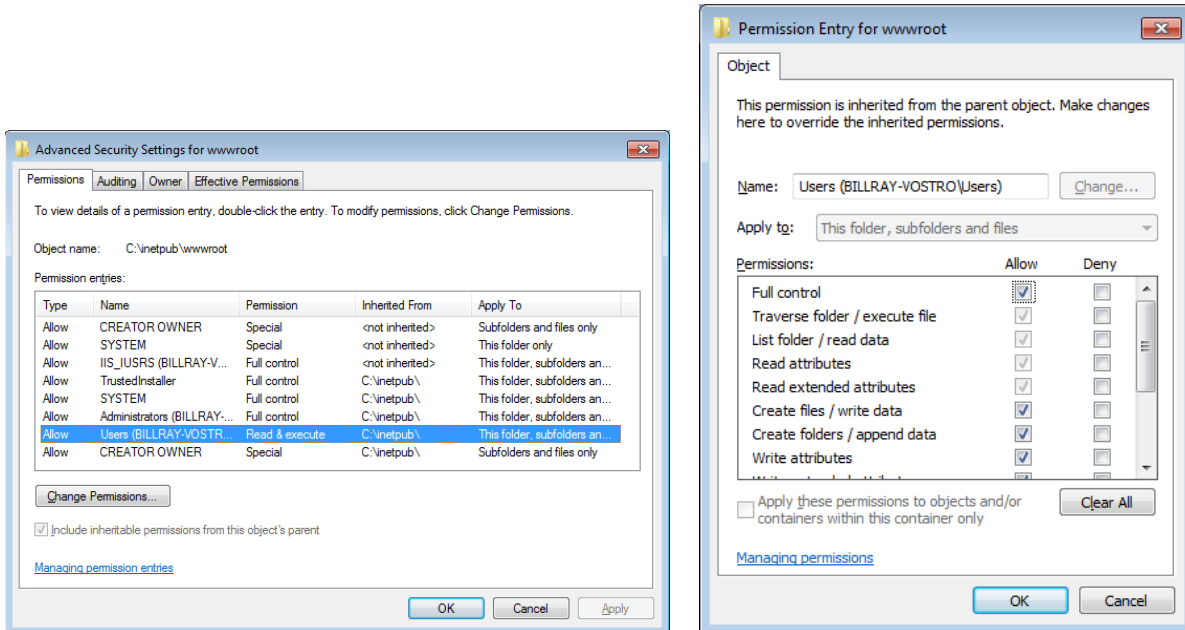
If index.asp is not already in the list, add it now.

We are going to keep this simple for this development setup by using the wwwroot folder as both the contents and projects node, which means we need to allow data to be written into the wwwroot and its sub-folders, which are not the default permissions. **Open Windows Explorer**, select the **c:\inetpub\wwwroot** folder, **right-click** for the menu and select **Properties**. In the Properties dialog select the **Security** tab. Scroll to the **Users group** (which contains the anonymous IUSR):



Since it does not have write or modify permissions, click the **Advanced** button.

In the Advanced dialog click the **Change Permissions** button, select the **Users group** and click the **Edit** button. Click the **Full Control Allow** checkbox and close this nest of dialogs with the **OK** buttons.

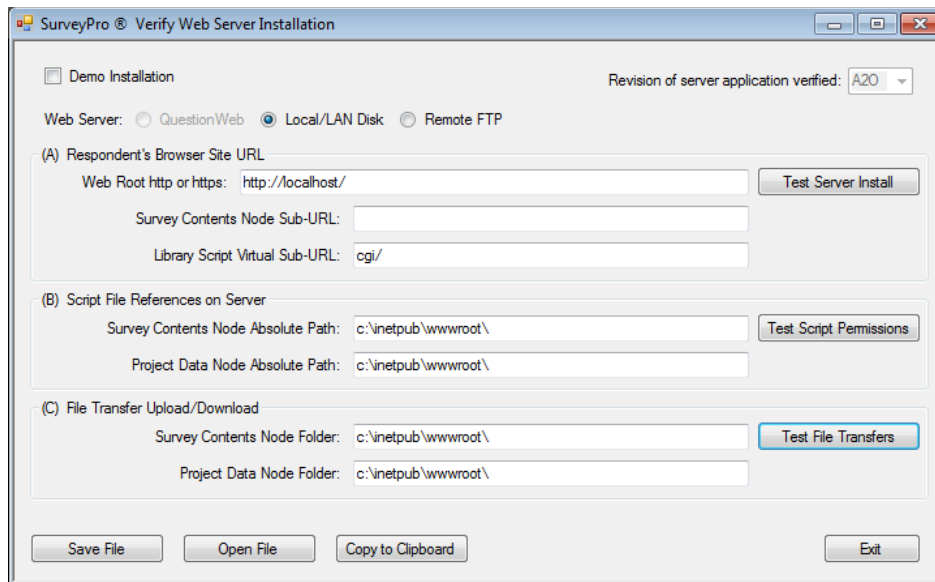


We have been assuming that security of the web site and folders can be relaxed because this server will not be connected to the public web. If you are running the Windows Firewall you can verify this by going to Start, All Programs, Administrative Tools and selecting Windows Firewall with Advanced Features. Normally Inbound Connections are blocked unless a rule explicitly enables something. Select Inbound Rules. Normally web access would be controlled by the built-in rule WWW Services (HTTP Traffic-in). Scroll down to confirm that TCP on port 80 is NOT enabled.

If you have not already **installed SurveyPro 5**, do so now. You may want to check that you have the latest version at <http://apian.com/downloads/> or contact Apian Support.

In the SurveyPro files, normally found under c:\Program Files (x86)\Apian Software\Survey Pro 50\, find the **..\Web Server Install\ASP\InstallNetCollectServerA20.exe** where A20 is the server application revision. **Install** it following the instructions on p. 16. The simplest thing for localhost is to install in the **suggested defaults**: scripts in c:\inetpub\wwwroot\cgi and DLLs c:\Program Files (x86)\Apian Software\ (x86 is added for 64-bit systems).

You should now be able to **run ServerVerify**, also found in the Web Installs folder, according to the instructions starting on p. 17. The verification screen is:



Then follow the instructions starting on p. 41 to set the web structure in SurveyPro for localhost development. Give it a different name from your production server, like "localhost", so you can re-publish and upload there later to take your design on-line.

The Default Web Site you created on your hard disk at c:\inetpub\wwwroot\ should now be accessible from your browser as <http://localhost/>.

Important: when you publish surveys to localhost, be sure to use a different folder for the local publish destination from your server nodes, then "upload" to the server folders. In other words be sure you emulate a separate server computer so far as the survey files are concerned.

Appendix: High Volume Surveys

There are two ways to generate high load on a survey. The first is to simply have a lot of visitors all the time, such as on a large e-commerce site or a large company's intranet. The second method is to generate artificial spikes in visitors. The most common approach for web surveys is sending e-mail invitations, but any event such as a television broadcast or trade show can generate surges of visitors. Generally e-mail drops produce an immediate response which sharply falls off in the next 24-48 hours. Sending e-mails in batches (batch control is available in SurveyPro's Respondent Emailer) or even simply sending them in the middle of the night (rather than at 9:30am when all your employees are at their desks) helps manage the inbound traffic.

When contemplating the load on your surveys, you need to think in terms of how many respondents you need to handle per minute. Shorter durations such as two respondents in 1/100th of a second are handled by SurveyPro's server application. Longer durations, such as an hour, are a useful reference point but don't represent how the server application handles arriving respondents.

What constitutes high volume? With the capabilities of server hardware at this writing very few surveys will push the limits of a web server unless it is very busy already with other work or a large email drop is badly planned. A quick rule of thumb would be to estimate two parameters:

- At peak load how many unique new visitors per minute would you expect to sustain?
- How many survey pages would the average visitor be completing or reviewing?

Multiply these for how many pages the server must provide per minute. If more than about 100 per minute you should continue reading. Otherwise server load is unlikely to be a concern since typical SurveyPro pages are serviced in much less than 50 msec of CPU time.

This section will help you understand what SurveyPro's server application is doing behind the scenes, so you can better assess whether your surveys are high load, and how to check on the performance of your servers.

CPU Management:

The server application uses flat files instead of databases, both to minimize server system requirements by making SQL optional, and because compiled code with smart conflict handling let us read and write very quickly to the files. However, IIS tends to be fairly simple minded when two visitor instances attempt to access the same file at once. Normally when this file contention happens, IIS would hang on to the CPU for all the visitors trying this and jam up the system. Instead of letting this happen, the SurveyPro server application allows one IIS instance to let loose of the CPU and then retries in a few milliseconds, keeping traffic moving. These retry requests are logged for analysis.

There are also a couple of system intensive maintenance routines, such as merging any abandoned survey sessions into a data file (high volume surveys may generate over ten thousand). When the server application is running these administrative functions, it restricts the amount of CPU used to ~25% so you don't have to worry about it impacting survey respondents or other processes.

Handling Inbound Respondents:

One of the worst things for a server administrator to hear is “Oops, we sent all 100,000 e-mails at once” because once they’re out there, it’s impossible to keep people from trying to hit the server. It’s like a self-inflicted DSN attack. This is why the first thing the server application does is check how many people are taking a particular survey, and if necessary, lock out new entrants. Because this function is most critical in high load situations, it was designed to access a minimal number of files and CPU cycles.

Each time a respondent clicks Next on a survey page, the server application has to handle the request. Some surveys will have 2 pages, some have 30 or more. By default, surveys publish with a capacity limit of 500 pages per minute. So if a survey is 10 pages long, NetCollect will allow 50 respondents to start the survey in a rolling 60 second period. The 51st person trying to start the survey in a minute will get a “try back later” message. Respondents resuming a paused survey are always allowed in.

The 500 page/minute throttling limit was set as a conservative number several years ago; today’s hardware makes it more conservative and subject to revision after careful analysis. Both the overall limit of 500 pages per minute and the number of pages per respondent may be adjusted in each survey’s Control Panel, which is SurveyPro’s web survey dashboard. Direct your SurveyPro users to the Advanced Options, Server Load Protection page (see page 329 in the NetCollect40UserGuide.pdf).

Depending on your server capacity, you may want to establish a higher or lower pages/minute limit that you tell your SurveyPro users to use. Or you may want to adjust the limit up or down for individual surveys which are particularly straightforward or system intensive (SQL connections, lots of field checks that can produce page reloads, etc.). While NetCollect knows the number of HTML pages it publishes for each questionnaire and uses that as the default for surveys, in some cases that value isn’t very representative of actual server load. If a survey is very skip/branch intensive, then typical respondents may only complete 10 pages of a 50 page survey. In those cases, the SurveyPro user can adjust the Typical Survey Pages setting to a lower value without jeopardizing performance.

Server Application File Reads and Writes:

SurveyPro’s server application uses the best practices possible for fast file opens, reads and writes. If you have concerns about whether a particularly large file is slowing performance, the best way to discover the impact is to run an experiment. Go through the survey a few times with the full copy of the pipe or other file. Then try completing it another few times with an abbreviated source file. Note differences in the execution times recorded in the log, and if necessary, adjust the throttle limit to reflect the heavier hit on the pages which do the piping (not all survey pages would be impacted). In many cases, you may be surprised at the execution times—for example the respondent authentication files are structured to allow binary searches, letting a million values be accessed almost as quickly as a hundred. With the occasional exception of piping pages, the first and last pages of a survey will be the most system intensive because initiating and closing a respondent session involves more files and modules than middle survey pages.

Adding Capacity:

In some cases, the SurveyPro user may say 500 pages per minute just isn't enough. The best way to handle this is to use a higher performance box, either by upgrading the entire system or by adding processors. Adding a dedicated server for the survey to your cluster or perhaps redirecting survey requests to a rented cloud server to handle a specific project is likely to be the quickest, cheapest and simplest solution.

If you are seeing lots of file retries, you can look into faster data writes, either by going for a higher performance hard drive or by upgrading any LAN connections between the IIS server and where data is being written.

You can also look at load-balanced front-end servers, but keep in mind that all respondents to a particular survey need to be writing to the same data folder. This also only solves the problem of high CPU usage on the IIS server, so if you're seeing lots of file retries being recorded, this will only exacerbate the problem.

Also to address frequent file retries, you can "clone" surveys. This is similar to server mirroring, where a complete copy is made of the survey project, including a copy of the data folders. In this case, you create a switcher page that randomly directs respondents to one of the clones, or you can parse your e-mail list to send respondents to specific clones. Note: Switcher pages do not work with one-time individual passwords as the respondents would be able to access each clone one time. Leave/resume would also be limited to bookmarks with a switcher page, rather than re-entry with a code.

Checking the Logs and Doing the Math:

The IIS logs are of limited use in evaluating survey performance. Instead, check the NetCollect logs for particular surveys found under the Projects Data Node. The main project _WIP.log will record execution times for each script request, including file access retries and any errors. The Throttle.log will reveal the time and number of respondents at its peak (handy for convincing users that the 500 pages/minute limit is more than enough).

See *Reading the Log Files* on page 362 of the NetCollect40UserGuide.pdf for how to decipher the entries of both the main _WIP.log and the Throttle.log.

When you review the logs, you'll see page submits in milliseconds. With a little math, you can translate that to how much server capacity each page submit is taking.

1. Take at least 4 passes through a survey at the same times respondents will (not midnight). Find the average time it's taking to submit pages for the survey. (The first one after publish and upload will be misleadingly long as IIS loads its buffers the first time.)
2. Say it's averaging 20 milliseconds to process a page. There are 60,000 milliseconds in a minute. This translates to a theoretical capacity of 3000 pages/minute for the survey. (Multiply that 3000 by the number of load balanced front-end servers if applicable.)
3. Now consider how much of your total processor you want to allot to one application. If it's 25%, then the maximum you could set this survey to is 750 pages/minute. Generally you'll want to keep it under 50%.

The allowed processor is the throttling algorithm's safety cut-off, not a fixed slice of the pie. For example, on Apian's servers, if you totaled "allowed maximum" processor for all the surveys live

at any time, you'd be well over 100%. However, very few of those surveys get anywhere near their capacity limit. Of the ones that do have high volumes, very few are doing so on a sustained basis. Instead they're being driven by e-mail invitations which are on staggered schedules—and often staggered time zones.