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This document describes the Tracker Sync Web Service configuration and implementation.

# **Directory Structure**

The layout of the web service directory structure is shown to the right. You would normally copy the entire *TrackerSync* directory structure to your web server and then configure it as described in the next section. The *Sync.asmx* file is the actual web service referenced by the *Tracker Sync Editor* application. *TrackerSync.sln* is a Visual Studio .NET 2005 solution file for editing the web service program. The *web.config* file has a number of user-configurable settings as discussed later in this document.

Inside the *App\_Code* directory is a code file that contains the programming of the web service. It should not be edited directly but rather should be maintained through editing the solution via Visual Studio .NET 2005.

The *App\_Data* directory contains the *CourseLessonStudentInfo.mdb* Access



database as shown to the right. This database contains "assignment" tables that map up the TBK Tracker courses, lessons, and students to the corresponding data in the Tracker.Net instance.

These tables are covered in detail later in this document.

Folders	~	Name
⊿ 퉲 TrackerSync 🐌 App_Code 🐌 App_Data	*	🐴 CourseLessonStudentInfo.mdb

# Deploying the Web Service

To begin working with the web service, you must put its directory structure on the web server and make it into an ASP.NET 2.0 virtual directory/application. This is shown below.



If your local computer has Internet Information Services (IIS) and ASP.NET installed, you can do this locally for testing as well. If you have multiple versions of the .NET runtime on the web server, then you will be able to choose 2.0 from the ASP.NET tab as shown to the right (note that this screen capture is from a different virtual directory but the choices would the same for TrackerSync).

Note: If you are running IIS 6 or later, it is critical that

TrainingStudioTracker Propertie	25	<u>? ×</u>
Virtual Directory HTTP Headers	Documents Custom Errors	Directory Security ASP.NET
Microsoft ASP.nc	rt	
ASP.NET version:	2.0.50727	<u> </u>
Virtual path:	1.0.3705 1.1.4322 2.0.50727	
File location:	D:\TrainingSwglio\Tr	ainingStudioTracker\web.c
File creation date:	10/30/2006 4:10:08	РМ
File last modified:	11/13/2006 6:06:54	РМ
	<u>E</u> di	Configuration
0	K Cancel	Apply Help

## you select an application pool that <u>only</u> has ASP.NET 2.0 applications in it.

Mixing .NET 1.1 and 2.0 applications within the same pool can cause both the web service and the 1.1 application to fail. The setting for an application pool is shown to the right.

Another view with IIS 6 and the Vista interface is shown below.

200	6bobtest Properties	;			1	2 X
D	irectory Documents The content for this r	Directory Securit esource should c	y HTTP Headers	Cust	om Errors	1
	e	The <u>d</u> esignated	directory			
	C	A share located	on another comput	er		
	0	A redirection to	a <u>U</u> RL			
	Lo <u>c</u> al path:	\2006bobtest				
	Script_source acce     Read     Write     Directory browsing	ss 1	<ul> <li>✓ Log visits</li> <li>✓ Index this re</li> </ul>	source	е	
	Application settings					
	Application name:	2006bobtest			R <u>e</u> move	
	Starting point:	<4donlinetrair	ning.com>\2		Carl Committee	
	Execute permissions:	Scripts only		•	Connguration	
	Applicatio <u>n</u> pool:	DefaultAppPo	ool	•	Unload	
		DefaultAppPo MSSharePoint plesk(default	ol AppPool Apool)			
		ОК	Cancel	App	Help	

File       View       Help         Connections       Actions         Path       Actions         Path       Path       Actions         Path       //       Basic Settings         Scheduler       Scheduler       Basic Settings         Scheduler       DefaultAppPool       Beowse         Edit Application       Bowse       Edit Application         Scheduler       Optication pool:       Select       Basic Settings         Scheduler       Optication pool:       DefaultAppPool       Bewase         Example: sales       Physical path:       Optication pool:       Pressed polication pool:         Tracker3 or       Tracker3 or       Connect as       Select Application Pool       PersutAppPool         App_Code       App_Data       Optication pool:       Classic NET AppPool       AppRot         TrainingStudioTracker       TrainingStudioTracker       Image Connect as       Image Connect as       Other and policition pool:       Classic NET AppPool         TrainingStudioTracker       TrainingStudioTracker       Image Connect as         TrainingStudioTracker       Tracker 3       TrainingStudioTracker<	Internet Information Services (IIS) Manager	Nafault Wah Sita 🔺 TrackarSunc 🔺	
Image Application         Image Application <t< th=""><th>File View Help</th><th>Edit Application</th><th>Actions</th></t<>	File View Help	Edit Application	Actions
		Web Site name: Default Web Site Path: / Alias: Application pool: TrackerSync DefaultAppPool Select Example: sales Physical path: C:\inetpub\wwwroot\VBTrainProducts\TrackerSync w Connect as Connect as OK Fatures View Content View	Pool OK Cancel

You can tell if the web service is set up correctly if you can navigate to the *Sync.asmx* file and see a screen like the one below.



Note that this URL is what is required by the users of the Tracker Sync Editor application.

# Editing the web.config File

The web.config file located in the main directory of the web service has a number of userconfigurable settings. These are all located in the *<appSettings>* area of the file. Each setting is described below. After editing the web.config (and keeping a backup copy of the original), you can replace the one on your web server.

1. **TrackerNetSyncKey**. This key must match the key being sent by the Tracker Sync Editor as described later in this document.

<add key="TrackerNetSyncKey" value="1111111111" />

2. **SendEmailNotificationOfSynchronization**. This setting controls whether the web service sends an email when it receives a synchronization. It can have a value of True or False.

<add key="SendEmailNotificationOfSynchronization" value="True" />

3. **NotificationEmailAddress**. This is the email address(es) to which notification emails are sent. Separate multiple emails by a comma. This setting is only relevant if *SendEmailNotificationOfSynchronization* is true.

```
<add key="NotificationEmailAddress" value="jrhodes@plattecanyon.com" />
```

4. **NotificationEmailMessage**. This is the body of the notification email message. There are placeholders for variable pieces of information as follows.

Placeholder	Value
{0}	Carriage Return Line Feed (e.g., a hard return)
{1}	TBK Tracker Student ID. This in the format of <last name="">*<first< th=""></first<></last>
	Name>* <middle initial="">. An example would be Mullins*Shawn**</middle>
{2}	TBK Tracker Database ID. This is the identifier from the TBK Tracker
	database. This is helpful is there are potentially multiple TBK Tracker
	databases that could be synchronized.
{3}	TBK Tracker Course ID List. This is a comma-delimited list of the TBK
	Tracker Course ID numbers of the courses being synchronized. Note that
	these Course ID numbers do not necessarily match those of the Tracker.Net
	instance but that the associated Tracker.Net Course ID is stored in the
	TBKTrackerTrackerNetCourseAssignment table of the
	CourseLessonStudentInfo.mdb database.
{4}	TBK Tracker Lesson ID List. This is a comma-delimited list of the TBK
	Tracker Lesson ID numbers of the courses being synchronized. Note that
	these Lesson ID numbers do not necessarily match those of the Tracker.Net
	instance but that the associated Tracker.Net Lesson ID is stored in the
	TBKTrackerTrackerNetLessonAssignmenttable of the
	CourseLessonStudentInfo.mdb database.

This setting is only relevant if *SendEmailNotificationOfSynchronization* is true.

```
<add key="NotificationEmailMessage" value="Dear
Administrator,{0}{0}There has been an TBK Tracker to Tracker.Net
synchronization from Student ID '{1}' on TBK Tracker database
'{3}. The synchronized TBK Tracker Course ID's are '{2}' and
Lesson ID's are '{4}' {0}{0}Sincerely,{0}{0}The Tracker Sync
Team" />
```

5. **NotificationEmailSubject**. This is the subject line of the notification email. This setting is only relevant if *SendEmailNotificationOfSynchronization* is true.

<add key="NotificationEmailSubject" value="Tracker.Net Synchronization Notification" />

6. **NotificationEmailReplyAddress**. This is the reply address of the notification email. This setting is only relevant if *SendEmailNotificationOfSynchronization* is true.

<add key="NotificationEmailReplyAddress" value="support@plattecanyon.com" />

 smtpServer. This is the Simple Mail Transfer Protocol (SMTP) server for the notification email. This will be specific to your web server. If you are running the web service on your local computer for testing, you would put the machine name in for this setting. You can get the machine name via *My Computer – Properties*. Using the machine name or "(local") works for some web servers as well. This setting is only relevant if *SendEmailNotificationOfSynchronization* is true.

<add key="smtpServer" value="relay.yourmailserver.com" />

8. **ConnectionString**. This is Tracker.Net connection information needed to connect to the Tracker.Net instance you are synchronizing. This should match the *ConnectionString* of the web.config file in the root of the Tracker.Net instance itself.

```
<add key="ConnectionString"
value="server=(local);uid=happy;pwd=happy;database=Tracker3Synch
Test" />
```

9. **PasswordKey**. This is Tracker.Net password key used to encrypt passwords. It needs to match the equivalent setting in the Tracker.Net instance you are synchronizing.

<add key="PasswordKey" value="ThisIsATest"/>

# Editing the CourseLessonStudentInfo Database

As mentioned earlier in this document, assignment information between TBK Tracker and Tracker.Net is stored in the *CourseLessonStudentInfo.mdb* file located in the \App\_Data directory. An Access database is used rather than a more powerful database like SQL Server since this is largely read-only access and many target end-user organizations may not have a SQL Server license. However, the web service may be edited to use other databases if desired. The tables within the database are shown below.



# TBKTrackerTrackerNetCourseAssignment Table

This table matches up the TBK Tracker Course ID with the corresponding Course ID for the Tracker.Net instance.

CourseLessonStudentInfo : Database (Access 20 Table Tools								
Home Create External Data	atabase Tools Acrobat Datashee	t 🕡						
View Clipboard 5	1 * 詳評 PTT * Refresh All * X	Image: New     ∑ Totals       Save     Image: Spelling       Save     Image: Spelling       Collete ~ Image: More ~       Records   Sort & Filter Find						
Security Warning Certain content in the data:	Security Warning Certain content in the database has been disabled Options							
All Access Objects 📀 «	<b>TBKTrackerTrackerNetCourseAssignm</b>	nent ×						
Tables	TBKTrack - TBKTrackerDatabas	eld - TBKTrackerCourseId - TrackerNetCourseId - Ad						
TBKTrackerTrackerNetCourseAssignment	1 SportsSample	1 4						
TBKTrackerTrackerNetLessonAssignment	2 TrainingStudioSamp	ble 1 5						
TBKTrackerTrackerNetStudentAssignment	3 TrainingStudioSamp	ole 2 6						
	* (New)							
	Record: 🛤 🔺 1 of 3 💿 🕨 👪 🏹 N	o Filter Search						
Datasheet View Num Lock 🗇 🕮 🕮 😹 🦼								

The required data is shown below.

# TBKTrackerDatabaseId

This is the identifier from configuration file (typically *tbksettg3.ini*) and selected by the user in the *Configuration Editor* screen of the *Tracker Sync Editor* application. The identifier corresponds to this part of the configuration file:

```
[Databases]
TrainingStudioSample=JET
sportsSample=JET
TraingStudioSample_SQL=SQL
```

The element is used since different databases will have the same TBK Tracker Course ID that will presumably match up to a different Tracker.Net Course ID.

#### TBKTrackerCourseId

This is the *CourseID* from the *Courses* table in your TBK Tracker database as shown below. This course must have a corresponding course in the Tracker.Net instance in order for synchronization to be possible.

Courses	5 - M	icroso	ft Access		Table Tools			
🖉 🕼 Home Create External Data	D	ataba	se Tools Acro	obat	Datasheet			🕜 – 🗖 X
View Views Fields & Columns	Da Fo	rmat:	e: AutoNumber ,	+ + Formatt	Unique Is Required	Relationships Ot Depen Relationships	oject dencies	
Tables 📀	~		CourseID 👻	L	ongName	<ul> <li>Description</li> </ul>	on 👻	hasSelfRegistra
ClassCourseAssignment		B	E 1	TBCO	N <sub>Make this a re</sub>	qui This course has i	information	True UseClobels
Classes		*	(New)	<add< td=""><td>a value. Course Name</td><td>e&gt;</td><td>exams from</td><td>useGlobals</td></add<>	a value. Course Name	e>	exams from	useGlobals
ClassStudentAssignment								
Companies								
CourseLessonAssignment								
Courses	•	Rec	ord: 🖬 🔺 1 of 2	•	No F 🕅 🕅 No F	ilter Search	4	+
Datasheet View							Num Lock	🖪 🗄 🗶 🦼

If you do not want to open the database directly in Access, you can see the CourseID in the *TBK Tracker Administrator* as shown below.

Modify Courses	
Courses are composed of 🛸 lessons. 🌾 Students and/or 🔭 classes are a	ssigned to 🔌 courses.
Course Name       Select a course below to edicitie data. Click the "Add Course" or "Delete Consolid to the select a course of the select a cou	urse" buttons as needed. Open Enrollment True  Password Required useGlobals  Enable 'Print Test' button UseGlobals  Return To Last Lesson Pg True  Show Standard E-mail Button  Show HTTP Post Button ty: Students Assigned Via Class:
Associate Lessons with Course Assign Classes to Course Assign Students to Course	e
Id     Courses     Id     Add Course     Delete Course     Edit Globals	Close

# TrackerNetCourseId

This is the *CourseID* from the *Tracker\_Courses* table in the Tracker.Net instance with which you are synchronizing. You will need to open this table in SQL Server in order to get this value, as shown below.



# TBKTrackerTrackerNetLessonAssignment Table

This table matches up the TBK Tracker Lesson ID with the corresponding Lesson ID for the Tracker.Net instance.

CourseLessonStude	ntInf	o : Database (Access 20	Table Tools			
Home Create External Data	Data	ibase Tools Acrobat	Datasheet			۲
Image: Non-State index i	11	● 課 課 PT ~	Refresh All *	New ∑ Totals Ž↓ Save ॐ Spelling Ž↓ Delete = ⊞ More = 2	Filter	Find by -
Views Clipboard 💌 Font	-	Rich Text	I F	Records	Sort & Filter	Find
All Access Objects 💿 «		TBKTrackerTrackerNetl	essonAssignme	nt		×
Tables 🏾 🕆		TBKT - TBKTracker	DatabaseId 👻	TBKTrackerLessonId 🕞	TrackerNet	LessonId 👻 Adı 📥
TBKTrackerTrackerNetCourseAssignment		1 SportsSamp	e		1	17
TBKTrackerTrackerNetLessonAssignment		2 SportsSamp	e		2	19
TBKTrackerTrackerNetStudentAssignment		3 SportsSamp	e		3	20
		4 SportsSamp	e		4	21
		5 TrainingStud	lioSample		1	22
		6 TrainingStud	lioSample		2	23
		7 TrainingStud	lioSample		3	24
		8 TrainingStud	lioSample		4	25
		9 TrainingStud	lioSample		5	26
		10 TrainingStud	lioSample		6	27 👻
	Re	cord: 🛛 🔸 1 of 10 🔶	🕨 🛤 🔺 No I	Filter Search		•
Datasheet View					Num Loo	:k 🖪 🔀 🕊 🛒

The required data is shown below.

# **TBKTrackerDatabaseId**

This is the identifier from configuration file (typically *tbksettg3.ini*) and selected by the user in the *Configuration Editor* screen of the *Tracker Sync Editor* application. The identifier corresponds to this part of the configuration file:

```
[Databases]
TrainingStudioSample=JET
sportsSample=JET
TraingStudioSample_SQL=SQL
```

The element is used since different databases will have the same TBK Tracker Lesson ID that will presumably match up to a different Tracker.Net Lesson ID.

#### TBKTrackerLessonId

This is the *LessonID* from the *Lessons* table in your TBK Tracker database as shown below. This lesson must have a corresponding lesson in the Tracker.Net instance in order for synchronization to be possible.

Lessons - Microsoft Access Table Tools							
🕑 🕼 Home Create External Data Database Tools Acrobat Datasheet 💿 – 🖘							
View     Paste       Views     Clipboard       Clipboard     Image: Clipboard		in text	Records	Filter	Y Sizeto Switch Fit Form Windows ▼ Window	Find Find Find	
Tables						cription	
Companies 🔺		+ 1	Beatles Exa	am	Tests your knowledge of	of John, Paul, George	
CourseLessonAssignment		± 2	Eagles Exar	m	Tests your knowledge of	of the boys of "Hotel	
Courses 🗌		+ 3	Led Zeppel	lin Exam	See if you know all abo	ut Page, Plant, Jones	
alobals 🗐		+ 4	TBCON Fac	ulty	Learn more about the f	acult of The ToolBool	
		± 5	TBCON His	tory	Learn how the ToolBoo	k User's Conference /	
		+ 6	Van Halen	Exam	Test your knowledge of	f Van Halen.	
LessonTestLog	*	(New)	<add lesso<="" td=""><td>on Name&gt;</td><td></td><td></td></add>	on Name>			
PropertyLessonInformation	Re	ecord: 🛯 🔸 1 of 6	► FL FQ	🐨 No Filte	er Search 🛛 🖣 🛄	)	
testAverageAcrossAllUsers					Num	Lock 🔲 🔀 🖽 🔛 🚛	

If you do not want to open the database directly in Access, you can see the LessonID in the *TBK Tracker Administrator* as shown below.

٠		
Courses are composed	d of <sup>©</sup> lessons, which are individual ToolBook files.	?
Select the lesson below to edit its o	data       Click the Add Lesson' batter to add a new one or "Delete Lesson" to remove the selected lesson.         LessonID       Image: Completion in the selected lesson in the selected lesson.         Description       Tests your knowledge of John, Paul, George, and Ringo         Location       Lessons\Beatles Exam\start_customer1.swf         Ini File Location       Lessons\Beatles Exam\start_customer1.swf         Ini File Location       Description         Database       CD Name         Completion       Test         Minimum       Test         Test Score       80         Iminimum       Store Question Log         Store ASYM_BeenHere       (Needed for Visit' Completion Method)         Store ASYM_Done       Skip Return to Last Page Visited         Prevent Favorites in Lesson       Store User Properties for Lesson	stored each session)
	Add Lesson Delete Lesson	Close

# TrackerNetLessonId

This is the *LessonID* from the *Tracker\_Lessons* table in the Tracker.Net instance with which you are synchronizing. You will need to open this table in SQL Server in order to get this value, as shown below.



# TBKTrackerTrackerNetStudentAssignment Table

This table does <u>not</u> need to be populated in advance. If it is not populated, then the *TrackerSync* web service uses the Tracker.Net username and password entered in the *Tracker Sync Editor* to retrieve the corresponding Student ID from the Tracker.Net instance with which you are synchronizing. But if you have are pre-populating the TBK Tracker Student ID's and thus have access to this data, you can populate it advance to avoid the need to look up the data. If not, the *TrackerSync* data will only go to the Tracker.Net instance the first time and will write the data to this table for use in subsequent synchronizations.

CourseLessonStude	tInfo : Database (Access 20	Table Tools					
Home Create External Data	atabase Tools Acrobat	Datasheet		۲			
View View View View View View View View		efresh All → Peccent	A↓     Y       A↓     Filter       A↓     Filter	Find Eind			
Views Cipboard (*) Pont		Records	J Solt & Filter	Find			
All Access Objects 🔍 «	TBKTrackerTrackerNetStud	dentAssignment		×			
Tables 🕆	🗾 TBKTrackerT 👻 TBKTra	ckerDatabaseId 👻 TBKTracke	erStudentId 👻 Tra	ackerNetStudentId 👻 🖌			
TBKTrackerTrackerNetCourseAssignment	3 Training	gStudioSample Mullins*Sl	hawn**	3			
TBKTrackerTrackerNetLessonAssignment	J 4 sportsS	ample Rhodes*Je	effrey*M*	3			
TBKTrackerTrackerNetStudentAssignment	* (New)						
	Record: I 4 2 of 2	🔀 🕅 No Filter Search	◀				
Datasheet View	Datasheet View Num Lock 🖪 🕮 😫 🛒						

The required data is shown below.

# **TBKTrackerDatabaseId**

This is the identifier from configuration file (typically *tbksettg3.ini*) and selected by the user in the *Configuration Editor* screen of the *Tracker Sync Editor* application. The identifier corresponds to this part of the configuration file:

```
[Databases]
TrainingStudioSample=JET
sportsSample=JET
TraingStudioSample_SQL=SQL
```

The element is used since different databases will have the same TBK Tracker Lesson ID that will presumably match up to a different Tracker.Net Lesson ID.

# TBKTrackerStudentId

This is the *StudentID* from the *Students* table in your TBK Tracker database as shown below. This student must have a corresponding student in the Tracker.Net instance in order for synchronization to be possible.

	- Mi	cro	soft Access	Table Tools				x
Home Create External Data	Da	atab	ase Tools Acroba	t Datasheet			0 -	⊐ x
View     Paste       View     Calibri       View     Paste       View     Calibri       * $\Delta$ * $\Delta$ * $\Box$	1	•		$ \begin{array}{c}                                     $	∛ ™ 7	Size to Switch Fit Form Windows	+ Find	
views clipboard a font				3010 211	lei	- window		
Tables 💿 🗸	«		Stu	IdentID	•	LastName 👻	FirstName	▼ Mi
			Rhodes*Jeffrey	*M*		Rhodes	Jeffrey	M
StudentCourseInformation			Mullins*Shawn	**		Mullins	Shawn	
StudentLessonInformation			Hagar*Sammy*	*		Hagar	Sammy	
StudentLessonPropertyInformation		*				<add last="" name=""></add>	<add first="" nam<="" td=""><td>e&gt;</td></add>	e>
III Students	-	Re	cord: M 🔸 1 of 3	🕨 🕨 🙀 No Fil	ter	Search	Ш	•
Datasheet View Num Lock 🔲 🤀 🖽 😫 👷						×		

If you do not want to open the database directly in Access, you can see the StudentID in the *TBK Tracker Administrator* as shown below.

Students	take 📎	courses.	🕻 Stud	lents may be op	otionally grou	uped into **	classes.	?
Eelect the studer Last Name Hagar Mullins ► Rhodes EtudentID First Name Company Department Social Security Number Felephone # Email Address Fax Number	Rhodes*Jeffrey M Rhodes <none></none>	data. Click the ' Fi Si Je µ*M*	Add Student'	Classes In	hew one or "Di Encrypted Location Identifier 3 Pager Nun	elete Student" to i Password nber Directly Rock & Roll I TBCON	remove the selected	e Courses Registered In Via Class:
Cell Phone #	719-963-1110			Assign Classes	to Student	Assign Cours	es to Student	

# TrackerNetStudentId

This is the *StudentID* from the *Tracker\_Students* table in the Tracker.Net instance with which you are synchronizing. You will need to open this table in SQL Server in order to get this value, as shown below.



# Configuring the *Tracker Sync Editor* Application

The URL to the web service as well as the *TrackerNetSyncKey* is needed by users of the *Tracker Sync Editor* application in order for it to communicate with the web service and synchronize student data. The *Tracker Sync Editor* Configuration screen is shown below:

Configuration E	fitor	
Enter of edit the set	ings to the FDN Trackel database and trackel sync web service.	
TBK Tracker Infor	mation	
Configuration File	C:\Program Files\Common Files\ToolBook\TBSystem\tbksettg3.ini	
Select Database	TrainingStudioSample	
Web Service URL		
http://localhost/T	rackerSync/Sync.asmx	
Mah Samiaa Aaa		
Web Jervice Acc		
	11	
Help		Save Cancel

The user enters or browses to the location of the TBK Tracker configuration file (normally located in C:\Program Files\Common Files\ToolBook\TBSystem) as well as the Web Service URL and Web Service Access Key (which must match the *TrackerNetSyncKey* defined in the *web.config* file). Once the user saves this information, it is restored each time he or she opens the *Tracker Sync Editor* application.