ACT! | Whitepaper

Synchronization Architecture

ACT! by Sage Product Family

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Introduction

The ACT! synchronization architecture for ACT! by Sage and ACT! by Sage Premium is designed for performance, scalability, and data integrity. The ACT! sync model is a custom implementation that takes the best of many available Relational Database Management Systems (RDBMS) and third-party sync products, rolling them into a single dynamic solution tailored to the ACT! environment and business rules. This architecture supports both desktop database sync and synchronization with Palm OS® and Pocket PC devices via ACT! Handheld Links[1]. These are generally referred to as directly-connected devices.

The implemented architecture is a combination of client-side Microsoft®.NET-managed code, embedded in the ACT! Framework, and server-side Microsoft SQL Server® procedural objects residing in the ACT! database. The approach leverages the underlying client-server technologies, allowing more data- and process-intensive operations to be handled server-side, while the client-side components define the business logic, data packaging, encryption, and data transport.

This whitepaper provides an overview of the ACT! sync model, including a description of the key features, abilities, and concepts. It is directed at current users and potential customers seeking to perform a functional and technical evaluation of the product. Diagrams and examples are provided where appropriate, as well as greater detail on Internet synchronization, focusing on setup and configuration. Also included is an overview of Handheld Device sync[2].

The ACT! synchronization architecture is designed for performance and scalability, supporting both desktop databases and handheld devices.

ACT! Synchronization Overview

The ACT! synchronization experience supports the workgroup's experience and is a database-to-database process. It adheres to a Publisher-Subscriber model, meaning that one central Publisher supports one or many remote Subscribers. This collection of databases is referred to as a "sync family." All remote Subscribers are true subsets of the contents of the Publisher database. Peer-to-peer synchronization, which existed in earlier versions, has been replaced. It is important to note that handheld synchronization[3] (Palm OS, Pocket PC) is supported from all nodes – Publisher or Subscriber. (Please note: Prior to ACT! 2005, ACT! synchronization was a user-to-user process.)
In an ACT! synchronization environment, one main database syncs with multiple remote databases. Setup for the synchronization process is centralized at the main database. Once synchronization has been set up at the Publisher database, a "pull" process is initiated by a Subscriber database. The Publisher database, aided by a synchronization service, will be listening for incoming sync requests from Subscriber databases.

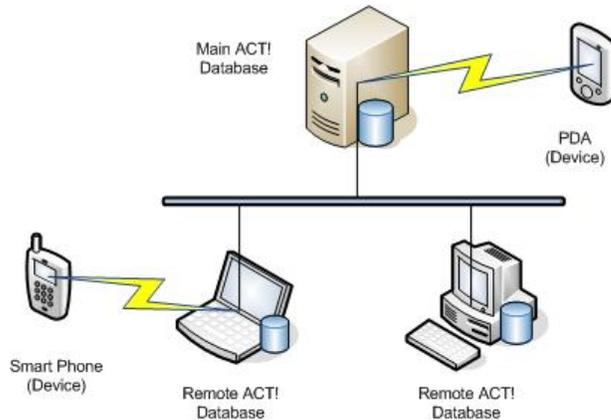ACT! Sync is based upon a Publisher/Subscriber Model:

- Publisher provides the data.
- Subscriber requests data, retrieves data, and submits new data.
- The "main" database is the Publisher.
- A "remote" database is a Subscriber.
- A main database can have many remote databases.
- Remote databases have only one main database.
- A remote database can also be a Publisher, if one or more handheld devices are registered to that remote.

A collection of syncing databases is referred to as a "sync family."

1 This feature is not available in ACT! Premium for Web.

2 This feature is not available in ACT! Premium for Web.

3 This feature is not available in ACT! Premium for Web.

Main ACT!
Database

PDA
(Device)

Smart Phone
(Device)

Remote ACT!
Database

Remote ACT!
Database

ACT! database synchronization is dependent on a LAN, Internet, or WAN connection and requires a Sync Server or service. It is designed as a background process that allows for normal use of both the Publisher and Subscriber databases during the synchronization process.

Subscriber databases are responsible for initiating synchronization on a regular basis, but the ability expires after a specified period of inactivity. This period is defined during synchronization setup, but can be changed later. A Subscriber database may "estrange" itself from a synchronization relationship with its Publisher database, either manually or implicitly. The Administrator may allow one last sync prior to estrangement. Once estranged, the Subscriber database will not be able to re-establish the relationship. If re-establishment of this synchronization relationship is desired, the Subscriber must be recreated from the Publisher database.

Goals and Objectives of the ACT! Synchronization Model

The overarching goal of the ACT! synchronization model is to provide a highly reliable sync solution that addresses the key sync scenarios a typical customer may face.

Additional objectives include:

- Emphasize control of data transport and data resolution.
- Provide clear, consistent behavior.
- Design for scalability.
- Match sync environment as closely as possible to behavior of "real-time" workgroups.
- Enforce security across all databases.
- Avoid "anonymous subscribers."

Methods of Synchronizing

The Sync Server is the middle-tier component that serves as the "transport broker" and communication mechanism between a Subscriber and Publisher database.

Three possible Sync Servers are available in ACT! Premium (only one is available in ACT!). The Sync Server is the middle-tier component that serves as the "transport broker" and communication mechanism between an ACT! Subscriber and Publisher database. Users often run a Sync Server on the machine hosting the Publisher database, but this is not necessary. It is generally recommended that administrators run a Sync Server on one or more machines other than the machine hosting the Publisher database to distribute the workload. This can "load balance" the network. It can also provide a good contingency or failover plan for remote users should connectivity be unavailable for one of the Sync Servers (i.e., traffic can be re-routed).

Additionally, with ACT! Premium, a recommended practice is to install the Network Sync Server (and possibly the Internet Sync Server) on each client machine that may receive a Subscriber syncing database. The service can be defined to be a sync listener for the Publisher server/database as well. If the prescribed Sync Server in the corporate office is down or otherwise unavailable, a remote user can still sync by starting the local Network Sync Server and changing his/her local connection information (on the Sync Panel in ACT!) to "point to" the local machine and port of the local running Network Sync Server:
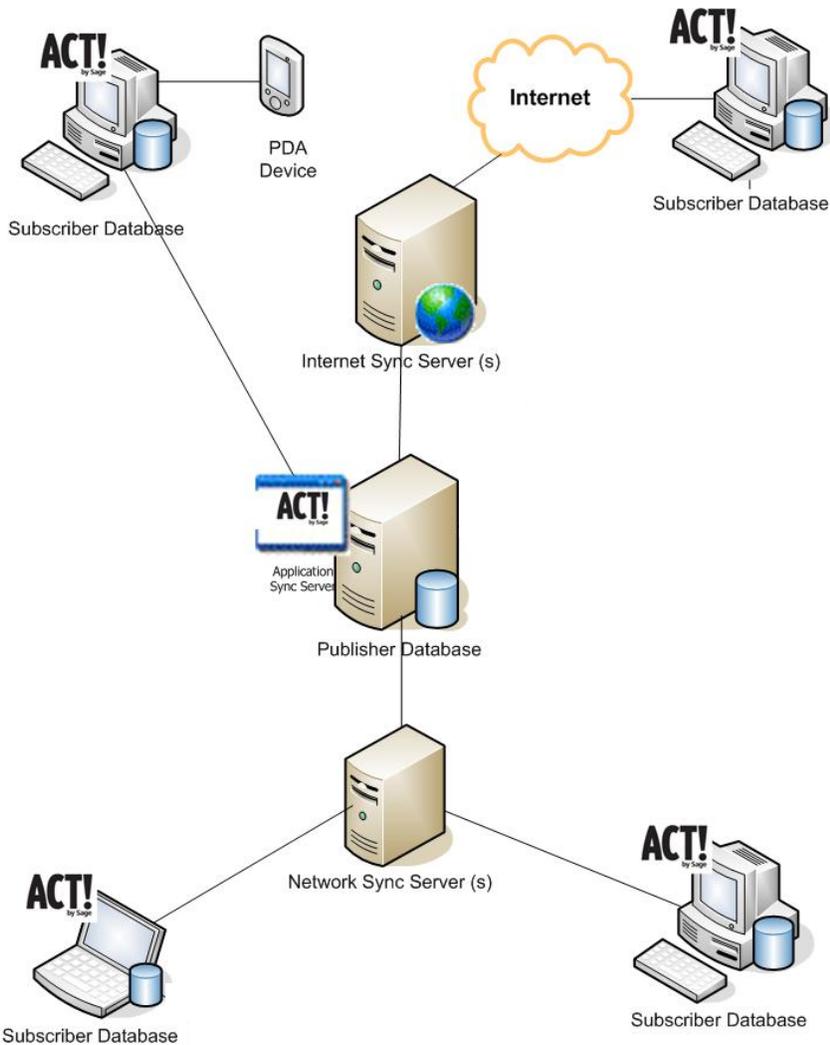

Network Sync Server (s)

SQL Server
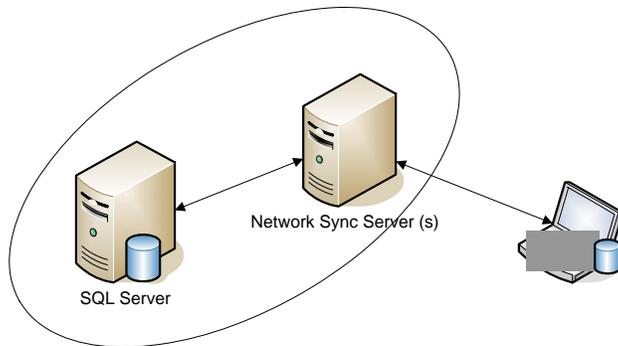
Devices do not use a Sync Server. Rather, they depend upon physical connectivity and perform direct synchronization of data with the ACT! database.

Specifications of the three possible Sync Servers:

- Application Sync
    - ACT! must be running and the Publisher database open, "listening" for incoming syncs
    - One "listener" at a time per machine
    - Multiple Subscriber databases can sync in parallel

- Network Sync Service (ACT! Premium solutions only)
    - Separate executable run as a service class program
    - "Listens" automatically for incoming syncs
    - Publisher database may be closed, i.e., ACT! doesn't have to be running
    - Can "listen" for multiple servers and databases
    - Multiple Subscriber databases can sync in parallel

- Internet Sync (ACT! Premium solutions only)
    - Uses Microsoft Internet Information Services (IIS)
    - Separate executable run as a service class program
    - "Listens" automatically for incoming syncs
    - Publisher database may be closed, ACT! doesn't have to be running
    - Can "listen" for multiple servers and databases
    - Multiple Subscriber databases can sync in parallel

Each Subscriber database can choose its sync method and connection information. This ability ensures that the sync family relationships and users can react to changing conditions.

Given the three-tier architecture of the Sync Server, a variety of configurations can be established within an organization to meet the business and network needs. The following diagram depicts an ACT! Premium setup using all three Sync Server types (Application, Network, and Internet). It's particularly noteworthy that the Network Sync Server can be configured and run on a Subscriber client itself, communicating with the Publisher database. With both Network and Internet Sync Server, the service can be installed and run on the Subscriber client, the Publisher server, or a third independent machine hosting neither of the syncing databases.

Each subscriber database can choose its sync method and connection information. This ability ensures that the sync family relationships and users can react to changing conditions.

Sync Server network configuration example.

What Is Synchronized

The easiest way to think about what is synchronized is to realize that any Subscriber database is a true subset of the Publisher database. Actions taken on any data are always synced back to the Subscriber's Publisher database so that nothing "falls through the cracks." The following items are synchronized with an ACT! database:

- **The synchronization set:** Sync Set of data as defined on page 11.
- **User and Team data:** These access and security-related tables are identical in all nodes/members of the Sync Family. The benefit is that security is consistent across all nodes.
- **Attachments:** Attachments related to the Contacts in the synchronization set (as well as Groups and Companies) may be synchronized, but this may be limited by the options chosen when the Subscriber database was created. A number of settings are customizable.
- **Database supplemental files:** Database supplemental files (templates, queries, layouts, and dashboards can be created at the Subscriber database, and they may or may not be synchronized, depending on options chosen when the Subscriber database was created.
- **Schema modifications:** The schema can be modified only on the Publisher database. The modifications will be synchronized to each Subscriber database.
- **Picklist modifications:** Picklist modifications may be made at any node and will synchronize.

Once an ACT! database has been sync-enabled (whether a Subscriber or Publisher database), ACT! detects this on database log-on and invokes a sync "File Watcher" on the database's datastore (a.k.a., supplemental files) folder structure. This is true whether ACT! is running on the machine hosting the database or on another network client machine. This process ensures that any changes made to any database-related file are recorded in the sync transaction logs and can therefore be evaluated for sync. It's important to note that file modifications made outside of ACT! may be captured as well as normal ACT! operations. The File Watcher includes both database-specific files, such as layouts and templates, and content-specific files, such as attachments.

Sync data tracking resides in and is performed by the database itself, ensuring all data modifications are properly captured.

Devices use a Sync Set, as well, however they are specific to each ACT! user. By default, each user's Handheld Device Sync Set[4] is defined to sync all available Contacts but can be modified to identify specific data that each user may desire. A Handheld Device Sync Set is used to drive the content of any/all devices for the user.

Features and Capabilities of ACT! Synchronization

Within the ACT! sync feature, a number of usability, performance, security, reliability, and scalability factors were considered. The following features were incorporated into the product to support those factors:

- Subscribers can recover from a broken or incomplete sync.
- Publisher and/or Subscriber can recover from a restored database. This is referred to as "replay."
- Automatic Recovery "picks-up" incomplete synchronization sessions and will only resend non-completed transactions, skipping those previously completed. It also recovers from

[4] This feature is not available in ACT! Premium for Web.

dropped connections and verifies that "last sync" date/times agree; if not, it resends previous updates.

- Orphaned/Estranged Subscribers can become Publishers.
- Subscribers allow only remote users to log in (the Sync Set "who list"). Additionally, any Administrator may log in to a Subscriber database, however, not all data available to him/her may be present.
- Non-Administrator users can be given permission as Remote Administrator in the Publisher database, allowing them to perform many administrative tasks on a Subscriber database, including backup, export, and database maintenance.
- Remote users can manage subscriptions on either the Publisher or Subscriber ("data fishing").
- Transactions are logged by and stored in the database (self-contained) – SQL Server trigger-based.
- Users receive 64-bit DES encryption, which is configurable and can be disabled via the application config file.
- Data packet formation is based on SyncML 1.1, an open XML-based standard adopted by World Wide Web Consortium (W3C).
- Two levels of sync logging are included for troubleshooting and reporting.
- Column-level update logging and syncing are available on all tables.
- Schema customization/definition on the Publisher is synced chronologically to each Subscriber.
- Last change prevails in data resolution, based on the Universal Time Coordinator (UTC).
- Each sync session is logged for later review and troubleshooting, reporting, etc.
- Lookup > last sync can be either date-range based or simply the last sync session. This lookup will present results in a manner similar to results for Keyword Search functionality.
- Administrative-style sync reports via ActDiag allow both configuration and preview information.

Data Logging and Tracking

The mechanism for capturing and storing data changes resides in the ACT! database itself. ACT! creates and manages custom database table triggers for all insert, update, and delete events, providing optimum performance and consistency. Each ACT! database contains a series of sync tracking tables containing both data changes and sync definition data (metadata). Database logging ensures several key benefits, including:

- Improved performance and reduced network chatter by leveraging the client/server architecture.
- Real-time and persistent logging of sync changes in local database control tables.
- Durable and transactionally-bound data logging within the database – guaranteed to be there when the user records are written.
- Self-encapsulation of the tracking data related to the actual user data, backed-up and restored at the same time so it's always "in sync."
- Consolidated and comprehensive reporting and troubleshooting.

The database of origin is denoted on each transaction, to assist in data resolution and to provide more granular lookups and reporting. In addition to all database tables being logged, files residing outside of the database in the Datastore (supplemental file location) are "shadow tracked" via logging tables in the database.

Security and Permissions

Generally speaking, Administrator and Manager role users are responsible for defining the sync setup and configuration, including the creation of Sync Sets and remote databases. Standard role users can perform several tasks to adjust content definition. In addition, Standard role users can be given individual permission to perform some administrative tasks while logged into a Subscriber database.

- Standard role users and above can perform (initiate) sync from a Subscriber database.
- Administrators and Managers can modify any Sync Set for any Subscriber database.
- Administrators and Managers can modify any Subscription List for any Sync Set.
- Standard role users can modify subscription Lists for Sync Sets for which they are intended users if they have been given permission to manage Subscription Lists by an Administrator.
- Standard role users can sync with Handheld Devices (Palm, PocketPC) if they have been given permission by an Administrator.

Some functionality is limited on Subscriber databases:

- Though the user's security role permits, some features are limited or unavailable on Subscriber databases.
- The "Remote Administrator" permission enables the non-Administrator user to perform tasks such as database backup and maintenance on a Subscriber database.

With regard to overall data security, the sync model depends on the ACT! security model to properly handle data access and permissions. Essentially, the Subscriber database is a logical extension of its Publisher database – a model of equivalency. The actions a remote user can take, as well as which data he or she can see, are identical to those available when the remote user is logged into the Publisher database.

The ACT! Sync model depends on the ACT! security model to properly handle data access and permissions.

Administrator Database Management

Within the Manage Databases task of the Sync Panel in ACT!, Administrators can view and manage the Subscriber databases (including handheld devices) as needed. Administrators have visibility to each database's last sync date and the days remaining until expiration. Administrators can change the status of a Subscriber database. The four possible database statuses are Active, Suspended, Disabled with Last Sync, and Disabled.

A Suspended status option allows the Administrator to temporarily disable a Subscriber database from synchronizing. This could be done for troubleshooting or any business-related reason as necessary. A Suspended database can be changed back to Active, or Disabled, any time later.

The Disabled with Last Sync option lets the Subscriber database perform one last bi-directional sync, which sets that database as disabled on both the Subscriber and the Publisher. A Disabled Subscriber database can no longer sync with its Publisher database. To allow the database to begin syncing again, the Administrator must re-create the Subscriber database from the Publisher.

A remote Administrator user also can "sever" the Subscriber database by changing its status to disabled. Once disabled, the database can become a Publisher, able to create new Subscriber databases of its own.

The Database management panel allows an Administrator to view all member databases within the Sync Family. The list includes any handheld devices, such as Palm OS or Pocket PC, that may be registered to the Publisher or any of the Subscriber databases. This enables the Administrator to effectively manage the definition and behaviors that affect sync and the data received by remote users.

Technical Features and Highlights

The following is a list of technical features and specifications of the ACT! synchronization feature:

- SyncML v1.1
    - Open, XML-based standard adopted by the W3C allows definition of sync packets.
    - Designed for wireless applications (low bandwidth).
    - Designed to accommodate Palm OS computing.

- Transactions logged in and by the database
    - Sync-enabling the database generates triggers for each table to track all inserts, updates, and deletes.
    - Ensures nothing is missed from any source.
    - Provides optimal performance – all data stored in the database.
    - Approximately 20 tables support sync (logging and metadata).

- Column-level update logging on all tables
    - By default, only changed columns are sent for updates.
    - Design supports full chronological logging for all tables.

- Multi-Level design
    - Design supports a three-level model (Publisher, Subscriber, and Publisher to handheld device) to accommodate handheld devices.[5]

- Publisher/Subscriber model
    - Uses a database paradigm, not a user paradigm as in versions prior to ACT! 2005.
    - Connected model (no store-and-forward).
    - Subscriber initiated sync (pull model).
    - Subscribers have only ONE Publisher.
    - Subscribers allow only remote users and Administrators to log in.
    - Remote users can manage subscriptions on either Publisher or Subscriber.
    - Subscriber is ALWAYS a subset of the Publisher.
    - Subscribers can recover from a broken or incomplete sync.
    - Orphaned Subscribers can become Publishers.

- Sync Server
    - .Net Remoting Framework.
    - Stateless and scalable.[6]
    - HTTP or TCP/IP Protocol binding.
    - Integrates with IIS 4.0 and above for Internet sync.
    - Multiple servers can be configured to run on one machine.
    - Can run as a Windows® service (Network or Internet Sync Servers).

- Sync client
    - .Net Remoting Framework.
    - Bound to the application context.

5 Requires additional purchase.

6 Scalability will vary based on hardware and size and usage of your database. Published minimum system requirements found at www.act.com/2010systreq are based on single user environments. You must purchase one license of ACT! per user.

- o   Initiates the sync process (pull scheme).

- •   Inside firewall/LAN connection (Application or Network sync)
    - o   TCP/IP.
    - o   Local or Wide Area Network connection.
    - o   VPN (Virtual Private Network).
    - o   RAS (Remote Access).

- •   Outside Firewall (Internet sync)
    - o   Encrypted via 64-bit encryption, or
    - o   Secure Sockets Layer (HTTPS).

- •   Transport assures packet delivery and auto-recovery from dropped packets.

Preparing for Synchronization

The database Administrator can take a non-syncing database and establish it as a Publisher database. There are seven steps to deploy and sync the first Subscriber database:

1.   Enable sync on the subject database (this become the Publisher database).
2.   Start a Sync Server to accept incoming syncs for the subject Publisher database.
3.   Create a Sync Set (described below). This determines "who" and "what" will sync.
4.   Create a remote database. Set the options as desired in the UI panel. Multiple remote databases can also be created at one time.
5.   Distribute the resulting remote database file (.RDB) to the targeted machine.
6.   Apply that .RDB file via ACT! using the *File > Restore > Database* menu item. Or, simply double-click the .RDB file to automatically deploy the Subscriber database onto the machine.
7.   Verify the Sync Server connection on the Subscriber, then sync.

At this point, you can create and deploy additional sync sets and/or remote databases by repeating steps 2 (or step 3 if you decide to use the existing sync set definition) through 7 above. A key to sync setup is understanding and defining a sync set.

Understanding and Defining a Sync Set

There are two general types of Sync Sets:
- •   Regular Sync Sets
- •   User Handheld Device Sync[7] Sets

Regular Sync Sets must be defined and managed by an Administrator, while Handheld Device Sync Sets are per-user and can be managed by the user themselves without Administrator intervention.

A Sync Set is the defined set of data in a database that is designated to synchronize to one or more Subscriber databases. When setting up synchronization at the Publisher database, the Administrator defines the Sync Set and uses it to define a Subscriber database during its creation. The Sync Set may be used for more than one Subscriber database. The Sync Set dialog boxes and behaviors are similar to Group and Company query definitions – the Sync Set is essentially a collection of contacts.

A special, isolated type of Sync Set is the Handheld Device Sync[8] Set. Each ACT! user has one of these Sync Sets available to them, and by default is created to subscribe all available Contacts. Just like regular Sync Sets, the user can limit and specify the Contacts desired based upon criteria. These Sync Sets can either be managed in the ACT! Sync Panel.

A Sync Set defines the criteria of what will synchronize and the intended users of the data.

7 This feature is not available in ACT! Premium for Web.

8 This feature is not available in ACT! Premium for Web.

The contacts available to be included in the Sync Set are limited by the accessibility of those contact records to the intended users of the Sync Set. If none of the "intended users" has access to a specific contact, it isn't available to be part of the Sync Set. If at least one of the "intended users" has access to a contact, it is eligible to be included in the Sync Set. A Sync Set may be further defined by applying a query definition to the contacts eligible to be part of the Sync Set. In the criteria definition interface, the user can create a set of criteria using the query builder or open a saved Group, Company, or advanced query (.QRY file). Contact records also may be included (beyond the bounds of the query definition) using a subscription list.

Any user belonging to the Administrator or Manager Role can alter a regular Sync Set at any node of the sync family. However, Standard role users have the ability to control the Subscription List from the Subscriber database node by manually subscribing additional accessible Contacts which do not currently meet the Sync Set criteria. At the Publisher database, an Administrator or Manager can perform a Lookup of a Sync Set for each Subscriber database.

Three major components of the Sync Set

The three components of the Sync Set are the "who list," query, and subscription list.

1. "Who list" (a.k.a. "intended users")
   o List of intended, remote users who can log in to Subscriber database.
   o At least one user must have a Standard role. Please refer to the Help topic "What Are User Roles and Permissions?" for more information.
   o Constrains which Contacts are available to be synchronized; only those Contacts accessible to at least one member of the "who list" are available for synchronization.
2. Query (optional)
   o Dynamic, criteria-based, query definition of the set of Contacts to be synchronized.
3. Subscription List
   o Additional "hand-picked" Contacts to be synchronized.
   o Allows user to select Contacts that fall outside the query definition to be synchronized.

Items that always sync:
•   Schema (from Publisher database to Subscriber ACT! databases).
•   Database preferences, such as name separators, scheduling, etc.
•   User data, including passwords, roles, permissions, etc.
•   Group and Company records, including query definitions and extended data.
•   Opportunity records
•   Database configuration and definition data lists, including Custom Activities, Custom Priorities, Custom Clearing Types, Events, Activity Series, Opportunity Stages, and Processes.

Items that the user may choose to sync:
•   Database supplemental files, including letter templates, report templates, layouts, and saved queries specifically "belonging" to the Publisher database.
•   Attachments
•   Only those documents associated with Contact records in the Sync Set, any Group, Company or Opportunity records.
•   Document tab items.

Items that do not sync[9]:

- Personal supplemental files
    - Files stored in the traditional "default locations" paths.
    - Letter templates, report templates, layouts, etc., which do not "belong" to any specific database.
- Settings and Preferences stored locally
    - Including settings for navigation bars, toolbars, menus, and column customization.
- The ACT! e-mail database.

Sync Set example:

Database contains 1,000 total contact records.

- (A) "Who list"
    - Three users identified as intended remote users (Moe, Larry, and Curly).
    - 500 possible contacts are accessible to at least one of the three intended users.
- (B) Query
    - State = "CA".
    - Reduces the 500 available candidates to 100 that meet the criteria.
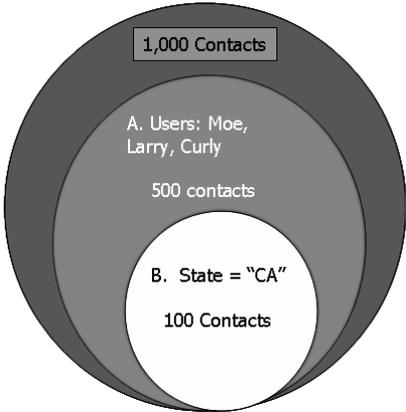
- (C) Subscription list
    - Allows users to select additional contacts that fall outside the query for synchronization.
    - 2 customers in Oregon.
    - 2 vendors in Texas.
- Total Sync Set = 104 Contacts.
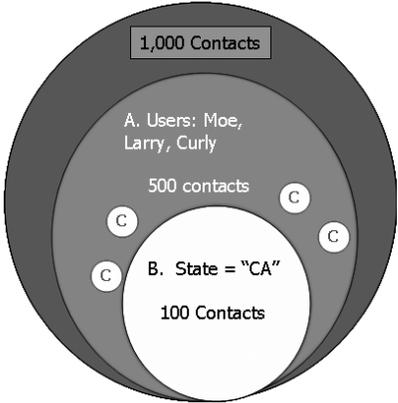
Subscription List

- List of all contacts in a Publisher database (within the Sync Family) to which a particular user has access, includes "core" fields Name, Company, and Phone.
- User may designate individual contacts to sync, regardless of query definition.
- Allows ACT! Standard role users to "data fish," that is, request additional contacts that do not meet the Sync Set criteria.
- Users can modify the subscription lists of any Sync Set where they are listed in the "who list".
- May be "reset" to return the Sync Set to the base query criteria.

HTTP (Internet) Synchronization

The ACT! Internet Sync Server enables users to synchronize data over the Internet outside a firewall. This means users do not need to connect to their workplace Local Area Network (LAN) to sync their data. This differs from the other two sync server configurations in ACT! (Application sync, which uses the ACT! application as the server, and the Sync Service, which uses an installed NT service). These configurations require users to be logged on the network. The firewall protects the Publisher database, which can be physically located at a protected site inside an organization's firewall, while the remote users can sync their data from unprotected locations using the World Wide Web. All the sync communication is performed over standard network protocols and is protected by data encryption algorithms to prevent eavesdropping.

To set up HTTP Sync, the minimum requirement is a Web server; in this case Microsoft IIS (Integrated Information Server). Currently, IIS is the only Web server that allows HTTP sync to occur. ACT! Premium includes the installer for the Web server, which configures IIS to run Web Sync Server. The clients connect to Web Sync Servers using URLs in the form used for conventional Web browsing. The Sync Server can listen to incoming requests for several Publisher databases at a time, just like the standalone ACT! sync service. The Web servers can be managed to accept incoming syncs for various Publisher databases, and these databases can be installed on different machines as the Web servers.

A Web server listens to the incoming requests on port 80 of the machine. Traditionally, corporate firewalls disallow any outside communications on any ports other than 80, to prevent software attacks on sensitive data. However, corporate Web sites are usually hosted on port 80 in demilitarized zones on the network. These zones are prone to outside attacks but are kept safe by Web server security. ACT! sync uses similar technology to allow syncing outside software firewalls.

To configure the IIS Web server, the ACT! Installer creates a virtual directory and installs the necessary files for syncing. These files are .NET-dependent and require the .NET Framework to reside on the same machine as the Web server. An NT administrator log-on is required to install and run the Web server to access the shared SQL Server instances on the network. Administrators can also log on to their machines and manage the Web servers using Microsoft Management Console (MMC). To provide scalability[10] and load balancing of the Sync Servers, a clustered configuration of Web servers can also be used. By managing the Sync Server information, remote users can sync their client databases seamlessly to Publisher databases using either a Web server or an NT service. For example, an NT service location may be **\\ACT_NTService** whereas Web sync server location may be **http://www.mycompany.com/ACT_Virtual_Directory**. Since the Web server always listens on port 80 by default, users do not need to enter the port number for the Web service.

The Sync Server can listen to incoming requests for several Publisher databases at a time, just like the standalone ACT! sync service.

Web Sync Server is a lightweight component with limited ability to manage data on its own. It has a limited UI to manage the list of the syncing Publisher databases. It does not contain any ACT! application features. To view changes made to Publisher databases, users need to log on separately using ACT!. A Web server's only purpose is to act as a channel between the syncing Subscriber and Publisher databases.

Requirements
- ACT! Premium.
- Microsoft IIS 5.0 and higher.
- Microsoft Windows 2003, XP (Pro recommended).
- Internet connectivity.

Web Server setup
- Port 80.
- "ActInternetSync" virtual directory.
- fport.exe/ActDiag.
- cliconfg.exe (Windows\System32).
  - Alias "<computer name>\ACT7" (same as server).
  - Server name "<computer name>\ACT7".
  - Uncheck dynamically determine port.
  - Port number "<port>" (from fport.exe or netstat).
- Integrated Windows authentication.

Internet Sync Setup

To address the challenges of connectivity within your organization, the ACT! Sync Server can be configured within the guidelines of an IT organization. To limit public exposure, don't set the SQL Server database server(s), but rather the machine(s) running the appropriate Sync Server(s). The following illustrations show two examples of the mobile user with a Subscriber database on his/her notebook computer, who needs to connect to a Sync Server back at the corporate office.
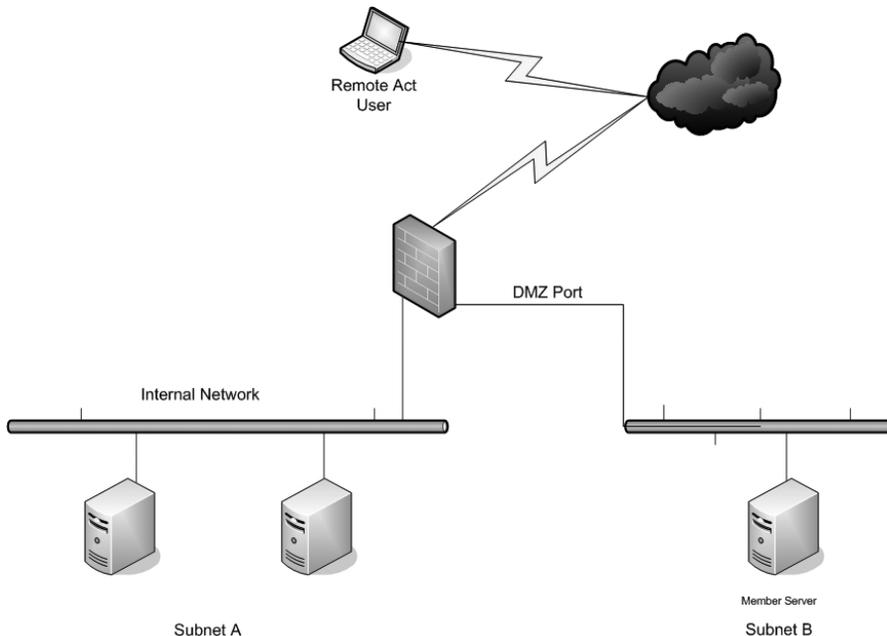
Example 1: Internet Sync setup – single firewall
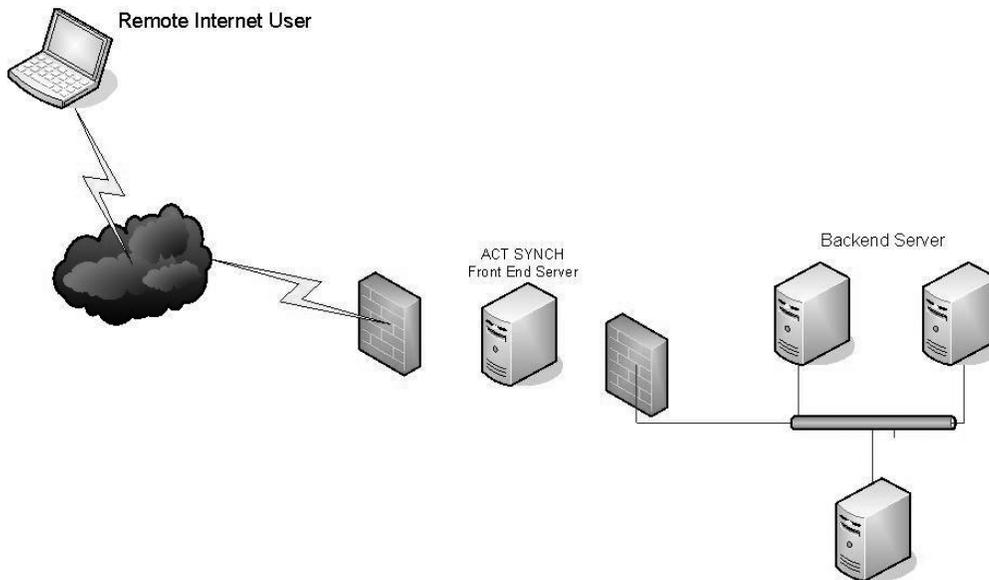
Example 2: Internet Sync setup – multiple firewalls

Advanced Troubleshooting Support

Internal and external logging, sync reports, and a sync rebuild ability are available for diagnostics and troubleshooting within the ACT! product and the accompanying ActDiag utility.

Sync Logging

Two levels of sync logging are available in ACT!. These logs are useful for both reporting and troubleshooting purposes. One is stored inside the database and the other resides on the machine's hard disk.

Sync High-Level Logging

This is stored in an internal database table. It shows all sync sessions for all Subscribers when viewed on a Publisher database, or just the Subscriber itself when viewed on the Subscriber database.
This Sync Log can be viewed via the *Tools* > *Synchronization Panel* > *View Sync Log* menu item.

Sync Low-Level Logging

This is used primarily as a troubleshooting technique. By default, errors are logged here to the resulting SYNCLOG.XML. You can modify the application and/or Sync Server .config file to increase the degree and verbosity of the logging. This is recommended only if ACT! Technical Support suggests it to help identify and resolve problems.

You must modify the applications .config file when changing the logging switch values. The .config file needs to be modified on both the remote client machine for the ACT! application (Act10.exe.config) and the machine running the Sync Server. You may need to modify a different .config file as noted below, depending on which of the three possible Sync Servers you are running.

To enable sync logging: [SYNCLOG.xml]:

- o   Internet Sync Server – web.config.
- o   Network Sync Server – Act.Framework.Synchronization.Service.exe.config.
- o   Application Sync Server – ActSage.exe.config.

The Microsoft Web site contains the description and behavior of these values.

ActDiag

ActDiag (with the file name ActDiag.exe) is a diagnostic and utility tool that is installed with your ACT! installation. The following configuration and diagnostic reports are available to run per database:

- •   Sync Configuration Report.
- •   Sync Preview Report.
- •   Sync Database History Report.

Additionally, a "Rebuild Sync Objects" repair utility is available if it is suspected that any structural or metadata objects or information is incorrect. Typically, this would seldom (if ever) be necessary, but it is there to help the user resolve problems.

Glossary of Terms

Application Sync – the Sync Server available in both ACT! and ACT! Premium. Invoked via the *Tools > Sync > Accept Incoming Syncs* menu item, it processes incoming sync requests from Subscriber databases. This option is only enabled on a sync-enabled Publisher database. When started, it listens for incoming sync requests for the current database only.

Evil twin – a second copy or deployment of a remote database (.RDB file). A Subscriber database is unique. Once created, an .RDB file could be distributed to multiple machines and restored. ONLY the first Subscriber database to successfully sync with the Publisher establishes the "contract" between the Publisher database and that Subscriber database name. Subsequent attempts to sync that .RDB file deployed onto a different machine are rejected by the Publisher and considered to be an "evil twin."

Handheld Device – also known as a handheld computer, "smart phone" or simply "handheld". A pocket-sized computing device typically having a display screen with touch input and/or a miniature keyboard. Examples include, Windows Mobile®, BlackBerry®, and Apple iPhone™.

High-water marks – refers to the "last success" values of a database. These values represent the "starting point" for the next sync session.

Internet Sync Service – available with ACT! Premium only. Installed separately, it requires Microsoft Internet Information Services (IIS). This service lets the user "register" one or more SQL Server machines and databases, for which the server will listen for incoming sync requests.

Network Sync Service – available with ACT! Premium only. Installed separately, it runs as a service-class process. It contains a UI form that lets the user "register" one or more SQL Server machines and databases, for which the server will listen for incoming sync requests.

Parent – see Publisher.

Publisher – a database from which one or more other databases are created. A Publisher database does not initiate the sync process and is a superset of all subscribed databases. Synonymous with Parent database.

Remote – see Subscriber.

Replay – if the Publisher or Subscriber database has been restored from a previous backup, the sync process will detect this. It will attempt to reset the "high-water marks" as necessary (and as available) and "replay" the transactions that have occurred since the backup.

Subscriber – a database that was created from a Publisher. A Subscriber database has only one Parent (Publisher) database and is responsible for initiating the sync process. Synonymous with Remote or Child database.

Subscription List – a by-product of the Sync Set. Contains a list of contacts available to the users of a Sync Set (the "who list"), identifying subscribed contacts and non-subscribed contacts. Contacts are subscribed automatically (via query) or manually (via user selection). Any non-subscribed contacts can be manually subscribed by the user. This causes the contact and all extended data to be retrieved during the next sync session.

Sync Log – a database table containing sync-relevant events. These events include creating and changing the Sync Set and Subscriber database, the steps in each sync session, and the resulting record counts and statistics. This sync log is viewable from the sync panel.

Sync Service – available with ACT! Premium only. Installed separately

Sync Set – a logical grouping of information that contains contact subscription query criteria and the "who list," essentially defining who and what will sync. A Sync Set can define and drive the contact subscription content for one or more remote (Subscriber) databases. Handheld Device Sync Sets specifically define syncing with personal devices (see Handheld Device definition above).

Who List – identifies the list of database users targeted by the contact subscription list in a Sync Set. In addition, this is the list of users who are allowed to log on to a remote (Subscriber) database using the Sync Set.

References and Related Links

Sage has created and maintains a Knowledgebase Web site that addresses many known issues regarding ACT!. Several helpful sync-related articles can be referenced to a specific feature of the product. In addition, you can access the Knowledgebase directly from the Welcome page in ACT! 2010.

You can access the ACT! Knowledge Center at:
http://www.act.com/support/technicalsupport/knowledgebase/

To search relevant articles after logging in, select the "ACT! by Sage" Product and type in "Sync" for the Search Text.

Important Note: Review ACT! system requirements at www.act.com/2010systreq. You must purchase one license of ACT! per user. Scalability varies based on hardware, size, and usage of your database. **Compatibility:** Due to new functionality available in ACT! 2010, we strongly recommend contacting your add-on product provider to confirm compatibility. Using versions of the add-on product that have not been confirmed compatible by the vendor may result in features behaving differently or not appearing within ACT! 2010. Visit www.actsolutions.com or contact your add-on product provider to help determine compatibility.

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About ACT!
ACT! by Sage is the #1 selling contact and customer manager in the world with 2.8 million users. It's designed so you can organize all the details of your customer relationships in one place for a complete view of the people you do business with. Improve your marketing effectiveness to attract new customers and get more from existing relationships. And, take action on your most qualified sales leads with total visibility and control of your pipeline. Because ACT! is easy to learn and use, you can be more productive right away. Continue working with your existing business solutions, like Microsoft Outlook, Word, Excel, and Lotus Notes, because they integrate with ACT!.

About Sage CRM Solutions
Sage CRM Solutions is a portfolio of market-leading applications consisting of ACT! by Sage, Sage CRM, and Sage SalesLogix. Over 63,500 organizations and 3.1 million users worldwide rely on Sage CRM Solutions to develop profitable, long-term business relationships.

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