



*First View*TM

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July

This is our second edition of *First View* in 2002. The response to our newsletter continues to be extremely positive. We hope you find this issue both useful and informative.

The year continues to be very exciting at First Choice Software. In economic times where most companies are slowing down, First Choice expanded our product and service offerings at a tremendous pace. These new solutions, along with First Choice's stockpile of tactical solutions for your Clarify needs, will enable you to extend and protect your Clarify investment.

This issue of *First View* highlights many of these new technologies, products, and services. For more information about any of them, please contact us at sales@fchoice.com.

The primary focus of the edition, however, is our upcoming *Connections 2002* technical conference in September and October. Last year, our first Connections conference was **THE** must-attend Clarify event of the year, and we expect that the same will be true this year.

This issue of *First View* discusses:

- [Details of the upcoming *Connections 2002* technical forum](#)
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If you know of someone who might enjoy a copy of *First View*, please share it with them. Also have them send an email to add-firstview@fchoice.com. Make sure they include their name, phone number, and email address. We will send them future editions of the newsletter. If you do not wish to receive future copies of *First View*

Support News

First Choice is well known for its incredible knowledge of Clarify. We bring that knowledge to our customers in a variety of ways. In this issue, we will briefly discuss four ways we are accomplishing this goal.

Connections 2002

First Choice Software will host the 2nd annual **Connections** technical forum on September 30- October 1, 2002 in Austin, Texas. Here is what one Clarify developer said about last year's **Connections**:

"Compared with other conferences I've attended, this one was excellent. A lot more technical, a lot less sales. I think that was the key of the conference."

We were excited to see this comment because it means that we hit our target. **Connections** is a *technical* forum where First Choice, Clarify, customers, developers, and vendors can share information and learn from each other to maximize the investment they made in Clarify.

We present a vendor showcase area at **Connections**; some of the leading providers of Clarify products and services will be there. However, the heart of **Connections** is the technical presentations that are geared to help you learn about the technology, tools, and techniques to help you achieve your goals. They are **NOT** sales hype and marketing presentations.

Connections 2002 will be the biggest, best, and most informative Clarify-based conference ever. In July and August we are soliciting abstracts for talks at **Connections**. The list of confirmed talks will be updated regularly on our web site. Here are some of the topics that may be presented at **Connections 2002**:

Where is Clarify Going? Upcoming Product Roadmap
Business Object Programming 101: eBusiness Framework, FCFL

Going Thin: How to migrate your thick client customizations to a thin environment

Moving on Up: Tips and tricks in upgrading your Clarify system to the latest version

Business Object Programming 201: Writing basic web systems

Tool Time: Demos and Sample Code for Useful Utilities and Routines

Ask the Experts: Bring your Clarify questions

Go Anywhere: Wireless Clarify

What's New: New and interesting tools in the Clarify world

WebLogic Server: How To Really Use It

Secrets of the Clarify Data Model

CTI Customization Workshop

How To Test Your Clarify Customizations Strategies, tools, and methodologies to insure your Clarify customizations work correctly the first time

Customer Sharing Session: What should be added to or fixed in Clarify?

What's new in Clarify? In-depth discussion of new features in versions 10, 11, and 12

Unicode Support for Clarify

Solutions That Work: Purging/archiving Clarify data

Customer Sharing Session: System Administration

Performance Tips: Improving system performance

Effective Reporting with Clarify

Free Admission! Would you like to present at **Connections 2002**? Please submit an abstract (< 250 words please) by August 31, 2002 of a talk you would like to present. (You may use the ideas we listed above or suggest your own). Presenters are given **free admission** to the event.

Interest in **Connections 2002** has been tremendous. Many new companies will send representatives, and many new vendors will have booths (and, yes, giveaways). Vendors who have already committed include Eagle Creek Software Services, RPA Wireless, Xora, Neon Systems, and ServiceWare. Many other vendors are expected to commit soon.

Registration information: **Connections 2002** will be held at the Austin Marriott at the Capitol, the location of last year's successful event. The Registration Fee is \$500.00, but there is a \$100 discount if your fee is received before July 31st, or a \$50 discount if your fee is received by August 30th. There are also discounts for participants of **Connections 2001** and companies who send three or more employees.

For more information about **Connections 2002**, please visit the website at: www.fchoice.com/connections.

Win a Connections 2002 Registration

You can win a free registration to **Connections 2002** by logging onto *fcConnect* (see below) any time during July. The winner will be selected at random. (Make sure you log in, not just view the forum). We will also give away five \$25 gift certificates to Barnes and Noble. Just visit www.fchoice.com/fcconnect and make sure to login.

Free First Choice/Clarify Support Forum

Do not forget First Choice hosts a free help forum called *fcConnect*, which allows you to ask questions about Clarify and First Choice products. Others can answer the questions, follow up, and begin dialogues that are valuable to all. First Choice staff monitors *fcConnect* and answers many of the questions. *fcConnect* is available at: www.fchoice.com/fcconnect.

Questions You Cannot Answer?

First Choice offers pay-per-incident support called **Help Desk for Clarify**. This service has recently become extremely popular with customers who need a question answered right away or a small bit of code to show you how to get over that hump.

If you have a similar need, you now have a way to get the help you need without engaging a consultant. In just one phone call, we can help you get by those thorny bugs and issues about your implementation to which you just cannot seem to get an answer.

Our unparalleled Clarify knowledge and renowned customer support allow us to answer a wide variety of questions, not limited to our product line. **Help Desk** gets you answers without paperwork or hassle. **It is fast and easy**. Simply call us or send us an email (helpdesk@fchoice.com).

fcSelfService on the Web

First Choice Software uses our own *fcSelfService* product on the web to provide even better support to our customers. You can register for it at www.fchoice.com/fcweb/login.asp.

Product News

Available Now

Here are some of the exciting new First Choice products.

First Choice Foundation Library (FCFL)

FCFL is the most powerful and versatile business object programming language ever released to work with Clarify. **FCFL** is now being shipped to customers. (When we announced FCFL is the last issue of *First View*, it was called “*fcGeneric*”; we changed the name to **FCFL** because we continue to add more functionality to the product. **FCFL** is 100% First Choice code; it does not require any underlying Clarify products (such as eBusiness Framework) to operate.

FCFL continues to grow and supports more methods, objects, and properties than eBusiness Framework! **FCFL** version 1.2 allows you to write web pages, scripts, fat client customizations, interfaces, and Visual Basic programs for *any* version of Clarify. Writing programs in **FCFL** is simple and quick.

More Added to fcSupport

fcSupport is a fully-functional agent-facing thin client for ClearSupport that includes all the functionality you would expect from First Choice, including:

- A familiar console, including Queues, WIPBINS, Queries, Find By ID, and an optional auto-refresh timer
- Case and subcase management
- Contact and site management
- Full log support (notes, phone, activity, research, etc.)
- All workflow operations (dispatch, accept, reject, status change, etc.)
- Other standard operations (previous cases, change contact/site, close, reopen, etc.)

First Choice is releasing a new version of *fcSupport*, adding exciting new technology and even more features:

- Written using First Choice’s **FCFL** business Object technology
- Fast performance. Additional enhancements have been made to make *fcSupport* even faster
- Works with any version of Clarify (You do not need eBusiness framework or Clarify version 9.0 or later.)
- Includes First Choice’s Data Restriction technology. This allows you to partition one Clarify database into multiple “virtual” databases
- Localization. Different users can use the client in different languages/locales against the *same* database
- Includes the Clarify Explorer, which allows you to create, save, iconify, and run queries against any table or view in Clarify
- Recently-opened objects available from the console
- Full firewall security, including optional secure socket layer support and certificates
- **Web Demo:** Try out the new *fcSupport* on the web, please visit <http://fchoice.com:10000/>

Customer-Facing Thin Client: fcSelfService

First Choice is shipping an updated version of *fcSelfService*, which provides a simple, intuitive interface for your customers, allowing them to perform all of the self-service tasks they need, including:

- Creating, modifying, note logging, closing of cases
- Self-registration for customers, with optional workflow for you to approve them before they’re entered in your database
- Ability to query for open/closed cases
- Ability to view “My products,” which displays the customer’s version and the latest version. With a single click, the customer can view differences between versions and request an upgrade or sales call
- Works with *any version of Clarify*

For more information about *fcSelfService*, please contact us at sales@fchoice.com or use our support system at www.fchoice.com/fcweb/logon.asp.

Instantly Convert Clarify Forms to Web Pages

The new *fcFormsConverter* technology allows you to take **any** Clarify thick-client form, whether baseline or custom, and immediately convert it into an HTML form to load in your web browser. This may sound too good to be true, but it is available today from First Choice Software.

This product can greatly decrease the time and cost to move from a Clarify “thick” environment to “thin.” Using this product, you can use the UI Editor to maintain your thick client forms, and to keep your thin client forms in sync.

Also, read below about our new *ClearBasic Code Converter* (available Q3), which helps complete your thick to thin conversion task.

For more information about this product (or a demo of the product), please contact us at sales@fchoice.com.

API Toolkits Available in New Language

First Choice’s famous API toolkits are now available to work with First Choice’s object framework **FCFL**. The toolkits have long been First Choice’s premier products, available in both the traditional ClearBasic language, and in Clarify’s eBusiness Framework.

The **FCFL**-enabled toolkits allow you to easily and quickly write web pages that can perform virtually *any* Clarify action. Web pages can be written in a matter of minutes using just **ONE LINE** of code to call the API. All the versions of the toolkits work with **ALL** versions of Clarify.

For more information about these products, please contact us at sales@fchoice.com.

Available Soon

In times when technology companies have little new to offer, we are excited that First Choice continues to bring you new and useful technology. Here is a summary of the new products that will be available this quarter from First Choice.

Thin Client for ClearQuality, *fcQuality*

Based on feedback from the last issue of *First View*, First Choice Software is now completing a fully-functional agent-facing thin client for ClearQuality.

fcQuality includes all of the basic ClearQuality features, including CRs, Duplicates, Replicates, status transitions, and more. It also includes all of the new,

enhanced *fcClient* features found in the *fcSupport* module detailed above.

For more information about this product, please contact us at sales@fchoice.com.

Convert Customized CB Code

Why should you rewrite customizations on which you already spent significant money, just because you want to migrate from thick to thin?

The answer is: You don’t have to. First Choice Software will soon be shipping the long-awaited thick-to-thin code conversion utility: *fcCodeConverter*.

The *fcCodeConverter* will allow you to easily recoup much of the significant investment you have already made in your customizations by automatically converting ClearBasic programs into a variety of web-based languages, including JavaScript, VBScript, and Visual Basic.

The converter is a two-pass compiler, and understands all of the intricate issues involved in Clarify customizations.

For more information about the *fcCodeConverter*, please contact us at sales@fchoice.com.

Thin Client: Field Operations, *fcFieldOps*

First Choice Software is continuing to expand its lineup of fast, easy-to-use thin clients for Clarify. Work began in early July on the newest First Choice thin client: *fcFieldOps*.

This agent-facing thin client will allow your field personnel to perform their job done in a simple web application that looks and feels like Clarify, but can be run from any location at any time.

For more information about the upcoming *fcFieldOps*, please contact us at sales@fchoice.com.

Employee Profile: Marty Sirkin

Marty is the President and CEO of First Choice Software, and coordinates all research and development work at First Choice. Marty has been with First Choice for five years, helping it to create over 50 products for Clarify customers.

Marty graduated from Caltech in 1984, and then received both a Masters degree and a PhD in Computer Science from the University of Washington in Seattle.

Marty moved to Austin, TX in 1989, joining IBM’s research and development division. While at IBM he worked on a variety of projects, including designing distributed database algorithms, OS/2-related projects, and DCE. Marty was the chief architect for

Internationalization and Localization for IBM personal software products.

Marty joined Clarify in 1994 as the first technical employee in the central US region working in both Professional Services and R&D. He worked on many major implementations including HP, Motorola, ADP, and GE. He was the lead technical consultant on the original Microsoft implementation. Marty worked on a variety of R&D projects, including the original purge/archive product, Clear Logistics Spares Manager, and the Asset Management Interface.

Under Marty's leadership, First Choice has grown from a small regional consulting firm to the premier Clarify add-on products partner, and revenues have grown by a factor of 30 from 1997 to 2001.

Marty supervises all new First Choice projects and is looking forward to the future in the Clarify world. As odd as it sounds, he enjoys nothing more than designing and writing top-notch software that is truly useful to First Choice/Clarify customers.

What Do You Think?

In each *First View*, we ask you about what products you want to see First Choice develop.

In the past, feedback from this ideas column have helped First Choice Software develop a host of new applications, including our thin clients for ClearSupport and ClearQuality.

Now, with our web and thin client offerings taking shape, we decided it was time to pull back, and solicit feedback from our customers about several projects we have had on the back burner for some time.

It is also possible that you would prefer to see us continue expanding our already extensive line of thin client offerings.

Here are some ideas that we are considering:

- "Performance Analyzer" would analyze *any* operation performed in Clarify, and suggest (or

automatically add) indexing to improve performance. Several months ago, we completed about 65% of the development work for this product, but it was put on hold to because of other priorities..

- "Data population tool." We already use a version of this tool internally. It allows us, from a file-driven input, to describe all data that should be added to a Clarify system. This allows us easily and quickly to set up testing databases with just the right data added to them. Our developers and testers love using this tool, and we are considering making it available to our customers.
- "Pause business rules". A customer recently approached us about writing a tool that would allow you, based on status (or other case attributes), to delay the execution of existing business rules. This way, when a case is waiting for customer feedback (or other similar conditions), the business rule could be put on "hold."
- "Additional web offerings" are currently being considered. We are thinking of writing thin clients for ClearLogistics Spares Manager and ClearContracts.
- "Migration services". As much as it pains us (as a Clarify-only tools vendor), we have received several requests to productize tools to assist customers in migrating from Clarify. Given our extensive knowledge of Clarify, we can create a tool to greatly reduce the cost of such a move. In fact, we have already written most of the necessary technology for other products.

Please take a minute to contact us at ideas@fchoice.com to let us know what you think about our ideas for future projects.

Let us know which tools your company might be interested in purchasing. Also, let us know if there are other products you would like to see available.

Technical Corner

In each issue of *First View*, the Technical Corner section contains a tip, example, or technique we find useful. We will include them, along with appropriate code examples, in the hope that you will find them useful as well.

Some Things Never Change In Clarify – or Do They?

When you have a system as complex and stable as Clarify has been over the years, it is nice to know that certain things will never change. While new features and technology may appear, there are certain basics that remain inviolate over time.

If you are in the business of customizing Clarify (as First Choice is every day), it is nice to know that you can count on those design and technology items to never change.

Or do they?

This Technical Corner will focus on one simple item of Clarify that I personally thought would never change – the Clarify object id, or *objid*. This is the cornerstone of the Clarify data model, and really hasn't changed since the early 1990s. However, over the last few releases of Clarify, some key changes and augmentations have been made in this cornerstone concept.

If you are a user of a Clarify GUI (thick or thin), you would never be aware of these changes. But if you customize Clarify, or plan to, it is crucial that you stay abreast of these changes. This is especially true if you are upgrading from a previous version of Clarify, and want to make sure that all of your customizations continue to work with the new version of Clarify. Also, you want to be able to take advantage of the new capabilities of these features.

It is important to note that the items detailed below were changed for very specific releases, and only for certain platforms. It is possible that some (or all) of these items do not affect you. If so, you can ignore them. But for many of you, one or more of these changes will be crucial.

The Objid in Clarify – Something That Never Changes

The Object ID (or *objid*) in Clarify is the basis of the entire data model. The objid is an artificial key that uniquely identifies each data row in each data table in Clarify. The objid is a long integer that may look odd (such as 268435457), but helps Clarify efficiently store and relate your data.

Before we start discussing the recent changes in objids (and how they are used), a brief history/tutorial is in order.

- 1) **Why did Clarify choose to use artificial integers to identify data rows?** There are really two good answers to that question. Firstly, while some tables have *natural* keys available (such as first name, last name, and phone number for contacts, or Case IDs for cases), many tables do not. For example, try to imagine a natural key for an activity log. There really aren't any. So, since artificial keys are necessary in some cases, why not use them everywhere? Secondly, when you index your keys (so you can find the rows efficiently), integer indexing is more efficient than indexing string columns. So, it will be faster for relating tables.
- 2) **What are the ranges for objids?** That is dependent on how you set up your Clarify database. When you create your database (with `mkdb` or `mkdb2`), you can specify a `site_id` for your database. This is an integer (1 by default) that sets a range for your objids. It has nothing to do with `table_site` in your database. Each `site_id` gives you a range of 268,435,456 different objids for each table.
- 3) **Do different tables use different objids?** No, they don't. Each table starts with the same objid number, and works up from there. For example, if your first objid is 268435457, then the first row added to each data table will have that objid. But two rows in two different tables that have the same objid are not necessarily related to each other – it's just an artificial key.
- 4) **Do all tables have objids?** All data tables do. There are three types of tables in Clarify that don't have objids for each row. In most common customizations you will not have to access these tables directly. They are:
 - a. **MTM tables.** These are used to store MTM relations between data tables. Each one contains two columns, which are relation pointers to the data tables.
 - b. **ADP tables.** These are the meta-data tables used to hold the description of the Clarify schema.
 - c. **Custom tables.** Any table that you create in the Clarify database instance that you create directly with SQL (not with `DDComp` or `DDEditor`) will not have objids.
- 5) **Can you have duplicate objids?** Absolutely not. Clarify insures that you cannot have two rows that have the same objid in any single table.

- 6) **How are objids used?** Objids are used for several purposes. The primary use of them, however, is to *relate* data rows in different tables. While there isn't sufficient room in this article to discuss data relations, just remember that if a row in table A wishes to point to a single row in table B (that is related), then the objid of the row in table B is stored as a *relation column* in table A. For example, every case has one (and only one) related contact (the person who reported the case). This is represented in Clarify with the column `case_reporter2contact` on the case table. Each row in the case table contains (in this column) the objid of the related row in `table_contact`.

So, What's Changed?

The remainder of this article will discuss three items that have changed in handling objids in the past few releases of Clarify. They are:

- 1) How objids are generated for Oracle databases. This changed as of Clarify 9.0.
- 2) What are exclusive relations, and how have they changed in versions 7.0 and 8.0.
- 3) How can you reuse objids. This is a new feature as of Clarify 10.1.

Change 1: Generating Objids

Before we talk about how this has changed, it is important to understand how it works for the various platforms.

Originally, Clarify was a Sybase-only system. With the Sybase version of Clarify, objids were generated via a stored procedure mechanism, using a special ADP table. Then, Clarify introduced an Oracle-based version. The Oracle database system provides a native mechanism for auto-numbering rows of a table, called a *sequencer*. So, Clarify engineers decided to use this approach. Hence, if you wished to customize Clarify (and add your own objids), you had to know which database system you were using to be able to correctly generate objids.

For the (very few) companies (such as First Choice Software) that write code for both platforms, you have to have code that is able to use both mechanisms. **Note:** SQL Server uses the same Sproc/ADP mechanism as does Sybase.

Generating Objids Via The Stored Procedure

When you needed to generate objids with Sybase or SQL Server, Clarify made it very easy for you. First of all, they created a new ADP table: `adp_tbl_oid`. The definition of the table is as follows:

Column Name	Type	Purpose
<code>type_id</code>	Integer	Table number for a Clarify table
<code>obj_num</code>	Long Integer	Next objid for that table

Each data table in Clarify has one row in this table. The `obj_num` column is simply an integer counter (0, 1, 2, 3...) that counts up each time a row is used in Clarify. To get to the larger numbers used in the objid ranges, Clarify adds this counter to a magic number which is equal to `268435456 * adp_db_header.site_id`.

So, how does Clarify insure that you don't have duplicates? That's where the stored procedure comes in. Clarify provides a stored procedure named `csp_new_oid`. It is defined as follows:

```
csp_new_oid @type_num int, @out_num int output
```

Basically, you call on the stored procedure with the table number for which you want an objid. It returns (in the output argument) the next objid in the sequence. It's just that simple. The stored procedure locks the ADP table row to insure that you have no duplicates. You can call on the stored procedure from SQL or from CB with the `SQLDB` object, or `CBO` (version 10.x and later) with the `SQLExec` object, or from `FCFL` with the `FCSQLExec` object.

Generating Objids Via The Sequencer

Generating objids in Oracle is just about as simple (but different). In this case, simple SQL statements, such as the one below will return the next objid for a table.

```
SELECT site_id*(268435456) INTO base_objid FROM adp_db_header;
SELECT seq_recv_parts.nextval INTO recv_objid FROM dual;
```

```
recv_objid := recv_objid + base_objid;
```

The middle statement (using the .nextval) is the sequencer, and gets you the next objid. It also guarantees no duplicates.

Note: You only need to get the base objid once!

So What's Changed in Objid Generation?

Not a whole lot really. When Clarify released version 9.0, they decided that they wanted to have a single mechanism for objid generation. Since SQL Server and Sybase didn't have a sequencer, they added the ADP table and stored procedure to their Oracle version. So, if you have a Clarify/Oracle system, the objid generation mechanism changed from version 8 to version 9. **If you have customizations that generate objids (for Oracle), you MUST change the code to work with the new mechanism.** If you don't, you will have some serious problems.

Change 2: Reusing Objids

There are two interesting problems in objid generation. The first is that if you get an objid, and then don't use it, it's gone forever. While this isn't a problem in Clarify, it does bother some people. Also, if you have a table (such as table_act_entry) with a lot of rows, it can be concerning.

The other issue is that generating objids requires another round trip to the database, and consumes extra time that you'd rather not spend.

To solve these issues, Clarify introduced, in version 10.1, a way around these problems: An objid reuse mechanism.

How It Works

What Clarify did was to create a new table: adp_tbl_oid_unused. It is defined as follows:

Column Name	Type	Purpose
type_id	Integer	Table number for a Clarify table
min_obj	Long Integer	The starting objid that you can use
num_obj	Long Integer	How many objids, in a row, are available in this sequence

The basic idea is that Clarify can grab a group of objids for you (for a given table). This way, when they have to get the next objid, they don't have to go to the database. This saves you time. When they run out of objids, they go and get more. But sometimes the Clarify application ends with the application still having some objids available. In these cases, one or more rows will be added to the table above.

The basic idea of this table is that each row in it represents one (or more) available objids for a given table. You can copy the data from a row in this table (deleting the row in the process), and then you have those objids available for data rows that you would create. If, for example, you have a row in this adp table that is as follows:

```
type_id = 0, min_obj = 268435888, num_obj = 3
```

This would tell you that you could use objids 268435888, 268435889, and 268435890 for the case table if you needed them, and you can be sure that they're not used already in that table.

Clearly, if you grab a series of objids, and don't use them, you can write row(s) back to this table so that others may use those objids.

Change 3: Exclusive Relations

As mentioned before, most Clarify relations involve a column on one table that contains an objid of a related table (This handles four of the five relation cardinalities: MTO, OTM, OTOP, and OTOF. It does not include MTMs). This is how over 99% of the Clarify relations are implemented.

But consider a very busy table, such as table_act_entry. This table has a huge number of relations (34 alone in version 9.0!!) added to the table. Most of them are indexed for fast data retrieval. But it is a fact, for a given data row, that very few of these relations are populated. For example, act_entry2case is only filled in for activity logs for cases, and act_entry2bug is only filled in for activity logs for change requests, and so on. Both of these are **never** filled in for a

single data row. Having all of these relations is wasteful in both space and time. It would be nice to have a simple, small mechanism that allowed you to reuse the space, and not have more relations than you need.

That is what exclusive relations do for you. The basic idea of exclusive relations is to add two new long integer columns to a table, instead of a great many relations. The columns are:

- 1) **The type field.** This contains the table number of the related table.
- 2) **The objid field.** This contains the objid of the related row.

You only now need to have (and index) two columns for a relation, instead of the 10-12 you might use if you created a relation to each possible table. It is important to note that this is only useful if you know that one **AND ONLY ONE** table can be related at a time. If you have multiple groups of relations, you might need multiple exclusive relations.

Note: You can make your own exclusive relations without using the mechanism. You just have to write your own code to handle it. First Choice has had many products for years that have used this idea.

You declare exclusive relations in the Clarify schema file. The following is an example.

```
'
EXCLUSIVE_SET route_for
  TYPE_FIELD = source_type
  OBJID_FIELD = source_lowid
  r_rqst2case MTO case
  INV_REL=case2r_rqst      COMMENT="For a routing request that represents a case, the case"
,
  r_rqst2contract MTO contract
  INV_REL=contract2r_rqst  COMMENT="For a routing request that represents a contract, the contract"
,
  r_rqst2dialogue MTO dialogue
  INV_REL=dialogue2r_rqst  COMMENT="For a routing request that represents a dialogue, the dialogue"
,
  r_rqst2contact MTO contact
  INV_REL=contact2r_rqst   COMMENT="For a routing request that represents a contact, the contact"
EXCLUSIVE_SET_END
```

Clarify has done a great job with exclusive relations. With the above syntax, you don't even have to know about the type and objid fields. You just use the relations that are listed, just if they were normal MTO relations. Clarify recognizes that they are exclusive, and builds the proper SQL code for you.

So What's Changed in Exclusive Relations?

First of all, exclusive relations did not appear in Clarify until version 7.0. And in version 7.0, you can only have one exclusive set per data table (you wouldn't use the *SET* syntax above for version 7.0. As of version 8.0, Clarify introduced the *SET* concept, and now you can have as many exclusive relations as you want.

Having said all of this, Clarify themselves do not use exclusive relations very much. As of version 10.1, they are only defining 8 sets in the entire data model.

Hopefully this information is useful to you. If you have questions about it, please feel free to post them in the *fcConnect* user forum located at: <http://www.fchoice.com/fcconnect>.

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