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The Port of Vancouver Charts a Course for Success

In 1994, over 67 million metric tons of cargo and over 590,000 cruise ship revenue passengers flowed through the Port of Vancouver—Canada's gateway to the rapidly growing Pacific Rim. And everyday that type of information needs to be tracked and analyzed if it is to help the Port maintain its competitive edge. Until recently, that wasn't easy for the Vancouver Port Corporation. Key information for harbor administration, wharfage, and accounting was being collected by three separate legacy mainframe systems running independent applications.

The Port's systems weren't supporting changes in their business, either. Port managers needed better tools to track and report on complex business interactions. They needed meaningful information and they needed it faster. Key reports used by Port executives sometimes took 6 to 8 weeks to compile—chewing up more and more time for MIS employees.

To turn the situation around, the Port hired Minerva Technology, a Vancouver-based Systems Integrator. The goal: to devise a state-of-the-art solution for the Port's information needs. That meant developing a robust, easy-to-learn, easy-to-use application. And of course, it had to be fast. Right from the start, Minerva Technology knew that Crystal Reports Professional would be part of the solution. The result of that collaboration, **PortView**, is a perfect example of the type of data collection and reporting that today's client/server systems can deliver.

The key components of PortView include the following:

- A vessel and cargo tracking system allowing port officials to see on a computer screen where various ships are in Vancouver Harbor, what stops they make while in the harbor, and what cargo (including raw materials, agricultural products, industrial goods, and passengers) they take on or discharge.
- A tracking system for ship manifests which documents the number of cruise ship passengers or shipping containers (and their contents) being loaded and unloaded. Managers can study trends on a near to real-time basis. For example, using Crystal Reports, the system allows executives to spot whether the Port is gaining or losing market share in critical commodity categories, like specific types of grains or industrial parts.
- Data from the arrival-departure and manifest tracking systems is transferred automatically to the Port's accounting and billing systems for accurate and timely processing.

PortView was a major effort encompassing Crystal Reports and almost all of Microsoft's Office and BackOffice products, including Access, Excel, Visual Basic, SQL Server, and Visual C++. Integrating these tools meant the added advantage of a Windows interface—helping minimize the training time for new users.

As an integral part of PortView, Crystal Reports makes reports on the collected data more accessible to users and frees up MIS resources. The reporting system allows users to build reports using data from a variety of databases. There are 3 basic types of reports that abide by the security rules built into the PortView database:

- Personal reports that users can execute from their toolbars
- Reports that reside in local libraries
- Reports that reside in a corporate library.

As part of the ad hoc reporting framework being developed, Crystal Reports will be one of a number of tools to help simplify user access to the PortView database. Starting from several predefined toolbars, users will create custom toolbars drawing upon reports located in a local library or the corporate library.

These personalized toolbars will allow users to access favorite reports with the single press of a button. And Crystal Reports will allow users to combine results from multiple reports into more complex master reports. Currently 20 workstations are linked to the reporting system. Eventually, the Port plans to roll the system out to more than 100 desktops.

Because PortView is still in its relative infancy, additional reports are still being added to aggregate data at even higher levels; but that's the beauty of PortView—since it uses state-of-the-art client/server tools such as Crystal Reports, it can evolve and grow as the Port of Vancouver itself grows and evolves. Users who one year earlier were unable to get vital operating reports are now just beginning to scratch the surface of the kinds of exciting and meaningful reports they'll be able to create as they tap into the power of Crystal Reports.

Trade Show Schedule

October 1995

Oct 9-25	Crystal Info Seminars	10 cities	*****
Oct 10-12	ITExpo (Gartner Group)	Lake Buena Vista, FL	
Oct 11-12	DataWarehouse Conf	Phoenix, AZ (DCI)	
Oct 15-18	Access/VB Advisor Show	Phoenix, AZ	
Oct 23-24	VBITS	Orlando, FL	
Oct 24	Client Server Expo	Denver, CO	
Oct 26	Client Server Expo	Seattle, WA	
Oct 27,28	VB Teach	Toronto, ON	

November 1995

Nov 13-17	Fall Comdex	Las Vegas, NV	
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***** Crystal Info Seminars

Oct 10th	NY
Oct 11th	Washington, DC
Oct 12th	Philadelphia
Oct 13th	Boston, MA
Oct 17th	Chicago, IL
Oct 18th	Atlanta, GA
Oct 19th	Houston, TX
Oct 20th	Dallas, TX
Oct 24th	Los Angeles, CA
Oct 25th	SFO, CA

Partner News

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Crystal and Blackbaud Help Make the World a Better Place

Blackbaud, a leader in software development for over 3,700 non-profit organizations, joined Crystal's growing list of OEM partners in December 1994.

Blackbaud develops and markets **The Raiser's Edge for Windows**, deemed to be the most popular fund-raising software in the world. The program is designed as a Work Group—a set of programs linked together to facilitate multi-tasking. Within the Work Group, a customized version of Crystal Reports allows users to report on data. Users can produce simple or sophisticated reports which can be used repeatedly or modified as required.

Nigel Cooper, Blackbaud's Vice-President of Research and Development, said "Blackbaud selected Crystal Reports because it was the most feature-rich sophisticated product of its type in the marketplace. It has strong associations with many development tools in the industry. It is very user-friendly and provides a great degree of programmability through User-Defined Functions. Several other products were reviewed but we felt Crystal Reports had the most to offer, now and in the future."

Blackbaud is Crystal's first OEM partner in non-profit software management—signaling Crystal's commitment to provide reporting functionality in all markets. Crystal has over 80 OEM partners including Microsoft, Borland, Hewlett Packard, PeopleSoft and Symantec.

For more information on Crystal OEM partner opportunities, please contact Mark Sochan, Director of Strategic Relations at 604-893-6313. For more information about Blackbaud or The Raiser's Edge for Windows, call 800-443-9441.

Chase Manhattan Empowers Customers to Create Their Own Reports

Today's client/server computing systems have to bridge an enormous gap: Behind the scenes, they can be incredibly complex and sophisticated, yet for users they need to be easy to use, flexible, and efficient.

But imagine if the end users of your client/server systems are also your customers. Then, the caliber of the computer tools and interface that you supply take on even greater importance as they serve as automated representatives for your company.

Take Chase Manhattan Bank's Global Payments and Treasury Services Division, for example. Global Payments and Treasury Services manages cash flows, payments, account information, investments, and more for large corporate clients around the world, including many of the Fortune 500. It's a fast moving business, where clients want to know at a moment's notice precisely what their account balance is and what changes—fund transfers, detailed credits and debits, and so on—are taking place during the day. In many cases, these transactions also require specific client approvals or funding.

As you might expect, the bank's back office servers wouldn't be the appropriate processors to handle the thousands of individual queries, such as are listed above, that their customers generate. The best strategy, Chase decided, was to provide their customers with tools that allow them to easily access and store this information on their desktop PCs and thereby simplify their financial account management activities from the subset of data directly on their PCs.

Chase has been using this PC-based querying system for more than 10 years, and it's no lightweight. For example, the Gupta database that resides on the client PCs mirrors the structure of the server database and contains about 200 tables of normalized data; these PC databases, which can start with up to 20M of data for a large client, are updated with about 1M of information at least once every day.

Chase, which had been providing these services through a DOS-based front-end, recently released a Windows version with greater functionality. At the same time, they were also able to upgrade a number of the tools they provide to their users. One tool in particular that they wanted to upgrade was the report writer that their customers were using to summarize the status of their accounts and activities.

Chase's implementation of Crystal Reports currently offers 35-40 production reports that vary in complexity from fairly straightforward to quite complex; in fact, a few are based on 10-20 tables and require complex formatting and C++ routines to create the appropriate data. And many users develop their own reports to supplement those supplied by the system.

Why did Chase select Crystal Reports? When the selection process began, the bank devised a two-part checklist. This checklist covered the essential features that their report writer would have to offer—such as being able to run on their existing architecture—and a second list of important, subjective factors—such as ease-of-use and the ability to interface with multiple databases. Other key criteria included the ability to use ODBC drivers, the ability to interface with Visual Basic, and name recognition among customers. The latter ingredient would make it easier for customers who had already used Crystal in other applications to come up to speed more quickly with Chase's implementation.

The evaluation team, which included both users and systems people, evaluated about a dozen tools over a period of four months, and created several reports with each product. The selection of Crystal Reports was largely influenced by the following factors, say Chase managers:

- Crystal makes it easy to customize reports.
- It seamlessly integrates with Chase's existing applications.
- Reports can print to the screen or to paper.
- Reports can be exported directly to virtually any other spreadsheet or database.
- Crystal Reports is backwards compatible, so an application written in an earlier version of Crystal Reports needs minimal modification to work in later versions.

In the end, Chase is extremely happy with the ease of use and flexibility that Crystal offers. It helped them create a system that combines the best of their in-house development talent and off-the-shelf software. The relationship between Chase and Crystal Reports will continue to grow as both organizations expand and embrace their systems' capabilities.

10 Tips Toward A Better Report Design!

Today, businesses are obsessed with information. The result is we are all inundated with paper. It is essential to distribute relevant information and to ensure that the reports we produce and distribute are clear, meaningful and readable. The desktop publishing industry has discovered many ways to present data - let's learn some design tips from them!

Choose Information Carefully

Think about what information is important and confine your report to that information only! Don't be tempted to include everything.

Introduce Your Information Properly

What title will grab their attention? What title will clearly identify the information? Should the date be included in the header?

White Space

Use a lot of it.

We all know that we should, but somehow we never do. Stop thinking of white space as the part of the page begging for text. Too much text jammed into every corner of any report makes for a slow, heavy read.

Details

Avoid over-detailing.

Does the reader need to sift through every detail, or can some details take a back seat? If so, use the CRW 4.0 *Summary Expert* to create a simple report. Or, get the best of both worlds by using the Crystal Reports 4.0 *Drilldown* feature.

Drilldown lets you view hidden data. Hide the details during report creation and present concise summary data to your audience. Readers interested in seeing the nitty gritty can simply double click to access all of the supporting information.

Suppress if Duplicated is another Crystal Reports feature that lets you hide repetitive data like a salesperson's name, territory, or a transaction date. Or, if the report is grouped by the field, hide the field in the detail section and show it once only in the group header section.

Proximity

Remember to group related report elements close together on your page, and separate unrelated elements with white space. For example, keep a subtitle close to its relevant text, and put some white space between that group of elements and the next group.

Alignment

Each element on your page should be aligned with another element on your page, no matter how far away that other element might be. That way, your report will have a more cohesive look. Once you've finished your report, double check that each element is aligned.

Hot Alignment Tip!!!!

If your paragraph is left aligned, and the first sentence is indented, don't center your headline above it. Instead, set it flush left.

Don't center a headline over left aligned text that has its first line indented. Instead, set it flush left!

Typefaces

Avoid using more than 2 typefaces in one report.

If you need to create variety, try different weights or thicknesses of the same font—that way you still maintain a consistent look. For example, in Crystal Reports, use Helvetica for titles and Helvetica-Narrow for subtitles. Also,

DO NOT TYPE LONG BLOCKS OF TEXT IN ALL CAPS, IT'S TOO HARD TO READ AND IT LOOKS UNSOPHISTICATED. For emphasis, use **bold** or *italics* instead.

Fonts

Use serif fonts when including large blocks of text in your report.

Serif font letters have little "feet" on their edges which help guide the reader's eyes forward, thereby making text much easier to read. Sans serif fonts (meaning "without serif") have no little feet on the ends of the strokes. Here are examples of each font-type:

Serif Fonts

Courier

Times New Roman

Footlight MT Light

Palatino

Sans Serif Fonts

Arial

Avant Garde

Century Gothic

Helvetica

Don't forget, to save formatting time you can preset all your fonts in Crystal Reports by choosing File/Options/Fonts!

Extra! If you do use 2 fonts, never put 2 serif or 2 sans serif typefaces on the same page. Putting a sans serif font beside a serif provides greater contrast. Try using a sans serif for headers and a serif for body text.

Contacting Crystal

Here is a list of ways to contact Crystal

Bulletin Board:

604-681-9516

CompuServe Support:

Go Reports

Connect Modem Support:

604-662-8298

E-mail Address:

sales@crystalinc.com

Facts-on-Demand:

604-681-3450

For a full list of technical, sales, or marketing documents, press 3

Fax Support:

604-681-7163

Internet Home Page:

<http://www.seagate.com/software/crystal/>

Sales Information:

(US) 800-877-2340

(Canada) 800-663-1244

(International) 604-681-3435

Fax Orders:

604-681-2934

Technical Support by Telephone:

604-669-8379

Mailing Addresses:

CRYSTAL A Seagate Software Company

3873 Airport Way, PO Box 9754

Bellingham, WA USA 98227-9754

CRYSTAL A Seagate Software Company

1095 West Pender St., 4th Floor

Vancouver, BC Canada V6E 2M6

Index Your Way to Faster Reports

What is an index?

An index is a list or a guide that makes locating information easier, primarily because it is sorted in a predetermined order. Its advantages are speed and efficiency. For example, let's say you wanted to complete the task of finding all the people in a city with the last name "Cunningham". Without an index, such as a telephone book, you'd have to spend a long time tracking down every resident in the city individually, until at long last your list of "Cunninghams" was complete. With an index, you could quickly turn to the relevant section in the telephone book, and since it is sorted alphabetically, you could immediately zero in on all the "Cunninghams" in a matter of minutes, or even seconds. The second alternative would take much less time, and a lot less legwork. And, as the city got larger, the benefit of the index would be even greater. This analogy is almost exactly what is happening in your computer each time you perform a query. Instead of having to do a massive search of every record (citizen) in a database (city), your computer refers to a smaller file—an index—so that it can quickly and efficiently locate the information you want.

The KEY to understanding indexes

In a telephone book the critical information that makes the index work is the last name/first name combination, because that's the information you need to know to look somebody up. This combination is called a *Key*. An index is simply a collection of keys that have been appropriately sorted based on their values, usually alphabetically for words and numerically for numbers. Keys can be based on one or more fields and are often made up of expressions. For example, many direct mailing companies build unique keys by combining a person's name with part of their street address and postal/zip code. Once you know how a key has been constructed, you can use an index to search a database and locate a specific record almost instantly.

Indexes and Crystal Reports 4.0

Crystal Reports uses indexes for 3 purposes; first to speed up selections, second to eliminate the added task of sorting, and third to allow table linking. The program tries to determine which, if any, indexes will accelerate the selection process by matching field names in your selection formula to the field names in the keys for the known indexes. Generally, the better the match, the more likely the index will be used. Crystal Reports interacts directly with the indexes for xBASE, Paradox and Btrieve-based databases. (All look-ups for SQL type databases are performed on the SQL server, outside of Crystal Reports' control).

How do I use indexes for speed?

For NTX (Clipper), NDX (dBASE) and Paradox indexes, you must first specify the name of the index file by using the Visual Linking Expert. Double-click on any field in the list of fields for the parent table, choose Add index|browse and select your index. Index files need to be in the same directory as the database files. MDX, CDX and Btrieve indexes are automatically found and added. Once your index is linked, create a selection formula by setting a range and then adding a sub-selection. The following restrictions apply to index selection formulas:

You can use these operators: > = < >= <=

You cannot use these operators: OR IN LIKE <>

It is important to use ANY index you can to skip past as many non-relevant records as possible, then use the selection you really need to find the "right" records. For example, say you want to run a weekly report to determine your sales for the week. If you don't use an index the computer would have to

process every record ever entered in the orders file to select the orders that were entered last week—a much slower process than it should be.

If you had an index on the field indicating the date the order was entered, you could create a selection formula using that field to force your query to jump to the first entry with the specified date and then continue on from there. Your selection formula might look like this:

```
{orders.date} >= (Today - 8) and {orders.date} <= (Today -1)
```

But if you *don't* have an index on the date field, you'll most likely have an index on the order number. Often, the order numbers are assigned sequentially. In that case, first base your selection formula on the order number, then add the sub-selection for the date:

```
{orders.ordnum} > "123445" and {orders.date} >= (Today -8) and {orders.date} <= (Today-1)
```

Anything else I need to know?

1. Formulas will not work with indexes. The program wants to work through a range instead of individual look-ups, and since often there is no way to know the range of keys with a formula, the program doesn't try.
2. Use the IDAPI drivers and get index-type speed on any selection. Crystal has just released support for IDAPI database drivers (Borland Database Engine) which do non-indexed based selections almost as fast as indexed based selections. Call Crystal's Fax On Demand service at 604-681-3450 for details.
3. Indexes for speed apply only to the master or parent table (or database file), not to the linked or child tables. When linking tables and indexes be sure to start with the table that has an index on the field that can be used in your selection formula. In the previous example, you would start with the order table and then link it to the customer table, so that the computer could take advantage of the index using the numerically sorted "order field". If you started with the wrong table, the computer would grind it's way through the "wrong" records first, and would not be able to use indexes for speed.

The 5 Formulas for Success

Accurately Comparing Totals Involving a One-to-Many Look-Up

When designing reports which compare fields like a total of last year's sales with an on-going total of this year's transactions, make sure that your last year's sales number is displayed accurately. The two report files (Report #1 and Report #2) illustrate an incorrect and a correct example of what can happen when a one-to-many look-up is used. Following is a step-by-step explanation of how to do it right.

CUSTNAME	LASTYRSALE	AMOUNT	ORDERNUM
Empire Data	20,851.28	16,900.00	2309
Empire Data	20,851.28	9,176.60	2388
Subtotal:	41,722.56	26,076.60	
Target Data	34,287.84	7,242.00	2284
Target Data	34,287.84	12,420.00	2409
Target Data	34,287.84	18,435.60	2474
Subtotal:	102,863.52	38,097.60	
Grand Total	144,586.08	64,174.20	

Report #1

CUSTNAME	LASTYRSALE	AMOUNT	ORDERNUM
Empire Data	20,861	16,900	2309
Empire Data		9,176	2388
Subtotal:	\$20,861.28	\$26,076.60	
Target Data	34,287	7,242	2284
Target Data		12,420	2409
Target Data		18,435	2474
Subtotal:	\$34,287.83	\$38,097.60	
Grand Total	\$55,149.12	\$64,174.20	

Report #2

When two or more tables are linked for use in one report, the first (source) table that is accessed becomes the parent table and the remaining table(s) used to look-up matching records becomes the child table(s). The link is referred to as one-to-one if there is only one row in the child table for each

row in the parent table. When there is more than one row in the child table for each row in the parent table the link is called one-to-many. A one-to-many look-up might occur if a customer's last year's sales from a parent table are matched against that customer's individual transactions for this year from a child table.

In Crystal Reports, a report that accesses two or more tables using a one-to-many link repeats the fixed value from the parent table (e.g. \$20,861 in Report #1) for every matching row in the child table (values in the AMOUNT column) so that it can complete the match. If the parent table column—in this case LASTYRSALE—is then summarized by inserting a subtotal, Crystal Reports automatically subtotals the repeated parent field and returns an inflated value. Notice that in Report #1 the subtotal of LASTYRSALE should be \$20,861 but instead is \$41,722 as it has been multiplied by two (there are 2 records to look-up).

Columns formatted to "Suppress if Duplicated" will not resolve this issue because although the numeric fields are hidden, the subtotal command still includes them in the calculation.

Inserting LASTYRSALE into the Group header or footer section is not a solution because columns inserted into Group header or footer sections cannot be further totaled or summed.

The solution is to create a series of 5 formulas that print the subtotal of LASTYRSALE in the Customer group footer and the grand total in the grand total section.

5 Formulas

Design		Preview	
T			@GTRreset
PH	CUSTNAME	LASTYRSALE	AMOUNT ORDERNUM
GH1			@CustCounterReset
D	CUSTNAME	LASTYRSALE	AMOUNT ORDERNUM @CounterCalculation
GF1	Subtotal:	@CustCounterDisplay	Sum of AMOUNT
GT	Grand Total	@GTDisplay	Sum of AMOUNT
PF			
S			

```

1. @GTRreset
WhilePrintingRecords;
CurrencyVar GTCounter:= 0;

```

This formula declares a new (currency) memory variable called “GTCounter” (for Grand Total Counter) and sets the memory of this variable to zero. Place this formula in the Title section of your Crystal Report and format it to hide when printing. Note that it will only execute once—at the beginning of the report.

2. @CustCounterReset

```
WhilePrintingRecords;
```

```
CurrencyVar CustCounter:= 0;
```

This formula declares a second memory variable called “CustCounter” (for Customer Group #1 Counter) and sets the value for this variable to zero each time a new customer name is encountered. This way, Crystal Reports will be sure not to include a previous customer’s LASTYRSALE value in a new customer’s calculation. Place this formula in the Group #1 header section and format to hide when printing. Note that it will execute each time the customer name changes.

3. @CounterCalculation

```
WhilePrintingRecords;
```

```
CurrencyVar CustCounter;
```

```
If PreviousIsNull({customer.LASTYRSALE}) or  
Previous({customer.CUSTNAME}) <> {customer.CUSTNAME}  
then CustCounter:= {customer.LASTYRSALE}  
else CustCounter:= CustCounter;
```

This formula performs two tests on the Parent table fields, and is executed for every line in the Details section. First, it tests whether the previous record field value is null. This will only be true for the very first record in the file. Second, it tests whether the previous record field value—i.e. customer name—is NOT equal to the current record field value. This will only be true when the customer name changes. If either test is true, the variable grabs the new **LASTYRSALE** field value and stores it in the CustCounter (Group #1) variable. If both tests are false, the CustCounter variable retains its previous value. Place this formula in the Details section of report and format it to hide when printing.

4. @CustCounterDisplay

```
WhilePrintingRecords;
```

```
CurrencyVar GTCounter;
```

```
CurrencyVar CustCounter;
```

```
GTCounter:= GTCounter + CustCounter;
```

```
CustCounter;
```

This formula adds the value stored in the CustCounter (Group #1 or subtotal) variable to the value stored in the GTCounter (grand total) variable, and stores the result in the GTCounter variable for future use. Then it prints the value stored in the CustCounter variable. The formula is executed whenever there is a change in customer name (i.e. whenever there is a change of group). Place this formula in the Group #1 footer section under the LASTYRSALE field, since it will be printing the subtotal.

5. @GTDisplay

```
WhilePrintingRecords;
```

```
CurrencyVar GTCounter;
```

```
GTCounter;
```

This formula prints the value stored in the GTCounter variable so that we can see the final (and accurate) grand total. This formula is executed only once—at the end of the report. Place it in the Grand total section of the report, below the LASTYRSALE field.

Crystal Provides Users with Magic

MagicSolutions, one of the market leaders in Help Desk Technology, has been a Crystal OEM Partner since 1993. Magic develops and markets SupportMagic for Windows, with an installed base of 30,000 end users, has the largest installed base of any PC and Windows based Help Desk software.

According to Andrew Rawson, VP of Marketing, MagicSolutions chose Crystal Reports because "Crystal Reports is the best mix of power and ease-of-use, and Microsoft could have picked any report writer, but they decided to go with the bestCrystal Reports".

Crystal Reports provides SupportMagic with both a custom built-in interface and an additional module for easy and intuitive report writing. SupportMagic users take advantage of the built-in interface to access standard reports through the Print Engine and to make use of Crystal Reports' robust editing capabilities. For additional report writing needs, MagicSolutions offers the Custom Report Writer (Crystal Reports) Optional Modulethe complete Report Designer.

Crystal Services believes in the added value of OEM partnerships and currently has over 80 OEM partners. Other partners include Microsoft, Borland, Hewlett Packard, PeopleSoft and Symantec. For more information on OEM Partner opportunities, please contact Mark Sochan, Director of Strategic Relations, at (604) 893-6313.

Crystal Goes On-Line with Everything from Tech-Tips to Trade Shows

For up-to-the-minute information day or night, locally or globally, get on-line. CompuServe members can **Go Reports** to access the Crystal Reports section of the Windows Components B Forum. There you'll find tips, tricks, downloadable reports, peer support and more.

Crystal's home page on the Internet provides information about Crystal products, training, trade shows, partners, FAQs, technical-tips, hot links to other industry-related home pages, and more. The address is **<http://www.seagate.com/software/crystal/>**. You can also download reports and report templates, access our facts-on-demand documents, even browse press releases and back issues of newsletter articles. Surf's up...see you on the 'Net.

What Sort of Information Makes Your Point?

Smart reports don't just show data, they *highlight* data. Here's an explanation of how you can use record and group sorting to highlight your data.

Sorting Records

Most of us understand the concept of *sorting records*. If the phone company printed phone books without sorting records by last and first names, the entries would appear in another order—perhaps the order that subscribers were added to the database. You'd look for new listings at the end of the book, while the oldest resident in town would have the very first listing—not a very useful way to sort records.

Sorting Groups

Group sorts are harder to grasp. Just as a record sort allows you to change the order of records in your report, a *group sort* allows you to change the order of the groups. Why would you want to do this? Imagine a database that tracks a company's sales reps, the states they cover, and the sales they close. One table would document the sales reps; there are 4 reps, 2 in Indiana and 2 in New York. A separate sales table holds five sales—one for each rep.

An Example

If we use Crystal's Expert to create a small report that groups the records by *state*, the results look something like table 1.

Example #1: No sorting

State	Rep Name	Cust #	Sale #	Amount
IN				
IN	Thom Veratti	1	1	\$100.00
IN	Thom Veratti	1	5	\$150.00
IN	Rosie Saville	2	3	\$140.00
				\$390.00
NY				
NY	Jean Thompson	1	2	\$110.00
NY	Wally Campbell	1	4	\$120.00
				\$230.00
Grand Total				\$620.00

Table 1: An unsorted report with records grouped by State.

While this report is useful, it may not properly highlight the information that our audience wants to see. Let's say we're interested in sale amounts. We might decide to do a sort on the Sale Amt column so that within each state group, we can easily see the largest sales or smallest sales. To accomplish this, we use

the Report | Sort Records... command, which brings up the Record Sort Order window. This window provides a list of fields in the report. By selecting “sales.saleamt” (the saleamt field from the sales table), pressing the Add button to add the field to the Sort Fields list, and leaving the Sort Direction at its default of Ascending, the report changes to look like table 2.

Example #2: Sort by record

State	Rep Name	Cust #	Sale #	Amount
IN				
IN	Ihom Vematti	1	1	\$100.00
IN	Rosio Ferillo	2	2	\$140.00
IN	Ihom Vematti	1	5	\$150.00
				\$390.00
NY				
NY	Jean Thompson	1	2	\$110.00
NY	Wally Campbell	1	4	\$120.00
				\$230.00
Grand Total				\$620.00

Table 2: Records sorted by sales amount in ascending order highlights lowest and highest individual sales.

The report looks very similar, but now the position of some records in the Indiana group have changed. Our small example makes it easy to see the single change, but you can imagine the impact on a huge set of data—like the phone book we mentioned earlier.

What’s the difference?

So what difference can a group sort make? The two groups are already in “order” in the sense that IN comes alphabetically before NY. In fact, you can see in Crystal Reports how this is specified by using the Report | Change Group Expert... command. A list of the groups in the report (in our case just the state group) appears. If you choose the state group and click OK, you see the Edit Group Section window. This window clearly shows that the records will be sorted and grouped by the state field—the default when you create a group.

But what if you needed to highlight something else about the data? Let’s say that we’re more interested in the relative performance between states, rather than seeing the states in alphabetical order. We need a *group sort* to tell Crystal Reports that the order of the groups needs to change.

Just as groups allow you to create totals and summaries, a group sort is usually used to *sort* these totals and summaries. In this case, we create the group sort by choosing the Report | Top N/Sort Group Expert... command. The Top N/Sort Group Expert window contains a tab for each group in our report (in this case just the state group); because the Expert created a total for the state group, the option “Sum of sales.saleamt” appears in the window. By choosing to sort all of the records on this option, the report changes again, to look like table 3.

Example #3: Sort by group

State	Rep Name	Cust #	Sale #	Amount
NY				
NY	Jana Thompson	1	2	\$110.00
NY	Wally Campbell	1	4	\$120.00
				\$230.00
IN				
IN	Thom Venatti	1	1	\$100.00
IN	Thom Venatti	1	5	\$150.00
IN	Rozia Saville	2	3	\$140.00
				\$390.00
Grand Total				\$620.00

Table 3: Group sort by State highlights relative performance between states.

Now the two *groups* have changed position, because the sum of sales amounts for NY is less than the sum for Indiana.

A Summary of Sorts...

Record sorts put the data of an entire report or a group section of a report in some meaningful order.

Group sorts put the group sections of a report in order based on some summary of the entire group (such as sum, count, or average.) Of course, you can use these two types of sorts together and apply them to reports that have many different groups in a variety of ways and combinations. It's up to you to find the right combination for your needs—the one that properly *highlights* your data.

Beyond Reporting

Since its founding in 1984, CEO Terry Cunningham has been the leader and visionary behind the remarkable success of Crystal Reports. We took a few minutes to ask Terry where the reporting and decision support industry is heading.

How have changing customer needs affected Crystal's direction over time?

When we produced Crystal Reports as the first Windows-based report writer in 1992, our focus was to provide developers with a powerful data access and reporting tool that could be seamlessly integrated into database applications. Now, as businesses shift toward client/server technology, we are extending our technology to address the information needs of business professionals.

How do you see the business user market evolving?

Business people are now seeking their own information solutions. They want access to company data, and they want it fast. IS Managers want open systems, but they also need to maintain data security and guard against system overloads. The challenge is to balance the business user's need for autonomy with the IS Manager's need for control.

How will Crystal meet that challenge?

With Crystal Info, our newest product. Crystal Info addresses the issues of IS control with the Information Management System and business user needs with the Information Desktop. The Information Management System centralizes control over data, user privileges, and the system itself. It also executes report scheduling and implements Smart Processing, so that your system automatically handles data more efficiently.

What can customers expect from Crystal in future?

Crystal will continue to be a leader in the database access and reporting market. In May 1994 we were acquired by Seagate Technology Inc., thereby gaining the strong financial backing of a Fortune 500 company. Yet, we operate as a wholly owned subsidiary and have the same drive, flexibility, and entrepreneurial spirit as we did in 1984.

Also, we're in a soaring market. The market for client/server decision support tools is expected to grow to \$800 million by 1997. We intend to help drive that growth by providing both business users and developers with cutting edge technology. We're committed to developing faster products with increased functionality and unbelievable ease-of-use, and we're aggressively exploring future trends to identify emerging customer needs. Our mission is simple; to make great products that people will want to buy. Where will we be in the future? Easy. Wherever the customer needs us to be.

Crystal announces support for Microsoft Exchange Server

Crystal Reports to provide connectivity to the Microsoft Exchange Information Store

Vancouver, BC, -- May 8, 1995 -- Crystal announced today that Crystal Reports will be enhanced to provide users with easy access to the Microsoft Exchange Information Store from which they can produce powerful reports. As part of Crystal's commitment to support Microsoft Exchange, they have begun to work closely with Microsoft to ensure that Crystal Reports is tightly integrated with Microsoft Exchange Server.

Microsoft Exchange contains data that can be summarized into useful information. Crystal Reports provides this functionality by giving users direct access to standard reports and the ability to design custom reports from their Exchange data. Crystal also provides data export capabilities which enables users to easily transport data across their desktop applications.

"Crystal Reports will add significant value to Microsoft Exchange" said Donna Izzo, Crystal Product Manager. "The data exists to answer such questions as 'how much mail do users send?', 'when do they send it?', and 'to whom?' Crystal Reports enables administrators and users to make the most of Exchange Information by providing easy access to answer such questions, and user-friendly tools to convert the data into meaningful presentation-quality reports."

"Crystal Reports has been the leading report writer for the Microsoft Windows® operating system for several years now." said Rob Shurtleff, General Manager of the workgroup solution productivity unit at Microsoft. "They have a proven track record as an OEM partner, as demonstrated by their work with Microsoft Visual Basic® programming system, and will be a great enhancement to Microsoft Exchange Server as well."

Microsoft Exchange Server is part of the Microsoft BackOffice integrated suite of server applications that make it easier for companies to improve decision making and streamline business processes. The message server provides a powerful and manageable corporate messaging platform which improves business communications.

Crystal has been creating quality software since 1984. Crystal shipped the first report writer for the Windows operating system in 1992. Crystal Reports is now the #1 award winning reporting tool with over 1,000,000 units shipped. Crystal's product line includes Crystal Reports Standard, Crystal Reports Professional, and Crystal Info. Crystal is located in Vancouver, BC, Canada and operates as a wholly owned subsidiary of Seagate Technology (Scotts Valley, California).

Crystal Reports, Crystal Reports Professional, and Crystal Info are registered trademarks of Crystal Computer Services, Inc. Microsoft, Windows and Visual Basic are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Other brands and product names are the property of their respective owners.

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Crystal Announces 32-bit Windows Versions

Crystal to ship 32-bit versions of Crystal Reports for Windows 95 and Windows NT

Vancouver, BC, -- July 12, 1995 -- Crystal, A Seagate Software Company (NYSE: SEG), announced today new 32-bit versions of Crystal Reports™, the #1 data access and reporting tool for PC and client/server environments.

"Crystal Reports has always been the leading data access application for both developers and end users," said Terry Cunningham, CEO of Crystal. "Now with the 32-bit OLE Control and Report Engine, developers will be able to deliver very powerful reporting solutions for their 32-bit environments. The speed and stability that 32-bit operating systems allow, plus the Crystal Reports easy-to-use "tab" interface and long filename support will continue to make Crystal Reports the reporting tool of choice for business professionals."

Crystal Reports 4.5 will be available in both 32 and 16-bit versions for use with Windows 3.1, Windows for Workgroups, Windows 95 and Windows NT. The product is designed to be easy to use for users transitioning to new versions of Windows - reports are compatible between 32 and 16-bit versions (and with reports created in earlier versions of Crystal Reports).

Crystal Reports 4.5 provides developers with maximum flexibility. When designing 32-bit applications, they can utilize the 32-bit OLE Control or Report Engine. While designing 16-bit applications, they can utilize the 16-bit OLE Control, Visual Basic Custom Control, VCL or Report Engine.

New features in Crystal Reports 4.5 include: a fully-featured 32-bit OLE Control, the ability to report on the NT Event Log, improved Microsoft Access support, the ability to Drilldown on graphs and the convenient saving of Report Options with each report.

Crystal Reports Standard 4.5 is available at a Suggested Retail Price (SRP) of \$195. The SRP for Crystal Reports Professional 4.5 is \$395. Upgrades to Crystal Reports Professional 4.5 from Crystal Reports 3.0 or earlier versions of Crystal Reports Standard or Professional plus OEM versions of Crystal Reports have an SRP of \$199. Upgrades from Crystal Reports 4.0 have an SRP of \$69. Users who purchased 4.0 after July 12, 1995 are entitled to a free upgrade. All products will ship in Q3 1995.

Pricing Summary

<u>Crystal Reports Version</u>	SKU	From earlier version	SRP
Crystal Reports Prof. 4.5	Full Product		\$395
Crystal Reports Prof. 4.5	Upgrade	Crystal Reports 3.0 and lower	\$199
Crystal Reports Prof. 4.5	Upgrade	Crystal Reports 4.0	\$69*
Crystal Reports Standard 4.5	Full Product		\$195
Crystal Reports Standard 4.5	Upgrade	Crystal Reports 3.0 and lower	\$79
Crystal Reports Standard 4.5	Upgrade	Crystal Reports 4.0	\$49*

* Users who purchased version 4.0 after July 12/95 are entitled to a free upgrade, \$69 & \$49 offers expire Nov 30/95

Reports are downwardly compatible (i.e. later versions of Crystal Reports support reports designed in earlier versions) and are independent of the operating system (i.e. reports created in 16-bit environments can be accessed in 32-bit environments and vice versa).

Crystal has been creating quality software since 1984. Crystal shipped the first report writer for the Windows operating system in 1992. Crystal Reports is the # 1 award winning reporting tool with over 1,000,000 units shipped. Crystal's product line includes Crystal Reports Standard, Crystal Reports Professional, and Crystal Info. Crystal is located in Vancouver, BC, Canada and operates as a wholly owned subsidiary of Seagate Technology, Inc. (Scotts Valley, California).

Crystal Reports, Crystal Reports Professional, and Crystal Info are registered trademarks of Crystal Computer Services, Inc. Microsoft and Windows are registered trademarks of Microsoft Corporation. Other brands and product names are the property of their respective owners.

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Crystal Reports 4.5 Technical Features

Features Common to all Builds:

For ease-of-use and learning

- Crystal Report Experts: Report Creation, Table Select, Graphing, Style & Report Distribution
- Private Tutor for on-screen step-by-step assistance
- Easy-to-understand database interface: Data Views created by Data Dictionary Builder
- Flexible Preview Window (live data) and Design Window (template) interface
- Sort and Subtotal in ONE Step
- Drag and drop, Tab Interface, Best Fit, Browse Field Data, Right Mouse Menus, Automatic Styles, Undo
- End User and Developer manuals
- Tab Interface, Grid Control options

For presentation quality reports

- Line drawing, box drawing, and graphic image support (BMP, GIF, TIFF, PCX, TGA)
- BLOB bitmap support (Paradox and xBASE)
- Integrated graphing — 12 styles
- OLE 2.0 support

For turning data into information

- Easy Select Records query interface plus powerful Formula Editor
- Drilldown, Search Dialog
- Cross-tab reports
- Export to other analysis tools (many export formats supported)
- Save Data with Report for after-the-fact analysis
- Top N/Named Groups

For efficient report distribution

- Integrated E-mail capability (VIM and MAPI)
- Send reports with saved data for distributed analysis
- Schedule reports for automatic production and distribution using Crystal Info
- Compiled Reports for free distribution of executable reports

Report Engine Capabilities

- Two pass reporting
- Sorting on groups, unlimited sorting
- Heterogeneous data sources (link various types of databases in one report)
- Formula Language with more than 140 functions and operators
- Extensible Formula Language (User Defined DLL functions)

System Requirements

- 16-bit: Microsoft Windows 3.1, Windows for Workgroups, Windows 95 or Windows NT. 8MB of RAM (16 for Windows NT). 35MB hard disc space for Professional Edition. 25MB hard disc space for Standard Edition
- 32-bit: Microsoft Windows 95 or Windows NT. 8MB RAM (16 for Windows NT). 35MB hard disc space for Professional Edition. 25MB hard disc space for Standard Edition

4.5 Features Technical Specifications

Legend:

P32 = Feature is available in Crystal Reports **Professional** 4.5, **32-bit** version.

P16 = Feature is available in Crystal Reports **Professional** 4.5, **16-bit** version.

S32 = Feature is available in Crystal Reports **Standard** 4.5, **32-bit** version.

S16 = Feature is available in Crystal Reports **Standard** 4.5, **16-bit** version.

ALL = Feature is available in all builds of Crystal Reports 4.5.

* = 32-bit ready, but requires component not currently available.

Advanced Features

P16	Data Dictionary Builder
P32	Security pass-through: support of back end and client/sever passwords
P32,P16	Report options saved with report

PC Data Access

ALL	ASCII
P16,S16	ACT! 2.0
P16,S16,*P32,*S32	Btrieve (all indices, requires DDF's) (32-bit: Yes NT)
ALL	Clipper (NTX)
ALL	dBASE (NDX,MDX, Visual dBASE)
ALL	FoxPro (IDX, CDX, Visual FoxPro)
ALL	Microsoft Access (1.0-2.0) & Access Queries
ALL	Microsoft Excel (XLS)
P16,S16,*P32,*S32	Paradox (3.5-5.0/Pdx/W/via IDAPI)
P16,S16	Lotus Notes

SQL Data Access

P32,P16	ODBC
P16,*P32	Borland Database Engine-IDAPI
P32,P16	Gupta SQLBase
P16	IBM DB2/2
P32,P16	Microsoft SQL Server
P32,P16	Oracle
P16	Scalable SQL
P32,P16	Sybase SQL Server

P32,P16	Stored Procedure support
P32,P16	Ability to sort data on the SQL server
P32,P16	Case Sensitive SQL data
ALL	Ability to convert database drivers

NEW 4.5 Features

ALL	OLE Control (OCX) - (No. of calls: >80 in P32, >35 in P16 S32 & S16)
ALL	32-bit Report Engine DLL-(No.of calls:>80 in P32&P16.>35 in S32&S16)
ALL	Drilldown on Graphs
P16,S32,S16,*P32	Graphing customization (printable from 32-bit)
P16,S16	Export to Lotus Notes Format
P16	Delphi VCL
P32,S32	Report from the NT Event Log (NT only)
ALL	Improved MS Access support
ALL	Export to Excel 5.0 format
ALL	Report options saved with report

Rapid Application Development

ALL	OLE Control (OCX) - (No.of calls: >80 in P32 & P16. >35 in S32 & S16)
P16,S16	Visual Basic Custom Control (VBX)-(No.of calls: >80 in P16. >35 in S16)
ALL	Report Engine DLL - (No.of calls: >80 in P32 & P16. >35 in S32 & S16)
ALL	FREE Runtime

* 32-bit ready. Requires component not currently available.

Check for updates: Internet: <http://www.seagate.com/software/crystal/>

Facts-on-demand: dial 604-681-3450 and request document #4030 from the marketing menu

BBS: 604-681-9516.

Telephone: 604-681-3450

Fax: 604-681-2934

World Wide Web: <http://www.seagate.com/software/crystal/>

E-mail: sales@crystalinc.com

International: Access the distributor listing.

Dial 604-681-3450. Request doc #4090 from the marketing menu.

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Crystal Reports 4.5 Demo Script

When demonstrating Crystal Reports 4.5, the following script will help you point out its new powerful features.

If New to Crystal Reports: I'd like to show you how quick and easy it is to create a report using Crystal Reports.

Crystal Reports is the #1 award-winning reporting tool, and we are continuing to lead the market with our new version Crystal Reports 4.5.

Crystal Reports 4.5 has true 16 and 32-bit versions, so it doesn't matter if you are going to WIN 95, Windows NT or continuing to use Windows 3.X, Crystal Reports 4.5 will meet your needs.

We have made considerable improvements to the report processing speed. Version 4.5 is 2 to 10 times faster than version 3.0, with Smart Engine Technology alone. In our own tests, some reports have run as much as 100 times faster. In addition, we now can access stored procedures and do o SQL sorting on the database server, for even faster performance.

The 32-bit version was developed based on testing for Visual Basic 4.0 and includes a fully featured OCX, and in 16-bit, both an OCX and a VBX. If you are using NT, 4.5 32-bit also allows you to report off the NT Event Log.

We can start by creating a report with our Report Creation Expert, which provides an instant template of a basic report. (Click on New Report icon)

Here we can chose the type of report we want to create, including 8 different redefined report types, such as cross-tabs, Top N, and mailing labels. It also gives you the option of choosing a custom report so you can design your own. I'm going to create a Standard report. (Select Standard icon).

The tabs along the top of the dialog box walk you through each step for creating the report and you can jump between tabs, or exclude some altogether. I'm going to create this report using a database file. We'll select the Type, Movie and Studio database files. Choosing the Database File option automatically inserts a Linking Tab which allows me to setup links between different database files. (Select Database File. Choose FilmType, Movie and Studio)

The graphical linking feature allows you to create the connections between database files using an easy to understand visual representation and the green arrows indicate the indexed fields in each database file. Now we can add the fields to our report.(Click on Fields tab).

We highlight the fields we want and either select Add, or simply drag and drop them. In this case, I'm going to use the Studio, Movie title, Category and Gross Receipts fields. (Highlight Studio, Category, Movie and Gross fields. Press Add or Drag and Drop).

We might also want to add a formula, right in the report creation expert. And Crystal Reports has over 100 functions and operators. (click on Formula button to show Formula Editor)

I want to group the data, and I'm going to sort on Studio, and its going to sort it in ascending order. Within Studio, I'm going to sort by category, but I'm going to specify the sort order as Action, Adventure,

Comedy, and an Other group that will include all other categories. (Choose Category field, ordered in specified order. Choose Action, Sci Fi, Adventure, and Comedy. Choose Others, and group all other categories together as Other).

We can even do some of our data analysis up front, by adding a total. I'm going to do a total on the Studio field. (Click on Total tab. Add the Studio field)

Now, suppose I am only interested in certain Movies. I can perform a record selection to eliminate unwanted records. This is the list of conditions I can use in my selection and we also provide you with a list of the relevant data, so you can see that it's very intuitive and easy to follow. (Click on Select tab. Select Movie field. Select Is Between. Select two movies).

We'll give our report a title. Let's call it Box Office Gross By Studio. We can choose from one of 10 different styles to quickly format our report and we can also add a logo and since Crystal is an OLE container application, we could add any OLE object. Crystal Reports 4.5 even supports BLOB fields. (Click on Style tab. Add title. Choose Teal and Maroon Style and add a logo).

See how quickly you can generate a report!! (Click on Preview Report)

You'll see how convenient the new Design and Preview tabs make switching between the Design and Preview windows. (Switch between Design and Preview windows using the Design and Preview tabs).

We don't want these studio and categories to appear multiple times, so we will suppress them, and I want the gross field sorted in descending order, so the studios with the highest gross are at the top. We are one of the few products that allows you to sort on grouped or summarized data. (Highlight Studio fields, use right mouse key to produce menu, choose format, choose suppress when printing. Repeat for Category fields. Highlight Gross field totals for Studio and use the Sort button to change the sort order to descending) .

An exciting new feature is graphing, which allows you to analyze your data at a glance and produce an attention-getting report. (Select Graph icon).

Graphing is completely integrated and Crystal Reports provides 12 different graph styles for you to choose from. Pick a style, such as a bar graph, choose the data you want to graph on and with CRYSTAL REPORTS 4.5 16-bit version, graphing is enhanced to allow you additional formatting options such as fonts, colors, more graphing styles and graphing templates. Not only can you add a graph during the design of a report but, as a developer, you can prompt the user for graphing options, and pass the information to the report engine at runtime. Now, if I change the record selection, the change will automatically be reflected in the graph and the graphs change dynamically per report group. (Click on 3D Bar icon. Click on Data tab. Select Chart Put Graph for Each Studio. Select Graph Done).

Let's take a look at an example of a report that has been a little more thoroughly formatted. (Bring up Boxoffice.rpt included with sample data).

You'll notice that whenever I place my cursor on summarized data, it changes into a little magnifying glass. This is our Drill Down feature, a tool we have provided to help you better analyze your data. Double clicking on the Gross Receipts field gives us the details behind this subtotal. For example, we can see that the gross receipts in the Comedy category is comprised of Home Alone and Home Alone 2. (Highlight the Gross Receipts field for the Comedy category for 20th Century and double click).

The tab features at the top screen allow us to track each level as we Drill Down and easily return to any

of the higher levels.

Let's go back to the original summarized version of the report. With version 4.5, we can even drilldown on graphs. (Choose the Preview tab to return to the preview window. Double click on a graph to show drilldown).

Now, we have these reports looking professional but we still have to get them to the people who need them, and fortunately, Crystal provides several options for report distribution. We could, of course, print the report, or we could export it for use in another program such as word or excel. We could also export it and email directly to the people who want it. (Select Export icon. Drop down Export menu to show export options. Drop down Email menu to show email options).

If you are a developer, we provide a simple way to wrap up an application you have created for distribution to users. The report distribution expert makes application deployment and distributing compiled reports easier. It collects DLLs, EXEs and configuration files in one place for distribution. With 4.5, you also have the ability to save the report options with each report, to simplify distribution of your report. (Open Report Distribution expert menu to show options. Close Report Distribution Expert).

Now there are more than 20 new calls to the Report Engine for greater control over reporting at runtime. And, you can take advantage of the full power of the Report Engine via the VBX. There's more than 80 properties - including 40 new properties. And, in the 4.5 32-bit version, we are shipping a new fully-featured OCX, a 32-bit OLE custom control. This is the very latest technology and has an improved user interface, organized, as you can see here, into Property Pages. It also allows you to integrate Crystal Reports into other OLE enabled applications, such as Access and Excel.. (Go to VB. Show VBX and OCX property pages).

Those are just some of the powerful features we have included in our new version, Crystal Reports 4.5. We have also just introduced a new product, Crystal Info, a complete decision support solution that provides a strategic approach for dealing with workgroup information in the form of reports and queries.

What's New In Crystal Reports 4.5?

Report Engine DLL in 32-bit

Now access the full power and functionality of Crystal Reports in 32 or 16-bit technology so you can develop and report in any Windows environment. There is full compatibility between both technologies so you have peace of mind knowing that your applications are truly cross-platform.

Full featured OLE Control

Check out Crystal 's new OCX with over 80 properties for full access to the Crystal Report Engine DLL. The new tabbed properties interface makes it really easy to navigate around the Properties Page.

Advanced Graphing for the best visual presentation of database information in the industry.

You will think you are sitting in a flight simulator! Totally advanced 16-bit graphing with over 100 styles has been added. You now have complete control over every aspect of graphs in a report. It's a snap to rotate a graph, change its perspective or simply adjust font size or colors, plus perform dozens of other adjustments. No other reporting tool has this much support. Important note: All graph work created in 16-bit can be read and printed in 32-bit. The 32-bit version of Crystal Reports has a basic 12 style template. Graphs are easy to insert and have report "smarts" built-in: graphs change dynamically per report group. And graphing options can be controlled at runtime.

Improved Microsoft Access Support

Crystal now offers better reporting with support for Microsoft Access OLE objects through Data Access Objects (DAO). Now you can include Access picture fields and OLE fields within reports.

The only way to report from the Windows NT Event Log

Use Crystal Reports to report on the Windows NT Event Log so you can better manage system related events. Monitor and analyze workstation or system-related activity. An IS favorite!

Delphi VCL

Now you can add reporting to Delphi applications. Crystal's Delphi VCL lets you take advantage of 89 properties for maximum control and runtime flexibility.

Easier Reporting with Lotus Notes

Crystal Reports now has 16-bit support so you have the ability to create reports importing Lotus Notes data (via ODBC) and the ability to export data to a Lotus Notes Format.

Borland Database Engine (IDAPI) & Support for Paradox 5.0

Crystal Reports has a new PDBBDE.DLL which uses the Borland Database Engine.

Export in Excel 5.0 format

Support for exporting reports directly to Excel 5.0 format.

Report Options Saved with Report

File | Report Options lets you save choices with the report to make it even easier to deploy reports across machines and throughout an organization. This saves the need to configure CRW.INI files on different machines.

Case Sensitive SQL Data

Sorting, record selection, subtotals, and other summaries can be affected by case sensitivity. Example: selecting "apple" and ignoring records with value "Apple" or "APPLE." Crystal now enables you to specify that you want SQL data treated on a case "insensitive" basis (apple, Apple, and APPLE all treated the same).

Drilldown on Graphs

Drilldown directly on graphs to view detailed data simply by clicking your mouse.

Ability to Convert Database Drivers

Crystal Reports provides a wide range of database drivers for databases like xBASE and Paradox. Now you control the choice over these drivers (even after report creation) to optimize report processing.

Don't Forget those Great 4.0 Features:

Blinding Speed

Re-designed Report Engine with new Smart Engine Technology means you get reports faster than ever. In fact, you can process reports 2-10 times faster than reports processed using versions 3.0 or 2.0!

SQL Control

Crystal Reports 4.5 now supports Stored Procedures for optimum SQL data access. In addition, it's able to sort data on the SQL server for even faster processing.

Report Engine Control

We've added more than 20 new direct calls to the Report Engine -- that's over 80 in total. And Visual Basic® users can take full advantage of the Report Engine via an enhanced, full-featured VBX with over 80 properties.

Easier Report Design

We've added seven Crystal Experts that prompt you for choices then do reporting tasks for you - automatically!

Company Profile: CRYSTAL A Seagate Software Company

Crystal A Seagate Software Company is a prominent Canadian software developer that began creating reporting applications in 1984. In 1992, Crystal launched the first Windows-based report writer, called Crystal Reports, for end users and developers. Now, with over 1 million units of Crystal Reports shipped through a worldwide VAR/distributor network and more than 90 OEM bundling agreements with companies like Novell, Hewlett Packard, PeopleSoft, Microsoft and Symantec, Crystal is dominating the fast-growing data access and reporting tools market. Acquired by Seagate Technology, Inc. in May 1994, Crystal operates as a wholly owned subsidiary. Crystal's commitment to on-going product improvement is demonstrated by their rapid development cycle—the company has brought 4 product releases to market in only 3.5 years. And, Crystal has added a new application to its product line called Crystal Info—a complete decision support solution for workgroups.

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Crystal Training Overview

Crystal offers Introductory, Advanced and VAR training (in both public and custom, on-site formats) for anyone interested in improving their report design and development skills.

Introductory Course

Crystal's two day Introductory Course is designed for the beginning to intermediate users of Crystal Reports and is offered at both public and custom locations. It covers all features of the Crystal Reports Professional 4.0 including Report Creation, Cross-tab Reports, and Dictionaries. Prerequisite for Introductory course is completion of the Tutorial in Crystal Report's Users Guide, Version 4.0.

Advanced Course

For the Developer, or "Power User", Crystal has designed a two-day Advanced Course which encompasses advanced report design and formulas; Crystal Reports Architecture and database connectivity, and the extended power and flexibility of the Print Engine (demonstrated using Visual Basic). Prerequisite for the Advanced course is completion of the Introductory course or a minimum of six months designing reports with Crystal Reports.

VAR Course

Designed specifically to meet the technical and sales needs of our VARs, Crystal's two-day VAR Course provides the VAR with: a conclusive overview of Crystal Reports; an in-depth analysis of Crystal's Data Dictionaries and Formula Editor; and an introduction to Crystal's software architecture and Print Engine. A Crystal Sales Seminar is also included to discuss the latest Crystal channel sales strategies.

Public Training

Crystal Reports Training by the Crystal Reports Experts!

Crystal has designed three 2-day training courses: An Introductory Course, An Advanced Course, and a VAR Course. The Introductory course covers Report Creation, Cross-tab Reports and Dictionaries. The Advanced Course is for users who want to fine-tune their report design and formula skills as well as learn about the Crystal Reports architecture, database connectivity, and the extended power and flexibility of the Print Engine. The VAR Course, specifically designed for Value Added Resellers includes topics such as Report Design, Formulas, Data Dictionaries, Software Architecture, the Print Engine, and a Sales Seminar.

Our Introductory and Advanced Courses are both available at many public training locations and are ideal for companies having 1 or 2 people to train. Public training is an opportunity to learn how to maximize your productivity using Crystal Reports and reduce reporting backlog! Bring samples of reports you would like to create or have had trouble creating in the past.

Format: Classroom style, maximum of 12 participants.

Cost: US \$ 800 per participant.

If you are interested in attending one of the above courses, or if you want more information, e-mail us or call us at:

800-877-2340 (U.S.)

800-663-1244 (Canada)

604-681-3435

Custom Training

On-site training is designed for corporations with 4 or more Crystal Reports users. Instructors base the course either the Introductory or Advanced Course 2-day syllabus. On-site training is customized to meet the specific abilities and concerns of company members and can be a combination of the Introductory and Advanced course topics.

Course length: To be determined based on information provided. An additional day can be provided as a workshop session to assist users with hands-on report creation.

Format: Classroom style preferable. No limit to the number of participants, but we recommend a maximum of 12 participants in order for each student to get the most out of the course.

Cost (expenses included):

US \$ 3000 1 day

US \$ 4500 2 days

US \$ 6000 3 days

For More Information or to Sign-Up contact Crystal at:

800-877-2340 (U.S.)

800-663-1244 (Canada)

604-681-3435

VAR Training

Course Length: 2 days

Course Description:

This two day course is specifically designed for Value Added Resellers of Crystal Reports. This course provides the VAR with: a conclusive overview of Crystal Reports; an in-depth analysis of Crystal's Data Dictionaries and Formula Editor; and an introduction to Crystal's software architecture and Print Engine. A Crystal Sales Seminar is also included to discuss the latest Crystal channel sales strategies.

Prerequisite for the VAR course is completion of the Tutorial in Crystal Report's Users Guide, Version 4, and of course, status as a VAR of Crystal Reports.

Course Outline:

Introduction to Crystal Reports:

Creating a Report

- Inserting and Formatting Fields
- Selecting Records
- Grouping, Sorting and Selecting data
- Inserting Graphs and OLE 2.0 Objects
- Basic Formula Creation
- Advanced Formatting
- Other Report Formats:
- Cross Tabs
- Summary Reports
- Mailing Labels
- Drill Down Reports

Analysis of Crystal Reports:

- Advanced Formulas
- If-then-else and nested If-then-else formulas
- Summary Functions and Stacked formulas
- Evaluation time functions
- Miscellaneous Functions (IsNull, NextIsNull, etc)
- Creating Crystal Dictionaries
- Links, Graphics, Aliases and Views
- Stored Procedures
- Report Templates
- Crystal's Architecture
- Discussion of Principle Executables and Dynamic Link Libraries

Use of Crystal Reports as a Developers Tool

- SQL Tips
- Editing SQL queries
- Configuring for speed with SQL
- Working with Stored Procedures
- Crystal Reports' Print Engine

- Making direct functions calls to Crystal Reports Print Engine from your application
- The Crystal VBX & using the Crystal Print Engine API

Crystal Sales Seminar:

Overview of Crystal's Channel Strategy

Crystal Marketing and Sales Objectives

Crystal Info Launch

Open Question & Answer Period

Introductory Training

Course Length: 2 days

Course Description:

This two day course is designed for the beginning to intermediate users of Crystal Reports. It covers all features of the Crystal Reports Professional 4.0 including Report Creation, Cross-tab Reports, and Dictionaries. Prerequisite for Introductory course is completion of the Tutorial in Crystal Report's Users Guide, Version 4.0.

Course Outline:

Introduction

The Report Design Window

Creating a Report

- Inserting and Formatting Fields
- Selecting Records
- Grouping, Sorting and Selecting data
- Inserting Graphs and OLE 2.0 Objects
- Basic Formula Creation
- Advanced Formatting

Other Report Formats:

- Cross Tabs
- Summary Reports
- Mailing Labels
- Drill Down Reports

Other Topics

- Linking Databases
- Distributing and Compiling Reports

1995 Public Training Schedule

Crystal offers courses in Chicago IL , Edison NJ, Manhattan NY, Minneapolis MN, Montreal QC, Newport Beach CA, New York NY, Parsippany NJ, and Vancouver BC,. Click one of these cities for specific geographical information or scroll down for an overview.

Announcing a special 1-day course on November 12 in Las Vegas, Nevada for FALL COMDEX.

Vancouver, BC

Introductory Course

- October 2-3
- October 9-10
- November 6-7
- December 4-5

Advanced Course

- September 7-8
- October 4-5
- October 11-12
- November 8-9
- December 6-7

VAR

- September 28-29
- November 29-30
- December 14-15

Minneapolis, MN

Introductory Course

- September 11-12
- November 9-10

Chicago, IL

Note: Effective September 1995, training location will be Schaumburg, IL, one of 3 main corporate centers in the Chicago area.

Introductory Course (offered by Special Ware)

- September 26-27
- October 24-25
- November 14-15

Advanced Course (offered by Special Ware)

- September 28-29
- October 26-27

- November 16-17

Manhattan, NY

Advanced Course

- October 12-13

Montreal, QC (offered by CMRC)

Introductory Course

- September 21-22
- October 26-27

Advanced Course

- October 30-31

New York, NY

Introductory Course (offered by Chubb Advanced Training)

- September 13-14

To sign-up contact Chubb directly at 1-800-CHUBB-07

Newport Beach, CA (offered by PC Works)

Introductory Course

- September 25-26
- September 27-28
- October 24-25
- November 28-29
- December 11-12

Advanced Course

- October 26-27
- November 30- December 1
- December 13-14

Edison, NJ

Introductory Course (offered by Chubb Advanced Training)

- October 26-27

Advanced Course

- December 4-5

To sign-up contact Chubb directly at 1-800-CHUBB-07

Parsippany, NJ

Introductory Course (offered by Chubb Advanced Training)

- July 25-26

To sign-up contact Chubb directly at 1-800-CHUBB-07

If you are interested in registering for any of the above courses, you can call our sales team at

- 800-877-2340 (U.S.)
- 800-663-1244 (Canada)
- 604-681-3435

or fax us at:

- 604-681-2934

If you're interested in courses offered by Chubb Training, contact Chubb directly at 1-800-CHUBB-07

Advanced Training

Course Length: 2 days

Course Description:

Designed for the Developer, Advanced, or "Power User", this course encompasses advanced report design and formulas; Crystal Reports architecture and database connectivity; and the extended power and flexibility of the Print Engine (demonstrated using Visual Basic). Prerequisite for the Advanced course is completion of the Introductory course or a minimum of six months designing reports using Crystal Reports.

Course Outline:

Crystal Reports Architecture

Database Connectivity

Advanced Formulas

- Nested If-then-else formulas
- Using Evaluation time functions and Variables in formulas (i.e., Running Total examples)
- Miscellaneous Functions (IsNull, NextIsNull, etc)
- Formatting with Formulas (i.e., Blank Line Every 5th)

Advanced Report Design

- Phone Book Report
- Simulated Cross Tabs with two summary levels
- Help Desk report illustrating Date Variables and Summary statements
- Displaying Record Selection in Report Titles and Headers
- Aging Report

Crystal in the SQL environment

- How Crystal creates a SQL query
- Editing SQL queries
- Configuring for speed with SQL
- Working with Stored Procedures

Crystal Reports Print Engine

- Using Crystal's VBX to integrate the Print Engine into your application
- Using Direct Print Engine Calls in your application

Crystal Info: Crystal's Newest Product

Introducing Workgroup Decision Support
The information access and scheduling application for client/server environments.

Making day-to-day decisions easier

Virtually every company has people who need to make business decisions. And those needs aren't limited to high-level strategic decisions, but include all the day-to-day decisions made by people who manage accounts, staff or networks.

The challenge is making information accessible for decision-making, without taxing systems and resources. As vital as data access may be, there are barriers to success. The primary barrier is the data itself. Your corporate data is not conveniently stored in a single location. And to the average end user, complex SQL structure isn't approachable. If the data itself weren't a barrier, imagine the network and security issues associated with unchecked end user access. Crystal Info, the next generation in decision support, eliminates all barriers to information access and solves the IT issues associated in deploying a decision support solution.

Workgroup decision support for network PCs

Crystal Info is the workgroup decision support application that provides a strategic approach for systematically delivering information to your workgroup. The user interface is a breakthrough in data access and ease. Its architecture takes advantage of server-based efficiencies to maximize system performance. And its unmatched scheduling introduces mainframe-style batch processing to networked PCs. With Crystal Info, your workgroup shares information elegantly and automatically, without taxing system resources and IT personnel.

Built on the success of Crystal Reports—the world leader in client/server reporting

Crystal Info is developed by the people who established Crystal Reports as the market-leading report writer, with over one million copies shipped. Crystal Reports is selected by 90 other software vendors, as the reporting tool in their software applications. This prestigious list of companies includes industry leaders such as Microsoft, Borland, and dozens more.

Automatic information sharing

The Info Library

Traditional decision support means accessing data, producing output, and then determining how you will distribute it. Typically, that method involves a photocopier and a short walk!

With Crystal Info, information sharing is amazingly automated. Crystal Info publishes the results of processed reports, queries and other Windows applications in the Info Library. These results—*Report Instances*—are immediately available to all members of the workgroup.

It's easy to share information and data from virtually any Windows application. Crystal Info processes and publishes Report Instances resulting from its own report and query designer, as well as spreadsheets, accounting processes, or any Windows executable—even the reports/queries of other report writers.

for your workgroup or your enterprise

The Info Desktop

Crystal Info is the decision support solution for your entire organization. All users, whether their PC is connected to the LAN or WAN—even mobile users—can access workgroup information for day-to-day decisions with the Info Desktop.

The Info Desktop is the user interface that lets all members of your organization have easy access to workgroup information. With familiar folders, the Info Desktop is as easy to use as e-mail. Info Folders are automatically updated with the latest reports and application results scheduled by others in their workgroup. For example: your organization's entire field sales force can access and analyze reports scheduled by their regional manager, *without making a request on their own*. In this case, the regional manager requests a monthly sales report. Crystal Info publishes the results in an Info Folder, which is immediately available to the field team with just a simple point and click.

Users can also actively choose to e-mail results of processed requests to others, whether or not the recipient runs Crystal Info. Users can choose from a range of export formats, so information can be delivered as a Crystal Info report or query, or in other common desktop formats, like Word, Excel and WordPerfect.

Unrivaled Scheduling for PC Networks

Crystal Info introduces market-leading scheduling for organizations that want their client/server environments to handle business-wide data processing requirements: unattended processing 24 hours a day, background processing, automatic recurring processing, and scheduling processes dependent on other events.

Automatic end user scheduling

End users, themselves, schedule and share the results of virtually any Windows application without involving IT personnel. The system default is "as soon as possible," but for even greater convenience, users can schedule reports to run regularly, so the information is always available to others in the workgroup. For example, your sales manager may schedule a weekly sales report by region for processing every Sunday night.

Mainframe-like scheduling for information networks

Crystal Info provides centralized control and dependencies for mainframe-like batch processing 24 hours a day. It provides unattended background processing and lets you schedule sequential events based on business dependencies to meet the needs of the most sophisticated IT organizations. Applications that typically require scheduling to run in batch mode overnight or in the background include: end-of-month reports, end-of month/year closings, CAD/CAM renderings, sequential or synchronized data warehouse updates, mainframe downloads, sequential series of transactions, repetitive file transfers or uploads/downloads between systems.

Scheduling for application integration

Use Crystal Info to help mission-critical applications operate more efficiently. Applications (written in Visual Basic, or other development tools) can be scheduled to run sequentially, saving further custom programming.

Easy Deployment

Meta maybe.

An application that delivers information like Crystal Info is bound to demand serious set-up and maintenance, right? Actually, no. Crystal Info can be uniquely deployed—with or without a meta-data abstraction layer—to meet your workgroups information requirements.

Because 80% of users will schedule or analyze shared information, and never actually design a report or query, you just add a few Report Objects to Info Folders. Report Objects are report and query templates. Chances are, your organization is already using a number of existing reports and queries. And, since Crystal Info can process any Windows application, your organization is ready to start using Crystal Info today.

The other 20% of your users will have report/querying "rights." These users can create reports by directly querying the data source, or through an optional meta data abstraction layer. Complex, distributed data sources are shown as simplified Info Views. Define any number of Info Views for your User Groups, with easy to understand field names and descriptions, hiding database links and unnecessary fields.

There are other decision support tools. But they do, in fact, require an IT professional to design and maintain a meta-data abstraction layer. These tools offer a fraction of the functionality of Crystal Info, and demand more of your IT resources. Crystal Info's meta layer capability is optional. That's Meta... maybe. And that's easy to deploy.

Easy to start using

Instantly familiar to e-mail users, the Info Desktop will have users accessing and analyzing shared information immediately. And for those Report Engineers who design Report Objects for themselves and others in the workgroup, Crystal Info has Report and Query Experts. These Experts—with a tab interface for step-by-step design—along with automatic styles, best fit, and other features make design and formatting fast and easy.

Superior System Performance - Smart Processing

Traditionally, by giving users access to data sources, IT is left with outstanding issues of security, LAN traffic and result accuracy. Crystal Info's innovative Smart Processing strategy makes the most efficient use of your system resources, solving the traditional IT challenges associated with decision support.

Redundant query control

Not only does automatic information sharing facilitate easier decision making, it also serves the needs of your network. Any number of people in your organization need the same information—everyone on your sales team needs the monthly sales reports, every member of your management team needs the same personnel report. Other decision support tools allow multiple users to access data, but that means they allow *several hits to the database for the same report*. By making shared information available in Info Folders, Crystal Info limits the number of job processing requests. As well, should a user schedule a report that is already waiting to be processed, the system will recognize this, process the report one time and use the results to satisfy both requests. So Crystal Info delivers the Report Instance with saved data, eliminating an unnecessary hit to the database.

Off-loaded processing

Processing is done on Info Servers (a concept unique to Crystal Info), not on the user's system. As a result, your users are free to work on other things, instead of waiting for their job to complete.

Off-hours processing

Crystal Info allows you to set processing controls, called Control Objects, to manage network traffic and demands on your database. For example, you may allow particular User Groups to process reports only after 5:00 PM and on weekends. There are two distinct advantages: 1) querying doesn't interfere with the performance of transaction databases during peak hours; and 2) off-hours processing takes advantage of otherwise idle computer processing time, to harness PC power 24 hours a day.

Value

Batteries included

Crystal Info is ready to run, out-of-the-box. Other decision support tools require the separate purchase of back-end control modules, data analysis tools, and even DBMS drivers. Crystal Info is a complete solution including all drivers, analysis functions, administration and processing modules.

You won't need a spreadsheet to calculate the final cost. Crystal Info is priced per PC, not by the number of administrator or processing modules needed. So you're in complete control of the system. Designate as many Info Servers, Admin Desktops and Info APS systems as necessary to serve your organizations' information needs.

Save on connectivity, too

Database connectivity can be costly and complex to deploy. Under the Crystal Smart Processing strategy, Info Servers are the only systems that require connection to the database—reducing the number of direct database connections and the risk of problems associated with LAN traffic

Data Access

Meaningful data access

Crystal Info is the application for accessing virtually all SQL and PC data sources. Users need only a single, easy-to-learn Windows interface to access data from multiple sources and build reports and queries. Most users, however, will never even have to create a report or a query and, in fact, won't even need the "rights" to build reports or queries. Crystal Info users can share, schedule and analyze information, as easily as pointing and clicking.

The data warehouse

Data warehousing is the client/server approach to data access—separating decision support from operational database systems.

Crystal Info is the front-end solution for accessing your ODBC-compliant data warehouse. It improves the decision-making process with: data abstraction, DSS management, workgroup decision-making support, and controlled resource costs.

SQL data access

ODBC, IDAPI; Gupta SQLBase®; IBM DB2/2®; Microsoft® SQL Server; Oracle®; Scalable SQL®; Stored Procedure support; Sybase SQL® Server. Connectivity to database systems is also delivered via popular gateways, such as MDI.

PC data access

ASCII; ACT!® 2.0; Btrieve® (all indices, requires DDF's); Clipper® (NTX); dBASE® (NDX, MDX, Visual dBASE); FoxPro® (IDX, CDX, FoxPro/W); Microsoft Access®; Microsoft Excel® (XLS); Paradox® (3.5-5.0/Pdx/W)

Crystal Info is engineered in three layers for client/server environments. The *Info Desktop*, for end-users, provides data access, analysis, and presentation. The *Info Library* manages access to complex data and facilitates information sharing. The *Info Management System* delivers centralized control and unmatched scheduling capability.

The Info Desktop

Analyze

- Instant, on-screen access to *Information Folders* with saved data
- The quickest way to get the answers for and decision making

Schedule

- Schedule requests for immediate, recurring, or delayed processing.

Query

- Generate ad hoc queries and create reports from queries

Report

- The reporting power of the world's leading Windows-based report writer, Crystal Reports Professional
- Design presentation-quality reports

The Info Library

Info Folders

- Folders are menus of shareable, workgroup information End users view the Folder from their desktop, and select reports/queries for analysis or processing.
- Report-Objects are pre-defined report/query templates, available for scheduling.

- Report Instances are reports, queries or the results of other Windows applications, already processed and saved with data.
- Info Views
- Crystal Info's optional meta data abstraction layer.
- Complex, distributed data sources are shown as simplified Info Views, with easy-to-understand field names and descriptions. Database links and unnecessary fields are hidden.

The Info Management System

APS

APS is the powerful scheduling backbone that facilitates business dependency scheduling, 24 hours a day.

The Administrator

Manages User Group profiles.

Controls user profiles by group, tailoring the *Info Desktop* for user needs and security clearance..

Remote Communications Server

- Handles scheduling requests from remote users.
- Allows users to download processed reports and queries to their remote PC.

Info Server

The processing workhorse.

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Distributor Contacts, United States & Canada

**Please contact the following distributors,
to order Crystal products.**

USA

Merisel - US 1-800-637-4735
Ingram - US 1-800-456-8000
DistribuPRO 1-800-821-7468
Tech Data 1-800-237-8931

CANADA

Merisel
1-800-268-1220

Ingram Canada - West
1-800-663-0960

Ingram Canada - East
1-800-668-3450

DistribuPRO
1-800-821-7468

Or you can call Crystal at
1-800-877-32340 (United States) and
1-800-663-1244 (United States/Canada).

Crystal Reseller Program

**The #1 award winning reporting tool
for report creation, report processing and distribution.**

Join our Crystal Reseller Program today!

Whether you sell Windows-based accounting software, PIMs, project management, or you want to integrate reporting into your own custom applications - you can enhance you solutions with Crystal Reports. Create custom reports for your clients with Crystal Reports and provide a TOTAL solution - with all the unique reporting features you choose! ADD value! INCREASE your sales!

The Crystal Reseller Resource Kit includes:

1. Full running, **Not for Resale** copies of the #1 **AWARD WINNING**, Crystal Reports product line:

Crystal Reports Standard Edition for PC data access!
Crystal Reports Pro for PC, SQL and ODBC database access!

2. Startup Pak of Crystal Reports full line brochures
3. One year automatic, priority product upgrades.
4. One year of technical support.
5. Crystal sales collateral including sales guide & other valuable tools
6. One year subscription to the Crystal Reporter newsletter (Value \$49)

It's a great investment and you don't have to break the bank to participate. In fact, you can recoup your investment on you first sale! Invest \$199 today and we'll take care of you for one full year.

How do you sign up?.....Simple!

Give us a quick call at Crystal at (800) 877-2340 (United States) or (800) 663-1244 (United States/Canada), or fax this order form to (604) 681-2934 and your *Crystal Reseller Resource Kit* will be shipped out right away!

Crystal Reports Reseller Program

Fax Application/Order Form

Yes! I want to join *Crystal Reseller Program* for only \$199* for one full year.

I want to receive the *Crystal Reseller Resource Kit* including product upgrades for one year. I understand these products are for demonstration only and are not for resale. Crystal encourages you

to use our **Not for Resale** products in-house. Please note **Not for Resale** products do not include free runtime, report compiler or a license for distribution of reports outside your immediate reseller location.

Company Name: _____

Contact Name: _____

Suite: _____ Address: _____

City/Prov: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Tax ID number: _____

Credit Card Number: _____ Exp: _____

Name on Card: _____

Signature: _____ Distribution Account#

Merisel _____

One Year Fee: \$199.00 Ingram _____

Shipping \$ 25.00 Tech Data _____

(for one year) \$224.00 DistribuPRO _____

Please note: *Crystal Reseller Resource Kits* may also be purchased through Merisel, Ingram, Tech Data or DistribuPRO. Please quote Crystal part # NRKTC45. CD-ROM only. Disks available upon request and registration of product with Crystal.

Questions? Give us a Call!

1-800-877-2340 (United States), or 1-800-877-2340 (United States/Canada) or fax your order today to 604-681-2934.

Crystal Welcomes OEM Partnerships

Join the leaders in the report writer market!

Crystal Services shipped its first Windows report writer in 1992, and is already the #1 award winning reporting tool. Crystal believes in the added value of OEM partnerships and currently has over 80 OEM partners. Other partners include Microsoft, Hewlett Packard, PeopleSoft, and Symantec.

For more information on OEM Partner opportunities, please contact Mark Sochan, Director of Strategic Relations, at (604) 893-6313, or Sue Yu, OEM Account Manager, at (604) 893-6331.

Crystal Reports Special Offer Order Form

To order Crystal Reports 4.5, please print and complete this order form and fax it to Crystal at 604-681-2934.

Note: Choose the option marked "with subscription" for today's upgrade plus future releases sent to you automatically for the next 12 months -- prepaid. By ordering the Subscription Edition, you save money on the cost of future releases and shipping costs, and save time by eliminating paperwork. Best of all, you always have the most current version of Crystal Reports!

For prices outside of the United States & Canada, contact your local reseller or distributor.

Please circle one of the five options below:

1. Crystal Reports Professional 4.5 upgrade with subscription for \$299
2. Crystal Reports Professional 4.5 upgrade for \$199
3. Crystal Reports Professional 4.5 for \$395

Name: _____

Company Name: _____

Address: _____ Postal/Zip Code _____

City: _____ State/Province _____ Country: _____

Telephone No.: () _____ Fax No.: () _____

Media Preference (circle one):

- A. CD-ROM (16&32-bit)
- B. Disks (32-bit only)
- C. Disks (16-bit only)

Method of Payment (circle one):

- A. Check or money order enclosed
- B. Visa
- C. Mastercard
- D. American Express

Credit Card Number: _____ Expiry Date: _____ / _____

Cardholder Name: _____ Cardholder Signature: _____

Preferred method of shipping (Circle one):

- A. 5-day ground (\$10)**
- B. Overnight (\$25)**

That's it! Now fax this order form to Crystal at **604-681-2934**...and don't forget to register

An Introduction to Crystal Reports

Crystal Reports Award winning Reporting Tool

There's no better way to create reports

Crystal Reports combines the ease-of-use of a leading Windows-based application with report design and data analysis features that make reporting tasks highly efficient. You can sort and subtotal in just one step, sort on groups, export reports to many file formats, distribute reports via integrated e-mail and much more!

Or integrate reports into applications

For developers, Crystal Reports' unique architecture consisting of a 16 or 32-bit Report Engine DLL and open APIs make it the ultimate reporting component tool. Take advantage of more than 80 direct calls plus an OLE Control, VBX or VCL to seamlessly integrate reports into database applications.

Or take advantage of any Windows environment

Crystal Reports' latest release—version 4.5 is available in 16 or 32-bit technology allowing you to take full advantage of any Windows system including Windows 95, NT, 3.1 or Windows for Workgroups. With 32-bit, you benefit from improved speed, better memory management and a more stable work environment.

Powerful, versatile tool

Use Crystal Reports to add versatile reporting to database applications while cutting application development time. This cross-industry tool results in timely sales reporting, better financial analysis, improved inventory management, and better decision making by marketing and accounting professionals. Plus hundreds of other data access and analysis benefits.

Crystal Workgroup Reporting Solutions. Unmatched choice

Crystal Reports Professional for:

- Windows developers and power users
- access PC & SQL data
- data Dictionaries & advanced features
- FREE runtime.

Crystal Reports Standard

- value-based reporting for
- PC databases
- FREE runtime.

Looking for decision support as part of your reporting solution? Ask about Crystal Info.

Crystal Info—Crystal's new workgroup decision support application

- for IT professionals deploying a decision support solution (Using Crystal Reports to populate user desktops with reports)
- for business users needing information access for better decision making and information sharing.
- per seat pricing.

Microsoft selects Crystal Reports for Visual Basic 4.0

Visual Basic 4.0 to include special 32 and 16-bit versions of Crystal Reports

Crystal, A Seagate Software Company (NYSE: SEG), announced that Microsoft's Visual Basic 4.0, both the Professional and Enterprise Editions, includes special 32 and 16-bit versions of Crystal Reports™ 3.0.

The special Crystal Reports 3.0 in Visual Basic 4.0 is available in both 32 and 16-bit versions so developers can make the transition to the 32-bit environment at their own pace. Crystal Reports 3.0 provides existing Crystal Reports 2.0 users with increased functionality including: 32-bit OLE Control and Report Engine, data access via Microsoft's new DAO technology, WYSIWYG editing of "live" data, an enhanced Formula Editor, the ability to export to many new formats, and integrated e-mail.

Visual Basic 4.0 users can upgrade their bundled Crystal Reports 3.0 to the latest version of Crystal Reports Professional, version 4.5, for only \$69 until November 30, 1995 (the regular upgrade SRP is \$199 and the full product SRP is \$395). This special pricing is designed to provide Visual Basic 4.0 users with the latest Crystal Reports technology at an affordable price.

Crystal Reports Professional version 4.5 includes a more full featured OLE Control and Visual Basic Custom Control, increased report processing speed, fully integrated and customizable graphing, easier report creation with Crystal Experts, enhanced support for Microsoft Access, reporting on Stored Procedures and the NT Event Log, and the ability to sort data on the SQL server.

Product Summary

Crystal Reports	Visual Basic	Visual Basic Integration	Upgrades
Crystal Reports 2.0 for Visual Basic	Visual Basic Professional Edition 3.0	VBX - 30 properties Data Access via MS Access Engine (JET)	\$199 to CR 4.5
Crystal Reports 3.0	Visual Basic Professional Professional Edition 4.0 & Enterprise Edition 4.0	OCX (32-bit)-35 Properties OCX (16-bit)-35 Properties VBX - 35 properties Data access via Microsoft DAO technology	\$69 to CR 4.5 Until Nov.30 1995
Crystal Reports Professional 4.5		OCX (32-bit) - 80 properties OCX (16-bit) - 35 properties VBX - 80 properties Data access via JET or DAO (if installed) and via direct PC drivers, ODBC, IDAPI	Full Product SRP \$395 Upgde SRP \$199

Compatibility

Reports are downwardly compatible (i.e. later versions of Crystal Reports support reports designed in earlier versions) and are independent of the operating system (i.e. reports created in 16-bit environments can be accessed in 32-bit environments and vice versa).

Availability

Visual Basic 4.0 is available from authorized Visual Basic resellers and distributors. Crystal Reports Professional 4.5 is available from resellers such as Programmer's Shop, Programmer's Paradise, VBXtras, Stream International, Egghead and more plus distributors such as Merisel, Ingram Micro and DistribuPro.

Crystal has been creating quality software since 1984. Crystal shipped the first report writer for the Windows operating system in 1992. Crystal Reports is the #1 award winning reporting tool with over 1,000,000 units shipped. Crystal's product line includes Crystal Reports Standard, Crystal Reports Professional, and Crystal Info. Crystal is located in Vancouver, BC, Canada and operates as a wholly owned subsidiary of Seagate Technology, Inc. (Scotts Valley, California).

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