Patricia Seybold's

UNIX IN THE OFFICE

PRODUCTS · TRENDS · ISSUES · ANALYSIS

Unix Office Roundup

What's Doing with Unix-Based Integrated Office Systems?

By Ronni T. Marshak and David S. Marshak

WELL, IT'S DECEMBER. A time for sleigh bells jingling, Santa Claus, and roasted chestnuts. It's also a time for taking a last look at the year gone by. It's been a busy one in the Unix industry. IBM The Reluctant not only agreed to support Unix, but also gave it a wholehearted endorsement. Different versions of Unix—MS Xenix and AT&T Unix 386, Sun's PSD-based operating system and AT&T 5.3—are merging towards the creation of a more portable operating system. And DEC and the Air Force have shot *(continued on page 3)*

• E D I T O R I A L •

An Information Systems Lament

An Ode to 1987 and a Ballad to the New Era.

By Patricia B. Seybold

WE WATCH THE inexorable pace of technology, and we resent the constant pressure to spend more, try more, dream more! We have already invested in minis and mainframes, in PCs and printers, in networks and knowledge. And what have we reaped? An economy reeling from malaise, a nation poised on the brink of recession, and a world full of future uncertainty.

What is the pay-off from investing in more computing power? Why should we move to a new generation of PCs? How do we know that the next generation of software will prove more productive than the last? These are the questions on many minds as 1987 draws to a close.

The world has become a more interrelated place. Economies are fatefully intertwined. The slightest perturbation can trigger a possibly catastrophic collapse. Global competition impacts all of us. Worldwide opportunities provide new challenges.

Management consultants exhort: Get Closer to your Customers! Reduce Hierarchy! Set Dramatic Goals and Achieve Them! Focus on Quality! Move Faster! Respond in Real Time! Innovate Constantly! Master Process! Focus on Incremental Improvements! Cooperate! Cross-Fertilize!

What really is going on? How do we make sense of it? What should we be doing? Where should we be going? And should we continue to invest in technology to get us there?

We are in the midst of a shift that is more than a change from the industrial age to the information age. It is a shift in the way we relate to the world in which we live. As a species, we are now becoming aware of our interrelatedness on the planet. The astronauts and the satellites have shown us a world without boundaries. The reality of a global economy has made itself felt. The scientists have discovered a universe that started with a single element and has been expanding and differentiating itself ever since. Complexity and diversity are not diminishing; they are accelerating. No matter how we try to simplify the systems in which we find ourselves intertwined, the complexity prolifer-ates and gets us in the end.

The correct response to increasing complexity, diversity, and interconnectedness is to embrace it. We have just been through the era of personal empowerment (take your pick: the human potential movement, PCs, the "me" generation, the Yuppie era). Now we are entering an era of synergy and cooperation. Only by pooling our disparate points of view and experiences can we hope to contend with the complex world around us. We have left behind the period when individual entrepreneurs could accomplish miracles, and we have entered the era of collective entrepreneurialism.

We should be honing our skills as team builders and players. We should be forging new alliances—with customers and suppliers, with colleagues and competitors. We have to learn to group and to regroup quickly into flexible project teams capable of producing rapid results.

How do we do that? We start by recognizing the principles involved in working effectively together. We need to understand that diversity is to be cherished and that different viewpoints are to be encouraged. Operating by consensus works best because the lone dissenting voice often raises a critical issue. Although an experienced project leader/facilitator is a plus, the actual process of collective endeavor is a pass-the-baton affair from which leaders emerge organically as their wisdom, energy, or experience is called for. The group needs to feel safe, to generate an atmosphere that encourages experimentation and idiosyncrasy.

Where does technology fit in this picture? Or does it fit in at all? We suggest you focus first on the human element. Master teamwork, foster synergy, create community. Experiment with cross-functional cooperation within your organizations. Eschew talking meetings in favor of working sessions. Brainstorm, cross-fertilize, experiment, implement, refine, and deliver. Don't look to technology as a way to speed up the process of cooperative work until you understand how to work cooperatively. Then, and only then, can you apply the tools effectively.

•UNIX OFFICE SYSTEMS•

(continued from page 1) it out over the legalities of the $3.5 billion AFCAC 251 bid.

We are using this opportunity to get back to our roots (if, after only two years, we have strayed very far) and take a snapshot look at the major office-systems offerings running on Unix-based boxes.

The Scenario

We looked at five different products:

* Alis from Applix, Westborough, Massachusetts

* OfficePower from Computer Consoles Incorporated (CCI), Irvine, California

* R Office Plus from R Systems, Dallas, Texas

* Q-Office+ from Quadratron, Sherman Oaks, California

* Uniplex II Plus from Uniplex Integrated Systems, Dallas, Texas

Each product was run through the following scenario:

> Four managers, Mr. North, Ms. South, Mr. East, and Dr. West, are to be scheduled for a meeting in Conference Room C. The meeting will review the performance of each of their sales staffs. Each manager oversees three sales reps. A report noting whether each sales rep reached quota will be delivered to each manager before the meeting. Individual letters are to be generated for all salespersons either congratulating them or castigating them for their performances. A carbon copy of each letter is to be sent via E-mail to the proper manager.

The purpose of the scenario was to allow us a chance to put every system through its paces in a life-like situation so that we could become familiar with its look and feel, as well as observe the level of integration among functions and consistency of applications. We will be reporting on interface and integration rather than keystroke-by-keystroke comparisons. Functionality is compared in the comprehensive chart on page 10.

In order to run the scenario, the following files were created:

* A database file containing personnel information about each representative, including monthly quotas

* A spreadsheet file (or other source if necessary) containing the actual monthly sales for each representative

Applix's Alis product is renowned for its graphical user interface (suggestive of the Macintosh or MS-Windows environments) and its compound document architecture.

This scenario tested the following functions of the systems:

* Meeting scheduler—set up a meeting at first available time slot; schedule a specific conference room; notify attendees; automatically schedule meeting in attendees' calendars.

* Electronic mail—obtain confirmations from meeting invitations; send merged letters via mail.

* Database creation and selection—select those who had exceeded quota to receive laudatory letter; select those who had not achieved quota to receive reprimand letter.

* Word processing—create master letters for mail merge; in some systems, create database entry form.

* Spreadsheet creation—create file indicating quotas and actual sales.

* Integration among applications—merge spreadsheet data into letter or database file; merge selected database records into letters; send completed letters via electronic mail.

Applix

Applix's Alis product is renowned for its graphical user interface (suggestive of the Macintosh or MS-Windows environments) and its compound document architecture. It began as a product for engineering types working on graphical workstations and was later migrated to the office environment.

UNDERLYING STRUCTURE. Alis provides live links between its word processing files and its spreadsheet, graphics, and database files. In other words, you can embed a spreadsheet (graphic, data file) into a word processing document, and, when the spreadsheet is changed—either by opening the spreadsheet document or by entering it from the text document—the word processing file reflects the changes. This compound document architecture is powerful and well designed. Even a compound document received as a mail attachment maintains its live links.

The highly graphic and windowing nature of Alis is also well designed. Using a mouse is recommended, but not necessary.

INTERFACE ISSUES. Much of the appeal of working in Alis is the interface, especially as it looks on a Sun or similar workstation. But even on a character-based screen, Alis looks good. There are many ways to access functions: selecting from menu rows with the keyboard, pointing and selecting with the mouse, and pressing function keys. The windowing facility is excellent,

especially on a graphics workstation.

The on-line help is exceptionally good. Help is not exactly contextual. When you request help, the system doesn't assume that you want help on the current action. Rather, you indicate what you want help on by pointing with cursor or mouse. The system provides help as well as links to other, related help screens. There is also a main Help menu if you are stuck. The total effect is a bit like a hypertext application, where you can go further and further into an explanation of the topic you choose. The non-hierarchic structure of help is very effective.

HOW DID IT DO? Unfortunately, Alis didn't do very well with our scenario. The major problem is the absence of a mail merge facility. Because of this, Alis couldn't address a large portion of the task. And, while compound documents and integration are a major part of the product, no links exist between the spreadsheet and the database, nor is there a calculating capacity within the database. So not only were we unable to integrate the actual monthly sales figures into the database, we could not calculate whether or not quota was met even after we typed in the figures.

Word Processing. The word processing component is feature rich and easy to use, and creating compound documents is surprisingly simple. Unfortunately, that was not the task at hand.

Database Creation. A nice "quick and dirty" database-creation capability allows you to go in later and specify field type and length. Querying the database is also very easy. All selection criteria are supported. Unfortunately, we needed the calculating ability to proceed with our scenario. We ended up doing the calculations manually.

E-Mail. The electronic mail feature is strong and is able to send and receive compound documents.

Meeting Scheduling. Alis allows you to specify required participants and optional participants when scheduling a meeting. You can also schedule resources (conference rooms, audiovisual equipment, etc.). In fact, you can specify a class of resources (conference rooms with VCRs) rather than a specific resource (Room A), and Alis will find the first available room of that class.

The system provides shortcuts to specifying meetings. It always assumes business hours and days unless told otherwise. It also lets you indicate whether you want to schedule a meeting at the first available slot after the proposed start-time or if the meeting must occur at a specified time.

CONCLUSION. This exercise was one in futility for Alis. The

system excels in many areas, but, unfortunately, we hit upon those where the system is lacking. One of the problems is that Alis hasn't been upgraded significantly in about two years. That's a long time in the Unix office world. A new version has been announced for early 1988, and many of the problems we encountered will be addressed. Rest assured, Applix is aware of most of the product's deficiencies.

OfficePower runs only on CCI's line of minicomputers, but we remain optimistic that the company will soon open OfficePower to the rest of the Unix world.

We, therefore, will reserve judgment just now on Alis. When the new version is ready, we will run it through its paces and see what happens. But for now, in spite of its advanced architecture and interface, it just doesn't have what it needs to succeed in many real-life applications.

Computer Consoles Incorporated (CCI)

Unlike most Unix-based office systems, OfficePower, CCI's offering, runs only on CCI's line of minicomputers. This decision pretty much negates the portability advantages of the Unix operating system. But we have been encouraging CCI to reconsider its proprietary-like position, and we remain optimistic that the company will soon open OfficePower to the rest of the Unix world.

UNDERLYING STRUCTURE. We have long been fans of the underlying architecture of the CCI OfficePower integrated office system. Each application within OfficePower is built on UDAP, the end-user database and applications developer. UDAP is limited to single file applications—no relational capabilities—but it is extremely easy to learn and to use, and it uses an open/close paradigm which suggests three-dimensionality in a character-based environment. Let's briefly describe how this paradigm looks.

A single line of data—usually displayed in reverse video, though this is user-definable—displays for each record in a data file. For example, in the electronic mail in-box, the single data line displays the date that the message was sent, the time it was sent, whom it was from, the subject, and a codes field. If you position the cursor at a specific data line and press the Open key, the data lines beneath the one in question drop down, revealing a completed mail message form. You can scroll through data lines in the open or closed mode. The Open key will toggle the screen back to the closed single-line mode. The actual open/close movement on the screen is very satisfying. There is a feeling of movement, of going deeper into the data. Very addictive.

INTERFACE ISSUES. Many roads lead to OfficePower; that is, the user has many ways to move through the system and execute

functions. There is both a menu mode and an expert (command) mode. You can choose menu items by pointing and pressing Accept or by typing the letter corresponding with the option. Also, soft keys are displayed at the bottom of the screen to move you from one application to another and to help you execute specific functions.

OfficePower uses an "accept/reject/exit" paradigm that can be initially confusing. For example, if you want to save a file, you "exit", which brings up a prompt asking if you want to save your work and exit. You can then accept or reject the "exit" prompt. This is the same as the good old Wang practice of executing your cancel. We found it awkward at first, but it soon became second nature.

The system is very effective in hiding Unix from the user. The only time the operating system is apparent—and then only to a user who is somewhat familiar with the Unix filing structure—is when you create and select files. You must indicate the file name and the path to it. Although you get some prompting (a list of options is available) and cosmetic improvements (you don't type the pathnames between slashes, but on separate lines), the Unix system is still getting in the way.

HOW DID IT DO? OfficePower was able to handle every task in our scenario but one: It could not merge data from a live spreadsheet into a database file or a word processing document. CCI does not provide its own spreadsheet, but has integrated 20/20 from Access Technologies into its product. The integration goes a bit further than just providing the spreadsheet as a pick from the main menu; soft keys are also active. But the only integration option is the ability to turn the spreadsheet file into a text file for word processing manipulation.

Word Processing. OfficePower excelled in database creation (using UDAP) and creation of a form letter. Everything is done in word processing. Fields are created simply by using a "field" soft key. Unfortunately, though you can add or delete fields from the word processing form, any data files already created with that form must be copied into the new version of the form. This is an irritating and counter-intuitive step.

The product offers many time saving features within database creation. For example, you can specify a "lookup table," which will list the valid entries into a field. If you attempt to enter data that isn't in the table, you get an error message. You can also specify short forms of the acceptable entries. We specified a table for the "Manager" field with entries of North, South, East, and West. We also specified that "n" would expand to North, "s" to South, etc.

The word processing component of OfficePower is a bit keystroke-intensive but easy to master.

The Mail Merge Process. The database system ran into some problems trying to select only certain records for the mail merge process. The software does not provide standard selection criteria of "less than (<)" and "greater than (>.)" Instead, you have to manipulate the range selector. (Using the range selector before

a single value means "less than or equal to"; using the range selector after a single value means "greater than or equal to.")

Even more frustrating is the inability to select negative numbers. We had a devil of a time trying to select all sales representatives who had not achieved quota. Achievement was measured as a calculated field equalling "actual" minus "quota." Therefore, those who did not reach quota had negative achievement. But, because we could not select based on this field, we had to juryrig a solution. According to experts at CCI (who couldn't figure it out at the time either), doing a "not equal 0 through 99999" selection would yield the proper result.

E-Mail. Once the selections were figured out, the merging process went very smoothly. We were able to send copies of the letters via E-mail to the appropriate manager, though we had to edit the letter file to make sure only the appropriate letters were sent. Here, we ran into a snag. When OfficePower creates a file of merged letters, instead of a page break between each letter, it puts an end-of-file indicator. We could not scroll or move the cursor past this marker. The only way we were able to move past this indicator was by doing a multidocument search for something that appeared in the next letter!

Meeting Scheduling. Scheduling a meeting was straightforward. The system provides shortcuts, such as assuming that hours mentioned are standard work hours. Therefore, if you indicate a meeting start-time of "1.", the system assumes you mean 1:00 p.m. A major limitation, though, is that meetings may only be scheduled within a 30-day time frame. Now, we don't know about your organization, but we have meetings scheduled months in advance.

The absence of a resource scheduler is another limitation.

CONCLUSION. The OfficePower interface is top-notch, and functionality is good. Unfortunately, the system has some dead ends, or non-intuitive leaps (for example, you can't add a field to an existing database file; you must create a new file and copy all records into it). In every case (except the integration of spreadsheet data), we were able to get past the dead end, usually by a roundabout route, but it took some creative juryrigging.

CCI has made its interface intuitive and flexible. The actual operation of the system needs to be enhanced to do the same.

Quadratron's Q-Office+

Originally, Q-Office from Quadratron was the best-known office system in the Unix environment. The word processing component, Q-One, was widely sold on both Unix and Dos systems. Quadratron is no longer the preeminent Unix office solution, though. Uniplex has come on strong as direct competition for value-added resellers (VARs).

Quadratron designed Q-Office as an OEM product. The idea was to sell the vanilla product to a VAR who would then make cosmetic changes and enhancements to the interface. And some have. Unfortunately, too many resellers just slap their

names on the product and don't address the interface issues at all. That's too bad, because the interface on Q-Office is lacking. Therefore, the high level of functionality within the individual applications is often overlooked.

INTERFACE ISSUES. Q-Office's interface is very reminiscent of the old Wang way of doing things. Unfortunately, not even Wang is still using the old Wang way of doing things. The system is menu based—and menu bogged! At times, you must go through five different menus to get to the feature you want. There is a direct command route for bypassing these menus, but these commands are difficult to learn and have no relation to the menu navigation sequences you become used to.

> *Q-Office+ is menu based—and menu bogged! At times, you must go through five different menus to get to the feature you want.*

Unix is not hidden effectively at all. For example, when doing a mail merge, you must create a list document containing the records to be merged into the form letter. The fields in this list must be identified by including an initial "$", and then the delimiter must be identified. All right. We decide that our list will have a return between each field, we type in a return. But, no, that doesn't do it. We must type in "\n" to indicate a return.

We asked a Quadratron support person why the end user had to type in such an enigmatic code (by the way, the delimiter code must be typed in for all fields!), and she told us that it was a Unix command and therefore necessary. Our message to Quadratron: It is your job to hide Unix from the end user.

Other problems in the interface result from the number of keystrokes required to do things. It takes two keystrokes to delete a single character; it takes three keystrokes to store a file and return to the menu. Ironically, one keystroke (Cancel) can take you out of a complex procedure without saving any of your work—we learned this the hard way.

On-line help is adequate. What is there is very good, but too many things aren't there. The documentation is poor. At one point, we were told to "Define a control file". This option wasn't on the specified menu, though "Edit a control file" was. But the documentation warns that you should not attempt to edit a control file unless you have programming experience. Now, we don't know about you, but that comment doesn't give a warm supportive feeling to us. Error messages throughout the system are enigmatic and unhelpful.

HOW DID IT DO? Aside from our problems using the interface, Q-Office didn't do too badly. It couldn't merge data from the spreadsheet into the database, and there are no calculations within the database, but we were able to get around this.

We were able to schedule our meeting (after a lot of trial and error), send out invitations, and run the merge process. But it took a lot of time and a lot of steps.

Word Processing. Creating the merge letters wasn't difficult,

though it was a bit tedious. Typing the actual letter is simple; the word processor is very functional. But inserting the field variables requires pressing the Merge key, typing the variable name (including $), and then pressing the End Merge key. If you aren't sure of a variable name, you must either close the document and go into the database function to get a listing of fields (seven steps), or you can open a window (split the screen either horizontally or vertically) and check the database file (only six steps). Either way takes too many keystrokes.

The Mail Merge Process. Creating the database and designing the input form were not hard to do, though they also took a lot of keystrokes. You must specify the length of the fields in bytes rather than characters. And, since you cannot add fields to a database after you have entered records, you are advised to create filler fields with dummy names and lengths. Even though these are just fillers, they take up room on the disk. And, even though the names are dummies, you can't change them later!

No calculated fields are available in the database, but you can create a calculated merge statement within the form letter.

In order to perform a mail merge, you must create four different files: the target file (form letter), the list file (either from scratch or using a database file—the latter eliminates the need to specify those annoying delimiters), the print control file (sorts and selects records), and the output file (the merged documents). Once you finish this complicated procedure, the merging works just fine. But there are a lot of steps and many chances for error. It took us several attempts before we got it right. And, as mentioned earlier, the error messages didn't help much. Messages such as "4:syntax error -> $" are not particularly useful.

E-Mail. Quadratron's electronic mail facility is very powerful. You can easily add blind carbon copies, prioritize mail, and send attachments. The full word processor is available for messages. It is initially confusing to use, though. Options exist for sending an attachment (default is no) and for including text (default is yes). Including text brings up the word processor complete with format lines. You can't jot off a short message without calling up this screen. Our problem was that we wanted to send an attachment (we changed the default to yes), but we forgot to select no for including text. We were then asked to specify the name of the attachment, and we did. But, instead of the attachment displaying, the blank word processing screen, awaiting included text, displayed. Thinking we had specified the wrong attachment or that we had somehow deleted all the text in the file, we exited the process pronto.

Once it was explained, everything was fine. But we did have a moment of panic.

Meeting Scheduling. The logic behind Q-Office's calendaring

function seems a bit backwards. You cannot schedule a meeting between individuals. You must assign them to a group first, and then you can schedule the group. Next, there are two choices: You can either find scheduling times or schedule a meeting. The first option is actually a traditional meeting scheduler, asking for the group to be scheduled, start and end time and date, and duration. From this function, you can schedule a meeting, including it in each attendee's calendar. But why the second function? It only works if you happen to find a time with no conflicts. Why bother?

We don't like having to create scheduling groups. We want to be able to schedule meetings with individuals at will.

Everything took a lot of steps, and the screen displays were neither clear nor helpful. But it did ultimately schedule the meeting in a free slot.

One drawback is that you must tell R Office+ how many fields will be in a database before you create a datafile, but you can add fields at any time.

CONCLUSION. Q-Office offers a lot of functionality, but it is overshadowed by the severe problems in the interface. Quadratron cannot keep relying on VARs to do the cosmetic work. While some might, too many will send out unadorned Q-Office. And that's just not fun to use.

One of the areas that needs work is that of hiding Unix from the user. That accomplished, we would turn our attention to streamlining functions (fewer keystrokes) and finding easy, intuitive ways of bypassing all those menus. Quadratron has a lot to offer, if you have the patience to find it.

R Systems Incorporated

Though not as well known as Q-Office, Alis, or Uniplex, R Office+ from R Systems has a large installed base of users. The word processing component, R Word, is probably more familiar to readers.

INTERFACE ISSUES. The R Office interface is very pleasant. You are prompted through every step. The error messages are particularly useful. The screen displays are very attractive and make for easy manipulation through the system. We were a bit concerned about the use of the Escape key. Escape not only acts as an "exit" key, but it also brings up soft-key options if they are available.

You can manipulate through menus in two ways. You can point and select, or you can type in the two-letter identifier for a particular option (for example, "CA" for calendar).

Help is excellent. There is context-sensitive help and, as mentioned, excellent prompting. Soft-key options are also abundant (perhaps overabundant). For example, under the print options (accessed by pressing Escape K), there is a veritable alphabet of choices—we chose "V", which inserts a variable field.

R Office gets around the Unix filing structure by providing

a very structured screen for selecting files. You are guided through selecting the directory, the category, and the file. These are indicated by number, which can be annoying, but a list of available options automatically displays, helping considerably.

HOW DID IT DO? R Office didn't do as well executing the scenario as some of the other products did. Not only is there no integration of spreadsheet data, no spreadsheet is included with the product—not even one from a third party. (R Systems acknowledges this deficiency, and we would not be surprised to see this situation change in the next release.) But the major limitation is that the electronic mail facility just isn't sufficiently functional for even the simplest of business scenarios (see "E-Mail" below).

Word Processing. Creating the merge letters was very straightforward (once we figured out the Escape K V sequence). The word processing module, in general, is very easy to use.

The Mail Merge Process. Setting up the database was very easy. There weren't a lot of shortcuts (automatic field fill-in, validation criteria, unique fields, etc.), but the process was fluid. We did encounter one problem: Even though we specified that certain fields were number-only, the system allowed us to enter alpha characters. Interestingly, we got an error beep when we attempted to enter numbers into an alpha field. One drawback is that you must tell the system how many fields will be in the database before you create the file, but this isn't as limiting as it seems because you can add fields at any time.

R Office provides strong selection and sorting capabilities, including the option to automatically create a new data file from the records that meet selection criteria. You can either delete these from the original file or copy them into the new file.

Merging the letters with the selected records was very easy.

E-Mail. Herein lies a problem. R Office provides no fully functioning electronic mail system, but only a quick message system, limited to six lines in length, no attachments supported. This is an unreasonable limitation in an office offering. We could not send the completed merge letters through the mail system. We couldn't even send a sample of the letters.

The real irony is that the interface on the messaging facility (part of the R Desk component, which also includes calendaring among other features) is excellent. The screen displays are clear, and the soft-key options are mnemonic. R Systems should address this issue immediately, if not sooner. It is the fly in the ointment.

Meeting Scheduling. Scheduling our sales meeting was very

easy. However, the scheduler does have some strange limitations. Instead of the more familiar method of specifying a start time and date, end time and date, and meeting duration, R Office has you specify the exact time and date of the desired meeting. If attendees cannot make the meeting, the system looks for the next date when the specified time period is free for all. This means that if we had wanted our two-hour meeting any time from 9 to 5 on December 23rd, we would have to keep specifying two-hour slices until we hit the jackpot. Needs work, guys.

CONCLUSION. We are ambivalent about R Office. On the one hand, we thoroughly enjoyed working with the interface. While not as addictive as OfficePower nor as graphic as Alis, it gives you a warm feeling that you are being taken care of and gently led on your way—very supportive. On the other hand, its functionality just isn't up to that of the competition...yet. We hope that R Systems will recognize the product's limitations and set about making improvements. The area that needs particular work is electronic mail.

Because of the supportive nature of the interface, we see it as a secretarial tool, not because secretaries aren't bright enough to master a less supportive system, but because they are likely to be sufficiently patient to perform all the keystrokes and prompts involved even after they become expert with the system. There are too many steps and too much verbiage for the casual managerial user, and the expert technical/professional user would quickly tire of the process.

R Office+ is a good start. Improved functionality and an expert command mode would make it a contender.

Uniplex Limited

Uniplex-II Plus, from Uniplex Limited, England and Dallas, offers almost everything you could possibly want in an office system. The product includes a relational database based on, and fully compatible with, Informix. A fully integrated spreadsheet with Version 6, announced and due for release in January 1988, offers a choice of Lotus or a 20/20-like interface. Other features are calendar (which the British-based company charmingly calls a diary), word processing, electronic mail, a rolodex, a calculator, and multilingual input.

The interface hasn't quite caught up with the level of functionality, as we will discuss below.

Uniplex is doing quite well right now. Several of its competitors have mentioned it as the one to beat.

UNDERLYING STRUCTURE. The basic design philosophy of Uniplex is modular. All the components are designed to be pulled apart and put back together differently. Each time we commented on a keystroke sequence or function that we didn't

like, we were told "Oh, you can change that! It's all configurable." Now, that's true. We watched it happen. But it isn't configurable by an end user. You need someone who really knows Unix to make these changes.

INTERFACE ISSUES. Uniplex uses both menus and soft keys. And, for the Unix user, there is an escape to a Unix command line for direct command input. The interface is easy to use in most cases. Menu options can be selected by pointing and selecting or by typing in the appropriate number. The soft keys are consistent from module to module. There are a lot of steps to go through, though, and the keyboard mapping (we know, we know, it's customizable!) isn't very familiar. For example, the Delete key acts as a destructive backspace. And you must use escape sequences to execute actions.

Help is contextual and is very complete.

We worked on Uniplex Version 5.04, but the newest version, 6.0, the one represented in the chart on page 10, is announced and almost ready to ship. The interface will include more drop-down and pop-up windows, and we are pleased to note that dot commands (those annoying formatting commands such as ".pa" for page break originally found in WordStar), which are currently overabundant in word processing, especially in the mail merge function, are going away. We have been told that there will be menus for working through merging. We haven't tested the procedure, but it is bound to be easier.

HOW DID IT DO? Uniplex did it all. It was able to handle everything we threw at it, and that's no simple task. We were able to link spreadsheet cells to the database, select records based on these fields, and merge the data into custom-designed letters. We could schedule our meeting and a specific conference room. We could send copies of the letters via E-mail. Uniplex was an unqualified success functionally. Our problems came only from the complexity of some of the features we used.

Word Processing. Creating the letters was no problem, except for the dot commands, which will not be around much longer. The word processor is feature rich, with the new release offering macros, the one major function not previously available.

The Mail Merge Process. Once we had set up the spreadsheet and database, the mail merge process went fairly smoothly. There are a lot of steps to go through, but the procedure is easy. But the adventures we had setting up that database-spreadsheet link!

We designed a quick database form without a problem. We created a spreadsheet in a flash. But linking the spreadsheet to the database relied on using SQL queries within spreadsheet formulas. We are not all SQL literate, unfortunately, and we had to get

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a considerable amount of help from Uniplex (the company). In order to be truly friendly, there needs to be some sort of front end to the SQL queries required in the database and spreadsheet.

Once the link is created, though, it can be rerun forever without any knowledge of SQL.

E-Mail. We were able to send mail messages with attachments. A single keystroke brings up the word processor for creating attachments on the fly. There were no problems.

Meeting Scheduling. The meeting scheduler is straightforward. You specify the attendees, resources, earliest and latest time and date, and the duration of the meeting. The system provides a graphic display of booked and available times for the attendees. Unfortunately, the screen display is hard to read, and if someone is booked, you will not receive an error message when you schedule the meeting. This will be corrected with Version 6, which, in general, provides improved error messages.

Version 6 will also send a mail message notifying the attendees of the meeting by automatically inserting it into their diaries.

CONCLUSION. While there is nothing wrong with the word processing and other features that are traditionally considered secretarial, the strength of Uniplex-II Plus is in its integration of modules and not its friendliness. The product would be acceptable to secretaries, but it would be more appealing to managers and professionals who are not used to having to do it all on their own. While a secretary might feel obligated to "figure it out alone," a manager wouldn't hesitate to take a problem to MIS for help with an SQL link between components.

We have always stated that Uniplex is a pragmatic company. While not out in front in any of its features, the company has put together a product which provides what customers really need. It isn't surprising that they are doing well.

But what happens when other companies, such as Applix, catch up functionally and also offer flashier interfaces and bonuses such as compound documents? Our advice to Uniplex is: "Continue on the present route in updating and enhancing the product, but let your hair down, take some risks that will take you into the future. The present doesn't last very long in this industry."

Summary

By putting each of these office systems through our scenario, we have found a winner! Uniplex was able to accomplish all the tasks we required. But there were interface limitations that made the process far from elegant. There still seems to be a continuum based on an inverse relationship between functionality and user interface (and we thought we had left that behind in the early 1980s). On the one end, we find Uniplex with its superior functionality and strong integration, but lacking a user interface that shields the end user from Unix and SQL. Uniplex may have the least distance to travel to achieve elegance, but interface work remains to be done.

On the other end of the spectrum sits Alis. Wonderfully integrated, with a true compound-document architecture and graphic interface, the sum is much greater than its parts. Unfortunately, the parts themselves are too weak to make the total much more than an attractive shell. We look forward to the next release to improve the underlying functionality and create a product that is leading edge in both form and substance.

Comfortably in the middle is OfficePower. While not leading edge (no compound documents, for example), it has good functionality and a fine user interface where the user can happily reside. Its problem is in the proprietary nature of CCI's sales strategy. Get that product on other machines, guys!

R Office Plus and Q-Office+ fall at different ends of the spectrum, but they are a cut below the other three. R Office Plus has a nice interface, but it is quite weak functionally, while the better functionality of Q-Office+ does not make up for its woeful user interface.

Conclusion

If you were planning to automate using a Unix platform, one of the first things you'd notice is the limited number of office software products available. In fact, we have heard Unix users complain that there are 10,000 boxes to buy, but only three office systems (Q-Office, Alis, and Uniplex—R Office hasn't made enough inroads yet, and OfficePower is really proprietary). The software vendors all offer the vanilla versions to VARs, claiming that they hope the VARs will customize the software in some innovative and unique manner. But the VARs are looking for quick and easy solutions. And, as our research indicates, the vanilla interfaces on the products tested are quite palatable. We keep looking, though, for some inspired vendor to turn a vanilla Unix office product at least into vanilla fudge ripple.

Functionally and interface-wise, Unix office systems are on a par with the proprietary offerings that have shaped the industry (All-In-1, CEO, WangOffice, etc.). In fact, the portable nature of Unix gives it the advantage in this multivendor, nonproprietary world.

But, like today's proprietary systems, the Unix office systems are really yesterday's news. While some offer bits and pieces of the latest trends—Alis's graphical interface, OfficePower's UDAP application generator—in general, they have yet to incorporate the latest and greatest software trends. Not one of them is *the* system which will spawn a new generation. Perhaps the problem is in the environment. Unix installations are often saddled with innumerable dumb terminals and have to serve the lowest common denominator. (One exception to this is the LIfE system from Motorola—see Vol. 2, No. 11—which is very advanced for a menu-based package. But it is early to say how customers will accept it.)

Proprietary systems have become rather pedestrian, and Unix-based systems have followed suit. We guess we'll have to leave it up to the PC LAN-based office offerings to spark our imaginations. Unless, of course, one of you vendors out there would like to surprise us. We keep hoping. ☻

Unix Office Systems

How Do They Compare?

	Applix's Alis	CCI's OfficePower
INTERFACE ISSUES		
Windowing environment	yes	no
Menus	command line menus	yes
Soft keys	no	yes
Expert/command mode	no	yes
ELECTRONIC MAIL		
Interface with Unix Mail	yes	yes
Full text editor available	no	no, but one keystroke ("create attach") brings up full WP
Create multiple mailboxes	ability to create multiple views of the mailbox	yes
Sort messages in mailbox	yes	yes
Circulated delivery (message sent sequentially to a routing list of users)	no	no
Delegating (routing a message to someone else to handle)	yes, but only to users who give permission	no
Encrypted messages	no	yes
Forwarding	yes	yes
Message length	"quick message" 1 line only, cannot be saved; "regular message" unlimited	6 lines; unlimited with "create attatch"
Blind carbon copies	yes	no
Immediate notification of mail	yes	yes
Distribution lists	yes	yes
Aliases (nicknames)	yes	yes

Quadratron's Q-Office+	R Systems' R Office+	Uniplex's Uniplex-II Plus
in WP only	no	no
yes	yes	yes
no	yes	yes
yes	no	yes, direct access to Unix command line
yes	yes	yes
yes	no	yes
yes	in Unix	yes
yes	no	no
yes	no	yes
yes	no	yes
yes	yes	yes
yes	yes	yes
unlimited	6 lines	unlimited
yes	no	yes
yes	no	yes
yes	no	yes
yes	yes	yes

	Applix's Alis	CCI's OfficePower
Registered mail (notification that mail has been received)	yes	yes
Certified mail (notification that mail has been opened)	yes	yes
Prioritized mail	may be marked "urgent"	yes, including the option to send at night (low priority)
Timed delivery	yes	no
Message file and recall	yes	yes
Attachments	yes, including compound documents	yes

CALENDARING

	Applix's Alis	CCI's OfficePower
Daily display	yes	yes
Weekly display	yes	no
Monthly display	no	yes
Calendar length	perpetual	perpetual
Meeting scheduler	yes, works across network	yes, works across network; meetings can only be scheduled within 30 days of current date
Resource calendars (conference rooms, A/V equipment, etc.)	yes	no
Scheduling groups	yes	yes
Automatic rescheduling of appointments	no	no
Public/private calendars	yes	yes
Copy appointments	yes	yes
Reminders	yes	yes

RECORDS PROCESSING/DATABASE MANAGEMENT

	Applix's Alis	CCI's OfficePower
Relational capability	no	no
Sort records	yes	yes
Selection criteria	all	does not do greater than and less than (>,<)

Quadratron's Q-Office+	R Systems' R Office+	Uniplex's Uniplex-II Plus
yes	no	yes
yes	no	yes
yes	yes	yes
no	no	yes
yes	yes	yes
yes, any file	no	yes
yes	yes	yes
yes	no	yes
yes	no	yes
96 months	perpetual	perpetual
yes	yes	yes, works across network
yes	yes	yes
yes	no	yes
yes	yes	no
yes	no	yes
yes	no	yes
yes	yes	yes
no	no	yes
yes	yes	yes
all	all	no greater than and less than (>,<), must use greater/less than and equal to (>=,<=)

	Applix's Alis	CCI's OfficePower
Maximum field length	100 chars.	4,096 chars. (also max. record length)
Maximum fields per record	30	unlimited
Calculated fields	no	yes
Date fields	yes	yes
Forms package	no	yes
On-the-fly datafiles (require little preparation and provide default record format)	yes, query by example	yes, UDAP
Report writer	no	yes
Create forms in WP	no	yes
Import forms into WP	yes	no
Interactive screen builder	yes	yes
Use multiple input files	no	no

ELECTRONIC ROLODEX

	Applix's Alis	CCI's OfficePower
Auto-dialing	no	yes
Sound-alike search	no	yes
Merge data from phone messages into phone list	no	yes
Merge data into calendar	yes	yes
Merge data into WP document	no	yes
Phone message form	yes	yes

WORD PROCESSING

	Applix's Alis	CCI's OfficePower
Document windows	up to 20	one
Multiple columns	yes	no
Table formats	yes	yes, including ability to move, copy, delete, and sort columns
Outline numbering	up to 6 levels	up to 6 levels

Quadratron's Q-Office+	R Systems' R Office+	Uniplex's Uniplex-II Plus
9,999 bytes	66 characters	32K
256	999	unlimited up to 32K
no	no	yes
yes	yes	yes
yes	no	yes
yes, Q-Note	no	yes, card index
yes, output forms	yes	yes
no	yes	yes
yes	no	no
yes	no	yes
yes	no	yes
yes	no	yes
wild-card search	yes	no
no	no	with cut and paste
no	no	with cut and paste
yes	no	yes
yes	yes	yes
up to 4	one	unlimited
snaking	yes	yes
yes, including ability to move, copy, and delete columns	yes	yes
up to 10 levels	up to 10 levels	up to 10 levels, must indent manually

	Applix's Alis	CCI's OfficePower
Index generation	no	no
Table of contents generation	no	yes, but only with auto-numbering feature
Footnotes	no	yes, auto-numbers and automatically continues long footnote onto next page
Headers/footers	yes	yes
Non-printing notes	no	no
Security	yes	yes
Mail Merge	no	yes
Express cursor movement	no; mouse supported	yes
Search and replace	30-character string, options for case sensitivity and whole words only, wild cards	case-insensitive option, replacements match case
Spelling	checker with word lookup capacity	corrector with list of phonetic choices
Hyphenation	automatic, using dictionary	both semi-automatic and automatic with dictionary
Glossary	no	yes
Macros	no	yes
Voice annotation	no	no
Graphics insertion	yes, also spreadsheet and database	yes
Compound documents	yes	no
Style sheets	yes, prototype documents	no
Document assembly	yes	yes
Math	spreadsheet and calculator	columnar and calculator
Text enhancements	bold, italics, underline	bold, italics, underline, reverse video, double underline

Quadratron's Q-Office+	R Systems' R Office+	Uniplex's Uniplex-II Plus
yes, for up to 10 documents simultaneously	yes	yes
no	yes	yes
yes, auto-numbering is a separate command, must manually leave room at bottom of page	yes, auto-numbers, also endnotes	yes, auto-numbers, also endnotes
yes	yes	yes
yes	yes	yes
yes	yes	no
yes	yes	yes
yes	yes	yes
case-insensitive wild-card matches, simultaneously replace up to 10 strings	case sensitive or insensitive, forwards or backwards	case sensitive or insensitive, forwards or backwards
corrector	checker	corrector
automatic using dictionary	semi-automatic	automatic, using dictionary
yes, including glossary by example	yes	yes
yes	yes	yes
yes, if terminal permits	no	no
yes	yes	yes
no	no	no
yes, prototype documents	no	up to 10 stored rulers
yes	yes	yes
columnar and random numbers within WP	comprehensive table math with equations	calculator, spreadsheet, and four-function math in WP (row, column, or random numbers)
bold, underline, double underline, overstriking, blinking, reverse video	bold, underline, reverse video	bold, underline, reverse video, blinking

	Applix's Alis	CCI's OfficePower
Types of tabs	decimal, left, centered	decimal, left, right, centered
Dot leaders	no	yes
Indents	both margins	left margin
Revise and redlining	no	yes
Widow/orphan control	yes	yes
Bookmarks	no	no
Change language (causes spelling corrector to change to foreign dictionary)	no	no
Super/subscript	yes	yes
Redo/undo	yes	yes
Upper/lowercase conversion	yes	yes
Justified margins	left, center, right, and both	partial and fully justified right margin
Font control	yes	no
Typeset output	yes	yes
Miltilingual input	yes	no
Copy or move text with formats	yes	yes
DCA RFT and FFT conversion	no	no

Quadratron's Q-Office+	R Systems' R Office+	Uniplex's Uniplex-II Plus
decimal, left, right, centered	decimal, left, right	decimal, left, right, hanging, centered
yes	yes	no
left margin	left and right margin	left margin
no	yes	no
yes	yes	yes
up to 10	no	available, not standard
yes	no	foreign language versions recognize different languages
yes	yes	yes
undo page and document only	yes	yes
no	yes	yes
yes	yes	yes
yes	yes	yes
yes	no	no
yes	yes, 7 languages	yes, with up to 3 language dictionaries; unlimited languages per document
yes	yes	yes
yes	no	no

•TUTORIAL•

Network Protocols: Part 1

Providing definitions for internet, TCP/IP, and UDP.

By Gary J. Nutt

Many of today's Unix machines operate in a local area network (LAN) environment. These machines are personal computers, workstations, servers, minicomputers, small multiprocessors, and an occasional mainframe. This month, we discuss some of the basic technologies used in LAN schemes for Unix and for other machines.

Interconnection schemes are very complicated. As an aid to designing and packaging some of this complexity, networks are defined as "layered architectures." Because of the importance of establishing architectures that are acceptable to multiple vendors, it is necessary to establish standard network protocols. For networks, the International Standards Organization (ISO) has established the Open System Interconnect (OSI) specification (much of which is still in draft form). Many vendors adhere to the standard, at least nominally.

The OSI model divides the interconnection functionality into seven layers, with the definition of the physical signaling mechanism at the bottom, or first layer, and the end-user application software at the seventh layer. (Systems Network Architecture, or SNA, also used a seven-layer architecture, but with different layer definitions.) For any pair of nodes to communicate, each must agree on the meaning of signals, data formats, and message semantics—hence the term "protocol" for describing the behavior of constituent pieces.

OSI-compatible LANs are "digital packet networks," meaning that the physical signaling mechanism carries a group of signals from a sender to a receiver as a collection of digital (as opposed to analog) data. The *physical layer* protocol will specify how each signal is formed, transmitted, and received; it will also specify the way that senders should encapsulate the digital data into a collection, i.e., a packet, and how the receiver can decapsulate the packet to reproduce the data. The physical layer protocol is a very important consideration for the bandwidth of the inter-

connection and the "wiring" strategy for a site, e.g., twisted pairs of wire, coaxial cable, fiber optic, etc., but not a very important one for the application software that will ultimately use the network.

In order for the packets to be useful, almost any client of a network will require the contents of the packet to be delivered as it was sent. Minimal error control—checksum value—is usually implemented at the *data-link layer* of a network. At the same layer, the standard calls for flow control, or the ability for a receiver to let the sender know that packets are being sent faster than they can be received. Application software is rarely built directly on this layer, since most such software requires more function from the interconnect, e.g., reliable delivery of packets. ISO-compatible systems use a different protocol than SNA-compatible systems; hence, there are fundamental differences between the two at a very low level.

Whenever anyone talks about an Ethernet or token-ring network, the conversation is about the physical and data-link layers of the network. Higher level protocols may be implemented on any data-link layer! For example, SNA's LU6.2 can be implemented on an Ethernet and Transmission Control Protocol/Internet Protocol (TCP/IP) (see below), or it can be implemented on an SNA-defined synchronous communications link, e.g., SDLC.

Suppose that a company's headquarters location wishes to have one LAN to support accounting and finance, another to support manufacturing, and a third to support engineering. This may be desirable because of the number of hosts within each organization, for cost-accounting reasons, or for internal security. Ultimately, it will be necessary to combine these networks in order to get global communication across the corporation, e.g., electronic mail; the corporation needs a "network of networks," or internet.

Other reasons exist for employing internets, including the interconnection of networks which have different low-layer protocols. Internets require that packets have "large addresses" to specify not only the receiving host identity, but also the identity of the receiving host's network. As one begins to design an internet for very large networks, it becomes clear that the gateways that

are used to interconnect the individual networks need to translate low-layer protocols, route packets, etc. Internet management is defined in the third layer of the OSI model, the *network layer*; the dominant protocol for internet management is from the ARPAnet, and it is called the internet protocol, or simply IP. Notice that IP is really only required if the interconnect is a network-of-networks; for small networks made from a single LAN, the IP functionality need not be present. It is not unusual in today's commercial OSI packages to ignore IP. Of course, the users of the non-IP implementation will need to upgrade their networks by adding IP whenever they combine two or more LANs.

Some application programs are satisfied with the network facilities as defined above, i.e., a packet switch that includes checksums within a packet and flow control so that no packet overrun problems (with or without IP) occur. It is possible to use this level of network functionality to build significant software packages, such as diskless workstation systems. For example, Sun's diskless workstation products (which use a remote disk server) rely only on this datagram approach for moving disk sectors back and forth between the diskless workstation and the disk server. Notice that such applications are responsible for encapsulating and decapsulating the information into and out of the packets. If much information is to be transmitted—more than will fit into a single packet—then the application will have to put the first part of the information into the first packet, the second part into a second packet, etc. This suggests that the receiver must be equipped to handle difficult cases, such as missing packets or packets delivered out of order.

Other application programs would like the network to handle standard housekeeping functions, such as reliable packet delivery, encapsulation and decapsulation, etc. That is, that application program would not have to be written to deal with internets, packets, reliability of delivery, etc.; the network is largely transparent to the application program.

One level of transparency is the notion of a virtual circuit on top of the packet network. One can easily draw the analogy between datagrams and telegrams; virtual circuits are analogous to telephone circuits. The application program first establishes a virtual circuit (sets up a call), then exchanges streams—not packets—of information with a remote host, and finally closes the circuit (tears down the call) when the session is complete. Why don't all applications use virtual circuits? Because they are costly in performance! Some

argue that applications that do not need transparency and reliability should not have to suffer the performance penalty of virtual circuits. As a consequence, there was considerable discussion about whether or not virtual circuits should be included in the OSI network layer; the compromise is that virtual circuits are an option at this layer.

The fourth layer of the OSI model is called the *transport layer*. The transport layer ensures reasonable isolation from the details of the physical and data-link layers. For example, software meeting the transport layer interface specification will not need to be aware of packets. Virtual circuits—whether implemented in the network or transport layer—will provide reliable data transmission. There are a number of protocol choices at the transport layer. In the Berkeley Unix world and in much of the System V world, the workhorse transport protocol is the ARPAnet Transmission Control Protocol (TCP) for supporting wide varieties of applications including file transfer (FTP) and electronic mail, remote file servers (network file system, or NFS), network window systems (such as XWindow and NeWS), and virtual terminals (such as Telnet).

Often, we hear TCP mentioned in the same breath as IP, since TCP implementations generally are built to use the IP protocol at the network layer—"You have to build it on something." TCP/IP has many Unix systems application implementations in commercial and experimental environments.

Despite the popularity of TCP/IP in conjunction with an Ethernet (standard software on the Berkeley Software Distribution), experimentalists continue to implement new network and transport layer protocols. Currently, the Unreliable Datagram Protocol (UDP) is enjoying considerable success with the experimentalists. UDP is implemented on top of IP, but provides only a raw datagram protocol with internet addressing. It is fast and unreliable. Some developers also look to unique transport layer protocols that are especially well-suited to their applications' needs, but this work is largely experimental and is mentioned only in passing here.

Standards efforts are succeeding at the higher layers of the protocol stack, e.g., the X.400 mail standard. However, there is no general agreement on the proper definition for the *session* and *presentation layers*. (The top layer, of course, is the *application layer*.)

In our next column, we will continue this discussion of networks and protocols by describing how vendors are dealing with the implementations and products. ⊙
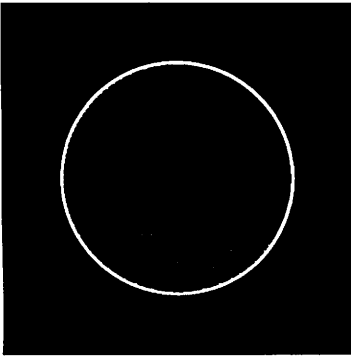
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NEWS

PRODUCTS • TRENDS • ISSUES • ANALYSIS

ANALYSIS

• A F C A C •

Revisited

It seems that when $3.5 billion are involved, the action gets hot. The latest in the never-ending U.S. Air Force Computer Acquisition Center Project 251 (AFCAC 251) saga is a revision of the specification resulting from DEC's protest of the bid. In case you missed the action, DEC protested the bid on the basis that the federal government was restraining trade by requiring a proprietary operating system: i.e., AT&T's System V and its System V Verification Suite (SVVS). While the judgment of the General Services Administration (GSA) recognized that the specification needed to be more descriptive of functionality, it maintained that the federal government was within its rights to mandate the Unix operating system. DEC, on the other hand, desperately wanted to be able to bid its proprietary VMS operating system. The company had hoped that the judgment would require the Air Force to restate the bid, rewriting the operating system specs in functional terms so that any operating system could play. No such luck, DEC.

Most of those companies bidding on the project and the National Bureau of Standards vehemently protested DEC's attempt to get rid of the Unix requirement. "They certainly did not make any friends in the government," said Roger Cooper, deputy assistant secretary of Information Systems at the U.S. Department of the Treasury. However, on the positive side, he acknowledged that DEC's protest settled the issue of requiring standards as part of government bids. "We weren't too happy, but the issue of requiring the Unix operating system did get resolved," says Cooper.

The latest pack of paper to move out of the Air Force includes some changes that open the bid a bit more to other versions of Unix (i.e., Berkeley Software Division, or BSD).

How then did the Air Force change the wording of AFCAC 251 to reflect the changes resulting from the GSA judgment? We thought you'd find the wording interesting:

"The highest evaluation consideration will be given to those operating systems most closely conforming to SVID [System V Interface Definition], especially the SVID base system. However, no proposed operating system will be declared technically unacceptable solely for failure to support any particular functions defined in the SVID."

The revised request for proposal (RFP) concludes that the Air Force will evaluate the version of Unix used with two methods. The primary method will be based on compliance with the SVVS tests. If a vendor's version of Unix does not pass the test suite, the Air Force will base its judgment on how the vendor provides equivalent functionality. In addition, non-SVID functions will be evaluated through a review of the impact on software portability, programmer productivity, system operability, and migration to Posix.

All new proposals are due by December 22. But don't worry. Even after AFCAC 251 has becomes a distant memory for all but the winners, we are prepared to tell you about the forthcoming IRS Request For Comment for some $1.8 billion in Unix based minicomputer systems. Stayed tuned for more details. ❍   —*J. Hurwitz*

• D B M S U P D A T E •

Ingres Expands Its Connections

Relational Technology Incorporated (Alameda, California) has announced its first two gateways between the Ingres relational database management system (RDBMS) and non-Ingres database files. The Ingres RMS Gateway allows Ingres users to access RMS data in the DEC VAX/VMS environment
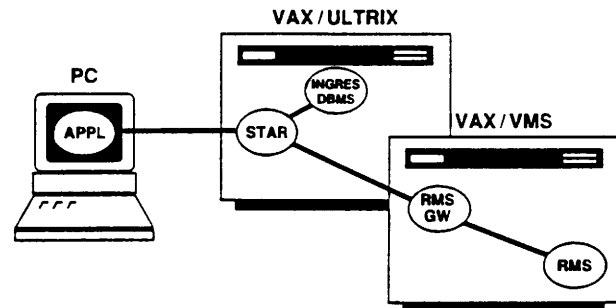
Combining Data
Single Machine

* **Better decisions by combining old & new information resources**

PC

VAX / VMS

(INGRES DBMS)
STAR
RMS GW
RMS
APPL
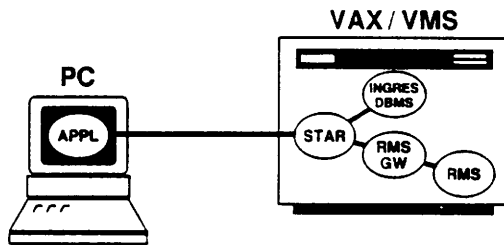
Combining Data
Multiple Machines

* **Unified view of all information resources**

VAX / ULTRIX

PC

APPL

STAR

(INGRES DBMS)

VAX / VMS

RMS GW

RMS

---

via the Ingres RDBMS and SQL. The dBase Gateway performs the same function for dBase (.DBF) files in the DOS world.

These products are an extension of the company's distributed database architecture, adding access to heterogeneous DBMSs to the existing elements of portability, connectivity, and distributed data management.

MIGRATION STRATEGY. Relational Technology's objective is to give users an easy migration path into the Ingres distributed RDBMS environment from these existing products. The major benefit is the ability to develop new applications with the Ingres fourth-generation language (4GL) application development tools, yet access existing data files. These gateways allow the organization to move on using state-of-the-art development tools without having to convert or leave behind masses of data in RMS/dBase files. An additional benefit is applications coexistence, the ability to continue to run older custom applications that maintain or use the RMS/dBase files.

Using Ingres/Star, the company's distributed networking architecture, a user could also combine data from RMS or dBase files with existing Ingres data in an Ingres application.

Both gateways provide one-way (read-only) access. It is not possible to update or change the RMS/dBase data from within Ingres.

RMS GATEWAY. According to DEC,

the volume of RMS files already out there is huge, and only a few tools (other than third-generation programming languages like Cobol, C, and Fortran) are available to tap into the data. Products like Datatrieve, Powerhouse, and Focus can access RMS files but do not provide the full relational capability and development tools of Ingres.

The Ingres RMS Gateway software runs on the DEC VAX under VMS. It will be available this month at a cost ranging from $450 on a DEC VAXstation to $24,000 on a DEC VAX 8978.

DBASE GATEWAY. The dBase market is also significant, with dBase installed on approximately 1.5 million PCs. The Ingres dBase Gateway will be available in the first quarter of 1988 at a cost of $120.

FUTURE GATEWAYS. Relational Technology indicated that it will develop gateways into other DBMSs, such as IBM's IMS, DB2, and SQL/DS; DEC's Rdb; and Data General's DG/SQL.

AGREEMENT WITH DEC. Relational Technology has also signed an agreement with DEC granting DEC a nonexclusive right to sell the Ingres RDBMS directly to its Ultrix customers. Relational Technology will continue to sell Ingres to both Ultrix and VMS customers and will provide all customer support and training for Ingres. DEC chose Ingres because of its

level of after-sale support and its portability.

Making Progress

As a logical step in trying to catch up to its larger rivals, Progress Software Corporation (formerly Data Language Corporation) of Bedford, Massachusetts, has recently made two announcements: an enhanced version of its Progress fourth-generation language and RDBMS, and the availability of Progress on the DEC VAX under VMS.

The new Version 4 of Progress improves both performance and security, introduces roll-forward recovery capability, and adds overlapping windows and support for color to its user interface.

Version 4 has also been ported to the DEC VAX/VMS environment, enabling Progress Software to compete in this significant market for the first time. Progress already runs under Unix, Xenix, Ultrix (DEC's version of Unix), MS-DOS, and PC LANs, and applications developed on one platform can be ported to others without rewriting the code.

We will be taking a closer look at Progress next month, so stay tuned.

PRICING AND AVAILABILITY. The company started shipping both Version 4 and the VAX/VMS edition last month. A full application development copy of Progress Version 4 ranges from $1,000 (on a PC under DOS) to

$125,000, depending on the host computer. The VAX/VMS version of Progress ranges from $3,000 on a VAXstation 2000 to $60,000 on the VAX 8800. Lower cost Run-Time and Query/Run-Time end-user versions are also available in all environments.

Oracle for OS/2

Oracle Corporation is the first major database vendor to announce a version of its RDBMS for IBM's Operating System/2 (OS/2). Oracle, Version 5.1, for OS/2 will begin shipping in January.

Oracle introduced Version 5.1 for the MS-DOS environment last April, making use of protected mode and requiring 1.5MB of memory to allow users to develop large applications in spite of DOS limitations. Under OS/2, even larger applications can be handled. In addition, OS/2's multi-tasking capabilities will allow multiple Oracle applications to access an Oracle database while maintaining integrity and consistency.

Oracle Version 5.1 for OS/2 will include the SQL*Plus, SQL*Forms, SQL*Report, SQL*Calc, and Pro*C modules in addition to the RDBMS. The product will cost $1,295, the same price as the current DOS product. Existing customers of the DOS product can upgrade at no charge if they have a maintenance contract. Otherwise, the product upgrade costs $295. ◐

—J. Davis

•APOLLO•

Integrating Macs into Apollo

As Macs are being brought out of the desktop publishing closet, the need to connect them into the company's overall computing strategy is becoming urgent. In October, we saw the Sun/TOPS strategy for integrating Macs

into the Network File System (NFS) environment. Now, Apollo has responded by announcing an agreement with Information Presentation Technologies (IPT) of Calabasas, California, to cooperatively market uShare, a communications product that allows corporate end users to integrate Macs and Apollo workstations.

IPT is a reincarnation of Lutzky-Baird Associates (LBA), a pioneer in the Unix-Macintosh-PC connectivity arena. Its initial product, UltraOffice, is the basis for IPT's current offerings.

I SHARE, uSHARE. IPT's new product, uShare, has three levels of connectivity. On the lowest level, it provides VT100 emulation for a Mac or PC into an Apollo network running Unix or Aegis. Currently, this is a character-based package that simply puts the user at a Unix prompt. However, the next release, due to be exhibited at UniForum in February 1989, will make use of Apollo's XWindow Open Dialogue to create a Mac-like interface running in a window. A Mac user could thus have an icon-based terminal emulation session running in one window, mail running in another, a Mac application running in a third, etc. PC users will have a similar interface based on MS Windows.

uShare itself is an AppleShare-compatible file service that resides on an Apollo workstation, making that workstation a non-dedicated file server for the networked Macs. uShare allows the Mac user to store and retrieve files on the Apollo workstation. The server's files can be made available to anyone else connected to that workstation, be it a Mac or another networked Apollo. All Apple Filing Protocols (AFP) calls are implemented. uShare shadows Apollo concurrency controls, adding its own record-level locking, which Apollo lacks. With Apollo's next release, which implements record-level locking, uShare will tie in directly with the Apollo scheme.

uShare+ provides the third level of Mac integration. First, the enhanced version creates a distributed file server

by adding gateway routines that allow multiple servers, networks, and devices to be accessed transparently over standard communications protocols such as X.25. With this addition, Macs can access files across a whole Domain network.

Second, uShare+ contains a network-wide file-search facility. The user can locate files and applications by browsing through a graphical representation of the file system or by using a sophisticated search capability. A search can be done by:

• Part or full name of file

• Name of owner

• Name of group

• Date file was created

• Text string

This helps alleviate one of the deficiencies of the Apollo network, which permits searching by title only.

A final feature of uShare+ is voice annotation on the Mac. Using a small microphone and digitizer, a user can implant a voice message anywhere in a text or graphics document. This is done by using the Mac's font manager and fooling the Mac into thinking that the digitized voice information is font information for the document. Any Mac user on the network can have the message played back by clicking on that section of the screen.

MAIL SERVICES. Both uShare and uShare+ include electronic mail for the Macs. Under uShare, the Mac is constantly polling the user's Unix mailbox. When the user receives mail, the Mac beeps, and the Apple logo blinks and reverses itself to show a message is waiting. Using multifinder or the coming XWindow interface, the user can pop into mail at any time. Mail can be sent through a mail icon and dialogue box. Future releases will include the ability to send to distribution lists and to request return receipts.

E-mail is directly connected into Unix Mail running on the host and can communicate with anyone on the network. Mac users also have access to outside mail users through Unix Mail's interface with other systems (PROFS, X.400, etc.).

PRICING. The host price for uShare is $1,195, and for uShare+, $1,495. Mail, virtual disk, print spooling, and terminal emulation packages are $395 each. The "Office Automation System" (all of the above plus the voice annotation and search features) costs $2,995. Client software for mail, terminal emulation, and virtual disk costs $39.95 for each module, with the Office Automation System running at $195.

FUTURE DIRECTIONS. IPT has a very ambitious timetable. At UniForum, it plans to demonstrate not only the Open Dialogue-based interface, but also intelligent mode (terminal or networked) selection, peer-to-peer Mac integration, and a Network Computing System (NCS) port for the Mac.

Under the intelligent mode selection, the user can select a file anywhere on the network. Not only will the system know which application to launch for the file, but it will also determine whether the Mac should run as a Mac or in terminal emulation. Also, PC-to-Mac and Mac-to-PC file translations will automatically be made.

Currently, any document on the network looks like a Mac document to the Mac. For a true peer-to-peer relationship, this should also be equally transparent to any Apollo node. IPT intends to introduce this capability by making use of the Apollo's extensible streams, which will allow Apollo nodes to access Mac files via demand paging.

Most exciting is IPT's planned NCS port. NCS permits processor-sharing across the network. Programs are written with distinct subroutines. A control program distributes the processing of the subroutines to the most appropriate (or least busy) CPUs on the network (which have been made available for network use). Once imple-

mented, NCS on the Mac will allow processes to be distributed among a number of Macs or combinations of Macs and Apollo workstations. Though there will be some immediate savings, the full power of the NCS port will be realized when applications are written to take advantage of the distributed processing.

Office Automation. IPT also has plans to move into the office automation (OA) arena. A turnkey OA package will be introduced in the first half of 1988 which will add a multiuser database management system (DBMS), a scheduler, a HyperCard memo facility, word processing, a spreadsheet, a graphics package, and support for shared modems, scanners, and Write Once Read Many (WORM) to their current Office Automation package of mail, voice annotation, and multiserver, multidirectory searching. In addition, IPT is actively working to integrate its product with other OA systems such as Alis from Applix and OfficePower on the CCI platform.

MARKET STRATEGY. IPT's marketing plan for uShare is two-pronged: top down and bottom up. From the top, it sees the existing Apollo networks as opportunities to implement uShare Mac and PC connectivity. The company anticipates an even greater opportunity in the adjacent office environments— those areas where engineering workstations exist but where office automation has not yet penetrated.

From the bottom, IPT hopes that, as Macs and PCs become the workstations of choice, a mature version of uShare will become the office automation package of choice.

WE ALL SHARE uSHARE? IPT is certainly not alone in the Mac to Unix connectivity business. TOPS (TOPS, A Sun Microsystems Company, Berkeley, California) and MacNIX (from Euro-Soft International Incorporated, Saratoga, California) both offer Mac-like interfaces for Macintosh users linked into the Unix world. TOPS also allows

the user entry into Sun's NFS, permitting distributed file-sharing.

uShare, through its integration with Apollo and its future porting of NCS to the Mac, takes us one step further. Soon the door to the world of distributed processing may be opened for Mac users. As we enter the fourth generation of networking, it is nice to see that Mac users will be able to come along. ◑

—D. Marshak

Life at the Low End

KOWIN. From its inception in 1983, Kowin Computers tried to provide multiuser capabilities in a low-cost, desktop package. Kowin's latest solution is a 68020-based desktop system that supports up to 64 users.

The Kowin 3 is a svelte desktop unit that boasts a 20 MHz 68020 and a 10 MHz 68000 for an I/O processor, another 68000 as a graphics processor, 4.5MB RAM expandable to 8.5MB, a 53MB internal disk drive, a 1MB 3.5 inch floppy drive, an optional Small Computer System Interface (SCSI) unit for external mass storage (up to 1 gigabyte), built-in modem and telephone for auto-dial, and the set of Quadratron Office software. The display monitor is a 12-inch, black-on-white, bit-mapped terminal.

The Kowin 3 comes with four RS 422 ports operating at 125 Kbits per second. By multidropping up to 16 workstations for each 422 using three-pair twisted wire and RJ11 plugs, you get your 64 users.

The Kowin 3 also has 3 RS232C ports operating asynchronously at 19.2 K baud.

Bundled with the system is Unix System V (including diagnostics and C compiler) and Q-Office. At Comdex, Kowin announced the availability of two basic interpreters and a Cobol run time system. The Kowin 3 costs

$11,900 (including application and system software). Additional Kowin workstations, using the same basic form as the Kowin 3, offer the 12-inch monochrome graphics display, telephone, and 64KB memory. The cost is $1,190.

TI FLESHES OUT THE 1000 SERIES. Expanding its System 1000 Series of Xenix-based computers, Texas Instruments (TI) added four entry-level models to the low end. System 1000 Models 1005, 1010, 1005M, and 1010M are differentiated by mass storage options and multiplexers. The 1005 offers a 48MB disk; the 1010, an 87MB disk. The M Models include one eight-port multiplexer. Additional drives can bring storage up to 227MB. Prices range from $7,195 for the 1005 up to $9,895 for the 1010M. A motherboard

upgrade can upgrade the 1000 Models to the System 1100 Model capable of supporting up to 16 users.

ENTER THE 68030. Motorola appeared in Las Vegas brandishing benchmarks about its new 68030. A 25 MHz version of a 68030 CPU board cranked out 9,976 Dhrystones. That translates roughly to about 6 MIPS performance. The demonstration system ran under System V/68, Motorola's version of System V, Release 3.

WORDS, WORDS, WORDS. Samna enhances its Unix WP. One of the first PC vendors to make the jump over to Unix, Samna has introduced an enhanced version of its Unix software.

Samna Plus IV Version 1.1 supports the incorporation of scanned documents and images using the Tag

Image File Format (TIFF) within Samna word processing documents. Samna Plus IV offers Unix users the same capabilities as the DOS version of the product, including spreadsheet capabilities and the WordBase Manager. WordBase Manager is a full-text search facility that hunts out words, phrases, or combinations thereof within Samna documents.

Samna plans to ship Plus IV 1.1 in January. Supported systems include 80386 boxes running Microport's Unix/386 OS, AT&T's 3Bs, the NCR Tower 32, Convergent's S/220s, and the IBM RT running AIX. Prices will range from $745 to $11,900. At the same time, Samna has announced a Plus IV Version 2.0 for DOS that offers a Page Preview feature. ●   *—M. Millikin*
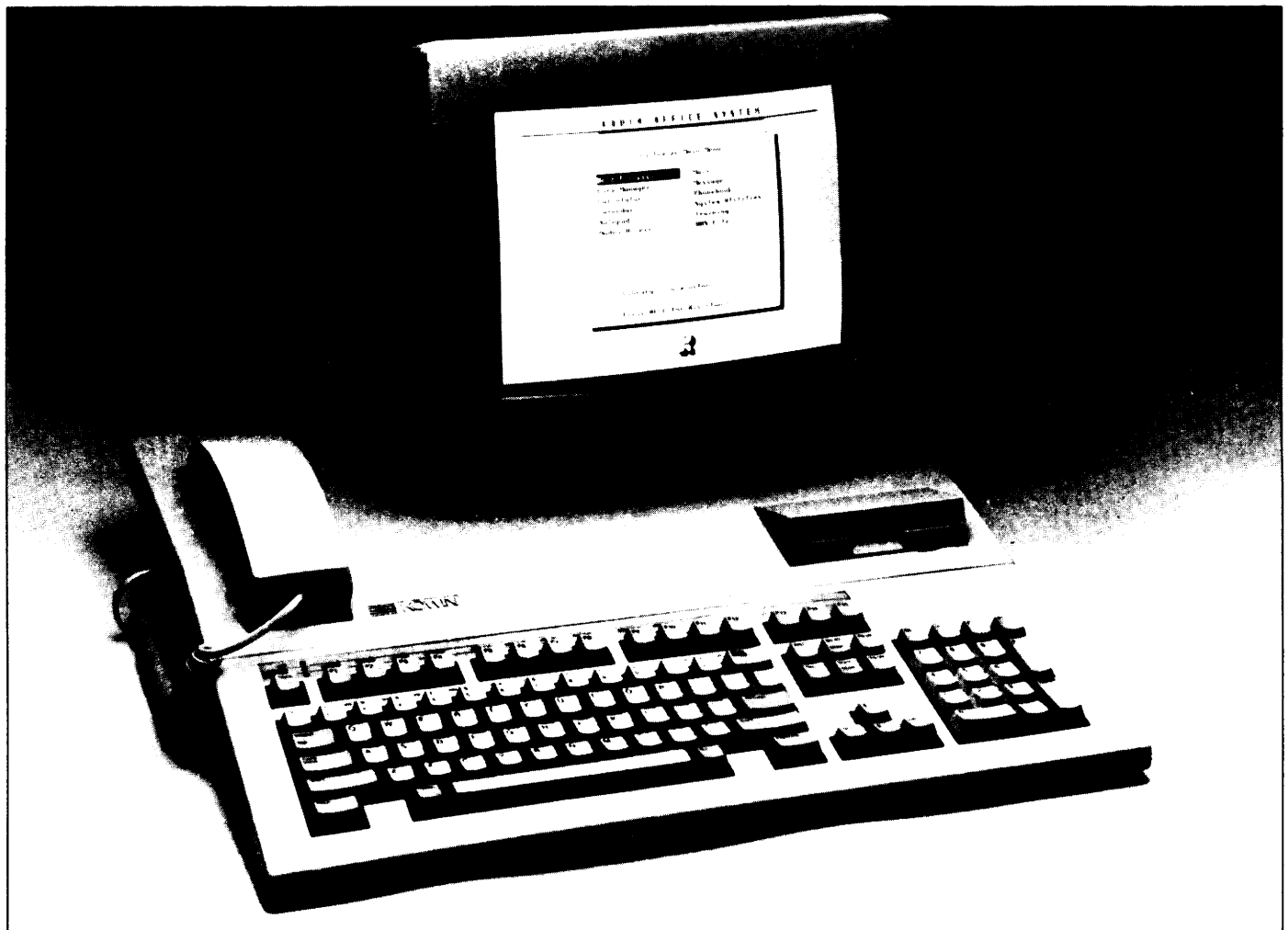
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