The Perfect
Marketing Requirements Document

Following is an example of a Marketing Requirements Document. This MRD is considered one of the finest available.

This document was derived from work originally done by Joe Ruck, one of the best product managers in the industry. The author gratefully thanks Joe for his tremendous insight, leadership, and friendship in working with her to develop this section of Software Product Marketing: The Book

Here are a list of study questions to consider while reviewing this document:

1) Who is the intended audience/reader of the document?

2) List three customer concerns regarding packaging.

3) What are Duxbury's particular problems regarding packaging?

4) What is the competitive threat regarding Duxbury's packaging?

5) What options and alternatives does Duxbury have to take a leadership position in packaging?

6) What factors were analyzed to justify the product recommendations?

Computer System Packaging:

Marketing Requirements Document

The Purpose of This Paper

This paper is intended as Product Marketing's input into Duxbury's packaging design effort. Its primary goals are to:

a) examine the role of packaging in the workstation market

b) provide insight into our customer's packaging needs

c) recommend a comprehensive 2—year packaging strategy.

The ideas are based upon discussions with Duxbury's customers and Duxbury's sales-channel.

The paper is divided into two parts. The first part is principally background information. It includes a description of the customer's packaging needs, an analysis of sales history, and a comparison of the packaging strategies of our major competitors – Lancaster, Milton and Windsor.

Among other things, the analysis reveals that the present solution for local disk storage on the 6—slot package is entirely inadequate. It also shows that we are losing ground to Lancaster in our packaging efforts – especially in the 40—inch cabinet area.

The second part of the paper is dedicated to strategy recommendations. The scenarios are intended to be comprehensive, and deal with the packaging aspects of all our workstations and fileservers, using present and proposed packaging designs as the starting point

Summary and Conclusions

With major computer companies like Lancaster and Milton entering the workstation market, packaging concerns, which were secondary not long ago, are becoming essential in the workstation purchase decision.

Also, Duxbury's high profile in the marketplace, coupled with the growth of our installed base make us a productive target for clones, and we are losing a significant portion of our disk and tape revenue to these competitors. We can strike back against these clones by offering a versatile and well—planned packaging line.

This report examines Duxbury's presently committed packaging programs relative to customer's needs, and contrasts our overall strategy with that of our major competitors. The result is a comprehensive strategy recommendation.

Discussions with Duxbury's customers and sales channel confirmed that Duxbury's target environments are the office and the computer room. For the computer room, the packaging of choice are racks and cabinets, because they are most efficient in their use of floor space. For the office environment three forms of packaging are favored –the desktop, the deskside stand and the 40—inch low—boy cabinet. There is however a strong desire for combining all the components of the system, including disk, tape, etc., in a single enclosure. So customers prefer a larger package, such as a 40—inch cabinet, over two smaller but separate stands. This is doubly important for the tempested environment. Two boxes means two tempested packages!

Duxbury's present packaging strategy appears marginally acceptable when seen in isolation.

However, when compared to our competitors, especially Lancaster's, we look inadequate. The Lancaster1 packaging line is well—conceived, flexible and meets the needs of the workstation customer.

Also, our new 6-slot package doesn't account for the historically established need for local disk for this class of product. It is safe to say that the success of the 6—slot package will be limited unless disk and tape functionality is provided.

Recommendations

I would like to propose a simple three—point strategy to amend the weaknesses in our present approach, and bring our packaging line up to par within a nine—month time frame. The following points are regarded as critical:

7) **6 Slot Stand with Integral 5 1/4—inch Disk and Tape**

   Kick off a program to provide local *5* 1/4—inch disk and tape capability integrated with a 6-slot cardcage. With the new 146 MB *5* 1/4 inch disk, this stand will serve as the low—cost server that the sales channel has been asking for, and the diskfull workstation of choice for numerous applications.

8) **Rack-mountable 6-slot Cardcage**

   Design a rack—mountable version of the 6—slot package. This product is key to making low— cost server capability available in a 40—inch cabinet, and is closely affiliated with our requirement for a low—boy cabinet.

   Lancaster offers this functionality today.

9) **40—inch cabinet, which can house a variety of CPUs and peripherals**

   Put efforts under way to design a versatile 40—inch low—boy cabinet, which can accommodate a rack-mountable 6—slot cardcage and two high-performance SMD disks, as well as some other combinations (described in the strategy section). This product will function as our office environment server and/or our computer room mass storage subsystem.

The Changing Role of Packaging Design

As the workstation market matures and Duxbury targets large end—user organizations as a strategic market segment, the role of packaging is becoming increasingly important to Duxbury. This increased importance can be largely attributed to the following factors:

Entrance of Major Computer Manufacturers in the Workstation Market

As major computer manufacturers with extensive packaging expertise enter the workstation arena, they are making packaging design and product appearance key competitive issues.

This represents a new challenge to Duxbury – one that must be taken seriously—particularly because some of our competitors are offering comprehensive and versatile packaging solutions to the workstation market today. Duxbury needs to meet this challenge or face losing certain major opportunities. A good example of an account where Duxbury workstations may not be considered as a viable solution is Central State Banks in Missouri. There, a $300 million dollar deal hangs in the balance, contingent on our ability to provide acceptable office environment packaging – which we do not have today.

Packaging Determines Success in Selling Mass Storage Peripherals

A well—balanced line—up is a key ingredient for winning back disk business which today is lost to third parties, because it will allow us to graduate from merely reselling disks to marketing mass storage subsystems. This has the potential for raising our disk—and—tape revenue from a low of 22% in FY98 to a more normal 30%, or even 35%. The latter percentages are typical for mini—computer companies like Lancaster or Percival.

Without good packaging, our customers perceive that we add little value over the disk manufacturers. Consequently, they will take their business to third parties, which charge considerably less than Duxbury, for the same functionality. This is especially critical for our rack— mountable peripheral business.

Increased Emphasis on Large End—Users

With Duxbury actively targeting large end—users, the need for well—designed packaging becomes paramount. These customers demand that the hardware be designed to meet the requirements of their environment, whether it is an office, a computer room or a shop floor. Also, they demand that packaging take into account all aspects of a Duxbury computer system, including disk, tape and communication options – not just CPUs. This is somewhat of a departure from the past, where Duxbury's business depended on OEMs who provided their own packaging, or universities, to which everything other than price is

a secondary consideration. Given that we have committed to actively pursue this market, we should put the supporting building blocks in place to make this a reality.

But first we have to review the needs of the customer and determine how well our current packaging strategy meets those needs.

Customer Environments

The vast majority of Duxbury workstations and fileservers are destined to be used in an office or in a computer room, so these two environments * will be covered in detail.

Computer Room

Footprint

In raised floor computer rooms a small footprint is the predominant packaging concern. This is caused by the fact that computer rooms are frequently crowded, and that expansion is a costly and complicated matter. Rack mounted packaging, with its small footprint and it's efficient use of floorspace, is widely considered as the packaging of choice for that environment. This allows a customer to stack a CPU, several large disks and a 1/2—inch tape, while only occupying nine square feet of floor space.

Cabinet Height

Height of the cabinet itself is another important element in this environment. Over the years, two informal standards have developed. First, the full—height configuration, which implies a 60—inch height. It provides maximum utility for a given amount of floorspace. The 60—inch height limitation was set for psychological reasons, because customers consider any height over 60 inches intimidating. This is the reason that companies like Lancaster, Percival and Merlin have abandoned the 76—inch height in favor of the more acceptable 60—inch height.

The second standard height is 40 inches. This standard is rapidly increasing in popularity, because it can be used in the computer room as well as the office.

It's a Cabinet World

Besides the argument of minimum footprint, a commitment to a cabinet packaging effort is also important, because Duxbury equipment will have to coexist with equipment of other vendors. From the single board computer to the mainframe business, successful vendors make their product available in racks. In this building block—like environment stands don't fit in well, especially if different stands are required for the CPU and mass storage peripherals, as is the case with Duxbury stands today. With the advent of the forthcoming Bellingham and Natick products, cabinets will become even more important, because a high proportion of these are likely to end up in machine rooms as fileservers.

* *Applications with unique packaging requirements would be better addressed*

elsewhere. A case in point would be packaging for the tempest environment, which more appropriately is addressed by the Government Systems Division.

Rating Duxbury's Present Cabinets

Today, Duxbury has two cabinets in the product line. Both have serious shortcomings.

The full—height cabinet is simply too high. The standard today is 60—inches, and Duxbury's product is 76—inches. Numerous customers have voiced their displeasure over this height issue, thereby making the rack only marginally acceptable in the computer room. Needless to say it is totally unacceptable for the office. Sales history confirms this notion because almost no cabinets are sold with Dux20's. We do book a modest number on the Dux30, simply because it represents Duxbury's only packaging solution for the computer room environment,

Our 40—inch cabinet is the right height, but its primary shortcoming is its lack of versatility and the fact that it is not possible to accommodate a CPU. Please see the half—rack paper for a detailed analysis of Duxbury's 40—inch rack, (Appendix B).

Many of the requirements of an office environment workstation can be traced back to the fact that this hardware goes into an environment where professionals spend their working hours. So the primary concerns in this environment are low noise, single enclosures and attractive packaging

Quiet Hardware

Because of the importance of preserving tranquillity in the office, noise suppression should be a key concern in our packaging efforts. Frequently customers voice complaints about disk noise and fan noise, or even the noise of diskless nodes themselves. At one customer site engineers even run extension cables from their disk stands in remote locations to the monitor and keyboard in their office. This underscores the importance of packaging, which takes noise suppression seriously.

One—box Approach

Many customers would like to see all their computer hardware housed in a single cabinet. One reason is that this approach reduces the chance for accidental abuse, which dramatically goes up when multiple boxes are used. Another reason is that there is no need for external cables when a single box is used. OEMs prefer one box as well. It is simply easier to deal with. This is doubly important for customers who want to tempest equipment. Two boxes means two tempest packages!

Popular Packaging Approaches –Desktop, Deskside and Low—Boy Cabinets

The most popular packaging approaches are the desktop enclosure and the deskside stand. The desktop is used for low—cost systems and has the advantage of simple cabling. Its primary disadvantage is that it consumes precious desk space. The deskside

stand is usually intended for the more powerful applications. All workstation vendors have made a strong commitment in these areas, including Lancaster, Windsor and Duxbury. See the competitive section for a comparison.

The third popular approach is a category of cabinets known as the low—boy racks, either 26— or 40—inches high. This type of packaging has numerous advantages:

1. Typically they can accommodate both a CPU and mass storage.
2. These cabinets are easily upgradeable.
3. They allow for concealing the numerous cables, which come with terminal servers
4. They can be used in both the machine room and the office environment.
5. Customers are familiar with – and therefore receptive to – this form of packaging because it has been made popular by major companies like Lancaster and PERCIVAL.

Rating Duxbury's Office Environment Packaging

In terms of noise suppression, Duxbury does fine with desktop diskless nodes, such as the Dux15 and the Dux25. However it is widely acknowledged that the 12—slot stand is too noisy.

Most of the time Duxbury also meets the requirement for a one—box approach. This is true for our diskless nodes and for *5* 1/4—inch disks in the 12 —slot stand. Unfortunately, the 6-slot package is currently not configurable as a diskfull system in one box. While it makes for a great high—end diskless node, it is unacceptable for standalone applications, as customers who want a single *5* 1/4—inch, and will have to use a shoebox. If they want two disks, they have to use two shoeboxes. This will be addressed in more detail later in this paper.

In the low—boy cabinet area we have an unacceptably inflexible and limited offering. Our present 40—inch rack can hold nothing more than the 380 MB Model500 and the old 1600-bpi tape drive.

Common Packaging Needs

Besides their unique needs, the office and computer room environments also share common needs:

Flexibility

Our peripheral packages should be designed so that they can house several combinations of peripherals and CPUs. This allows us to use one package for different market segments.

Upgradability

All packaging design should reflect the need for an upgrade path within the same enclosure, particularly in the area of disk storage. The size of Duxbury's system software and our customer's voracious appetite for data storage makes this mandatory. Another important reason is that this allows Duxbury to easily sell mass storage into its installed base. In larger computer companies this is traditionally a significant contribution to company revenue. Also, the Duxbury Customer Support organization could increase their revenue base, because they would be called on to carry out many of these installations.

As it stands today, the lack of this internal upgrade path is a frequently heard complaint about the shoebox and the system stand. Disk expansion on the shoebox is only possible with an additional enclosure. Disk expansion on the stand, whether internal or external, is plainly not possible. We need to correct this in our future packaging efforts.

Longevity

All packaging should be designed to last for several Duxbury CPU generations.

Reduced Server Costs

A frequently heard concern among Duxbury's customers is server cost. They just can't understand why we can design-a high performance compute intensive machine for $790, but charge an additional $1200 to get similar performance in a 12—slot cardcage. To address this concern, the 6—slot package was designed.

However, the CPU is only one part of the total server price tag. Peripherals and peripheral packaging make up a good chunk of the server price. To completely satisfy the objective of a lower—cost server, the product needs to combine disk and tape with the CPU in one package.

Terminal Server Business

Duxbury grew up as a computer component integrator. However, increasingly, Duxbury salespersons are presenting Dux20 and Dux30 servers with multiplexers as timesharing machines to price—sensitive customers with undemanding applications. And why not? Our Dux20 or Dux30 make powerful terminal servers. With a minimal amount of effort and without any hardware design, we can position ourselves for this business. A major step forward would be to reflect the packaging concerns of this market segment in our planning. For all practical purposes this means integrating a low—boy cabinet, which is the packaging of choice for this marketplace.

Shipment History

A review of recent sales history gives us valuable information about what the popular customer configurations are. Detailed option sales history is shown in the appendix. A summary of the key statistics is shown below, with the spotlight on those options, which directly affect product packaging.

Key Sales Statistics

[A table showing percentage of sales of various optional peripherals has been deleted.]

Summarizing these statistics, 80% of all Dux20s and Dux30s are sold with disks and 20% are sold diskless.

It is reasonable to expect that our 6 slot will fall somewhere between these two extremes. Those customers who are buying SCSI disks for their 12 slot stands, will almost certainly migrate to the 6-slot package. So the 6 slot is likely to be diskfull 60% of the time.

In the case of the Dux20-S model, bookings will not accurately reflect true customer need, because several key options have not been readily available. This has resulted in a product substitution process by which the salesperson ordered the “next closest” product. So in certain cases the Dux20-S model was substituted for the Dux30. This artificially boosted sales of that model.

The Dux30 is affected as well, but certain trends are clear above the confusion.

[A table showing percentage of sales of various optional peripherals has been deleted.]

Implications for the 6—slot Package

As shipment history shows, eight out of ten customers purchase a local disk and tape with their workstations. So, if the 6—slot package is to present a legitimate alternative to our 12—slot stand, we need to make sure that there is adequate provision for mass storage! Let’s review what we have in place today:

(1) Because no disk and tape can be housed inside the 6—slot all *5* 1/4—inch disk demand will need to be satisfied by the shoebox. This will work if a customer only wants a single disk – especially with our soon to be announced 146 MB disk. But it runs out of steam when a customer wants a second disk. The second disk will have to be housed in yet another enclosure – the third one, counting the 6—slot box. Customers refer to this undesirable add—on box phenomenon as the “choo—choo” effect -.

Given that we price competitively, this means decreased margins for Duxbury, because the additional enclosure drives up our materials cost.

We run into a real problem if a customer wants an SMD stand and a 1/4—inch tape for

backup. This is currently a popular configuration on the 12—slot. Bookings for this option average *15%,* but it is likely to jump to 30% ,when the 280 MB disk comes on line. The problem we face, is that there is no provision for 1/4—inch tape backup. Under the circumstances, the best thing we can offer that customer is a depopulated shoebox with only a tape. This will saddle the customer with three packages: a 6—slot, a disk expansion stand, and a shoebox for backup – all different in size. Perhaps adequate for the interim, but unacceptable in the longer term. The second solution would be a 6—slot with the present half—rack with the old Model500 and the old 1600 bpi tape

It should be clear that we are left with a hole in our packaging strategy if we don't provide a mass storage solution for the 6—slot.

Incorporation of Future Peripherals

With the rate of peripheral introductions reaching a torrential pace, it is critical that new package design take future peripherals into account

Following is a "most likely" scenario for Duxbury's product introduction plan for peripherals over the next 12 months.

May Announcement
Model500 XP – S7S MB formatted capacity

Rack—mountable fileserver disk, replacement for 380 MB Model500. This disk is three inches deeper than the present Model500, which has forced a redesign of the present 76—inch rack and ruled this disk out for the half—rack as it is presently designed.

280 MB 8—inch disk

Identical form factor to present 130 MB 8—inch disk. Present plans only call for integration in the deskside disk expansion stand.

142 MB S—1/4 inch disk

Identical form factor to present 71-MB disk. Present plans call for integration in shoebox package and system stand. This disk features a 28-millisecond access time and an ESDI controller, which permits a data transfer rate of 1.2 MB per second.

Floppy Disk

A floppy disk drive will be announced to support our low—end workstation programs in the AT/10—compatible world. This will be a *5—1/4* inch half—height form factor.

January Announcement
700 MB 9—inch disk

This disk is intended to replace the Model500 XP as Duxbury's high—capacity fileserver disk. Although capacity is similar to the XP, this disk is only half the width. Conceivably, this disk could be integrated in the full rack and the half—rack. The switch to this disk is part of our strategy to focus on industry standard peripherals to provide Duxbury with leverage to achieve our disk cost targets.

March Announcement
CD-ROM

Again a 5—1/4 inch form factor.

This tape drive will likely use the 5—1/4 inch form factor and is expected at a target cost of $150. From the cost target, it is clear that this device will not replace the present 1/4—inch cartridge as our low—end backup device. Given its price performance it will probably function as a replacement for our 1600 and 6250-bpi tape drive. If the device has indeed a 5—1/4 inch form factor, integration should be straightforward.

June Announcement

500 MB 8—inch disk or 400 MB 5—1/4 inch disk

These disks represent the next generation of what will be announced this coming May. Availability dates are unclear but it is expected that the 5 1/4—inch disks will have equivalent performance to the 8—inch disks in this timeframe, casting some doubt on the long term future of 8—inch disks at Duxbury.

On the other hand if the 500 MB + 8—inch disk becomes a reality, they may displace a good portion of the Model500 XP business, and become the flagship of our product line. We have to monitor the progress of the disk manufacturers closely.

[A calendar of product introductions has been deleted.]

Competition

Windsor

Windsor's packaging strategy is disjointed and difficult to understand. They have an array of different packages; most of them limited to a single configuration. The following summarizes the key products.

WIN30

This is their low—end PC compatible box. It is sold as a standalone workstation with a monitor, and as a low—priced server without the monitor.

Number of Slots	Seven AT slots
Disk	One 71MB 51/2 and one diskette max
Tape	One ¼-inch cartridge tape
Dimensions	7" x 23" x 17"
Comments	This box is similar to the MILT-AT. The chief drawback is that it does not provide disk expansion capabilities in the same enclosure.

WIN40

Number of Slots	Twelve
Disk	Two 5 ¼-inch disks max
Tape	One ¼-inch cartridge tape
Dimensions	24.5" x 13.5" x 28.5"
Comments	In terms of the number of slots, mass storage and physical size, this package is almost identical to the Duxbury 12-slot stand. To combine these high-performance workstations with 8-inch disks, a customer will have to purchase a WIN50 that can accommodate an 8-inch disk (described below). 9-inch SMD disks are also available. They come in the DFS500 enclosure.

WIN50

Number of Slots	Ten
Disk	One 8-inch disk max
Tape	
Dimensions	29" x 23.2" x 31.5"
Comments	This enclosure was previously used as the stand with the older computer models. It is a big box and, with the advent of the new model, it would appear to be relegated to the role of disk expansion tower. It is bulky and without expansion capabilities, but it is the only box in which Windsor can accommodate

	8—inch disks today

WIN60

Number of Slots	Five
Disk	
Tape	
Dimensions	8.7” x 20.4” x 19.2”
Comments	This is the replacement for the WIN50, although it does not accommodate any disk inside the enclosure itself. It comes in a desktop or rack—mountable enclosure.

WIN70

Number of Slots	Five
Disk	Two 400MB 9-inch SMD disks
Tape	
Dimensions	
Comments	This is a combined cardcage and high-performance disk subsystem. It is based on the cardcage in the WIN60. It is a floor cabinet. This package is also available without the CPU.

Summary

All told Windsor offers six different packages. The enclosures are inflexible and there is no consistent theme in their styling. Disk storage is frequently only available in expansion enclosures. There is no place for multiple 8—inch disks in their product line.

Lancaster

Lancaster has a clean packaging strategy for their Lancaster1. Their scheme reflects the needs of the customer's environment and provides a modular approach, which leads to economies of scale and lower product cost.

The Lancaster1 product line basically makes use of three different packages which all can incorporate a CPU and mass storage peripherals.

LANBOX

Number of Slots	Seven
Disk	One 71 MB 5-1/4 inch disk max
Tape	100 MB ½-inch cartridge
Dimensions	24.5" x 10" x 28.5"
Comments	This is their low-end box, designed for deskside stand usage. It is a strong offering for low-end diskfull applications because the mass storage is integrated in the same enclosure as the CPU. This permits competitive pricing on their low-end disks as they incur no extra packaging cost. It is the equivalent of Duxbury's 6-slot with local disk and tape. With the intro of new dual density disks, Lancaster will be able to offer 146MB in this "low-end" system: all in one box. Also, with their 100MB-cartridge tape, there is plenty of tape capacity to back up this storage.

LANBOXUltra

Number of Slots	Twelve
Disk	Three 71 MB 5-1/4 inch disk max
Tape	100 MB ½-inch cartridge
Dimensions	24.5" x 13" x 27.5"
Comments	This is the more powerful version of the LANBOX. It offers more slots and more disk capacity. It is similar to Duxbury's 12-slot stand with more disk capability. With the new 5 ¼-inch disks, the LANBOXUltra will be able

	to accommodate the 338 MB.

LANBOX-RM

Number of Slots	Fourteen (two LANBOXes stacked on top of each other)
Disk	Two 71 MB disks plus two 456MB disks
Tape	Either the 100MB cartridge or the 1600BPI tape (Note a ½" tape can be accommodated.)
Dimensions	41.6" x 25.7" x 35.7"
Comments	This is a well-designed packaging solution that offers very good versatility and is suited for the office environment as well as the computer room environment. This machine can be used as a powerful standalone workstation with either two 71MB disks or one 456MB hard disk. It can be easily upgraded to one GB within the same package. If a customer needs still more capacity he can order a second cabinet with two additional disk drives. Thus, while staying within the office environment height limits, this product can be turned into a powerful fileserver. The product can also be used as a terminal server. From a customer perspective, this package is desirable because it accommodates numerous peripherals without going outside the enclosure itself. Lancaster probably likes it because they can use the LANBOX for a variety of applications and environments.

Summary

Overall, Lancaster's packaging strategy is well—conceived. Their well—engineered modular packaging approach permits easy upgrades to higher capacity disks. They offer a low—cost standalone solution with their integrated 6—slot and mass storage approach. Also, this box could be used as a diskless node. The midrange is very similar to Duxbury, with somewhat more disk capacity than Duxbury's (three disks vs. two).

Duxbury does not have a good answer to Lancaster's packaging strategy. We need to develop packages to offset Lancaster 's advantage in these areas. See the recommendations section.

Milton

Milton offers two different packaging solutions for the MILT—10: desktop and deskside. Because the 10 is positioned as an office machine, they offer only office environment packaging. Also, they do not offer any high capacity SMD disks or 1/2—inch tapes in their technical computing product line, which simplifies the packaging problems considerably. (Of course it hurts their image as a technical computing vendor.)

MILT100A

Number of Slots	
Disk	One 5 1/4MB disk
Tape	External enclosure
Dimensions	6.3" x 21.3" x 16.7"
Comments	This is Milton's low-end desktop computer. It is severely limited in disk capacity with only one 40MB disk.

MILT100B

Number of Slots	
Disk	Three 5/14MB disks
Tape	External enclosure
Dimensions	25" x 8.3" x 24.2"
Comments	This enclosure is equivalent to Duxbury's 12-slot deskside stand. Total disk capacity is 210MB.

External Enclosure

Milton offers a separate desktop enclosure for the ¼-inch cartridge tape. It measures 8.3" x 14.5" x 5.4".

Summary

Because Milton's packaging line—up is limited, we have to be wary of reaching conclusions about their overall strategy. What is apparent however, that they do follow the single—box and internal disk upgrade packaging philosophies, except for the tape drive area.

Other Competitive Issues

Rack Pricing

Duxbury's full height rack pricing is high by the industry norm. This is one of the principal reasons why Duxbury is not booking the anticipated rack business. The following reflects competitive rack pricing:

Ironweed	$2000	70—inch rack
Lancaster	$2320	60—inch high rack
Duxbury	$3900	76—inch rack

It is easy to see why our customers balk at our rack price.

Recommendations

While we are in good shape for diskless node customers, our standalone workstation and server offerings fall short of providing adequate packaging solutions to our customers. What makes matters worse is that Lancaster has put together a versatile line that does meet the criteria for success. Clearly, it is time for some adjustments.

Fortunately, a few strategically positioned products can turn the situation around within a six or nine month timeframe.

Three—Point Strategy

I would like to propose a three—point strategy which is designed for this purpose, and which reflects the issues discussed so far in this paper. The thrust of this strategy can best be described as:

a) Integrate mass storage with CPU's when the majority of our customers require local disk,

b) Minimize the number of enclosures to house all the required components,

c) Minimize the design effort

The following new products are critical:

POINT 1: 6 Slot Stand with Integral Disk and Tape.

We need to put efforts underway to introduce a deskside 6—slot stand with provision for two *5* 1/4—inch disks, a 1/4—inch cartridge tape and a floppy. This design will satisfy the need for local *5* 1/4—inch disks with a maximum data storage capacity of 292 MB, in the stand itself. This will function as the low—cost server that the sales channel has been asking for.

Most importantly, we expect that 40—50% of our 6 slot customers will order *5* 1/4—inch disks, making this product is a must in our product line. Finally, tempesting this stand will be comparatively straightforward, given that there is only one enclosure

POINT 2: Rack—mountable 6—slot Cardcage

We need to provide 6—slot functionality in a rack—mountable package. This product is key to make low—cost server capability available in our racks. It will be the centerpiece of our low—boy cabinet proposed below.

POINT 3: 40—inch Cabinet that can house a variety of CPU's and peripherals.

Put efforts under way to design a 40—inch enclosure that can accommodate our rackmount 6—slot cardcage. This enclosure should be able to house:

- Six-slot CPU, two 280MB disks and a 1/4" tape

or

- Six-slot CPU, two Model500 XP's, 1/4" tape, three multiplexers

or

- Three Model500 XPs or six 9-inch disks

We also need:

- Companion cabinet with 6250 bpi tape, one Model500 or two 9—inch disks

This product is required to put us on equal footing with Lancaster's 40—inch rack offering. This cabinet will function as a multi—purpose server/subsystem.

Version A will be our office environment high—performance workstation or fileserver. The ¼ inch cartridge is a viable backup for the 8—inch SMD disks, transferring data at a rate of *5*MB per minute.

Version B will function as our office environment terminal server. A 12—slot package is required because our multiplexor occupies two slots. One of the nice features of this approach is that the break—out panel with the terminal connectors can be accommodated easily.

Version C can serve as our mass storage subsystem accommodating three Model500s for a data storage capacity of 1.5 GB.

Version D houses our high—performance 6250 bpi tape drive. This can be used with any of the previous versions as our 1/2—inch reel—to—reel backup mechanism.

These additions will complement our existing packaging line so that with an absolute minimum of design effort we can meet Lancaster head—on. The complete line can be summarized as follows:

Complete Packaging Line-up

Shoebox **Currently Exists**

Dux15's are the flagship in Duxbury's successful diskless node strategy. Therefore, the proper packaging, which minimizes both cost and package size is the desktop solution that already is in place today. The shoebox will continue to serve as our low—end solution for disk and tape. It will be matched with the Dux15, Dux25 and our 3—slot CPU's.

Six Slot Stand with Integral Disk & Tape **Proposed**

This is described in POINT 1 of the Three-Point Strategy above.

Twelve Slot with Integral Disk & Tape **Currently Exists**

This is our currently available system stand. It can accommodate two *5* 1/4—inch disks and a 1/4—inch tape. Its primary purpose is to serve as a placeholder until the six—slot stand with disk and tape comes on line.

40-inch Cabinet for CPU, Disk, & Tape **Proposed**

This is described in POINT 3 of the Three-Point Strategy above.

SMD Disk Expansion Stand **Currently Exists**

This is our existing expansion stand which houses 8—inch disks only. The new generation of 9—inch disks will not fit in this enclosure. This stand will only be matched with the 12—slot system stand because the 6—slot does not incorporate provision for 1/4—inch tape back—up.

This stand will be totally replaced by the six—slot package with mass storage (POINT 1)

and the new 40—inch rack with mass storage (POINT 3).

76-inch Cabinet **Currently Exists**

Our present 76—inch cabinet is adequate for computer room applications. So I don't see a 60—inch industry standard height as a pressing need. Also, when Duxbury's new 40—inch cabinet is available, numerous customers will migrate to that more desirable enclosure. Finally, with the advent of 500 MB 9—inch disks, which are half the width of our present Model500, the trend towards the 40—inch cabinet will grow stronger. Customers will then be able to get a 6—slot CPU and 1 Gigabyte of data storage in a 40—inch cabinet.

On the other hand, with Bellingham and Natick, Duxbury is making a strong commitment to "super-mini" class compute servers, which are traditionally matched with Gigabytes of storage. If this is a key segment for Duxbury in the near future, industry standard 60—inch cabinets will become strategically important.

In any case, we have a definite and immediate need for a 40—inch cabinet. After we have developed a versatile 40—inch cabinet, we will need to evaluate the need for a 60—inch cabinet to replace the 76—inch, taking into account Natick applications, advances in disk densities and effectiveness of the 40—inch cabinet for computer room usage.

This strategy is reflected pictorially in the following pages [pictures could not be reproduced].

Strategy Strengths

This strategy has numerous strengths:

1. With a minimum design effort _ one stand and one cabinet _ we can offer a very strong packaging line—up, which should last us for two years.

2. The strategy is optimized to integrate disk and tape where necessary but provides a separate enclosure where disk volumes are low. This is the case in the low—end, Dux15 and Dux25, where there is a high proportion of diskless node sales.

3. 40—inch cabinet is versatile and can be used as a fileserver, terminal server or mass storage subsystem.

4. No modifications are required on the 76—inch rack

5. We will offer desirable single—box solutions in most of the product line.

6. The 6—slot with disk and tape is the low—cost server that the sales channel has been looking for.

7. It is a flexible strategy allowing us to capitalize on developments in either the eight or nine inch disk arenas.

We will beat Windsor hands down.

Strategy Weaknesses

1. No good SMD solution for the 6—slot until the new 40—inch rack is available.

Other Approaches

Clearly there are other ways of addressing the needs of our customers. All of them have shortcomings relative to the 3—point plan above.

Mass Storage Subsystem to Match Six Slot

An alternative approach to a standalone 6 slot is to introduce a mass storage subsystem that complements our 6—slot enclosure. It would have provision for two *5* 1/4—inch disks, a cartridge tape and a floppy. With the new ESDI *5* 1/4—inch disks coming out we can provide 280-MB capacity in a 6—slot package.

The chief problem with this approach is that a high percentage of the 6—slot customers want *5* 1/4—inch disks. All of them will be saddled with a separate enclosure, which they do not want.

SMD Disk Expansion Stand with built—in 1/4—inch tape

This would be a kludge based on our existing disk expansion stand. The intent would be to provide an SMD solution for the six—slot. It would provide the necessary functionality, but it will not be a clean packaging solution. Certainly, it would be a poor response to Lancaster's 40—inch rack solution. I cannot recommend this in good conscience.

Overall, these are at best band—aids to fix urgent problems, and they don't fit Duxbury's position as leader in the engineering workstation market.

