Disc duplication positioned for market strength and growth

The business for CD and DVD duplication continues to strengthen as systems get even cheaper and easier to use. It has become accepted as something that any company with the need for small runs can afford to do themselves, and duplicators are geared up to meet their needs.

DEBBIE GALANTE BLOCK

While replication may be a risky business, it looks as if duplication is a profitable one. That's according to duplication equipment suppliers. Chuck Alcon Jr, general manager, Condre, says: "We think we're at the front edge of a marketplace that is going to grow a factor of 4% or 5% over the next three to four years."

While typical CD-R/DVDR orders usually top out at 1,000 pieces, orders have become more frequent, as corporate and live duplication markets continue to flourish leading to more sales for desktop, standalone and publisher units. "We're not finding that customers are looking for bigger quantities because the repaid run for most of these organisations is between 200–500 discs. What they are looking for is ease of use, an acceptable price point and a small footprint," says Alcon.

DVD is making strong inroads, accounting for 50–60% of new duplicator sales. All the duplicator system manufacturers, such as Tapematic, Alera, Otari, Discmatic and Trace, have long since introduced DVD-capable duplicators, while still maintaining a strong presence in CD. While some predict CD systems will disappear as early as this year, others disagree. CD duplicator prices are so inexpensive, companies such as Vinpower say smaller users, like the garage bands for example, who may have no need for video, will continue to buy CD machines.

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The "ratio of CD to DVD shipments is about 50/50. At the beginning of 2004 it was 70% CD. That's being driven by the speed of the recorders and the price of the media. The institutional market is going DVD first," says Alcon.

"DVD equipment sales have now exceeded that of CD, but CD still has its calling," says John Westrum, Microboard's chief technology officer. "Markets such as churches, pro audio and concert events still demand CD duplicators for audio discs that will be produced for years to come."

Rimage manufactures the Producer line of duplication and the Rimage 2000i Desktop product. Fran Peterson, product line manager, says almost two-thirds of its customers are buying systems with combo drives which will copy CDs and DVDs. Primera Technology's Mark Strobel, vice president of sales and marketing, sees much the same. Both companies say most of the volume going through these machines is still CD. Peterson says the CD volume is as high as 80%.

MF Digital's eastern sales manager, John McGrath, agrees: "We still have clients buying CD-only systems. If their need is strictly CD, then it makes sense. These drives offer faster write times typically, and better media support. However, with DVDR writing CD-R at speeds of 32x and higher, it will not be long before we see 'one drive does all' as the standard."

Who's buying?

Audrey Crawford, marketing manager at Verity Systems, divides the duplication marketplace into two areas: professional duplicating houses which need systems that can handle ever increasing quantities, and businesses who use the discs themselves.

The market has steadily evolved over the past few years. Companies and organisations of all sizes and types are buying in-house disc publishing equipment. "In the past, it was mostly the tech companies that dared bring such a machine in-house. Today, it's anyone who needs to put content onto discs," according to Primera's Strobel.

The profile of most of these companies buying duplication equipment is as you might expect. They include publishing houses, sports clubs, educational establishments, music companies for press review copies and back catalogue material, marketing and authoring agencies, ministry, government, education, the corporate market, recording studios and more.

"When we ship a power duplicator to a specific department in a large corporate entity, very quickly other departments gain access and they begin to use it for their own applications. Ultimately, they end up buying their own systems. A lot of repeat business occurs in this arena," says Alcon.

The business model that has been tried in various forms – content on demand – might actually start to happen in 2005. A customer can go up to a kiosk and order a movie, a music CD or maybe even computer software, and while they are shopping around, that content will be recorded and ready for when the customer leaves the store.

Desktop systems deliver fast, reliable results

In the past, several factors have gotten in the way, according to Rimage's Peterson. One issue being the content providers haven't always agreed to make their content available. The other issue, particularly for large amounts of content, is that the system weren't fast enough. "All of these barriers are starting to fall, or are being worked around. I'd say content-on-demand is going to be one of the biggest markets you'll see for duplication," Peterson says.

McGrath says that in addition to traditional markets, its Director line of CD/DVD publishers have also been used in some interesting ways. With its applications program interface, the duplicators have been used to automate disc creation in document imaging, medical imaging (PACS/RIS), satellite imagery, and discs for off-site storage.

The speed factor

Needing small quantities fast is an important reason to choose duplication over replication, but be cautious about speed specifications, equipment manufacturers say. McGrath says the MF Digital machines are amongst the fastest available today because they "do not rely on bullet under-ram prevention to mask issues with poor hardware performance. There is a good bit of misrepresentation in this business with people claiming, or inferring, their systems write at a higher speed than they actually do. This is especially true with standalone systems and the plethora of system integrators throwing units together with the popular commodity Taiwanese controllers."

To make sure that a system duplicates at optimum speed, equipment manufacturers recommend that customers use the best quality discs they can afford. Using cheap media may cause the drives to automatically reduce their writing speeds to accommodate the low quality discs, which cannot handle the high writing speeds of the drives. Cheap media can cause more major problems, although with a high level of false 'branded' blank media being produced in Asia, it is also a matter of buying trusted media from trusted suppliers. "We have also just heard of counterfeit DVDs appearing on the market which risk the lasers in the drives into producing too much power and as a result the drives burn out," says Verity's Crawford.

CDs can be duplicated at 52x, and DVD speeds are working to be as high as 16x. Tony van Veen, vice president of sales and marketing for Disc Makers, offers some example of speed. Its CD tower, equipped with seven Plextor drives, duplicates a minimum of 119 discs per hour. The automated duplicators have less drives, and since they also print on the discs, their throughput maxes out at about 50 discs an hour.

Crawford offers examples of speed directly related to her company's systems. All CopyDisc systems are fitted with the latest CD or DVD drives, which are also currently Plextor 52x CD-R drives or Pioneer 8x DVDR drives. "It takes approximately 3 minutes 25 seconds to copy a full (650MB) CD. Therefore, if you had a CopyDisc 8 fitted with eight CD-R drives, it would copy eight complete discs in under 3½ minutes."

Verity's systems can handle increasing quantities

One could produce approximately 140 discs per hour," she says.

While MF Digital's McGrath agrees drives have reached their speed peak, he says many controllers on the market still need to catch up in order to make use of the drive's maximum drive speed. "Other reps too can be taken to improve throughput. For example, we have engineered strategies such as Asynchronous duplication to maximise throughput whereby drives start writing individually rather than waiting for all the drives to become ready," he explains.

Computer processing speeds for automated disc publishing systems have not caught up with disc drive speeds yet, so there are speed improvements that are still possible for these automated duplicators, according to Discmakers' van Veen. "We're talking about speed improvements of 15–20%. Plus, as computers keep getting faster, the time to set up each duplication run will continue to get shorter."

For automated systems, the recording speed is not the only way to speed up production. Disc handling (loading and unloading) is the other way to maximise production in an automated system. Westrum says Microboards excels in disc handling efficiency with its patented disc singulation and print path technology.

"This technology allows systems like Microboards PF-2 (CD/DVD printer) and DX-2 (CD/DVD print and record system) to produce discs up to 40% faster than other competitive systems in the market," Westrum says.

While some duplicators have been claiming 16x speeds for DVD already, equipment manufacturers say those claims should not be taken on faith. 16x drives are just coming out. "The media speeds typically lag behind drive speeds. Any claims about 16x media should be scrutinised carefully, as we are only just recently seeing 12x DVD media becoming more prevalent," says van Veen.

Peterson says the problem with 16x is that many of the systems just don't have the internal architecture to feed the drives. "It's like going into an old house and turning on all the sinks and flushing the toilets. You're not going to get water out of every one. In the case of a 'well-designed' computer system, you have to pay attention to the plumbing. If we tell people we're going to put four 16x drives on our system, we are really also saying that the system we supply or recommend with it will keep up with those drives."

"With regard to 16x DVD, it is very hard to come up with that much data in a steady stream. So we had to work with new firmware interfaces to make sure it is all up to protocol for that kind of data rate," Peterson adds.

Ryan Swerdloff, marketing manager, Vinpower Digital, says what should also be taken into account is that a disc will not burn at 16x from beginning to end anyway. "The drive works its way up to 16x. There's only a portion of the disc being burned at 16x speed." In other words, if someone has an 8x drive and a 16x drive, the 16x drive will not record a disc twice as fast as the 8x drive. It has to go through a certain amount of spin-

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up time. The disc records from the centre out to the edge.

Peterson gives an example: "You actually start recording at 4x and it then goes, 4, 8, 12 and ends up at 16x. If you had a disc that would record in 10 minutes and you double the speed of the drive, you'll get a disc out in 7 minutes."

Verity's Crawford gives some DVD speed examples. A full DVDR (4.7GB) will presently copy in approximately 10 minutes. A CopyDisc 8 fitted with eight DVDR drives will copy approximately 48 full DVDs per hour. All CopyDisc systems also copy dual-layer DVDs, which are currently recording at 4x speed, therefore an 8.5GB DVD+R DL will record on a CopyDisc in approximately 25 minutes," Crawford says.

Higher speeds will have to come with the next format, equipment suppliers say. "16x is the practical limit for the speed of a DVD drive. You can spin to the point where the disc will actually disintegrate inside the drive," says Rimage's Peterson.

With dual compatibility issues over nitty go nagy? Equipment suppliers say 'yes', and that it is not much of a concern anymore as older DVD players are being replaced with second and third generation players. "Disc compatibility is actually the domain of the drive manufacturers more so than the duplicator

builders. So, it's a matter of partnering with the right drive company," explains van Veen. In general, CD and DVD recording is pretty mature technology by now, with very high compatibility between media and hardware. "We very, very seldom hear from customers who have compatibility issues burning discs, and when they do it's usually because they bought cheap C-grade media," he says. Primera's Strobel adds that most new players are compatible with all current formats.

The future

Whatever the product niche, the trend for duplication is toward simpler and smaller. Ease of use is particularly important in some markets. "Often we've found a production department is relatively sophisticated, but you've also got a duplication department that is not as sophisticated – sometimes made up of volunteers at a church, for example. They need to be provided with systems that are easy to use, but still have the capabilities that the production people are seeking," says Alcon. Faster burning, printing and robotics are other prevalent trends.

Lower acquisition costs and finer paybacks are also key consumer desires. Currently, desktop systems are the most inexpensive way to enter the marketplace, according to Rimage's Peterson. "The desktop market is very much interested in a low acquisition cost. They want a machine with a small footprint that is easy to use, and still provides both high quality recording and high quality printing – churches, sports clubs."

In addition to cost, desktop users are continuously looking for more utility in their desktop machines. "Listening to our customers, we have developed the CD Digital Photo Copy Station that copies photo memory cards to CD, and duplicates CDs at up to 52x speed. Both will copy without a computer and operate as an external USB 2.0 CD-recorder and Memory Card reader all in one unit," says Perry Solomon, Alera Technologies.

On the other side of the coin, Vinpower's Swerdloff sees the future of duplication in standalone publishers. "Standalone products have two benefits. A standalone unit is easier to use because you won't need to go into a computer to set it up. Also, standalones are a little more stable as far as duplication is concerned. They are dedicated to duplication as opposed to having a wide array of functions, which is the case with a computer. Standalones are portable. With desktops, you have to be near it to make it work."

Autoloaders are becoming more and more prevalent in the marketplace. Some systems allow a user to load the machine and walk away while it prints as many as 1,000 discs with no attention needed by a human. "That number will be even higher, even by the time next year because all of the hardware is getting cheaper and the blank media is getting cheaper. More

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The trend is for simpler and smaller systems

duplication houses are likely to incorporate duplication into their mix. It's becoming easier for them to do duplicators than replication for even smaller runs," says Swerdloff, who stands on behalf of the Stark list of product more.

In January, Disc Makers introduced a 7 drive Reflex/Elite tower that is optimised to write-only Disc Makers Ultra blank media, which sells for just $1,250 for DVD. "That's a $500 saving off one regular DVD tower. We're also excited about that breakthrough price point," says van Veen.

Condre has also come out with a new tower system featuring load-and-go operations, the Go Video line. The tower has no controller. The master disc is put in the top reader, the user shuts the drawer, and the system automatically begins to duplicate. "What we think is happening in the market is that instead of duplication equipment being positioned as a bedroom production device, it's being positioned as a front office appliance. It is as easy or easier, than using the Xerox copier," Alcon says.

As business models change and the internet continues to challenge the existence of physical media, replicators, who in the past would never

consider taking an order for a quantity as low as 500 discs, and duplicators will work more closely together to keep media alive, according to duplication equipment suppliers. As customers acquire shorter and shorter runs, the need for duplication equipment will grow. Equipment suppliers say the issue now is going to be adapted for use into other systems, such as document imaging, the sale of unique content over the internet, kiosks, and so on and so forth. And [died for off site storage disc creation is unique has line] †

How duplicators differ
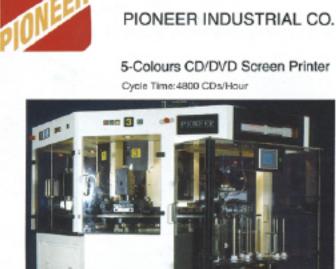
Stand-alone copiers: These units are similar in operation to a photocopier, typically having an LCD display and simple keypad. They are the best choice in terms of ease of use and setup. No PC is needed, and in our case, the copier is still auto-reliable for the more advanced users.

PC-attached: These are systems that attach to a host PC. Generally less expensive than a stand-alone but require some PC skill to use and can be more difficult to setup and maintain. Disc protection is a not an issue generally for stand-alone, but for PC-attached, a PC environment

Publishers: This term varies in its use. It generally means a production system whereby each drive can produce a different disc concurrently. These systems also have an API, an applications programme interface, that allows a user's application, or program if you prefer, to control the publisher. In this way it can be adapted for use into other systems, such as document imaging, the sale of unique content over the internet, kiosks, and so on and so forth.