

## TECHNOLOGY ■ DATA STORAGE

# Hard drive heartbreak

Think your data is safe? Magic bullet for secure storage remains elusive, but don't let that stop you

By Omar L. Gallaga

AMERICAN-STATESMAN STAFF

**T**hink for just a moment about the most valuable piece of digital data you possess.

Is it the scanned-in image of your birth certificate? The Word document holding the novel you've been knocking around at since 1998? The wedding video sitting on your hard drive but not burned to a DVD?

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Now, think about all the digital photos, videos, music, business documents and e-mail you might shoot, download or create in 2009. Where's it all going to go? Will you back it up to an external hard drive? What if the computer crashes and the external backup drive is stolen or a fire wipes it all out?

You may be nervous, but you're not alone. We've all got a growing amount of digital stuff scattered across multiple computers, cell phones, flash drives and other devices. It's a problem that's only going to get worse as our lives go more digital: Where do we put all that data and how do we keep it safe?

And, once our minds are eased that we're not facing a data-loss meltdown, how do we access our stuff whenever and wherever we want?

The bad news: It's not easy, and so far there's no elegant solution for doing it all with a cheap, all-in-one purchase.

The good news: Tech products that address all these issues in more than a piecemeal way are coming, perhaps as early as this year.

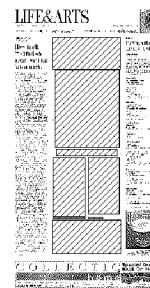
## Peeking into the future

How will that happen? Ron Green's home might give us a peek into that near-future.

Green, the chief technology officer at Austin's Powered Inc., a year ago purchased an NAS device, the beastly Thecus N5200. It looks like a jukebox for robots. NAS (short for "Networked-attached storage,") is any external hard drive or server used to store stuff that can be accessed from other parts of a network.

In Green's case, the N5200 can hold up to five large hard drives that back up and store family data. It connects to the five computers and two Apple TV boxes in the home.

The family's videos, photos and music are stored on the N5200 and can be accessed anywhere in the house. Green, his wife and his three kids can pull up a movie instantly on their televisions in the home network via



See **DATA**, back page the Apple TV boxes. “We don’t have DVDs all over the place,” Green says. “Everything is just available on demand.”

The NAS device backs up the data from all their computers. On top of that, Green duplicates that data every few weeks to a 2-terabyte hard drive he keeps at work. It’s what’s known as an “off-site backup,” protecting your digital files from fire, flood or theft by keeping a copy somewhere else.

Which brings us to another bit of bad news: To do what Green did took lots of work, and it wasn’t cheap. He says he can’t imagine someone who isn’t technically inclined going through all the trouble.

“The average user would not want to put up with the hassle of setting up and configuring these different devices,” he said. “We’re at the early stages. People are feeling their way around in the dark.”

Some version of this setup might end up in your home sooner than you think. Coughlin Associates, a storage industry consulting firm, estimates that by 2013, the average U.S. household will have about 9 terabytes of content needing storage. The largest consumer hard drives sold today top out at about 4 terabytes. (A terabyte is roughly 1,000 gigabytes. The average computer hard drive holds about 160 to 320 gigabytes of data.)

Home storage: It’s not just for chief technology officers anymore.

## Undoing data disasters

Chris Bross has heard every data-loss horror story you could imagine. The lost cell phone with the irreplaceable contact list. The hard drive full of baby photos that was never backed up.

As enterprise recovery engineer for Novato, Calif.-based DriveSavers, he’s witness to the nation’s data disasters.

“We’re the emergency room or ICU for when data gets lost,” he says.

The company tries (often successfully) to recover data from memory cards, discs, hard drives and servers. Business is good for DriveSavers because our data habits are so bad: When was the last time you backed up all the information on all your digital devices?

“We used to store everything in file cabinets — genealogy information, family histories, pictures of the kids. That’s not in the cabinet anymore unless it gets printed,” Bross says. “Now it’s all in the laptop or the home office computer.”

Bross says that with the introduction of cheaper, larger external hard drives, more people are backing up their data. External hard drives holding much more space than most families need now cost about \$100 to \$200.

Products such as Apple Inc.’s Time Machine, which automates backups to those drives on Mac computers, have helped more people keep more data safer. But no one, Bross says, has solved the problem of

having files scattered on multiple computers, being able to access those files at any time and connecting to an off-site backup service or drive. Unless you work in IT, it's not easy to figure out how to do it all.

"I really think the core reason we don't have more users with a more centralized solution is frankly they're a little intimidated by all the options and all the technologies that are available," Bross said.

At this year's Consumer Electronics Show, held last week in Las Vegas, companies including Linksys, LG and Hewlett-Packard Co. showcased NAS devices that not only offer expandable storage (by, for example, adding extra hard drives when you begin to run out of space), that can also stream videos, music and photos to TVs.

That kind of living room convergence has been talked about for years, but it only now looks like the kind of devices that will make it happen will start to roll out to the mainstream at a price (below \$300) that most people can afford.

"I don't think there's any one excellent solution yet," Bross said. "People don't understand that these devices absolutely will fail at some point."

## Seeing light in off-site

If our local hard drives will eventually let us down without a lot of work to duplicate their information, why not just stick it all online? After all, we let

Yahoo and Google store much of our e-mail and sites such as Flickr and YouTube keep copies of our photos and videos.

If it's on the Internet, can it ever really be lost?

Companies including Amazon.com, Apple and H-P have all offered services for a fee that will keep your files safe and secure online.

One of the most popular companies offering these kinds of off-site backups is Carbonite, a Boston-based company that has aggressively advertised nationally its ability to protect data by having its customers upload it online for about \$50 a year per computer.

"It's much more reliable than an external hard drive or DVD," says Carbonite chief executive David Friend. "It's a lot safer to have your data stored in a redundant data center. Millions of times more reliable."

The company offers unlimited storage to its customers, but that in itself can present a problem. Even the fastest home Internet connections could take a month of sporadic file transferring to upload gigabytes of data. Most home broadband connections download much faster than they upload. Friend advises his customers to back up their most important data first, then incrementally send the rest as they're able to.

"If you have, say, TV shows on your PC, you may not worry about backing that stuff up; losing last week's football

game is not like losing pictures of your kid when they were 2 years old," Friend said.

Using off-site storage as a sole backup can also be a problem if you're without Internet access or if the files are so sensitive that you don't want to trust it to an online service, even one that offers to encrypt the data.

Thomas Coughlin, a data storage consultant at Coughlin Associates who recently organized an industry conference, Storage Visions, says he thinks the future of home storage will be a mix of online storage and home storage devices.

Coughlin says two of the biggest challenges facing the storage industry are making these new products easy to use and making many different technologies all play nice with one another. Not all NAS devices that stream content can pull music from iTunes, for instance, and not all devices that promise to stream content to your TV can access Internet video sites such as Hulu.com or play all video formats.

Once we have all that data, Coughlin says, there's also the matter of finding it. We'll have to do a much better job, he says, using "metadata" to tell us what's in all those files. Ten years down the road, storage devices will have to figure out who's appearing in what photo, for example.

The rewards of having all this data are great, he said: "We will have a depth and breadth of record of what it's

like to be a human being that is greater than any such record that has existed in the history of mankind."

## Figuring it all out

If it sounds complicated, don't worry: The companies that are trying to sell you on storage are trying to make products that don't require an engineering degree to use.

Toronto-based Clickfree last year introduced a line of hard drives that plug into a computer and automatically back up data; there's no software to install. At the Las Vegas consumer electronics show, the company expanded its line of products, introducing a 1-terabyte drive aimed at home storage.

Jeff Brunet, chief technology officer of Clickfree, said the company is looking into introducing NAS devices, but won't do so until they can make a product that's as easy to use as the company's existing line. "There's some complexity that exists in today's products that are enough of a barrier of ease of use that we haven't gone there yet," Brunet said.

"The technologies all exist today," he added. "The reason we haven't seen the devices do well or sell in volume is because they're too complicated."

H-P has pushed a relatively user-friendly device called the Media Smart Server that backs up data and streams it on a home network. The company recently announced its

product line is now compatible with Macs. These devices start at about \$600.

And a little-known company called Data Robotics, maker of a product called Drobo, has earned rave reviews for its ease of use. Hard drives slide into the device and automatically back up data from a computer. If a hard drive in the device fails, no data is lost. You'd simply swap out the dead hard drive with a new one. That capability is becoming increasingly common in NAS devices.

But Drobo's market and its pricing (starting at about \$500, plus the cost of hard drives to insert and \$200 more for networking capabilities) is not aimed at mainstream home users.

The products can be a tough sell. After all, they are still essentially just virtual lockers.

"That part is like selling insurance," Coughlin said, "It's not a sexy sale. But the external storage market is growing enormously. It's driven by the need to back up and the perception that you need insurance policies."

Until the cheap, all-in-one device emerges, the magic bullet for secure storage, streaming and off-site backups, you could just let the family geek figure it out for you.

Trevor Wermund, a Westlake High School graduate, set up a home NAS device

using an old computer, free Linux operating system software and a hand-me-down 200-gigabyte hard

drive his father gave him. Now his family can sit in the living room watching downloaded TV shows stored on that server.

Using a piece of free software called Boxee and an Apple TV box, Wermund, his parents and brother can also access online news videos from MSNBC and get to any of their files from any of the family computers.

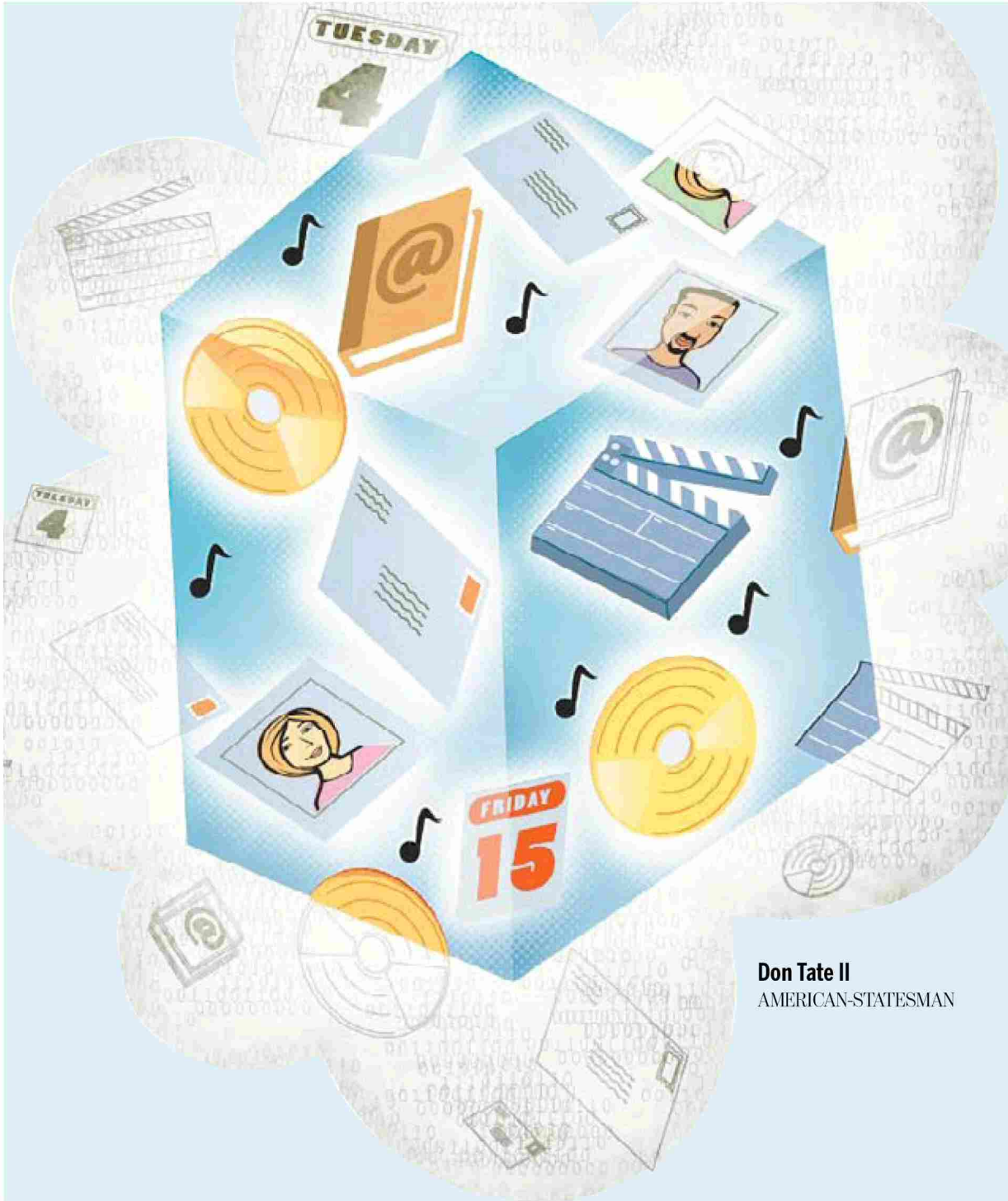
"Nobody else in the family understands it, but I take care of it for them," Wermund said.

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**Trevor Wermund** set up a home NAS device using an old computer.





**Don Tate II**  
AMERICAN-STATESMAN



Ron Green uses a device called the Thecus N5200 to store his family's videos, photos and music. It is connected to five computers and two Apple TV boxes, making all the data available on demand, he says.

**Deborah Cannon**  
 AMERICAN-STATESMAN

## Home storage: You've got (too many) options

### **Network-Attached Storage (NAS) devices:**

Any kind of hard drive or device that holds multiple hard drives and can serve files on a network can be considered NAS.

Companies including Buffalo, Thecus, H-P, Western Digital and Data Robotics made devices that connect to a network and hold multiple hard drives. If one drive in the array fails, no data is lost. Prices range from about \$250 to more than \$1,000 depending on whether hard drives are included and how large they are. Data Robotics' Drobo device can also be attached to a network with a \$200 add-on called 'DroboShare.'

**Streaming from storage:** Increasingly, external hard drives are becoming capable of plugging into your HDTV or streaming media through a home network. Last year, Western Digital introduced WD TV, a media player that plugs into a USB external drive. At the recent International Consumer Electronics Show, other companies introduced storage devices with media streaming built in.

**Off-site backups:** Apple's MobileMe, Amazon.com's S3 service and Carbonite all offer varying options for backing up your data online. Other online storage options include Mozy, JungleDisk, Crashplan and Dropbox. Don't

want to pay for online storage? Another option is backing up to an external hard drive and stashing that drive at a friend's house or in a safe deposit box. But you'll have to keep your backup updated regularly, which might require extra time and gas money.

Printing imperfections present during scanning

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