

BackupEDGE™ has fully integrated the Amazon Simple Storage Service (**S3**) computing cloud as storage target.



Using *BackupEDGE* with Amazon S3

Introduction

Amazon.com is a web retailer with a large, Internet-based computing infrastructure. *Amazon Web Services™ (AWS)* is a division of *Amazon.com* that provides additional storage and service offering using this infrastructure.

One service AWS offers is the **Amazon Simple Storage Service**, otherwise known as **Amazon S3**, or simply **S3**.

Think of **S3** as a storage server with virtually unlimited storage space and bandwidth, and high availability. To read more about the benefits of the service, browse to <http://aws.amazon.com/s3>.

Theory of Operation

BackupEDGE 02.03.00 and later treats **S3** as a standard storage *Resource*, with many similarities to *FTP Backups*. It is a fully functional *Resource*, capable of:

- Full or partial system backups.
- Checksum and full bit level archive verification
- Instant File Restore™
- Bare metal disaster recovery with *RecoverEDGE*.

As with any other *BackupEDGE* *Resource*, servers can be set up to perform complete *Master*, *Differential* and *Incremental* system backups. Individual backup subsets (we call them backup *Domains*) may be created as a supplement to locally hosted backups.

Pricing

Amazon Web Services provides all customer billing. Pricing is set as follows (effective August 1, 2011):

Base Monthly Fee	Include in Base Fee
\$25.00	<i>BackupEDGE</i> Support/Maintenance Subscription 60GB of on-line storage 60GB of downloads per month Unlimited uploads per month
Additional Monthly Charges	
\$.18	Each GB / month stored after the first 60GB
\$.18*	Each downloaded GB / month after first 60GB

* All regions except the for the new Singapore and Tokyo regions; these two regions are \$.25 for each uploaded GB / month after first 60GB.

The base monthly fee provides for a useful amount of nightly backup and verify cycles, plus a very large amount of on-line storage.

Plus, the first **BackupEDGE** license registered for use with the current **S3** account is automatically covered under a **BackupEDGE Support and Maintenance Subscription**, which typically retails for **\$200.00** per year.

Benefits

Internet backups are fast becoming a preferred method of off-line storage. Possible uses include:

- All server backups.
- Periodic off-site backups to supplement local tape/disk/NAS etc. backups. For instance, perform local backups daily and a weekly Internet backup.
- Specialized backups of critical data files / directories.

BackupEDGE "Transparent Media Technology™" ensures that users can use any combination of storage Resources to create the best possible protection scenario.

S3 provides storage with guaranteed protection from data loss and high availability, all at reasonable prices.

BackupEDGE "Instant File Restore" ensures maximum possible data retrieval performance. When files or directories need to be restored, only the actual data needed is transmitted. It is not necessary to scan the entire archive looking for the desired data.

BackupEDGE 3.0 includes quota management system with lazy reclamation. For instance, setting a 50GB quota would ensure that the user will never exceed the base monthly fee for storage space, while archives will not be deleted unless the space is needed for new archives.

Security

All communications between **BackupEDGE** and **S3** are performed over an encrypted link. Strict authentication ensures that data is kept secure from unauthorized access.

A two-stage authentication process is used to protect the authentication keys.

- On initial setup, the users logs into their Amazon Account through a special URL and selects **BackupEDGE** as a billable product. An **Authentication Code** valid for only 1 hour is generated.
- With that one hour, the user must run the **BackupEDGE EDGMENU** program, run **S3** setup, and type or paste the 1 hour **Authentication Code**.

BackupEDGE will connect to the **S3** service and use a combination of its product code and the **Authentication Code** to download a **Security Key** unique to the client account. The **Security Key** is embedded into **BackupEDGE** and **S3** access becomes transparent from that point. A private storage area (**S3** calls it a bucket) will be created on **S3**.

If **BackupEDGE** ever needs to be re-installed from scratch, the **Security Key** can be retrieved at any time by logging back into **S3**, generating a new **Authentication Code**, and typing/pasting it into **BackupEDGE**.

As long as the **S3** account remains open, stored archives may be retrieved. Closing the account or canceling the **BackupEDGE** service within the account will result in the loss of all stored data.

Only the https port (port 443) needs to be open on the user firewall for **S3** services to function.

Performance

This is purely a function of the internet bandwidth capabilities of the user. Backup schedules should be planned around this bandwidth. **S3** has no artificial bandwidth limitations.

Bandwidth examples (estimated), assuming all bandwidth is available to *BackupEDGE*:

<i>Service (per second)</i>	<i>Download from S3</i>	<i>Upload to S3</i>
Common DSL Plans		
768Kb/768Kb	4.6MB/Min. - 276MB/hr.	4.6MB/Min. - 276MB/hr.
3Mb/768Kb	18MB/Min. - 1.0GB/hr.	4.6MB/Min. - 276MB/hr.
6Mb/768Kb	36MB/Min. - 2.0GB/hr.	4.6MB/Min. - 276MB/hr.
10Mb/1MB	60MB/Min. - 3.6GB/hr.	6.0MB/Min. - 360MB/hr.
Common Cable Plans		
384Kb/384Kb	2.3MB/Min. - 138MB/hr.	2.3MB/Min. - 138MB/hr.
768Kb/384Kb	4.6MB/Min. - 276MB/hr.	2.3MB/Min. - 138MB/hr.
12Mb/2Mb	72MB/Min. - 4.3GB/hr.	12MB/Min. - 720MB/hr.
22Mb/5Mb	132MB/Min. - 9.0GB/hr.	30MB/Min. - 1.8GB/hr.
50Mb/10Mb	300MB/Min. - 18GB/hr.	60MB/Min. - 3.6GB/hr.
100Mb/10Mb	600MB/Min. - 36GB/hr.	60MB/Min. - 3.6GB/hr.
Common FIOS Plans		
15Mb/5Mb	90MB/Min. - 5.4GB/hr.	30MB/Min. - 1.8GB/hr.
25Mb/25Mb	150MB/Min. - 9.0B/hr.	150MB/Min. - 9.0GB/hr.
50Mb/20Mb	300MB/Min. - 18GB/hr.	120MB/Min. - 7.2GB/hr.
150Mb/35Mb	900MB/Min. - 54GB/hr.	210MB/Min.- 12.6GB/hr.
Common Dedicated Circuits		
T-1 / DS-1 1544Kb/1544Kb	9.2MB/Min. - 556MB/hr.	9.2MB/Min. - 556MB/hr.
T-3 / DS-3 45Mb/45Mb	270MB/Min. - 16GB/hr.	270MB/Min. - 16GB/hr.

(Kb=kilobit, Mb=Megabit, MB=Megabyte, GB=Gigabyte)

The high performance compression built into *BackupEDGE* is effectively able to double or even triple these speeds, depending on the type of data you are storing and the performance of the system CPU.

Various Uses - Single Server to Enterprise

There are many ways to handle the account management system with *BackupEDGE* and **S3**.

- Setup and use **S3** with a single server only.
 - This is the most common anticipated use.
- Use multiple copies of *BackupEDGE* with a single Amazon Payments account.
 - The keys for a single account can be downloaded to an unlimited number of systems.
 - Systems can use separate backup directories.
 - A common directory may be used in scenarios where “backup from system A, restore to system B” are required.
 - All systems share the same GB/month pricing and overages with one monthly fee.
 - Only one *BackupEDGE* license is covered under support / upgrades when single accounts are used with multiple servers. Other licenses must have separate support agreements.

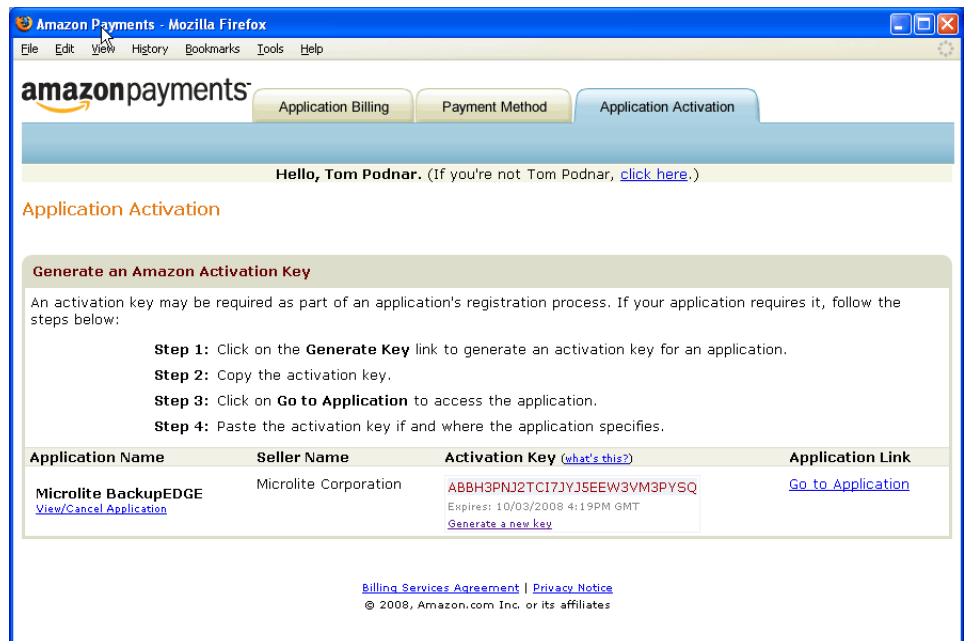
Sample Implementation Screens

The following screens are examples of the simple setup procedure for activating **BackupEDGE** with an Amazon Payments Account.

Amazon Payments Login



BackupEDGE S3 Activation



Microlite Corporation
2315 Mill Street
Aliquippa PA 15001-2228 USA
Tel: 724-375-6711
Fax: 724-375-6908
email: sales@microlite.com
web: www.microlite.com

Edgemenu - Setup - Amazon S3 Setup

```
Edgemenu for BackupEDGE
[File] [Backup] [Restore] [Verify] [Admin] [Setup] [Schedule]

S3 Activation
Please Enter The Amazon Activation Code
[ABBH3PNJ2TCI7JYJ5EEW3VM3PYSQ]

[Activate] [Cancel]

Primary Resource : m1310:dvd!dvd0 (/dev/rcdrom/cdrom1) (PLEXTOR DVDR
Compress: Soft, Hw Block: N/A, Edge Block: 64, Partition: C

Last Master Backup: NEVER
Local Machine: m1310 Administering: m1310
Set up BackupEDGE Features
```

Edgemenu - Admin - Define Resources - aws0

```
BackupEDGE Resource Information
- General Resource Information -
Resource Type Amazon S3 Resource
Resource Name [aws0] change as appropriate
Description [S3 Backup Resource]
Changer Assoc [Standalone Device]
Interface [Other]

- S3 Resource Information -
Directory [/backups/m1310/simple_job] [Test URL]
URL s3://s3.amazonaws.com/backups/m1310/simple_job

- Default Backup Properties -
Volume Size (K) [0] [S] Compression Level [5]
Edge Block Size [64] [Y] Double Buffering
[Next] [Prev] [Cancel]
```

As with *BackupEDGE FTP Backups*, we recommend creating a directory scenario using the hostname and the schedule name as directory entries to separate archive when multiple schedules or servers are used.

Summary

BackupEDGE with **Amazon S3** support enables “cloud storage”, providing secure, high reliability off-site backups at speeds limited only by the end users’ internet bandwidth, and at prices data centers generally cannot match. More information can be found on the Microlite Corporation website, <http://www.microlite.com/s3/s3.html>.