

# EXHIBIT 2A

**Claim Chart for Amazon Simple Storage Service (S3) U.S. PATENT NO. 7,802,310**

**Issued September 21, 2010**

**Controlling Access To Data In A Data Processing System**

CLAIM 24 '310 PATENT	Amazon Simple Storage Service (S3)
<p>24. A computer-implemented method implemented at least in part by hardware comprising one or more processors, the method comprising:</p>	<p>Although a review of Defendant's source code is necessary to confirm, Plaintiff alleges that Amazon S3 (Simple Storage Service) is an online storage web service offered by Amazon.com, Inc. ("Amazon") that performs a computer-implemented method implemented at least in part by hardware comprising one or more processors.</p> <p>Amazon S3 provides storage through web services interfaces. S3 stores arbitrary objects (computer files) up to 5 terabytes in size, each accompanied by up to 2 kilobytes of metadata. Objects are organized into buckets (each owned by an Amazon Web Services account) and identified within each bucket by a unique, user-assigned key. <a href="http://en.wikipedia.org/wiki/Amazon_S3">[http://en.wikipedia.org/wiki/Amazon_S3]</a>; <a href="http://aws.amazon.com/s3/">http://aws.amazon.com/s3/</a>.</p>
<p>(a) using a processor, receiving at a first computer from a second computer, a request regarding a particular data item, said request including at least a content-dependent name for the particular data item, the content-dependent name being based, at least in part, on at least a function of the data in the particular data item, wherein the data used by the function to determine the content-dependent name comprises at least some of the contents of the particular data item, wherein the function that was used comprises a message</p>	<p>Although a review of Defendant's source code is necessary to confirm, Plaintiff alleges that Amazon's S3, using a processor, receives at a first computer (Amazon's server) from a second computer (an end user's computer), a request regarding a particular data item, including at least a content-dependent name (an "ETag") for the particular data item, the content-dependent name being based, at least in part, on at least a function of the data in the particular data item (i.e., it is a hash), wherein the data used by the function to determine the content-dependent name comprises at least some of the contents of the particular data item, wherein the function that was used comprises a message digest function or a hash function, wherein identical data items will have the same content-dependent name.</p> <p>When performing a multipart upload, Amazon S3 automatically generates a unique key for the data and retrieves the data being uploaded. <a href="http://awsdocs.s3.amazonaws.com/S3/latest/userguide/mpu_intro.html">[http://awsdocs.s3.amazonaws.com/S3/latest/userguide/mpu_intro.html]</a>. Objects greater than 5GB in size require the use of the multipart upload API. <a href="http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf">[http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf]</a>.</p>

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digest function or a hash function, and wherein two identical data items will have the same content-dependent name;

## Amazon Simple Storage Service (S3)

## Common Response Headers

The following table describes response headers that are common to most AWS

Name	Description
Content-Length	The length in bytes of the body in the response. Type: String Default: None
Connection	specifies whether the connection to the server is open or Type: Enum Valid Values: open   close Default: None
Date	The date and time Amazon S3 responded, for example, W 12:00:00 GMT. Type: String Default: None
ETag	The entity tag is a hash of the object. The ETag only reflects the contents of an object, not its metadata. The ETag is determined when the object is created. For objects created by the PUT Object operation, the ETag is a quoted, 32-digit hexadecimal string that represents the MD5 digest of the object data. For other objects, the ETag is the MD5 digest of the object data. If the ETag is not an MD5 digest, it will contain one or more non-hexadecimal characters and may be more than 32 or more than 32 hexadecimal digits. Type: String
Server	The name of the server that created the response.

[<http://awsdocs.s3.amazonaws.com/S3/latest/s3-api.pdf>].

**Multipart Uploads:**



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	<p>S3 performs multipart uploads through the generation and use of an “ETag” hash (because it is a PUT operation, it is a MD5 hash, see “common response” above,) of the data-part, which is required for a later request to complete the upload and for Amazon S3 to concatenate the parts together to form a single object. [http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf]. And once combined, S3 responds with an ETag that uniquely identifies the combined data. [http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf].</p> <p>Multipart uploading is a three-step process: You initiate the upload, you upload the parts, you have uploaded all the parts, you complete the multipart upload. Upon receiving the complete upload request, Amazon S3 constructs the object from the uploaded parts, and you can retrieve the object just as you would any other object in your bucket.</p> <p>(http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf)</p> <p><b><u>Parts Upload Step</u></b></p> <p><b>Parts Upload</b></p> <p>When uploading a part, in addition to the upload ID, you must specify a part number, any part number between 1 and 10,000. A part number uniquely identifies a part of the object you are uploading. If you upload a new part using the same part number as a previously uploaded part, the previously uploaded part is overwritten. <u>Whenever you upload a part, Amazon S3 returns an ETag header in its response. For each part upload, you must record the part number and the ETag. You need to include these values in the subsequent request to complete the multipart upload.</u></p> <p>(http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf)</p>

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	<p><b>Multipart Upload Completion (or Abort)</b></p> <p>When you complete a multipart upload, Amazon S3 creates an object by concatenating the parts in the order based on the part number. If any object metadata was provided in the <i>initiate multipart upload</i> request, Amazon S3 associates that metadata with the object. After a successful multipart upload, the parts no longer exist. <u>Your <i>complete multipart upload</i> request must include the upload ID and both part numbers and corresponding ETag values. Amazon S3 response includes the upload ID and identifies the combined object data. This ETag will not necessarily be an MD5 hash of the object data.</u> You can optionally abort the multipart upload. After aborting a multipart upload, you can upload a new part using that upload ID again. All storage that any parts from the aborted multipart upload occupy is then freed. If any part uploads were in-progress, they can still succeed or fail independently. To free all storage consumed by all parts, you must abort a multipart upload only after all parts have completed.</p> <p>(<a href="http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf">http://awsdocs.s3.amazonaws.com/S3/latest/s3-dg.pdf</a>)</p> <p>* Note: It is our current understanding that the individual parts uploaded with a multipart upload have object operations necessarily have an ETag that is the MD5 hash of the object data (as described above titled "Common Response Headers,") however the ETag of the <i>complete multipart upload</i> response is not necessarily be an MD5 hash of the object data."</p>

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