Mediasite – A Video Content Management & Distribution Platform

Technical planner: TP-10
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Introduction

Mediasite 6.1 capabilities have expanded to include Video Content Management & Distribution. Mediasite includes content management, metadata extraction, content editing, analytics that include engagement metrics as well as time viewed, content security, and content transformation. Most of these functions are available via the EX Server. Mediasite also supports webcasting – both live broadcasts and on-demand delivery. Mediasite 6.1 introduces a new set of capabilities including:

- Mediasite Desktop Recorder, an application for recording content generated on desktops
- My Mediasite, a lightweight presentation management application for user generated content
- Web-based Editor, application for editing Mediasite content
- Tagging for content retrieval
- Search-based catalogs for publishing presentations
- Player customization to create flexible players
- A new approval-based publishing workflow
- Enhanced security model to support My Mediasite and user generated content

My Mediasite

In Mediasite 6.1, the EX Server includes a lightweight web application called My Mediasite that front-ends the Management Portal. As Mediasite introduces richer functions like Review-Edit-Approve, the Web-based Editor, and security enhancements with user profiles there was a distinct need to provide a lighter presentation-centric user interface for end users to create and manage their content. If users have permissions to use the Management Portal, then the Management Portal will be their content management interface. If users do not have permissions to use the Management Portal, then My Mediasite will be their content management interface. My Mediasite is included as part of the base Mediasite EX Server license.

User Generated Content Management

Mediasite 6.1 also introduces the ability to manage user generated content in addition to managing content recorded in rooms and published to the EX Server. My Mediasite extends the capability of EX Server to manage user generated content. A license for Mediasite User Generated Content enables the following:

1. Expand My Mediasite to support:
   a. Record on a user’s desktop and/or
   b. Upload media to a presentation
2. Desktop recording via an application called Mediasite Desktop Recorder. Mediasite Desktop Recorder is a multi-platform application for Macintosh and Windows platform that is able to record content in the form of:
   a. Audio + slides (from desktop)
   b. Web camera video + slides (from desktop)
   c. Audio + screencast video (from desktop)

Mediasite Desktop Recorder can be downloaded from My Mediasite and installed on a user’s desktop. My Mediasite is also used to launch the Mediasite Desktop Recorder to record and publish presentations.
3. Five additional licenses of Mediasite Transcoder that help balance and scale the growing transcoding needs at the back end introduced by new features like Mediasite User Generated Content and Web Editor.

4. Generic video content management and distribution. My Mediasite can be used to upload media files to Mediasite. Mediasite has traditionally supported upload of Windows Media and MP4 content. Sonic Foundry expects in early 2013 to expand the upload capability by supporting multiple media formats. Mediasite will introduce Mediasite Multi-Format Decoder that works with Mediasite Transcode to expand this capability. Media uploads are best supported via My Mediasite. The “Media Import” feature in Management Portal that is used for batch media upload operation via a drop box also expands support for multiple media formats.

**Licensing**

Traditionally, Mediasite EX Server is licensed on a perpetual basis (you buy it, you own it). Mediasite User Generated Content module is licensed on an annual basis.

Each EX Server base license includes the ability to set up a maximum of 5 transcoder instances to handle the demand for server-side transcoding of content originating from Mediasite Recorders as well as content ingested using the “Media Import” and “Media Upload” functions in EX Server.

Prior to Mediasite 6.1, server side transcoding was used for the following purposes:

- When a Mediasite Recorder encodes in Windows Media format, server side transcoding to MP4 is necessary for on-demand content to play back on iOS devices
- When a Mediasite Recorder encodes in H.264 using Smooth Streaming,
  - Server side transcoding is necessary to create the remaining bit rates to create the on-demand smooth streaming media package and
  - Server side repackaging of the H.264 stream to MP4 is necessary for on-demand content to play back on iOS devices
- When a Mediasite Recorder encodes in H.264 format using MP4, server side transcoding is generally not necessary. However, there may be a case where packaging the H.264 format as Smooth Streaming is desired, which will require server-side transcoding
- When media is uploaded via the use of Media Upload or Media Import functions, server side transcoding may be necessary depending on format ingested and the output desired
- When a Mediasite presentation is set up for podcasting, server side transcoding is necessary
- When a Mediasite presentation is set up for captioning, server side transcoding is necessary in some cases e.g. when Smooth Streaming is the only format available

Mediasite 6.1 continues to follow the above rules, but also adds additional transcoding needs in the following manner:

- When media is uploaded from My Mediasite, server side transcoding is always necessary
- When edits to the presentation are committed via the Web Editor, server side transcoding is always necessary
- When Mediasite Desktop Recorder is used to create a recording, server side transcoding is always necessary

In order to meet the growing transcoding demand, Sonic Foundry provides 5 additional transcoder instances as part of the UGC license. Customers who wish to deploy the UGC module will be able to set up as many as 10 transcoders for EX Server (5 with the base EX + 5 with the UGC Module). Additional transcoders can be purchased for increased performance in terms of throughput.
Preparing for My Mediasite Rollout

Traditionally, the management interface to Mediasite has been Management Portal. The Management Portal interface is well suited for users with administrative rights who manage the Mediasite system, or for pro-level level users who manage content and publishing. Mediasite administrators have found it difficult to provision Management Portal for use by end users. This is for various reasons that include complexity introduced via Mediasite security and access control as well as flexibility included in the Mediasite platform. As a result Sonic Foundry observed that very few individuals in the organization were granted access to Management Portal interface.

My Mediasite solves the problem and introduces an interface for end users to create, manage and share their content. It also introduces an appropriate interface to support user generated content.

Mediasite depends heavily on presentation templates to create presentations. While a presentation template abstracts a number of properties needed to create a presentation, it is difficult to use templates if one has to pick templates from a large list or if the templates are not well labeled. My Mediasite relies on three template definitions configured in the Management Portal, one each for:

- Recording the desktop with the Mediasite Desktop Recorder
- Uploading media
- Saving a presentation to record later, typically using the Mediasite Recorder (e.g. a Recorder placed in a recording studio)

Best Practices

Mediasite administrators need to prepare My Mediasite for their end users and this section outlines some best practices:

1. Enable the Mediasite User Generated Content Module license in the Configuration Editor, if purchased
2. Use Management Portal to configure My Mediasite in the “App Settings” section
   a. Set up the support email. This is typically an internal email address that My Mediasite users will send requests to, such as your organization’s help desk or the Mediasite administrator
   b. Set up the media server, slide server and quality settings for recording the desktop, if the UGC module is licensed
   c. Set up the media server and slide server settings for media upload, if the UGC module is licensed
   d. Set up the media server, slide server and quality settings for saving for later
3. Use Management Portal to set up “Desktop Recorder Operator” operation permissions for appropriate users/roles, if the UGC module is licensed
4. Use Management Portal to set up “Create Presentations” operation permissions for appropriate users/roles
5. Use Management Portal to set up “Management Portal” portal resource permissions for appropriate users/roles
6. Use Management Portal to set up “Advanced Security” portal resource permissions for appropriate users/roles
7. Use Management Portal to set up an email settings to facilitate moderation, security based on user profiles and notifications for review-edit-approve

As part of provisioning for My Mediasite, administrators need to consider the implication of security. End users may be able to log into My Mediasite, but may not have the rights to create presentations. This is especially important when the goal is to implement user generated content creation with Mediasite. Mediasite 6.1 enhances role based security to include roles associated with user profiles in addition to roles associated with groups and individual users.

**User Profiles and Security**

Traditionally, a role in Mediasite is created by mapping to a group or user in Active Directory / LDAP directory. The role maps to an entry in the directory. This approach works well when security is managed at the group level but is tedious when dealing with individual users. Mediasite supports roles mapped to individual users in the directory. However, this approach does not scale. An administrator would need to create a role for every user who intends to use My Mediasite with user generated content. In addition, managing notifications were a challenge.

**User Profiles**

Mediasite 6.1, while retaining all previous role mapping techniques, introduces user profiles. User profiles are based on the username for an authenticated user. The username is associated with an email address that is used to support notifications. The username must exist in the Active Directory / LDAP Directory that is used for authentication. Mediasite administrators do not need to “create a role or a user profile” for every user. User profile creation is delegated to users themselves. In addition, having an email address facilitates notifications.

My Mediasite takes advantage of role mappings based on user profiles and provides a private sandbox for user generated content created by users. When a user logs in with his/her credentials, Mediasite authentication returns all roles for the user, including the role that maps to the user’s profile. Mediasite authorization checks permissions on resources for the roles returned by the authentication process. After the login process is complete, My Mediasite displays:

1. All presentations in the user’s private folder
2. All presentations for which the user has write permissions
3. All presentations for which the user has approve permissions
4. All presentations for which the user has moderate & read permissions
5. All folders in their private sandbox
6. All shared folders

This way, although a user can create presentations only in their sandbox or shared folders, they can still get access to all presentations in the system for which they have appropriate permissions. My Mediasite also provides a calendar view that displays both presentations and schedules for which a user has write permissions. This is useful in cases when, for example, a faculty member misses a class and needs to record a presentation to a specific instance of a schedule.

**User profile creation & role mapping**

A user profile is created for a user when:

1. A user first logs into My Mediasite or Management Portal
2. A user is invited by another authenticated user to collaborate on a presentation
3. A user’s email was set up for moderating a presentation in a version prior to Mediasite 6.1 that was upgraded or migrated.

A role mapped to the user profile is created automatically by Mediasite after the profile is validated. When a user first logs into My Mediasite or Management Portal, the user is requested to validate his or her profile. Validation of a profile requires an email address. An email is sent out to the user with a token to complete the profile validation process. Email validation for profiles created in the system can be resent any time by:

- Mediasite Administrators from the user profile management page in the Management Portal
- Users themselves when they attempt to log in and are presented with the profile validation page

**Access Control**

Mediasite access control is very granular. Mediasite 6.1 introduces two interfaces for managing access control – an advanced and a simple. The advanced interface for access control allows users to control individual permissions on a resource for roles. Roles that map to directory entries are displayed as a group while roles that map to a user profile are displayed as a user in My Mediasite. The simple interface for access control allows users to assign a related group of permissions on a resource for roles. The simple interface does not display roles mapped to a directory separately from user profile roles. Individual permissions that can be managed on Mediasite resources include:

- **Read**: Grants read only access to a resource in Management Portal
- **Write**: Grants write access to a resource. Users with write permissions can manage the resource in Management Portal as well as My Mediasite
- **View**: Grants view access to a presentation or catalog for users to watch a presentation or browse a collection of presentations
- **Moderate**: Grants moderate access to a presentation. Users with moderate permissions can moderate live events and manage Q&A for the presentation
- **Approve**: Grants approve access to a presentation or folder. Users with approve access can approve presentations for publishing, if a presentation is set up for publishing that requires an approval
- A group of permissions are managed by introducing permission templates for a folder and presentation. Permission templates that can be managed via the simple interface include:
  - **Editor**: Grants Read, Write, and View permissions
  - **Moderator**: Grants Read & Moderate permissions
  - **Viewer**: Grants View permissions
  - **Approver**: Grants Read, Approve, and View permissions

There are some permission templates that are displayed for purposes of clarity in the simple interface but cannot be assigned. These permission templates show up when permissions have been assigned using the advanced user interface:

- **Reader**: Implies Read permissions
- **Writer**: Implies Read & Write permissions
- **Custom**: Implies a combination of permissions that are not clearly defined by any of the other permission templates
Managing Security

Mediasite 6.1 introduces a new portal resource called “Advanced Security.” It is up to the administrators to roll out the appropriate security interface to its users. This can be achieved by assigning read permissions to roles for this resource.

By default the role “MediasiteAdministrators” is presented with the advanced security interface in the Management Portal and all other users are presented the simple security interface. The simple security interface is always presented in My Mediasite.

Another portal resource “Management Portal” is worth mentioning at this point. My Mediasite front ends the Management Portal. What this means is that if a user does not have the rights to use Management Portal, and the user browses to the Management Portal URL, the user is presented with My Mediasite interface, if the user is authenticated. The portal resource “Management Portal” is checked to implement this routing. By default, the role “Authenticated Users” is assigned read permissions to this resource and everyone who is authenticated is directed to the Management Portal. Mediasite administrators need to opt-into this routing.

An administrator can decide to share the link to My Mediasite explicitly and choose not to share the link to Management Portal.

User Profiles and Content Organization

Mapping user profiles to roles expands Mediasite security. However, the use of user profiles also has an impact on content organization. User profiles are also tied to a sandbox for each user under a “users” folder in Mediasite. The “users” folder is automatically created and treated as a “system defined” folder under the root folder. A sub-folder is created for each user profile when the user profile is created.

The folder for each user profile is considered the user’s home or private folder. When a user logs into My Mediasite, a user gets a private sandbox that maps to a folder in Mediasite. They can create presentations in their sandbox as well as shared folders. Users are allowed to create single level sub-folders within their sandbox to organize their content. However, it is highly recommended to use tagging in order to identify content.

By default the user's private folder inherits from the parent folder, which in this case is the “users” folder. The user is the owner of the private folder as well as all sub-folders under the private folder. This allows the user to have full control over their sandbox.

Folders under the “users” folder cannot be moved to other folders. Likewise folders created in Mediasite other than under the “users” folder cannot be moved under the “users” folder. Although moving folders is restricted, there is no restriction in moving presentations. If a folder called “users” is already present in an existing Mediasite system, the “users” folder is created as “users_1.”

My Mediasite also includes shared folders, which are defined in Management Portal. A folder that does not belong to the “users” sub-tree can be shared in the Management Portal as a “shared folder.” A user that has write permissions to a shared folder will see it displayed in My Mediasite. The logged in user cannot change permissions of this folder nor delete the folder in My Mediasite. Users logged into My Mediasite can create presentations in this folder if they have write permissions.

Shared folders are single level. If a folder and all its children need to show up in My Mediasite, then shares need to be created for the folder as well as each of its children. This is because My Mediasite only supports a single level folder hierarchy.
Example Implementation

This section explains a sample implementation for an organization:

Assumptions:

1. Some rooms in the school are equipped with Mediasite Recorders. Recorders in these rooms are managed by Central IT and use “Mediasite Scheduling” to operate the Recorders
2. Some faculty members will use Mediasite Desktop Recorder, but not all faculty members. Use of Mediasite Desktop Recorder is enabled for faculty members by Central IT
3. Mediasite Desktop Recorder is not offered to students to create presentations at this time, for purposes of simplicity
4. Central IT will use Management Portal for advanced content management
5. Mediasite Administrators will use Management Portal for system administration
6. The following roles are set up in Mediasite that map to groups in an external directory:
   - Physics101Role: All students enrolled in Physics101 course
   - CentralITRole: Support advanced content management
   - DesktopRecorderFacultyRole: Faculty members who are allowed to use Mediasite Desktop Recorder
   - AllFacultyRole: Faculty members who are allowed to use My Mediasite
   - MediasiteAdministrators: Administer Mediasite

Scenario:

1. Physics 101 course lectures are recorded using a Mediasite Recorder via a schedule defined in Mediasite
2. Let’s assume that a professor by the name Stan Barney, with username stan.barney@sofo.edu will use the Mediasite Desktop Recorder to record announcements for the Physics101 course
3. Prof. Stan Barney will use My Mediasite to manage content for which he was write access
4. A member of the group Central IT that maps to the CentralITRole is set up as the owner of presentations recorded for the Physics101 course. Each presentation for this course is published to a course folder called Physics101.
5. Prof. Stan Barney teaching the Physics101 course is granted write access to the course folder Physics101 via his user profile stan.barney@sofo.edu
6. Prof. Stan Barney happens to be a member of the groups that map to the roles DesktopRecorderFacultyRole as well as AllFacultyRole.

Sample Implementation:

The table below lists typical permission assignment for the role MediasitesiteAdministrators & Central IT:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Portal</td>
<td>Portal</td>
<td>Read</td>
</tr>
<tr>
<td></td>
<td>Resource</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Security</td>
<td>Portal Resource</td>
<td>Read</td>
</tr>
<tr>
<td>Create Presentations</td>
<td>Operation</td>
<td>Execute</td>
</tr>
<tr>
<td>Desktop Recorder Operator</td>
<td>Operation</td>
<td>Execute</td>
</tr>
<tr>
<td>//Mediasite/Users</td>
<td>Folder</td>
<td>Read, Write</td>
</tr>
<tr>
<td>//Mediasite/Users/stan.barney@sofo.edu</td>
<td>Private Folder</td>
<td>Read, Write, View</td>
</tr>
<tr>
<td>//Mediasite/Users/stan.barney@sofo.edu/Announcements</td>
<td>Private sub-folder</td>
<td>Read, Write, View</td>
</tr>
<tr>
<td>//Mediasite/Physics101</td>
<td>Folder</td>
<td>Read, Write, View</td>
</tr>
</tbody>
</table>

The table below lists typical permission assignment for the role **AllFacultyRole**:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Presentations</td>
<td>Operation</td>
<td>Execute</td>
</tr>
</tbody>
</table>

The table below lists typical permission assignment for the role **AllDesktopRecorderFacultyRole**:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Recorder Operator</td>
<td>Operation</td>
<td>Execute</td>
</tr>
</tbody>
</table>

The table below lists typical permission assignment for the role **Physics101Role**:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>//Mediasite/Users/stan.barney@sofo.edu/Announcements</td>
<td>Private sub-folder</td>
<td>View</td>
</tr>
<tr>
<td>//Mediasite/Physics101</td>
<td>Folder</td>
<td>View</td>
</tr>
</tbody>
</table>

The table below lists typical permission assignment for the role **stan.barney@sofo.edu**:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Type</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>//Mediasite/Users/stan.barney@sofo.edu</td>
<td>Private Folder</td>
<td>(Owner) Read, Write, View</td>
</tr>
<tr>
<td>//Mediasite/Users/stan.barney@sofo.edu/Announcements</td>
<td>Private sub-folder</td>
<td>(Owner) Read, Write, View</td>
</tr>
<tr>
<td>//Mediasite/Physics101</td>
<td>Folder</td>
<td>Read, Write, View</td>
</tr>
</tbody>
</table>
As can be seen from the example above, roles that map to groups in a directory are used for securing global resources while roles that map to user profiles are used to secure the user’s content.

Another point to note is that My Mediasite focuses on owner driven management of presentations while Management Portal focuses on administrator or pro-user driven management of presentations.

**Publishing Presentations**

Mediasite provides catalogs for publishing presentations. Prior to Mediasite 6.1, catalogs could be created as:

1. Linked catalogs that publish a Mediasite folder. Linked catalogs inherit the permissions of a Mediasite folder
2. Custom catalogs that publish individual presentations and linked Mediasite folders. Custom catalogs define their own access control.

Mediasite 6.1 introduces “Tagging” that allows identifying content in the Mediasite system using tags. Presentations related to each other no longer need to reside in a single folder. They can reside in any Mediasite folder. Both linked catalogs and static catalogs have been enhanced to support “search” based catalogs. The search term can be restricted to a specific field or a group of fields. The fields include:

- Title
- Description
- Presenter
- Slide text
- Caption text
- Tags

A search based catalog can be defined at the root Mediasite folder or can be restricted to a folder subtree.

Mediasite 6.1 introduces My Mediasite as a content creation tool as well as a light weight presentation management tool. User generated content created via My Mediasite resides in a user’s private folder while course content lies in the course folder. In the past, groups like Central IT would create a linked catalog for publishing. Going forward, Central IT will need to use custom catalogs to support content publishing from multiple locations in Mediasite or use tagging along with search based catalogs that automatically publish content based on search terms in Mediasite. It is recommended that fields like “Tags” be used for publishing search based catalogs. In the example implementation above, two publishing solutions are possible:

**Solution 1 - Aggregate content based on folders:**

1. Create a custom catalog called Physics101 Course Catalog
2. Include the course folder Physics101 as a linked folder in the Physics101 Course Catalog
3. Include the sub-folder Announcements under Prof. Stan Barney’s private folder in the Physics101 Course Catalog

**Solution 2 - Search for content based on tags:**

1. Create a linked catalog called Physics101 Course Catalog that points to the Mediasite root folder
2. Define a search term “physics101” that matches the “Tags” field
3. Tag all schedules used to record presentations using the Mediasite Recorders with the term “physics101.” All presentations recorded via this schedule will have the tag “physics101” automatically set.

4. Prof. Stan Barney will need to tag every presentation recorded using the Mediasite Desktop Recorder with the term “physics101.” Each presentation tagged appropriately will show up in the Physics101 Course Catalog.

Solution 3 - Linked catalog that includes shared folders:

1. Create a linked catalog called Physics101 Course Catalog that points to the folder Physics101
2. Create sub-folders under the root folder
3. Create shares for the sub-folders that will be used by users to place user generated content
4. Set up appropriate security on the sub-folders, especially for the ones for which shares are created
5. Any presentations created in the shared folders will also show up in the linked catalogs

Although only three solutions are described here, one can also implement a combination of the solutions described above.

Review-Edit-Approve

Mediasite 6.1 introduces publishing based on an approval workflow called “Review-Edit-Approve.” The workflow has special significance with the introduction of user generated content. When user generated content is extended to students at an educational institute, faculty members may want to approve the content before it is published to course catalogs. Likewise content generated by users in a corporate setting may need to be approved before it is ready to be published for consumption by the appropriate audience.

The “Review-Edit-Approve Workflow” does not support a multiple approval pipeline. It is assumed that there is a single approval stage in the content lifecycle.

Enabling the Review-Edit-Approve Workflow

Review-Edit-Approve workflow is not enabled by default. Users can avail of this workflow only after the Mediasite administrator enables this workflow for the site. The following steps need to be performed to configure Review-Edit-Approve workflow:

1. Use Management Portal to enable the workflow under Server settings in the Site Information section.
2. After enabling the workflow, the Mediasite Administrator needs to set up roles for managing Review-Edit-Approve workflow. This is done by assigning execute permissions to roles for the “Review-Edit-Approve Workflow Management” operation.

Once the above steps are completed, the users that can manage “Review-Edit-Approve” workflow are able to:

1. Enable Review-Edit-Approve on a presentation or folder in Management Portal, provided users have write permissions to the presentation or folder
2. Can add approvers to a presentation or folder in Management Portal, provided users have write permissions to the presentation or folder

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3. Enable Review-Edit-Approve on a presentation in My Mediasite, provided users have write permissions to the presentation

4. Can add approvers to a presentation in My Mediasite, provided users have write permissions to the presentation or folder

It is recommended that appropriate shares be created in Management Portal when users need to use “Review-Edit-Approve” workflow in My Mediasite. Content creators should place their content in the shared folder rather than their user folder. Shares for a folder can be created in Management Portal by anyone who has write permissions on the folder.

**Review-Edit-Approve Lifecycle**

The typical lifecycle for presentations following Review-Edit-Approve is as follows:

- Enable review-edit-approve on the presentation before any content is associated with it via recording or upload
- Assign approvers to the presentation
- Record the presentation or upload media to the presentation
- The presentation moves to “viewable” state, but requires an approver to approve the presentation before it can be viewed by the audience
- The approver can approve the presentation so that it can be published for viewing by the audience
- The approver can reject the presentation and require some edits to the content
- The approver can add comments indicating the reason for the rejection
- Users with write permissions to the presentation can edit it using the “Web Editor.” The approver can take a look at the edits made and approve or reject
- The user editing the presentation can also add comments to the presentation e.g. what action was taken
- The approver is notified of a pending approval and logs into Mediasite via My Mediasite or Management Portal to approve the presentation
- The presentation set up for “Review-Edit-Approve” requires approval anytime a presentation is:
  - Opened for edit and the edit session is committed successfully from Web Editor or Desktop Editor
  - Configured to generate a podcast
  - Submitted to generate an OCR job as a result of slide edits
  - Updated by associating captioning or if association is removed

Please note that only changes to presentation content trigger a presentation to be reviewed for approval. This includes adding or removing content types. Changes to presentation metadata such as title and description do not trigger the need for approval.

If a presentation is aired live, then “Review-Edit-Approve” does not apply until it is published for on-demand consumption.

**Access Control and Review-Edit-Approve**

Review-Edit-Approve workflow is implemented by extending the Mediasite security model – specifically access control. Managing approvers on each presentation is a controlled operation. This is because only authorized personnel should be able to manage approvers. If owners are granted the rights to manage
approvers on a presentation, there is a chance of escalating privileges. As a result, Review-Edit-Approve workflow requires at least three roles:

- A role that manages the Review-Edit-Approve workflow for the presentation – enables Review-Edit-Approve on a presentation, and adds approvers
- A role that has Editor level permissions “(Read, Write, View)” that can manage the presentation metadata and content
- A role that has Approver (Read, Approve, View) level permissions that can watch a presentation and approve changes to the presentation content.

There may be a fourth role needed for creating “shares” in Management Portal. In most cases this may be handled by managers of the Review-Edit-Approve workflow. To create a share, the user must have access to the Management Portal and have write access to the folder for which the “share” will be created.

**Inheriting Permissions**

Inheriting permissions from a parent folder plays a big part in “Review-Edit-Approve” workflow. If a parent folder has “Review-Edit-Approve” turned on, then every presentation created in that folder will have this item turned on. In addition, “approvers” set up for the folder will be automatically set up on the presentations created in that folder. Likewise, when sub-folders are created in that folder, the sub-folders also inherit the item and approvers.

However, if “Review-Edit-Approve” is turned off on a folder, then every presentation created in that folder prior to turning it off, will retain “Review-Edit-Approve” as enabled. Inheritance is limited at the point of creation. Likewise, if an approver is added/removed from the folder, it does not affect presentations created in the folder prior to the change. The same holds true for sub-folders.

It is important to understand how the permission model and inheritance works with Review-Edit-Approve. As an example if Review-Edit-Approve workflow is turned on for the “users” folder with inheritance turned on for each user folder, it may result in any approver being able to approve any user’s presentation. Likewise, turning on Review-Edit-Approve workflow for a user folder with inheritance, would mean that all presentations created by that user must be approved.

**Presentation Template Override**

Presentation templates provide an override for inherited permissions on presentations created using the template. The override can:

- Merge permissions between the presentation template and parent folder. Prior versions of Mediasite did not support a merge operation
- Replace permissions inherited permissions from the folder with those from the presentation template

Use of presentation templates is only supported in the Management Portal for added flexibility. My Mediasite only supports inheritance of permissions from the parent folder.

**Using Shares**

Using shares for “Review-Edit-Approve” in My Mediasite is highly recommended. Setting up “Review-Edit-Approve” workflows for a course or department is easier than setting it up on a per user basis. This way, user generated content that needs to pass through the “Review-Edit-Approve” workflow can reside in the folder configured as a share. The folder marked as a share can be set up by anyone with access to Management Portal and has write permissions to the folder.
Users creating content in these folders will need write permissions. When a faculty member or member of a department requests for “Review-Edit-Approve” workflow, users managing “Review-Edit-Approve” workflow can:

1. Create a folder in the appropriate location
2. Set up a share for the folder
3. Set write permissions on the folder for appropriate roles who will create content in this folder. These could be roles that map to groups in a directory and/or roles that map to user profiles
4. Enable “Review-Edit-Approve” on the folder
5. Set approve permissions on the folder for appropriate roles who will approve content in this folder. These could be roles that map to groups in a directory and/or roles that map to user profiles

At times there may be constraints such as when users work in a group and members of a group should only have write access to their presentations and not see those created by another group. In this case, each group should have a folder created with appropriate write permissions set up for them.

**An Example Implementation**

This section explains a sample implementation for “Review-Edit-Approve” for an organization:

**Assumptions:**

1. Members of the marketing department use My Mediasite to upload media and use Mediasite as a video content management system
2. The media uploaded must be approved by the department head before it is available for companywide viewing
3. Members of the marketing department upload their content in a department folder in Mediasite. The department folder is accessible from My Mediasite
4. The marketing department folder cannot be accessed by any other department in the company
5. Mediasite Administrators will use Management Portal for system administration
6. Mediasite Administrators are responsible for supporting Mediasite needs on a departmental basis across the organization
7. The following roles are set up in Mediasite that map to groups in the directory:
   - AllEmployees: All employees in a company eligible to watch the presentation
   - MarketingContentCreatorsRole: Members of marketing department that have write access to the folder to create content for approval
   - Stan.barney@sofo.com: The marketing department head who approves content created by members of the marketing team. This is a role that maps to a user profile
   - MediasiteAdministrators: Administer Mediasite

**Sample Implementation:**

1. Let’s assume that Bailey Simmons, a product marketing specialist, with username bailey.simmons@sofo.com has recorded a video explaining the launch plan for a new product about to be launched
2. Bailey Simmons belongs to the MarketingContentCreatorsRole
3. A folder in Mediasite is created called “Product Launches” by someone from the MediasiteAdministrators group for the marketing department

4. The MediasiteAdministrators group have also set up the following:
   - Turned on “Review-Edit-Approve” for the site
   - Created a share for the folder Product Launches
   - Turned on “Review-Edit-Approve” for the Product Launches folder
   - The following roles have write permissions on the Product Launches folder:
     - MarketingContentCreatorsRole
     - MediasiteAdministrators
   - The following role has approve permissions on the Product Launches folder
     - Stan.barney@sofo.com
   - The following role has view permissions on the Product Launches folder
     - AllEmployees

5. Both Stan Barney and Bailey Simmons use My Mediasite to manage content in the marketing folder

Scenario:

1. Bailey Simmons logs into My Mediasite.
2. Bailey creates a presentation for upload in the Product Launches folder. The Product Launches folder is visible in My Mediasite for her because it is shared.
3. When the presentation is created, by default it inherits permissions from the Product Launches folder and “Review-Edit-Approve” is enabled for the presentation. The permissions for roles set on the folder are also inherited by the presentation
4. On successful upload, a notification is sent to Stan Barney that a presentation needs to be approved for publishing
5. Stan Barney logs into My Mediasite
6. Stan looks at his review required queue and locates the presentation to be approved or uses the email to obtain the link to the presentation that needs to be approved
7. Stan looks at the presentation and uses the watch link to playback and watch the presentation.
8. Stan makes notes and requests some edits. He adds these notes as comments. He specifically thinks that a 5 second clip at 1 minute needs to be removed. He also thinks that a few chapters should be added. He rejects the presentation
9. Bailey uses the comments and makes the necessary edits using the Web Editor and also adds chapters. The presentation is once again ready for approval.
10. Stan receives an email once again and takes a look at the presentation again in My Mediasite by watching it. Stan is extremely happy with the presentation and approves it.
11. Bailey sees that the presentation is approved and invites the entire company to watch the presentation
**Metadata Generation**

Prior to Mediasite 6.1 most metadata included with Mediasite content was very traditional. As an example:

- Title
- Description
- Record Date
- Captioning
- Thumbnail index
- Chapters

Mediasite 6.1 introduces additional metadata and new ways to use this metadata. The new metadata includes:

<table>
<thead>
<tr>
<th>Metadata</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tags</td>
<td>Search based catalogs, find presentations in My Mediasite and Management Portal, filter presentations in My Mediasite and Catalog. Tags can also be set on a presentation template as well as a schedule and are inherited by every presentation created from such a template or schedule.</td>
</tr>
<tr>
<td>Custom Fields</td>
<td>Key-value fields introduced to facilitate integration with 3rd party applications. As an example, custom time-based-metadata can be stored in these fields for a presentation which could be retrieved in a custom application that includes an embedded player. The time-based metadata is retrieved by the custom application based on playback time. Custom fields can also be set on a presentation template as well as a schedule and are inherited by every presentation created from such a template or schedule.</td>
</tr>
<tr>
<td>Slide extraction from video uploads</td>
<td>Media uploaded into Mediasite via media upload or media import can be set up to generate thumbnails for the video. This is done by associating a slide content server with the presentation. A successful upload or editing causes slides to be generated, which act as index points into the video and are displayed as thumbnails in the Player and Editor.</td>
</tr>
<tr>
<td>OCR from video</td>
<td>Slides extracted out of a media file are automatically run through Mediasite OCR to extract and create a text index used for search and creating search based catalogs</td>
</tr>
</tbody>
</table>

Metadata when automatically generated enhances the value of content since it can be searched & retrieved easily. Likewise metadata that enables integration capabilities is much desired by integrators to build rich new applications that use a video content management and distribution platform at its core.

System Integrators can build rich applications on top of Mediasite – a video content management and distribution system using the following SDK’s:

- Mediasite External Data Access Service – that includes web service API’s to get as well as manage metadata for content residing in Mediasite
- Mediasite Player SDK – that includes a JavaScript IFrame API to control presentation playback in an embedded player
Web Editor

Mediasite 6.1 includes a Web Editor for editing Mediasite content. Mediasite has traditionally supported a Desktop Editor on the Windows platform. The Web Editor makes editing available on both Windows and Macintosh platforms. The Web Editor uses Silverlight 5.0 for the media element and requires a browser that supports HTML5.

The Web Editor uses Silverlight to stream or progressively download the media from a content server. The Web Editor generates an audio waveform on the fly, if it is not present. The Web Editor also requests Mediasite to generate thumbnails for slides as well as video thumbnails.

Most of this activity is carried out via the Mediasite File Server and it is important for the Mediasite File Server to have access to video and slide locations. The identity of the application pool running the Mediasite File Server must have access to the physical locations for Mediasite Data, Slide Server and On-Demand Media Server.

Managing Content Revisions

The Web Editor supports content revisions and multiple projects owned by different users for a presentation. Every time the Web Editor is opened by a user for a presentation, a project is created or used, if one already exists for the user. Projects can be renamed. Projects include a set of editing commands and pointers to a specific revision of the media (video, thumbnails etc.).

Once changes made in a project are committed, a new revision for the media is created and is treated as the head revision. The head revision is never deleted unless the presentation is deleted. The project still points to the revision for which the project was started.

The Web Editor deletes a revision of the media in the following cases:

1. A single project, pointing to the original version of the media content, is used to create successive head revisions:
   - The project opens the original revision of the media content with all committed edits that map to the latest revision
   - Additional edits are added and the presentation is committed
   - A successful commit creates a new head revision of the media content and also causes the previous head revision to be automatically deleted.

2. Multiple projects, pointing to the different versions of the media content exist, and the one of the projects is used to create a new head revision:
   - The project opens the revision of the media content with all committed edits that are contained in its edit command list
   - Additional edits are added and the presentation is committed
   - A successful commit creates a new head revision of the media content and the previous head revision is deleted if it is not referenced by any of the projects

3. Multiple projects, pointing to the different versions of the media content exist, and then one of the projects is deleted:
   - The revision pointed to by the deleted project is “orphaned” and therefore media content for this revision is deleted

Mediasite administrators can use the content revision report in the Publishing section of Management Portal to manage housekeeping of content revisions and delete revisions of media manually, if necessary.
**Media Upload**

Mediasite 6.1 continues to support media upload both in an interactive fashion as well as in a batch via media import in the Management Portal. In addition, media upload is also available in My Mediasite in an interactive fashion as part of the User Generated Content license. Media upload is highly desired in a video content management and distribution system.

Mediasite upload supports Windows Media and H.264 content packaged as MP4. Sonic Foundry expects to enhance this function to support additional formats in early 2013.

Media upload in Mediasite 6.1 has undergone significant change to ensure that media upload in My Mediasite works for an end user without having to know about what content servers and encoding settings are set up on a presentation.

Mediasite 6.1 also introduces the concept of “archive media” for media upload and import. When the media type being imported or uploaded does not match the media type specified on one of the content servers in the presentation / template, the media type is managed as “archive media” and transcoded to the format specified on the content servers.

“Archive media” is supported for upload and import of Windows Media and MP4 formats. As an example, if a media import project uses a presentation template that in turn is associated with a MP4 content server and a Windows Media file is dropped into the drop box, it will be transcoded to MP4 format using the encoding settings specified for the MP4 content server. The Windows Media file is marked as the “archive source” and not available for use within the Mediasite ecosystem but is maintained as a media file associated with the presentation in the Mediasite system. It follows the presentation life cycle and is deleted when the presentation is deleted from the recycle bin.

In summary, the following rules are used for media upload:

<table>
<thead>
<tr>
<th>Upload Type</th>
<th>Application</th>
<th>Transcoding</th>
<th>Transcoding rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create presentation &amp; upload media</td>
<td>My Mediasite</td>
<td>Automatically determined</td>
<td>Always transcode using content encoding settings specified in upload media template. If content type does not match, transcodes to desired output and treats source as archive media</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H.264 (MP4) format</td>
<td></td>
</tr>
<tr>
<td>Upload media to a presentation</td>
<td>Management Portal</td>
<td>Automatic or forced to</td>
<td>Uses content encoding settings for a content server that matches the content type. If match not found uses primary server’s content encoding settings and treats source as archive media</td>
</tr>
<tr>
<td></td>
<td></td>
<td>always transcode (user</td>
<td>Transcodes to all additional formats specified in the template using content encoding settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>initiated)</td>
<td></td>
</tr>
<tr>
<td>Upload media to a specific content server</td>
<td>Management Portal</td>
<td>Automatic or forced to</td>
<td>Uses content encoding settings for a content server. If content type does not match, transcodes to desired output and treats source as archive media</td>
</tr>
<tr>
<td></td>
<td></td>
<td>always transcode (user</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>initiated)</td>
<td></td>
</tr>
<tr>
<td>Upload Type</td>
<td>Application</td>
<td>Transcoding</td>
<td>Transcoding rules</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Import media files</td>
<td>Management Portal</td>
<td>Automatically</td>
<td>Uses the primary content server if it matches the content type and uploads the media as-is to that location. If match not found uses primary server’s content encoding settings and treats source as archive media. Transcodes to all additional formats specified in the template using content encoding settings</td>
</tr>
<tr>
<td>Camtasia media import</td>
<td>Management Portal</td>
<td>Automatically</td>
<td>Uses the primary content server if it matches the content type and uploads the media as-is to that location. If match not found uses primary server’s content encoding settings and treats source as archive media. Transcodes to all additional formats specified in the template using content encoding settings</td>
</tr>
<tr>
<td>Mediasite presentation import</td>
<td>Management Portal</td>
<td>No transcoding</td>
<td>Uses content server that matches the content type and uploads the media as-is to that location. If match not found an error is reported.</td>
</tr>
<tr>
<td>Mediasite presentation import</td>
<td>System Manager</td>
<td>No transcoding</td>
<td>Uses content server that matches the content type and uploads the media as-is to that location. If match not found an error is reported.</td>
</tr>
</tbody>
</table>

All transcoding and processing for media upload is initiated immediately after upload.

My Mediasite uses a single template for video upload. If the template has a slide server set up, slides are also generated for the uploaded media as part of processing. Another important item to note is that only one media server and slide server in the template needs to be configured. This is a system template. The media upload job automatically associates a screencast player after the presentation is created on a successful upload. These players are system players. System players do not have banners associated and are set up using player customization.

Media uploads from My Mediasite are interactive in nature while uploads via “Media Import” in the Management Portal are automated and batch oriented. It would be tedious to go back in and change presentation settings in the context of automation. This is why media import behaves a little different compared to media upload.

Both media upload and media import will be expanded to support additional formats with the introduction of Multi-Format Decoder in early 2013. If the Multi-Format Decoder is installed, transcoding jobs will be automatically created to use the Multi-Format Decoder. The Multi-Format Decoder will read a media file, decode it and pass it on to the transcoder to encode the decompressed bytes to a Mediasite supported native format (H.264 or Windows Media). Decoding will require appropriate codecs to be present on the machine running Mediasite Transcoder. Mediasite will not ship any codecs with Mediasite Multi-Format Decoder. However, it will use codecs installed on the machine for decoding media including the H.264 codec installed by the Mediasite Transcoder.
Mediasite File Server

Mediasite 6.1 continues to include Mediasite File Server in the EX Server. It is recommended that the File Server is set up to run in its own application pool. The identity associated with the application pool should have read and write access to the following locations:

- Physical location for Mediasite Data
- Physical location for slide server
- Physical location for all on-demand media servers

The table below describes various upload scenarios in Mediasite and how they are accomplished:

<table>
<thead>
<tr>
<th>Upload From</th>
<th>Using</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediasite Recorder &amp; Editor</td>
<td>FTP/SFTP</td>
<td>Directly uploads media (video &amp; slides) to the storage locations</td>
</tr>
<tr>
<td>Mediasite Recorder &amp; Editor</td>
<td>HTTP</td>
<td>Uses File Server to upload media to storage location</td>
</tr>
<tr>
<td>Mediasite Desktop Recorder</td>
<td>FTP/SFTP/HTTP</td>
<td>Always uses File Server to upload media (2 media streams videos) to temporary location. Post process job moves the processed files to final destination. The post process job uses the appropriate scheme to upload processed files to the final destination</td>
</tr>
<tr>
<td>Media Upload</td>
<td>File Upload Control</td>
<td>Uploads media (video file) to temporary location via File Server using File Upload Control. Media upload job moves the processed files to final destination using FTP/SFTP</td>
</tr>
<tr>
<td>Media Upload</td>
<td>FTP/SFTP for on-demand content servers</td>
<td>Uploads media (video file) to temporary location via File Server using File Upload Control. Media upload job moves the processed files to final destination using FTP/SFTP</td>
</tr>
<tr>
<td>Media Import</td>
<td>FTP/SFTP</td>
<td>Directly uploads media (video &amp; slides) to the storage locations</td>
</tr>
<tr>
<td>Media Import</td>
<td>HTTP</td>
<td>Uses File Server to upload media to storage location</td>
</tr>
<tr>
<td>Graphics upload for presenters, players etc.</td>
<td>File Upload Control</td>
<td>Directly uploads graphics file to storage location via File Server using File Upload Control.</td>
</tr>
<tr>
<td>Serving slides for Player</td>
<td>HTTP</td>
<td>Uses File Server to serve slides &amp; thumbnails in a secure fashion</td>
</tr>
<tr>
<td>Serving captioning for Player</td>
<td>HTTP</td>
<td>Uses File Server to serve captioning in a secure fashion</td>
</tr>
<tr>
<td>Serving slides for Web Editor</td>
<td>HTTP</td>
<td>Uses File Server to serve slides &amp; thumbnails in a secure fashion</td>
</tr>
<tr>
<td>Serving video frames for Web Editor</td>
<td>HTTP</td>
<td>Uses File Server to serve video frame as thumbnails in a secure fashion</td>
</tr>
<tr>
<td>Serving feed files (RSS)</td>
<td>HTTP</td>
<td>Uses File Server to serve feed files</td>
</tr>
<tr>
<td>Serving Podcasts</td>
<td>HTTP</td>
<td>Uses File Server to serve MP3 files</td>
</tr>
</tbody>
</table>
Player Customization

Player customization and playback on multiple platforms is another aspect of a video content management & distribution system. Mediasite version 6.0 introduced the ability to playback presentations on multiple devices including tablets and phones. Mediasite 6.1 includes the ability to customize players. Every control on the player can be turned on or off. Player customization is managed in the Management Portal. If a control is turned on, but there is no data associated e.g. captioning, the control appears grayed out.

Mediasite plays back a video stream with synchronized slides. In addition to enabling/disabling controls, Mediasite 6.1 also offers the ability to customize the sizes of the video and slide areas. Additionally, Mediasite 6.1 introduces a light theme in addition to the dark theme.

Customized players are used within Mediasite 6.1 as system players. Three customized players are set up as system players in Mediasite and used with desktop recordings and media uploads.

Mediasite Desktop Recorder

Mediasite 6.1 introduces Mediasite Desktop Recorder for desktop recordings. Mediasite desktop recordings can be initiated from My Mediasite as well as from the Mediasite Desktop Recorder and then published to Mediasite.

As explained earlier, Mediasite Desktop Recorder is a multi-platform application for Macintosh and Windows platforms that is able to record content in the form of:
1. Audio + slides (from desktop)
2. Web camera video + audio + slides (from desktop)
3. Audio + screencast video (from desktop)

The following major workflows are supported by Mediasite Desktop Recorder:

1. Launch Mediasite Desktop Recorder from My Mediasite for recording and publishing back to Mediasite
2. Launch Mediasite Desktop Recorder from My Mediasite for recording later. Once complete, the recording can be published back to Mediasite
3. Launch Mediasite Desktop Recorder from desktop, record locally and upload to Mediasite later when connected

Mediasite Desktop Recorder can be downloaded from My Mediasite and installed on a user’s desktop. My Mediasite is also used to launch the Mediasite Desktop Recorder to record and publish presentations. Mediasite traditionally has always been associated with managing content generated in rooms. Mediasite Desktop Recorder expands content generation to desktops that is managed in a similar fashion by the Mediasite EX Server. Most video content management and distribution platforms offer content capture tools that record a single stream – typically a video camera and audio. Mediasite Desktop Recorder records two streams - screen and camera along with the microphone.

Mediasite User Generated installer includes installers for Mediasite Desktop Recorder, for both Macintosh and Windows platforms. The User Generated Content installer can be used only on a machine on which the EX Server is installed. Once that is installed, the Desktop Recorder installers can be downloaded by users only if a license for Mediasite User Generated Content module is activated.

Mediasite Desktop Recorder is a desktop application that is typically launched via My Mediasite, a web application. Mediasite administrators rolling out Mediasite Desktop Recorder in their organization need to consider the following:
1. The certificate installed on the machine running the EX Server for SSL must be a valid certificate issued by a trusted authority. When a certificate is not installed for SSL on the machine, Mediasite EX Server installer creates a self-signed certificate. This certificate cannot be used with the Mediasite Desktop Recorder.

2. Communication, by default, between Mediasite Desktop Recorder and Mediasite is recommended to take place over SSL using the Mediasite service root URL.

3. When users download the Mediasite Desktop Recorder for the first time, they are prompted to register their Mediasite URL (EX Server URL). In the event the registration is not completed users will not be able create presentations locally and publish to Mediasite from the Desktop Recorder. Without registration, users can initiate a recording from My Mediasite and publish the recording to Mediasite.

4. After users download Mediasite Desktop Recorder and complete the registration, they can enter and store their credentials to seamlessly publish to Mediasite.

5. If the Mediasite installation is set up to use SSO using SAML, users will be unable to create presentations directly in Mediasite Desktop Recorder. Users will always need to use My Mediasite to initiate a recording or complete the publishing of a locally recorded presentation.

6. When using Mediasite Desktop Recorder with SSO, Mediasite identity tickets are used for authentication. A few other points to note on identity tickets:
   a. The expiration time for these tickets is set to 2 hours
   b. The communication of identity tickets between Mediasite and Mediasite Desktop Recorder takes place over plain text.

7. When presentations are created from Mediasite Desktop Recorder, it has very minimal metadata - typically only the title.

8. Mediasite Desktop Recorder, when connected to Mediasite, can upload media for processing while the recording is in progress in order to reduce turnaround times.

9. A presentation uploaded to Mediasite from the Mediasite Desktop Recorder needs to be processed. The processing depends on the type of recording selected. The major processing steps include:

<table>
<thead>
<tr>
<th>Processing</th>
<th>Screencast</th>
<th>Video + Slides</th>
<th>Audio + Slides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transcode screen video</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Transcode camera video/audio</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multiplex audio with video</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Generate audio peaks</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Render cursor location</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Generate slides (if slide server specified)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Create Presentation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Update player</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

10. Recordings uploaded from the Mediasite Desktop Recorder to Mediasite are transcoded using the Mediasite Desktop Recorder template in Management Portal. Mediasite administrators can
limit the distribution resolution and bitrate for videos recorded from the camera via the system-wide Mediasite Desktop Recorder template

11. Mediasite uses player customization to create three system players, one for each type of recording. The processing job on Mediasite uses the appropriate player based on the type of recording.