

# TANDBERG

## Deployment Guide

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TANDBERG Content Server

Creating and managing a TCS cluster  
S3.3

D1446001

May 2009

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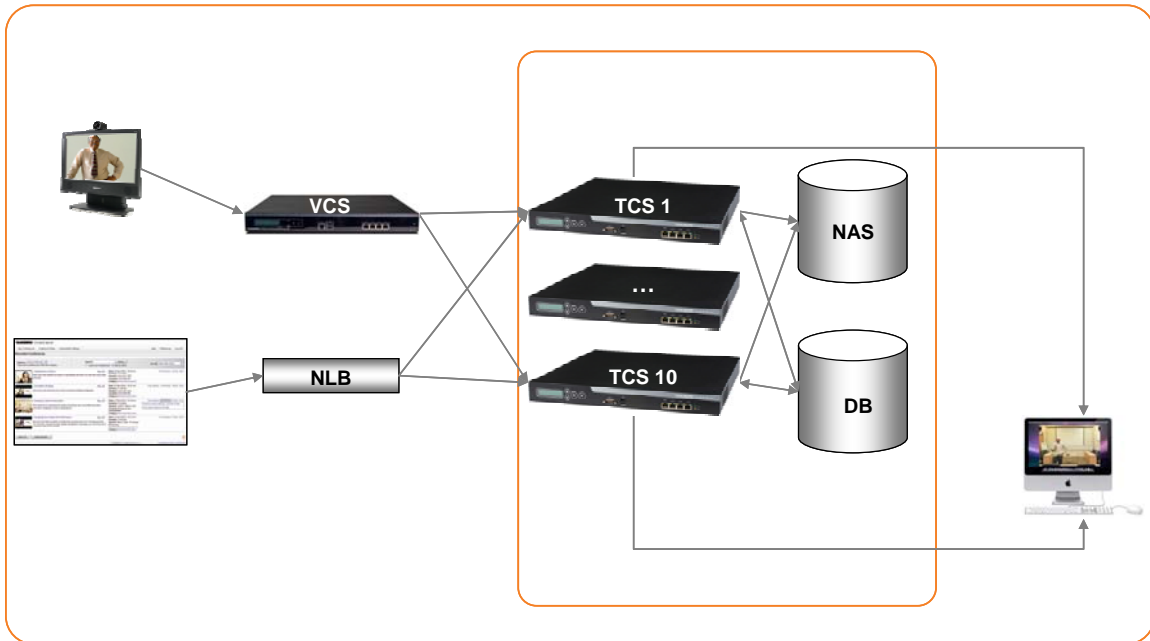
## **1 INTRODUCTION**

This deployment guide describes the main features, system requirements, setup and management of a TANDBERG Content Server cluster (TCS cluster). The goal is that to a user a TCS cluster shall look exactly like a single Content Server with much greater capacity for recording, streaming and serving the web interface.

## 2 MAIN FEATURES

### General Reliability

Multiple Content Servers can be clustered together to increase total capacity. In this cluster architecture there is no controller – each Content Server performs exactly the same tasks. If a Content Server is taken out of the cluster, the only effect on the cluster will be lessened total capacity.



### Interface Redundancy

The web interface is served in exactly the same way no matter what Content Server the user is connected to. This allows management of the cluster from any Content Server in the cluster. A Cluster Overview page provides information about the number of calls and transcoding jobs in progress on the whole cluster, as well as the calls and transcodes and the status of essential services on each Content Server in a cluster.

### HTTP load balancing

The use of a network load balancing solution (NLB) ensures that incoming user HTTP requests are spread across the cluster. While multiple solutions are available to handle NLB, the final recommendation in this document includes a hardware solution, Loadbalancer.org.

### Inbound H.323 Call routing

Inbound call load balancing is managed by the VCS (Video Communications Server) the cluster is registered to. Each Content Server is only capable of two transcoded live streaming outputs out of a total call capacity of 5 calls. Using a **Live** streaming alias means that the call can be watched while it's in progress, and then also viewed on demand. Using a **Non-Live** streaming alias means that the call is recorded, but cannot be watched until the call has finished and the offline transcoder has processed the outputs for on demand viewing.

While standalone Content Servers have a mixture of live and non-live aliases, they only require one gateway prefix for both. However, a TCS cluster needs two gateway registrations with separate

prefixes, one for live transcoded calls, and another for non-live (offline transcoded) calls, to ensure good load balancing of both types of calls across the cluster. Resource Allocation Indication messages are used to signal the VCS when a given Content Server is out of resources for a particular call type. This allows the gatekeeper to route calls appropriately, i.e. a TCS which has signaled out of resources for a live call type prefix will not be allocated any more calls that come in on that prefix until it signals otherwise.

Additionally, for registrations with the VCS, each Content Server also needs four system aliases - live and non-live H.323 ID and E.164 system aliases. It is important that each of those aliases is unique on that Content Server and on the TCS Cluster (i.e., that there are no duplicates).

System aliases should not be used for calling the cluster, as they are routed to a particular Content Server. If this Content Server is busy, calls to its system alias will be rejected even if other Content Servers are not busy at that time. Calls are appropriately load balanced across the cluster only when recording aliases are used for dialing a TCS cluster.

### **Outbound H.323 Calls load balancing**

Outbound calls can be made using the web interface or the ClusterDial API command. This will load balance based on current call load and choose the Content Server with the least call load to handle the call. As there is no specific “controller” in the cluster architecture the API commands can be sent to any of the Content Servers in the cluster. For added redundancy of the API functionality and to ensure that the external implementation does not artificially create a “controller” it is up to the integrator to build the logic around distributing the API commands among all Content Servers in the cluster to deal with situations such as Content Server unavailability.

### **Scalable Storage**

One Network Attached Storage (NAS) is used for the whole cluster and all media files are hosted on the NAS. This ensures that storage can grow as the cluster grows and is not constrained by the Content Server hardware capacity. Because transcoded media files are stored on the NAS, on-demand streaming of any recording is possible from any Content Server.

### **External Microsoft SQL Server Database**

All Content Servers in the cluster connect to one external Microsoft SQL Server 2005 database. This ensures that cluster configurations and conference information is global across the cluster. If a Content Server is taken out of the cluster, the conferences recorded by that Content Server are accessible from the interface of any of the other Content Servers remaining in the cluster.

It is the responsibility of the cluster implementer to provide the external Microsoft SQL Server 2005 instance. It should be noted that the SQL server instance on a Content Server cannot be used to configure an external database for other Content Servers in the cluster. While there are multiple ways to configure external databases, configurations which are required for the correct functioning of a TCS cluster are described further in this document.

### **API support**

The cluster is well supported by the API, which provides a special command for dialing out of the cluster as well as cluster status documents to report status and configuration across all nodes. The cluster API commands are fully documented in the TANDBERG Content Server API Guide.

## 3 SYSTEM REQUIREMENTS

### *TANDBERG Content Server*

- Version 3.3 or higher
- Each Content Server in cluster and the NAS must be added to the same Windows Active Directory domain.
- An option key is required for each Content Server that is going to be added to a cluster. The option key must be installed before running the TCS wizard, otherwise the clustering option will not be accessible in the wizard.
- A valid HTTPS security certificate should be obtained from a trusted source such as a Certificate Authority (COMODO, VeriSign etc). This certificate should then be installed on each Content Server in the cluster.

### *External SQL Server database*

- Microsoft SQL Server 2005 Standard or Enterprise (Service Pack 2 or higher) is required. Microsoft SQL Server 2008 is not supported for this version.
- The cluster requires an external database instance to be configured on a separate machine (not a Content Server).
- The database server requires dual 3 GHz processors and a minimum of 4GB RAM.
- Microsoft .NET Framework 2 must be installed on the server where Microsoft SQL Server 2005 is installed.

See the [Configure the external SQL server database](#) section for detailed information on the required database configuration.

### *Gatekeeper*

VCS X2.1 or higher

### *Network Load Balancer (NLB) solution*

There are a number of options for load balancing HTTP page requests. The recommended solution for a TCS cluster includes hardware-based NLB. This document describes the setup for a Loadbalancer.org hardware load balancer.

For installations where optimized load balancing of page requests is not important, DNS round robin could also be used.

### *Network Attached Storage (NAS)*

- Compatible systems include any NAS device built on the Windows Storage server and which is Windows Hardware Quality Lab certified. The file sharing protocol used by the Content Server to the NAS is Microsoft SMB.
- The NAS device must be added to the same Windows Domain as the Content Servers.
- The NAS should be dedicated to media storage. Installing your Domain Controller on the NAS device is not supported and may cause the TANDBERG Content Server cluster to stop functioning.

See [Configure the NAS](#) section for detailed information on the required NAS share configuration.

## 4 SET UP A TCS CLUSTER

The process of setting up a TCS cluster consists of the following steps. Each step is described in a separate section. Please note that the following process has to be followed in the order of the steps given below. Failure to do so may result in a non-functioning cluster.

TANDBERG recommends that you familiarize yourself with the [Limitations](#) section before setting up a TCS cluster.

### 4.1 Overview of the process

1. Content Server prerequisites.
2. Configure the external SQL server database.
3. Configure the NAS.
4. Create a TCS cluster.
5. Add a Content Server to an existing cluster.
6. Configure gatekeeper registration.
7. Configure domain authentication.
8. Configure Network Load Balancing (NLB).

#### 4.1.1 Content Server prerequisites

##### 4.1.1.1 Ensure that version 3.3 is installed

Ensure that all the TCSs that you want to cluster are at version S3.3. If they are not, upgrade them to S3.3 and check that they have the same build number.

##### 4.1.1.2 Add to domain

Add all Content Servers that you want to cluster to a Windows Active Directory domain. The general requirements for adding a Content Server to a Windows domain must be adhered to.

##### 4.1.1.3 Add cluster option key

The **Cluster enabled** option key should be installed on each Content Server from the **Software Upgrade** section on the **Administrator Settings > Server Overview page**. The option key must be installed before running the TCS wizard, otherwise the clustering option will not be accessible in the wizard.

##### 4.1.1.4 Install security certificates

In order to operate efficiently it is required that a certificate be obtained from a trusted source such as a Certificate Authority (COMODO, VeriSign etc). This certificate should then be installed on each Content Server in the cluster. By using a common certificate on all the Content Servers we ensure that a user does not have to obtain  $N$  certificates (for a cluster with  $N$  content servers) when they access the cluster through the network load balanced address.

For more information on installing security certificates, please see the *Security Certificate Management* section in the *TCS Administrator Guide*.

##### 4.1.1.5 Check time and date setting

Ensure that the time zone, time and date settings are identical on all Content Servers to be clustered.

## 4.1.2 Configure the external SQL server database

Check the [System Requirements](#) section first to see if your existing Microsoft SQL Server is compatible with the TCS cluster system requirements

The process of configuring the external SQL server database consists of the following steps. Each step is described in a separate section:

1. Add an SQL server instance.
2. Configure the SQL server instance.
3. Create a special user on the SQL server that the TCS cluster will use to connect to the database, e.g. TCS\_DB\_USER.

### 4.1.2.1 Add an SQL Server 2005 instance

One SQL server database is used by all Content Servers in a cluster. This database must not be hosted on any of the Content Servers used in the cluster.

The TCS cluster requires its own instance of the SQL server. If Microsoft SQL Server 2005 is already installed, you have to add a new instance to your existing SQL server installation. If Microsoft SQL Server 2005 is not already installed, you must install Microsoft SQL Server 2005 in order to create the new instance. In both cases, in order to create the instance you will need the Microsoft SQL Server 2005 installer available from Microsoft on the installation media (CD or DVD). See the [System Requirements](#) section to ensure that you use the correct version of the SQL server installer to create the new instance.

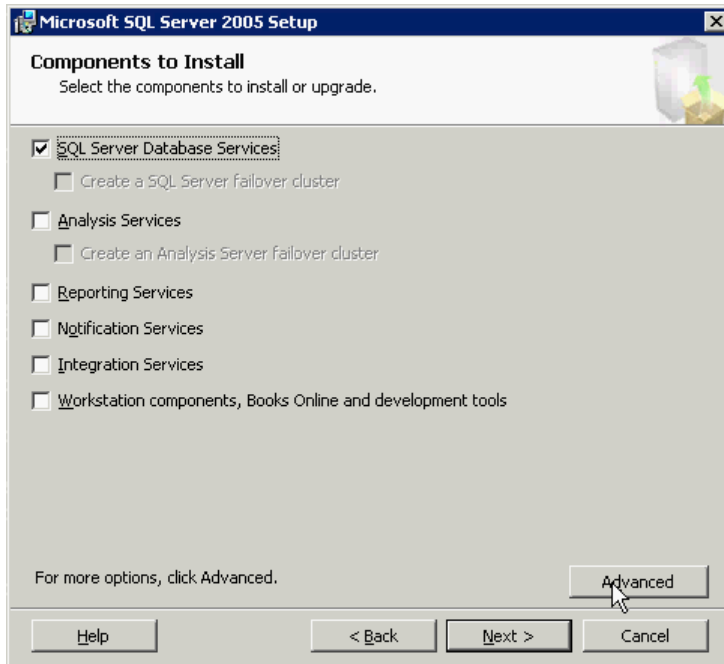
Note that not all installation wizard steps or screenshots are included in this documentation – only the ones where the installation options are required for a TCS cluster or differ from the default.

### 4.1.2.2

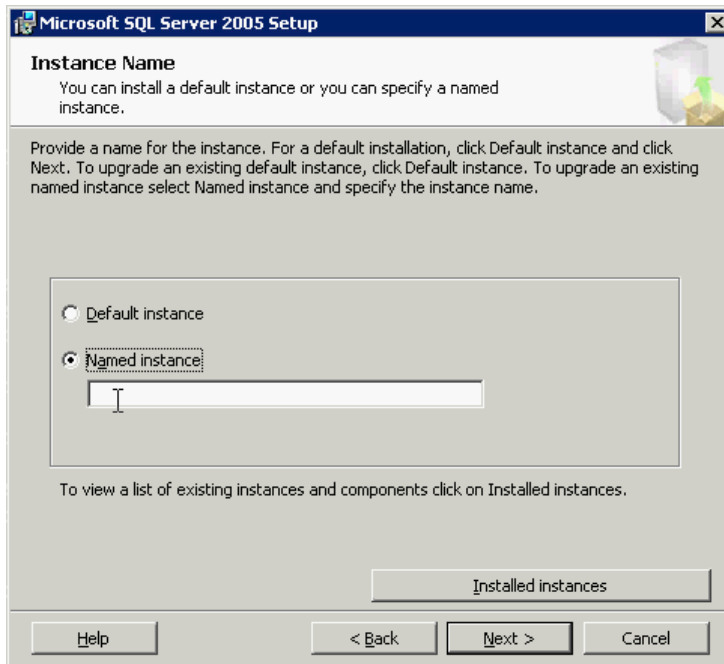
**Using the SQL Server 2005 installation media to add a new instance:**

1. Insert the Microsoft SQL Server 2005 installation media into the disk drive of the machine that will host your SQL server and start the Microsoft SQL Server Installation Wizard.

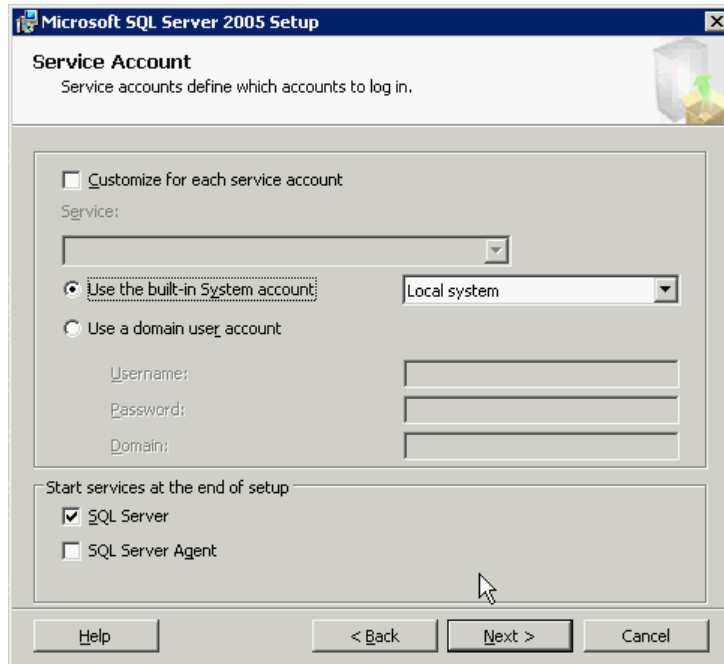
- From Components to Install, select **SQL Server Database Services**.



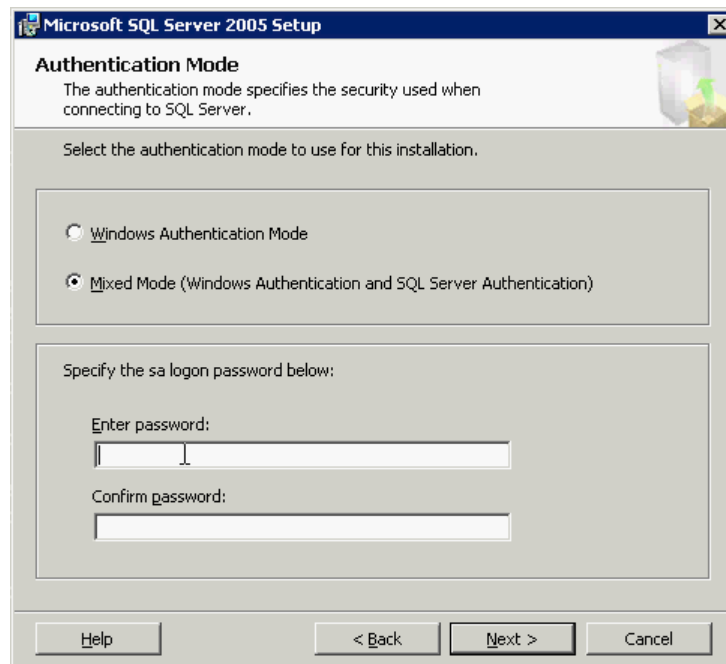
- Under Instance Name, select **Named instance**. Enter the instance name.



- Under Service Account, choose **Use the built-in System account (Local system, or Network service)**.



- Under Authentication Mode, select **Mixed Mode (Windows Authentication and SQL Server Authentication)** and enter the SA (System administrator) password.



- SQL server collation should be set to: **Latin1\_General\_CI\_AS, 'Dictionary, case insensitive, 1252 character set'**.

**NOTE:**

Service Pack 2 (or higher) must be applied to the newly created instance, otherwise the TCS wizard database connection test will fail and you will not be able to create a TCS cluster using this instance.

For more information on installing SQL Server 2005, see Microsoft article in the SQL Server 2005 Books Online:

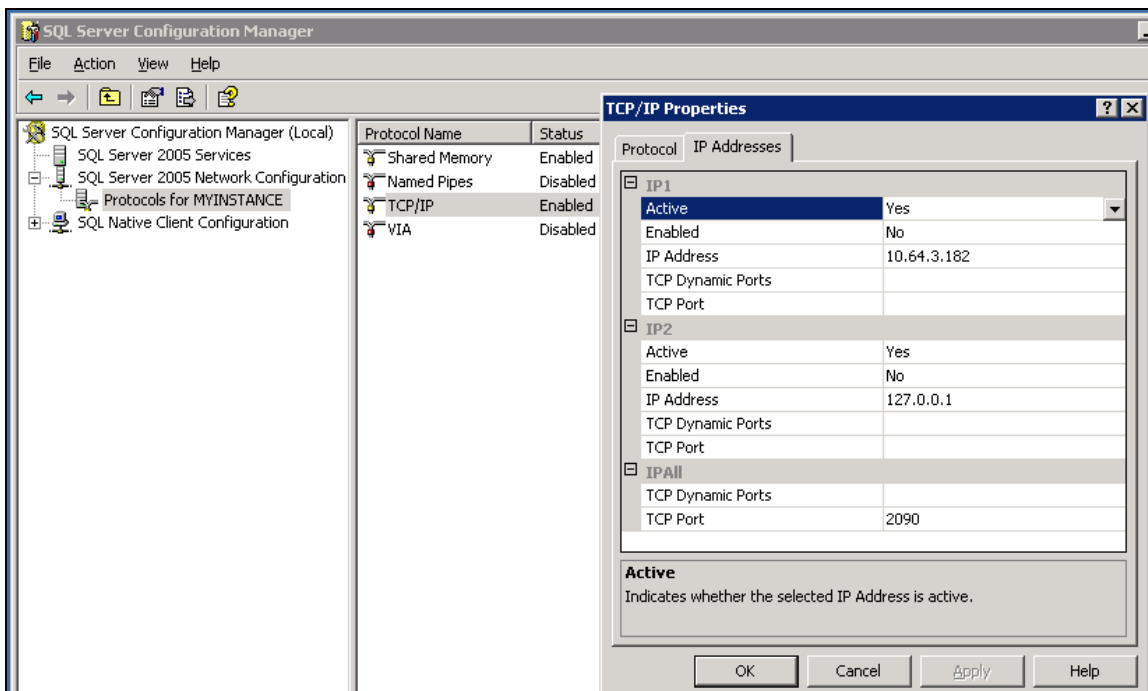
Preparing to Install SQL Server 2005: <http://msdn.microsoft.com/en-us/library/ms143719.aspx>  
 Security Considerations for a SQL Server Installation: <http://msdn.microsoft.com/en-us/library/ms144228.aspx>  
 Check Parameters for the System Configuration Checker: <http://msdn.microsoft.com/en-us/library/ms143753.aspx>

#### 4.1.2.3 Configure the SQL Server instance

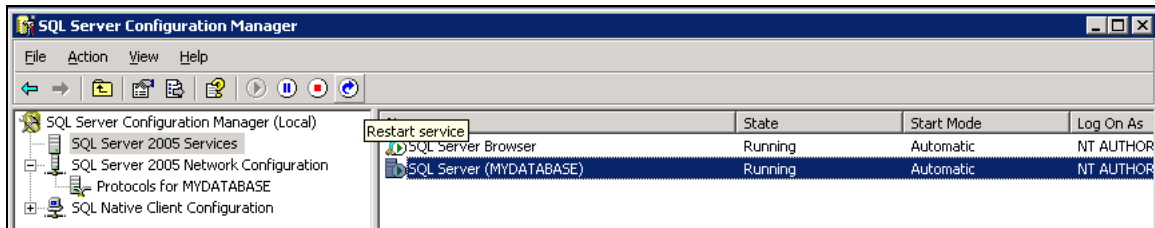
The SQL server instance used for a TCS cluster must be configured as described below. Failure to configure the SQL server instance correctly will cause the TCS wizard database connection test to fail and you will not be able to set up a TCS cluster.

1. Open the SQL Server Configuration Manager (usually located in the Start menu under **All Programs->Microsoft SQL Server 2005->Configuration Tools**).
2. Under SQL Server 2005 Network Configuration, select **Protocols for instance\_name** (where *instance\_name* is the name you specified when creating an SQL Server instance).
3. Ensure that:
  - a. Shared Memory is **Enabled**,
  - b. Named Pipes are **Disabled**,
  - c. TCP/IP is **Enabled**,
  - d. VIA is **Disabled**
4. Right click TCP/IP and select properties. Select the IP Addresses tab:
  - a. For each IP address, set Enabled to **No**.
  - b. Clear all TCP Dynamic Ports fields – make sure to delete any zeros that appear in those fields.
  - c. Clear all TCP Ports fields from all IP Addresses.
  - d. Under **IPAll**, enter the TCP Port that the Content Server will use to connect to this instance:  
 TCP Port – for example: 2090  
 You can use any port in the range of between 1000 and 64000 that is open on the firewall and is not used by other software on TCS or on the server that is hosting the SQL Server. The port you specify here must also not conflict with ports setup for other instances on the server.

The screenshot below shows an example configuration.



- Click SQL Server 2005 Services, select the instance you have just created, right-click and select **Restart Service**.



#### 4.1.2.4 Create a special user on the SQL server that the TCS cluster will use to connect to the database

The user you will be creating in this step will be used by the Content Servers to connect to the SQL server external database. For security reasons, we recommend that you do not use the existing SA user account but create a new user account.

You may choose any username you want for this user. In this document, we will refer to this user as TCS\_DB\_USER.

- Using the sqlcmd utility, open a command prompt on the machine on which the SQL server is running.
- To connect to the SQL Server, type:  
`sqlcmd -S (local)\instance_name -E` to use a trusted connection,  
 or  
`sqlcmd -S (local)\instance_name -U login_id -P password` to connect using SQL authentication.  
 The *instance\_name* is the name you specified when creating an SQL Server instance.
- At the Command Utility prompt 1>, create a user by typing:  
`CREATE LOGIN TCS_DB_USER WITH PASSWORD='strong_password'`  
 and press Enter.
- Then type GO and press Enter.
- Type EXIT and press Enter to exit sqlcmd.

```
C:\Documents and Settings\Administrator>sqlcmd -S (local)\my_instance -E
1> CREATE LOGIN TCS_DB_USER WITH PASSWORD='strong_password'
2> GO
1>EXIT
```

For more information on using the sqlcmd utility, see the Microsoft article in the SQL Server 2005 Books Online: "sqlcmd Utility".

For more information on creating a user using CREATE LOGIN, see the Microsoft article in the SQL Server 2005 Books Online: "CREATE LOGIN (Transact-SQL)".

### 4.1.3 Configure the NAS

The Content Server cluster uses a share on the NAS as its media storage location. See the [System Requirements](#) section first to ensure that your NAS is compatible with TCS cluster system requirements.

The process of configuring the NAS consists of the following steps. Each step is described in a separate section:

1. Add the NAS to the same domain as the Content Servers.
2. Choose or create a domain account which the TCS cluster will use to access the share on the NAS, e.g. MYDOMAIN\TCS\_NAS\_USER.
3. Set up a share on the NAS.
4. Set permissions and security settings on the share.

#### 4.1.3.1 Add the NAS to the same domain as the Content Servers.

All Content Servers in cluster and the NAS must be added to the same Windows Active Directory domain.

#### 4.1.3.2 Choose or create a domain account which the TCS cluster will use to access the share on the NAS.

Choose or create a domain user. You may choose any username you want for this user. In this document, we will refer to this user as MYDOMAIN\TCS\_NAS\_USER. MYDOMAIN\TCS\_NAS\_USER will be used by the TCS cluster to access the NAS share.

Follow the instructions further on in this document to give this user administrative permission over all the Content Servers in a cluster as well as full control over the NAS share.

*Note: You will need to enter the username and password for MYDOMAIN\TCS\_NAS\_USER when you run the TCS wizard.*

#### 4.1.3.3 Set up a share on the NAS

1. Log in via Remote Desktop to the NAS.
2. Create a folder on the NAS.
3. Make this folder a shared folder.

*Note: You will need to enter the path to this share when you run the TCS cluster Wizard.*

#### 4.1.3.4 Set permissions and security settings on the share

All Content Servers and the domain account which the TCS cluster uses to access the share on the NAS must be given full control over the share. Failure to set up the NAS share correctly will cause the TCS wizard to fail.

1. Right-click the share and select **Sharing and Security**
  - a. Click **Permissions**
  - b. Click **Add**
  - c. Click **Object Types**
  - d. Select the Checkbox for Type – **Computers**
  - e. Enter all the DNS names of Content Servers you want to cluster (the names you registered them in the domain with).
  - f. Click **Check Names** and click **OK**.

- g. Enter the name of the **MYDOMAIN\TCS\_NAS\_USER** account.
    - h. Click **Check Names** and click **OK**.
    - i. Give each of the Content Servers and MYDOMAIN\TCS\_NAS\_USER full control over the share.
  2. Click the **Security** tab.
    - a. Click **Add**
    - b. Click **Object Types**
    - c. Select the Checkbox for Type – **Computers**
    - d. Enter all the DNS names of Content Servers you want to cluster (the names you registered them in the domain with).
    - e. Click **Check Names** and click **OK**.
    - f. Enter the name of the **MYDOMAIN\TCS\_NAS\_USER** account.
    - g. Click **Check Names** and click **OK**.
    - h. Give each of the Content Servers and MYDOMAIN\TCS\_NAS\_USER full control over the share under the Security Settings tab.

#### 4.1.4 Create a TCS cluster

In order to create a cluster of Content Servers, you need to run the TCS wizard from a Remote Desktop of one of the Content Servers to create a new cluster, then run the TCS wizard on all the remaining Content Servers to add them to the cluster.

**IF YOU ARE CLUSTERING CONTENT SERVERS WHICH HAVE EXISTING RECORDED CONTENT AND CONFIGURATIONS YOU WANT TO KEEP, THE ORDER IN WHICH YOU ADD CONTENT SERVERS TO THE CLUSTER IS IMPORTANT.**

Existing content and configurations (recording aliases, templates, call configurations, media servers) from the **FIRST** Content Server that you use to create a new cluster will be added and available to the cluster.

Content from the **SECOND** and any other Content Servers that you add to the cluster (by running the TCS wizard and choosing the option to **Add to an existing cluster**) will also be imported into the cluster, but not all of the configurations from those servers will be added.

- Configurations that will be added include media servers associated with conferences and categories associated with conferences.
- Configurations that will not be added include recording aliases, templates, call configurations, media servers not associated with conferences, categories not associated with conferences, LDAP servers and users.

The wizard will not move any media files which are not associated with the Content Server's database. That includes orphaned temporary files not used in any conferences, .tcb import or export files or files placed in the data folder by the user. These files will not be moved to the NAS from the local TCS disk drive and will be deleted. If moving media between NAS locations or from the NAS to a local TCS disk drive, these files will not be moved, but the wizard will not delete them.

##### 4.1.4.1 Introduction – the TCS wizard options

The TCS wizard available as a shortcut from the remote desktop of S3.3 Content Servers has the following options:

- Alternate Storage (NAS) Wizard for a standalone Content Server (not discussed in this document, see the *TCS Administrator Guide* for more information).
- **Cluster Management Wizard.**

If you select the Cluster Management Wizard on a standalone TCS, you will get those options:

- **Create a new cluster.**
- **Add to an existing Cluster.**

If you select the Cluster Management Wizard on a clustered TCS, you will get those options:

- **Generate Cluster Settings File.**
- **Configure Load Balancer Configuration.**
- **Update Cluster Settings.**
- **Remove from Cluster.**

##### 4.1.4.2 User accounts the TCS wizard can run under

The TCS wizard can run under the following user accounts:

- a domain administrator account,
- the special domain account you set up in the [Configure the NAS](#) section, MYDOMAIN\TCS\_NAS\_USER,
- the local default administrator account.

**NOTE:**

All instructions in this document assume that the TCS wizard is run under a domain administrator account.

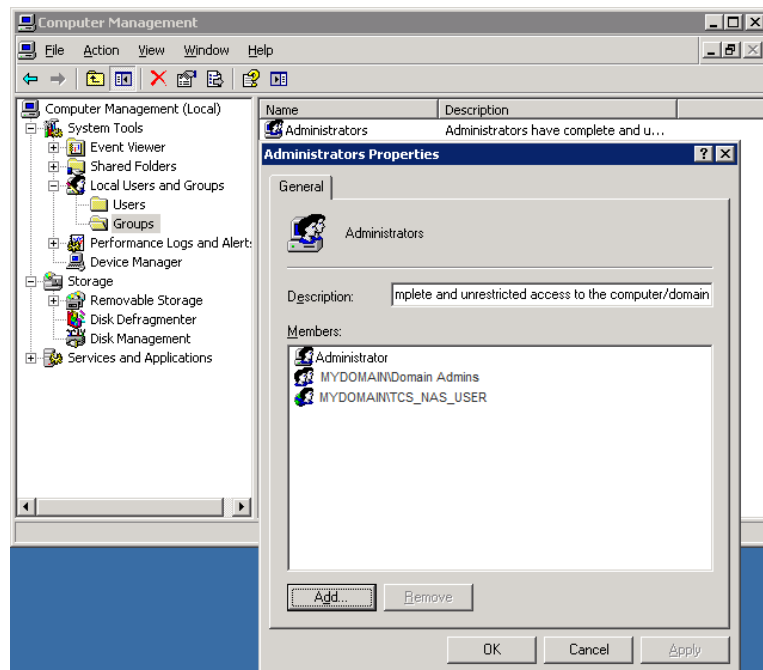
**4.1.4.3 Information you need before you can run the TCS wizard**

Before you run the TCS wizard to create a new cluster, ensure you have the following information available:

- External SQL server IP address or name.
- Name of the SQL database instance.
- The TCP/IP port you have chosen for your instance.  
The TCS Wizard will use this TCP/IP port to connect to your instance. The wizard will not check if the port you specified is the correct one for your instance, it will connect to whatever database instance is available from that port. You must make sure that the port you enter in the TCS Wizard is the port you specified for your instance and that no other instance is using it.
- The password for SA user, or a username and password of an SQL user with create and alter privileges (not TCS\_DB\_USER).
- The username and password of TCS\_DB\_USER.
- Path to the NAS share in the format of \\servername\sharefolder (IP addresses cannot be used for the NAS path).
- Username and password of MYDOMAIN\TCS\_NAS\_USER domain account.

**4.1.4.4 Create a new cluster**

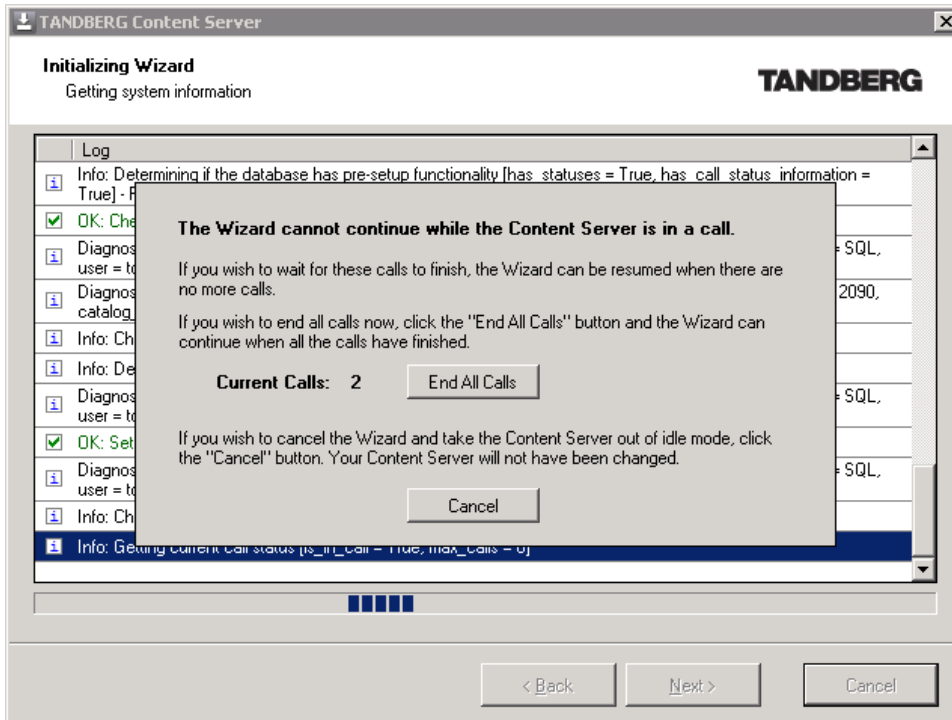
1. Log in via Remote Desktop as a domain administrator to the first Content Server that you want to cluster.
2. Go to **Computer Management>System Tools>Local Users and Groups>Groups>Administrators** and add the domain account MYDOMAIN\TCS\_NAS\_USER to the Administrators group on the Content Server.



3. Double click the TCS Wizard icon on the desktop or open **All Programs> TANDBERG>Content Server>TCS Wizard**.



4. Click Next from the Welcome screen.
5. The wizard will display an overview screen and then run through its initialization phase. If calls are in progress on this TCS, the wizard cannot continue, so you will have the option to either end the calls or cancel the wizard. End the calls and continue running the wizard.

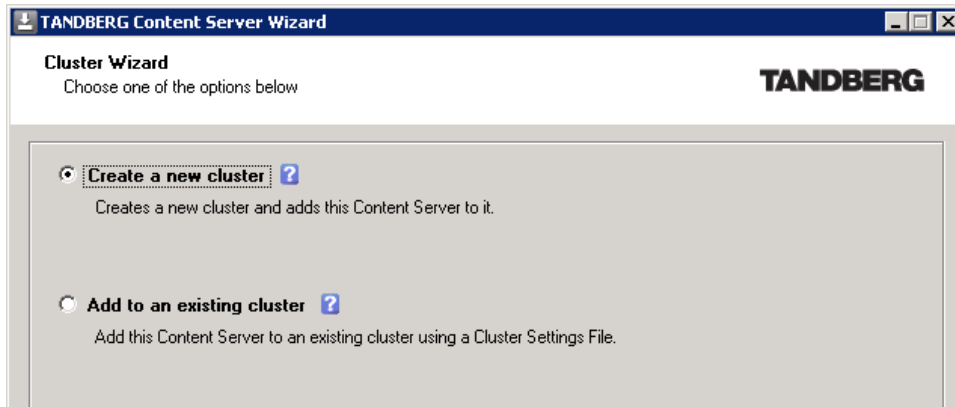


6. Once the wizard has finished its initialization stage, it will put the Content Server in Idle mode, where no calls can be made and no transcoded outputs are processed. The Content Server will return to Online mode once the wizard has been completed or cancelled.
7. Select the **Cluster Management Wizard** and click Next.



8. The wizard will then check some of the cluster prerequisites. Click Next.

9. Select **Create a new cluster** and click Next.



10. Read the following informational screen, then click Next.

11. At the **Connect to an external SQL Server Database** screen, enter the information for the database instance you have set up:
- SQL server IP address or name,
  - Name of the database instance,
  - TCS/IP port chosen for the instance,
  - Assign a database (catalog) prefix to your instance at this stage. It can be any string you want. The wizard will append '3' to the end of the string you have specified and will use this prefix to distinguish this database instance from other versions which may in time be added to the instance.
  - Username and password of the SA user, or a username and password of another SQL user with create and alter privileges (not TCS\_DB\_USER). The credentials of the SA user are used to create and configure the cluster's database at the time this wizard is run. The TCS does not store the credentials of the SA user.

12. Click Next at the database configuration informational screen.

- Enter the username and password of the database user you have created that the TCS will use to connect to the database, e.g. TCS\_DB\_USER.

The screenshot shows a window titled 'TANDBERG Content Server'. The main heading is 'Cluster: SQL Server Database connection' with the instruction 'Enter the user name and password of the database user'. Below this, there is a section titled 'Database Credentials' with the instruction 'Enter the user name and password of the database user that the Content Server will use to connect to this database.' There are two input fields: 'User name' and 'Password', each with a blue question mark icon to its right.

- Click Next from the next informational screen.

- Enter the path for the NAS share you have set up in the form \\server\share. Make sure that you enter the NAS server computer name, not the IP address of the NAS.

The screenshot shows a window titled 'TANDBERG Content Server'. The main heading is 'Cluster: Alternate Storage Location' with the instruction 'Enter location of the Alternate Storage for the cluster'. Below this, there is a section titled 'Alternate Storage Location' with the instruction 'Enter the remote server information in the form: \\Server\Share'. There is one input field labeled 'Path' with a blue question mark icon to its right.

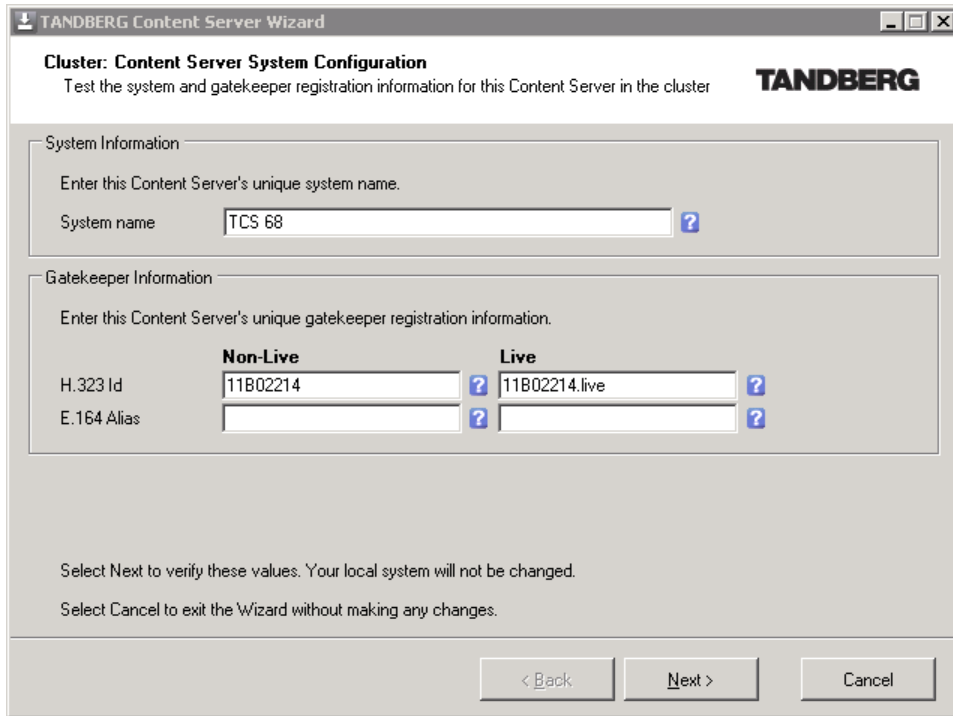
- Click Next from the next informational screen.

- At the IIS Anonymous User Account screen, enter the username and password of the domain account you have created that the TCS will use to access the share on the NAS, e.g. MYDOMAIN\TCS\_NAS\_USER.

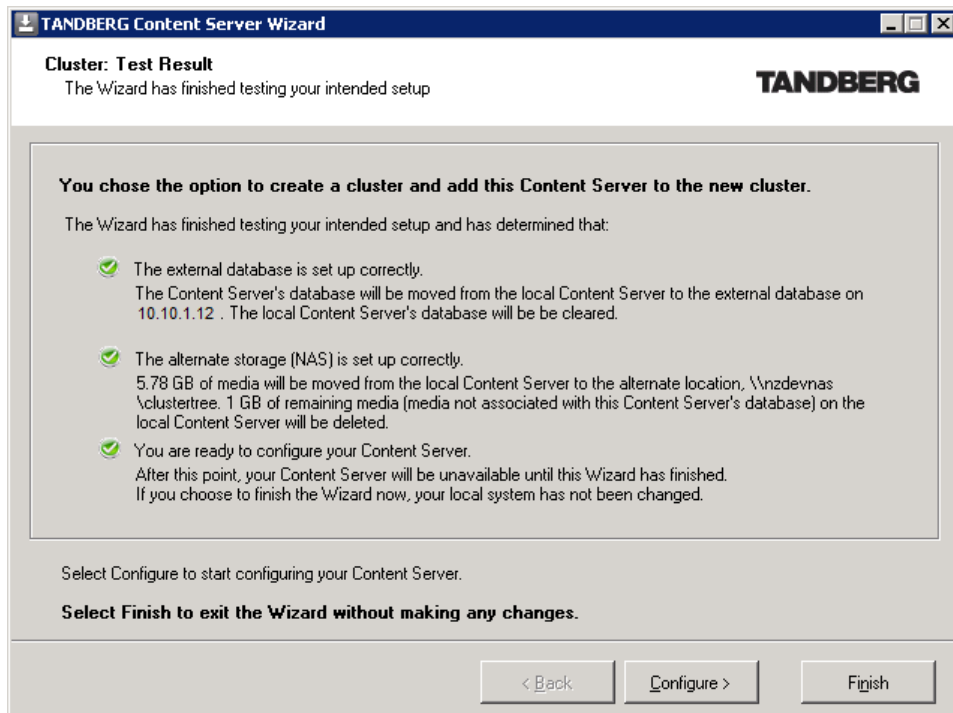
The screenshot shows a window titled 'TANDBERG Content Server'. The main heading is 'Cluster: IIS Anonymous User Account' with the instruction 'Domain account for the IIS to use to access the NAS'. Below this, there is a section titled 'IIS Anonymous User Account' with the instruction 'Enter the user name and password of the domain account that IIS will use access the NAS in the form DOMAIN\Username.' There are two input fields: 'User name' and 'Password', each with a blue question mark icon to its right.

- Click Next from the next informational screen.

- At the Content Server System Configuration screen, you can change the **System name** and default **Non-Live** and **Live** system aliases for this Content Server. The defaults suggested by the wizard are based on the current settings of the standalone TCS. For factory new TCSs, it will be <serial number> for the Non-Live H.323ID and <serial number.live> for the Live H.323ID. You will be able to change the system name and aliases for this Content Server from the Server Overview page after you have finished setting up the cluster.

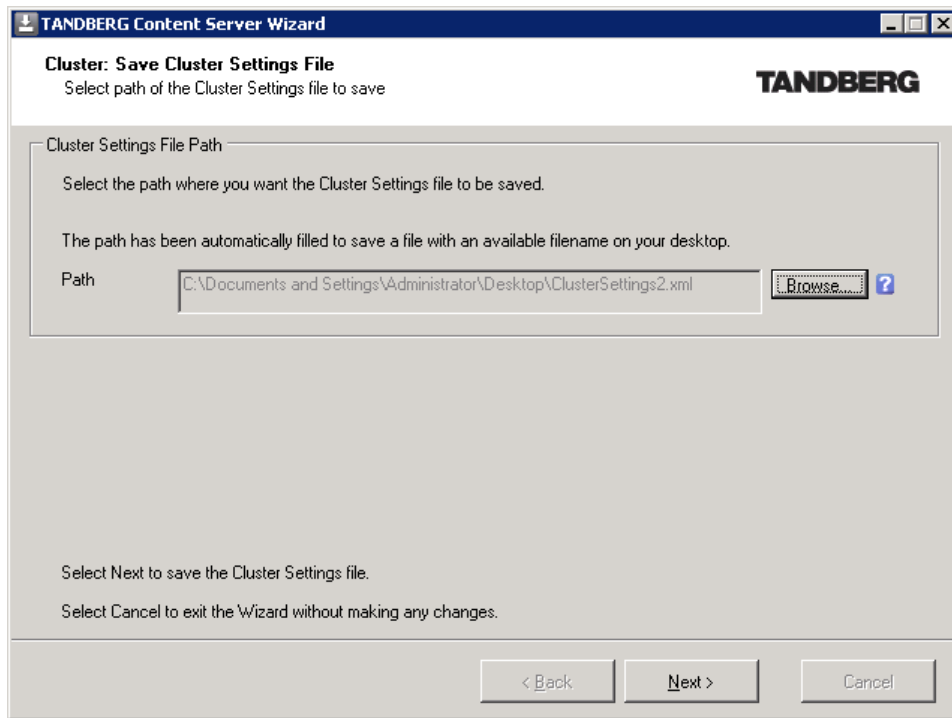


20. At the Content Server Checks screen, confirm that the Content Server has been backed up and that antivirus software has been stopped (if it is installed). If the TCS has not been backed up and antivirus software has not been stopped, cancel the wizard and complete those actions, then run the wizard again. Your system will not have changed if you select Cancel.
21. The Cluster: Test Result screen will display information about your intended setup. If all tests have been successful, click **Configure** to configure the cluster. You may also click **Finish** to exit the wizard without creating the cluster or making any changes. If any of the tests failed, you will not be able to continue to run the wizard. Note that in the screenshot below "media files not associated with the Content Server's database" include orphaned temporary files not used in any conferences or .tcb import or export files. These files will not be moved to the NAS and will be deleted from the local disk.



22. The wizard will configure your system and move the media files to the NAS share. This may take some time, depending on the amount of media that has to be moved to the NAS.
23. You will also be prompted to save the Cluster Settings file. Browse to the location you want to save the file to and click Save.

You will also be able to generate the Cluster Settings file by running this TCS wizard again after you have finished creating the cluster (see [Generate a Cluster Settings file](#)). You will need the Cluster Settings file if you want to add other Content Servers to this cluster.



24. Click Finish to exit the Wizard. The log location for the wizard will be displayed on this screen, should you need it.

You have now successfully setup a new cluster with one TANDBERG Content Server. You can now add other Content Servers to this existing cluster. Please note that your cluster will not be able to make calls until you have registered it to a gatekeeper.

#### 4.1.5 Add a Content Server to an existing cluster

To add a Content Server to an existing cluster, check the following prerequisites:

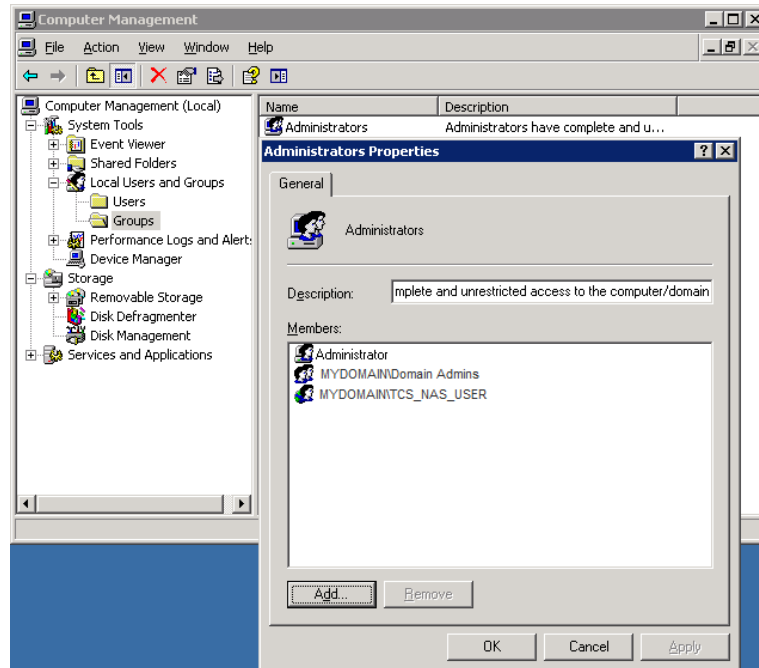
- Ensure that the Content Server you are adding meets the criteria described in the [Content Server Prerequisites](#) section.
- The Content Server you are adding must be given full control over the NAS share you created (see [Set permissions and security settings on the share](#) in the *Configure the NAS* section), otherwise adding the Content Server to an existing cluster will fail.
- Ensure that you have copied a Cluster Settings file to the desktop of the Content Server you are adding to an existing cluster. You can generate a Cluster Settings file at any time by running a TCS wizard on any of the Content Servers which are already clustered.

**NOTE:**

Content from the **SECOND** and any other Content Servers that you add to the cluster (by running the TCS wizard and selecting the option to **Add to an existing cluster**) will be imported into the cluster, but not all of the configurations from those servers will be added. Configurations that will be added include media servers associated with conferences and categories associated with conferences. Configurations that will not be added include recording aliases, templates, call configurations, media servers not associated with conferences, categories not associated with conferences, LDAP servers and users.

After you have checked that the prerequisites have been met, run the TCS wizard on the TANDBERG Content Server that you want to add to the cluster.

1. Log in via Remote Desktop as a domain administrator to the Content Server that you want to add to an existing cluster.
2. Go to **Computer Management>System Tools>Local Users and Groups>Groups>Administrators** and add the domain account MYDOMAIN\TCS\_NAS\_USER to the Administrators group on the Content Server.

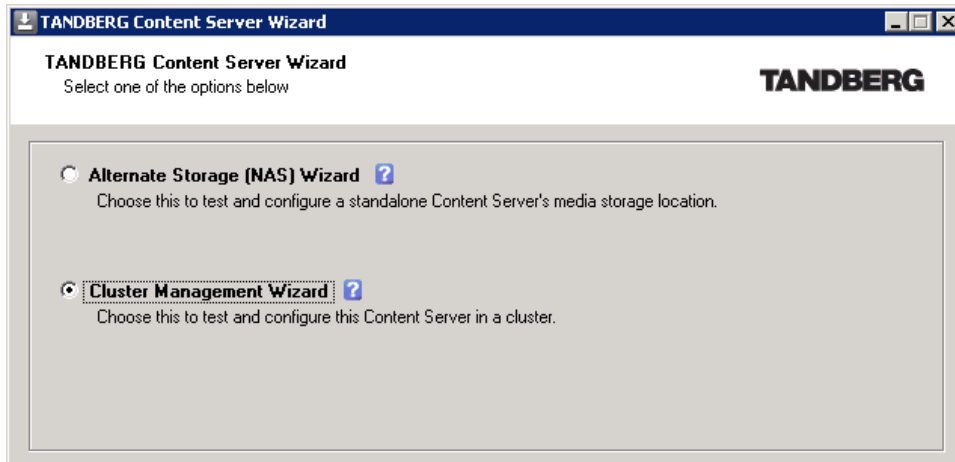


3. Double click the TCS Wizard icon on the desktop or open **All Programs>TANDBERG>Content Server>TCS Wizard**.

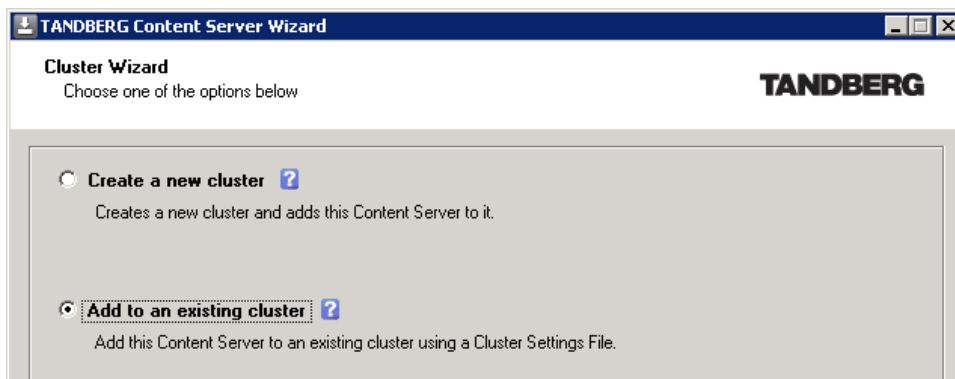


1. Click Next from the Welcome screen. The wizard will display an overview screen and then run through its initialization phase. If calls are in progress on this TCS, the Wizard cannot continue, so you will have the option to either end the calls or cancel the wizard. End the calls and continue running the wizard.

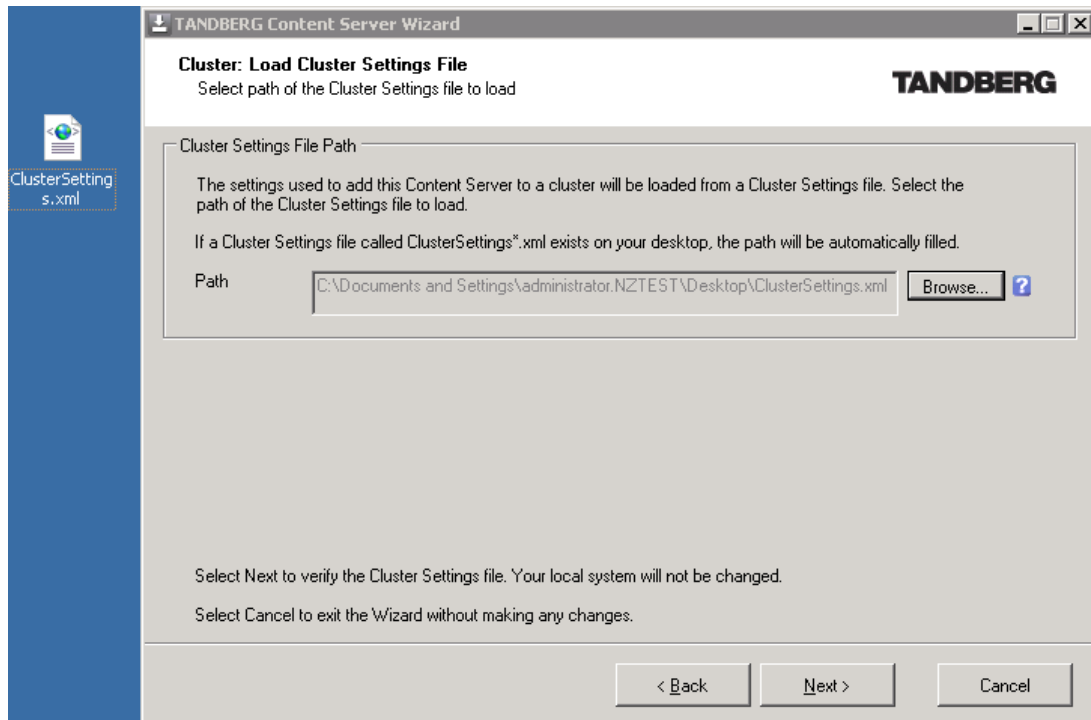
2. Once the wizard has finished its initialization stage, it will put the Content Server in Idle mode, where no calls can be made and no transcoded outputs are processed. The Content Server will return to Online mode once the Wizard has been completed or cancelled.
3. Select the **Cluster Management Wizard** and click Next.



4. The wizard will then check some of the cluster prerequisites. Click Next.
5. Select **Add to an existing cluster**.



6. When prompted, browse to the Cluster Settings file you copied to the desktop.



7. At the Content Server System Configuration screen, you can change the **System name** and default **Non-Live** and **Live** system aliases for this Content Server. The defaults suggested by the wizard are based on the current settings of the standalone TCS. For factory new TCSs, it will be <serial number> for the Non-Live H.323ID and <serial number.live> for the Live H.323ID. You will be able to change the system name and aliases for this Content Server from the Server Overview page after you have finished setting up the cluster.
8. At the Content Server Checks screen, confirm that the Content Server has been backed up and that antivirus software has been stopped (if it is installed). If the TCS has not been backed up and antivirus software has not been stopped, cancel the wizard and complete those actions, then run the wizard again.
9. The Cluster: Test Result screen will display information about your intended setup and the amount of media that will be moved from this Content Server to the media location for the cluster (NAS). If all tests have been successful, click **Configure** to configure the Content Server and add it to the cluster. You may also click Finish to exit the wizard without adding to the cluster or making any changes. If any of the tests failed, you will not be able to continue running the wizard.
10. The wizard will configure your system and add the Content Server to the cluster. This may take some time, depending on the amount of media that has to be moved to the NAS.
11. Click **Finish** to exit the wizard. The log location for the wizard will be displayed on this screen, should you need it.

You have now successfully added another TCS to a cluster. You need to repeat this process for each new Content Server you want to add to the cluster.

## 4.1.6 Configure gatekeeper registration

After all the Content Servers have been added to the cluster, you need to configure your gatekeeper registration before you can start making calls. The gatekeeper is permanently enabled for a TCS cluster – it is not possible to disable the gatekeeper functionality.

1. Log in to the web interface of any of the Content Servers in a cluster as an administrator, and select **Site Settings** from the **Administrator Settings** menu.
2. Enter a gatekeeper address.
3. Enter Live and Non-Live H.323 and E.164 gateway prefixes.
4. Check the Q931 and Ras ports – the H.323 call setup and registration ports. By default, a TCS cluster uses a range of 1719 to 1722 so it can independently register Out Of Resources for Live (live transcoded) and Non-Live (offline transcoded) calls. The ports are editable because it is possible to instruct the cluster to listen on different ports, e.g. non standard ones. Ensure that the ports you enter do not conflict with each other or with ports used by other services on the TCS, otherwise you will not be able to make calls.
5. Save **Site Settings** and wait until **Current Status** displays that registration has been successful.

If you are experiencing problems registering to the gatekeeper, you need to check if you have duplicate gateway prefixes or system H.323 or E.164 aliases which may be causing the gatekeeper to reject registrations.

System H.323 and E.164 aliases for each Content Server which were entered at the time of running the TCS wizard can be changed by following these steps:

1. Click the text link: **Click here to set the H.323 ID and E.164 Alias for all Content Servers in the cluster** to go to the **Cluster Overview** page.
2. Click **Details** next to the Content Server whose system aliases you want to edit. This will bring you to the **Server Overview** page for this Content Server.
3. Update the system aliases for this Content Server and click **Save**.

You will need to repeat this for each Content Server.

#### 4.1.6.1 What are Live and Non-Live prefixes and why does a cluster need them?

A TCS cluster needs two gateway registrations with separate prefixes - a Live gateway prefix for live transcoded calls, and a Non-Live gateway prefix for offline transcoded calls, to ensure good load balancing of both types of calls across the cluster by the gatekeeper.

Additionally, for registrations with the VCS, each Content Server also needs four system aliases - live and non-live H.323 aliases and E.164 system aliases. It is important that each of those aliases is unique on that Content Server and on the TCS cluster (i.e., that there are no duplicates).

See *Inbound H.323 call routing* in the [Main features](#) section for more details.

#### 4.1.7 Configure domain authentication

The recommended authentication mode for the TCS cluster is domain authentication. This will ensure that Active Directory users can log in to the cluster's network load balanced frontend address.

Go to **Administrator Settings>Site Settings** and select **Domain** in the Authentication section. Add details for your domain's LDAP servers. Refer to the *TANDBERG Content Server Administrator Guide* for more information on how to configure Domain authentication.

The use of local authentication is not recommended in a TCS cluster, as local users would have to be added to every Content Server in the cluster to be able to view pages served from the network load balanced interface.

#### 4.1.8 Configure Network Load Balancing (NLB)

To ensure that web page requests are spread across all Content Servers in a cluster rather than going to one specific Content Server interface, it is recommended that you set up a NLB solution. The Virtual IP address (VIP) you set up for the cluster on the load balancer should be used to log in to the cluster interface rather than using individual Content Server IP addresses. The VIP of the cluster is also referred to as the network load balanced frontend address of the cluster.

The load balancer as configured in this documentation works in Direct Routing mode where the load balancer simply changes the MAC address of a packet it receives to that of the server it wishes to send it on to. In order for the TCS to respond to this request it must pretend to be the VIP specified in the request and yet not advertise this address to the rest of the network (as all the other Content Servers also think they are the VIP). To do this you need to install a loopback adapter and set its IP to be that of the VIP.

In order to set up network load balancing for a TCS cluster, you need to:

1. Configure a load balancer.
2. Set up the loopback adapter on each TCS in cluster.
3. Enter the virtual address of the cluster (VIP) as the **Frontend Address** on the TCS.

##### 4.1.8.1 Configure a load balancer

The following documentation is based on Loadbalancer.org Enterprise version and should be applicable to any Loadbalancer.org product.

The steps below outline the process for configuring a load balanced cluster of three Content Servers (with example IPs of 10.10.3.103, 10.10.3.98, 10.10.3.149).

1. Go to the web interface for the Loadbalancer using the IP address you assigned to the device.
2. Set up a Virtual Server.

The virtual server represents the entire cluster thus it also has a virtual IP address (VIP) that will be accessed by Content Server users. The load balancer will receive requests on this IP and forward it to one of the servers in the cluster. The VIP in this example is 10.10.2.111. In the example we have set up four virtual servers for the cluster, one for each port needed for a TCS to operate. The four ports are 80 (HTTP), 443 (HTTPS), 8080 (Windows Media HTTP streaming) and 554 (RTSP). If you want to load balance MMS streams, you also need to set up a virtual server for port 1755.

- 2.1. To set up the virtual server go to **Edit Configuration > Virtual Servers**. Click **Add a new Virtual Server**. Fill in a label with an appropriate name (you might want to include the protocol name here). Next enter the VIP you wish to use followed by the port for this virtual server, in this example enter 10.10.2.111:80 for the HTTP virtual server. Set the persistent option to **Yes**.

- 2.2. Create one of these virtual servers for each of the ports you want to load balance (using different labels each time) but the same VIP. Your final configuration should look as follows:

EDIT CONFIGURATION > VIRTUAL SERVERS			
[ Add a new Virtual Server ]		[ Real Servers ]	
VIP1 HTTP	10.10.2.111:80	[ Modify ]	[ Delete ]
VIP2 HTTPS	10.10.2.111:443	[ Modify ]	[ Delete ]
VIP3 MMS	10.10.2.111:8080	[ Modify ]	[ Delete ]
VIP4 RTSP	10.10.2.111:554	[ Modify ]	[ Delete ]

3. Configure the Virtual Server.
  - 3.1. Click **Modify** for each of the four servers.
  - 3.2. Change the **Check Type** to **connect** and ensure the **Service to check** is set to none.
  - 3.3. The **Check Port** should be set to: 80 for HTTP, 8080 for Windows Media HTTP streaming, 554 for RTSP, 443 for HTTPS and 1755 for MMS.
  - 3.4. Leave the other options at their default values. Your configuration for this virtual server should look similar to the HTTP example shown below:

**EDIT CONFIGURATION > VIRTUAL SERVERS**

Label	<input type="text" value="HTTP"/>	?
Virtual Server (ipaddress:port)	<input type="text" value="10.10.2.111:80"/>	?
Persistent	<input type="text" value="yes"/>	?
Persistence Timeout	<input type="text" value="300"/>	?
Scheduler	<input type="text" value="wrr"/>	?
Fallback Server	<input type="text" value="127.0.0.1:80"/>	?
Check Type	<input type="text" value="connect"/>	?
Service to check	<input type="text" value="none"/>	?
Check Port	<input type="text" value="80"/>	?
Check Command	<input type="text"/>	?
Virtual Host	<input type="text"/>	?
Login	<input type="text"/>	?
Password	<input type="text"/>	?
Protocol	<input type="text" value="tcp"/>	?
Granularity	<input type="text" value="255.255.255.255"/>	?
File to check	<input type="text" value="/tcs/systemunit.xml"/>	?
Response expected	<input type="text" value="Active"/>	?
Email Alerts	<input type="text"/>	?
Forwarding Method	<input type="text" value="DR"/>	?
Feedback Method	<input type="text" value="none"/>	?

4. Add each of the three Content Servers in the cluster into each of the virtual servers you have just set up.
  - 4.1. Go to **Edit Configuration > Real Servers**.
  - 4.2. For the first virtual server in the list click **Add a new Real Server**. Enter a label for this TCS (this will help with administration) as well as the server's IP address followed by the same port as that used for the virtual server (i.e. 80 for the HTTP virtual server).
  - 4.3. Ensure the weight is **1** (a weight of 0 will disable the server so that it receives no traffic) and that the forwarding method is set to **DR**.
  - 4.4. Repeat this process adding each server from the cluster to each of the virtual servers. The final configuration should look similar to that shown below:

EDIT CONFIGURATION > REAL SERVERS				
VIP 1	<b>HTTP</b>	(10.10.2.111:80)	[ Add a new Real Server ]	
RIP 10	<i>Hypvmcs10</i>	<b>10.10.3.103:80</b>	?	[ Modify ] [ Delete ]
RIP 9	<i>Hypvmcs9</i>	<b>10.10.3.98:80</b>	?	[ Modify ] [ Delete ]
RIP 8	<i>Hypvmcs8</i>	<b>10.10.3.149:80</b>	?	[ Modify ] [ Delete ]
VIP 2	<b>HTTPS</b>	(10.10.2.111:443)	[ Add a new Real Server ]	
RIP 10	<i>Hypvmcs10</i>	<b>10.10.3.103:443</b>	?	[ Modify ] [ Delete ]
RIP 9	<i>Hypvmcs9</i>	<b>10.10.3.98:443</b>	?	[ Modify ] [ Delete ]
RIP 8	<i>Hypvmcs8</i>	<b>10.10.3.149:443</b>	?	[ Modify ] [ Delete ]
VIP 3	<b>MMS</b>	(10.10.2.111:8080)	[ Add a new Real Server ]	
RIP 10	<i>Hypvmcs10</i>	<b>10.10.3.103:8080</b>	?	[ Modify ] [ Delete ]
RIP 9	<i>Hypvmcs9</i>	<b>10.10.3.98:8080</b>	?	[ Modify ] [ Delete ]
RIP 8	<i>Hypvmcs8</i>	<b>10.10.3.149:8080</b>	?	[ Modify ] [ Delete ]
VIP 4	<b>RTSP</b>	(10.10.2.111:554)	[ Add a new Real Server ]	
RIP 10	<i>Hypvmcs10</i>	<b>10.10.3.103:554</b>	?	[ Modify ] [ Delete ]
RIP 9	<i>Hypvmcs9</i>	<b>10.10.3.98:554</b>	?	[ Modify ] [ Delete ]
RIP 8	<i>Hypvmcs8</i>	<b>10.10.3.149:554</b>	?	[ Modify ] [ Delete ]
[ Virtual Servers ]				

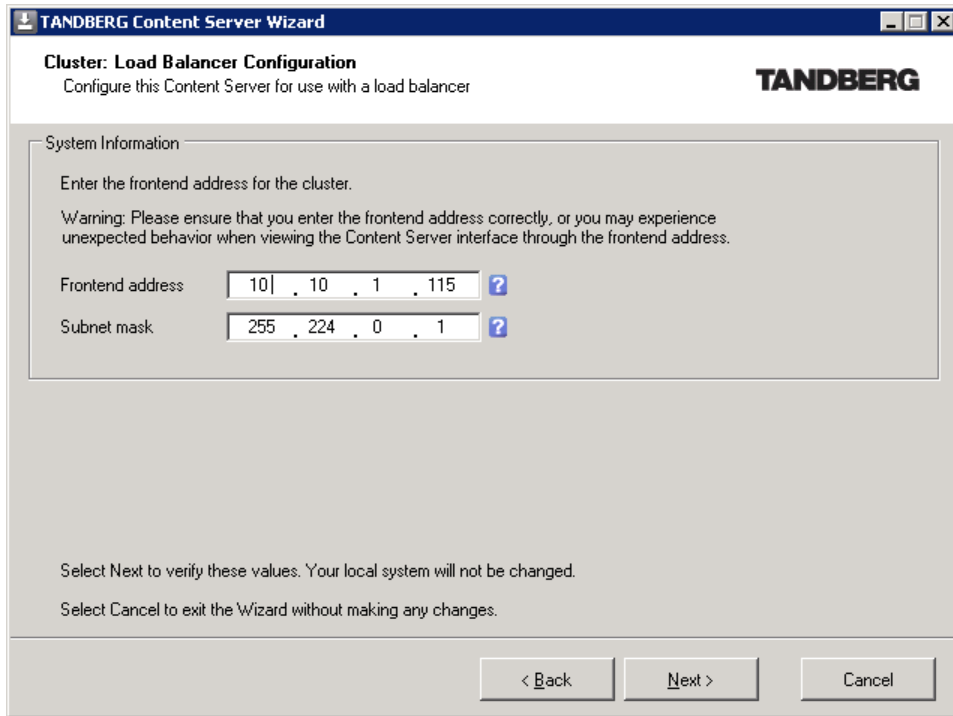
#### 4.1.8.2 Set up a loopback adapter on each TCS in cluster

The TCS wizard is used to set up a loopback adapter for network load balancing. This operation must be repeated on each TCS in the cluster.

1. Log in via Remote Desktop to the Content Server and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the **Cluster Management Wizard** option will be available.
3. Select **Configure Load Balancer Configuration**.
4. Enter the virtual IP (VIP) address of the cluster you set up on the load balancer and the subnet mask of your network.

**NOTE:**

Ensure that you enter the correct IP address. Failure to do so will result in unexpected behavior when accessing the cluster interface.



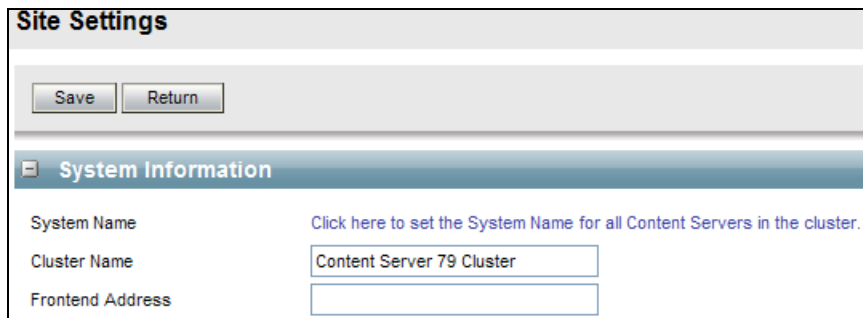
5. Click Next.
6. Click **Configure** for the wizard to install the loopback adapter.
7. Click Finish.

Repeat this procedure for all the other Content Servers in the cluster.

See also the [Update Load Balancer Configuration](#) section for details on how to update the load balancer configuration on a TCS.

#### 4.1.8.3 Enter the virtual IP address of the cluster (VIP) as the Frontend Address on the TCS

The virtual IP address or DNS name of the cluster as set up on the load balancer must be entered in **Administrator Settings>Site Settings> Frontend Address** field. This will ensure that all conference links generated by the TCS and on TMS will use that address.



## 5 MANAGE A TCS CLUSTER

This section describes those cluster management functionalities which are different from a standalone TCS. The purpose of this document is to supplement, but not replace, general purpose TCS documentation.

See the *TCS User Guide* for more information on viewing and editing conferences.

See the *TCS Administrator Guide* for general information on common administrative tasks.

This section describes how to:

1. Access administrative pages in cluster.
2. Get an overview of the cluster status.
3. Edit information specific to each Content Server in cluster.
4. Edit information common to all Content Servers in cluster.
5. Generate a Cluster Settings file.
6. Update Load Balancer Configuration.
7. Update Cluster Settings.

### 5.1 Access administrative pages in cluster

You can access the web interface of a TCS cluster by logging in to the IP address or DNS name of a specific Content Server in the cluster, or by logging in to the network load balanced frontend address of the cluster. The menu items available in the Administrator Settings menu will vary depending on the address you are logged in to.

If you log in to a specific Content Server in the cluster by its IP address or DNS name, the **Administrator Settings** menu includes the following menu items: Site Settings, Users, Templates, Media Servers, Call Configurations, Categories, Import Conference, Server Logs, Server Overview, Cluster Overview and Windows Server.

If you log in to a TCS cluster using the network load balanced frontend address, the **Administrator Settings** menu includes the following menu items: Site Settings, Users, Templates, Media Servers, Call Configurations, Categories, Import Conference, and Cluster Overview.

Server Logs, Server Overview and Windows Server are menu items specific to each Content Server. Links to those menu items can be accessed from the **Cluster Overview** page regardless of the address you are logged in to.

### 5.2 Get an overview of the cluster status

#### 5.2.1 Cluster Overview page

Go to **Administrator Settings>Cluster Overview**.

The Cluster Overview page:

- Lists the System names and IP addresses of all TCSs in cluster.
- Displays a link to the **Server Overview** page for each Content Server. Click **Details** next to the System Name to go to the **Server Overview** for this Content Server.
- Reports the total number of current calls for the cluster and for each Content Server.
- Reports the total number of offline transcodes for the cluster and for each Content Server.
- Reports the **Server Mode** for each Content Server.
- Reports the **Status** for each Content Server. The status reported on this page is a composite of the Content Engine and Transcode Engine status. If both services are running, then status

on the Cluster Overview page displays a green tick, meaning that all is OK. If one of those services is not running, the status on Cluster Overview page for this server and for the whole cluster displays a red exclamation mark. Go to the **Server Overview** page for this Content Server to see more details and check which of the services is not running.

- Displays links to each Content Server’s logs and Windows Server administration interface.
- Allows you to **End all Calls** on the whole cluster. If you want to end calls on a particular TCS only, you can do this from the Server Overview page for that Content Server.
- Allows you to put a Content Server in Maintenance mode. When the Content Server is in Maintenance mode, no new calls will be accepted on that server but current calls and jobs will continue until completed. The other TCSs in the cluster will continue working as usual. Maintenance mode should be used to ensure no new calls are made to a Content Server, for example, if you want to defragment its drive, run a Windows security update installer or update antivirus software on that Content Server. You should also put a Content Server in Maintenance mode (after ending current calls on that box) if you need to shut it down and move it to another location.

Click **Enter maintenance mode** button. The button label will change to **Rejoin cluster**, and the Server Mode will display Maintenance. Once you have finished maintenance on the server, click the Rejoin cluster button. The button label will change to Enter maintenance mode and Server Mode will display Online. This means that the Content Server is now ready to receive calls.

System Name	IP Address	Calls	Transcodes	Server Mode	Status	Links	
<b>Overview</b>		<b>8 (7 live streaming)</b>	<b>4</b>				<input type="button" value="End all calls"/>
TANDBERG Content Server 49A01	10.10.1.1		1	Online		Logs   Windows Server	<input type="button" value="Enter maintenance mode"/>
TANDBERG Content Server 49A02	10.10.1.2		1	Online		Logs   Windows Server	<input type="button" value="Enter maintenance mode"/>
TANDBERG Content Server 49A021	10.10.1.3		1	Online		Logs   Windows Server	<input type="button" value="Enter maintenance mode"/>
TANDBERG Content Server 49A00	10.10.1.4		1	Online		Logs   Windows Server	<input type="button" value="Enter maintenance mode"/>

### 5.2.2 Server Overview

Go to **Administrator Settings>Server Overview**.

The Server Overview page provides some additional information relevant to the cluster, such as:

- Total disk space and free disk space on the cluster media storage location (in addition to the disk space information for the C and E drives of this Content Server).

Note that in the screenshot below, remaining disk space on the NAS is below the critical 10% level and should be attended to. Once free disk space on that share falls below 5%, the cluster will stop receiving calls or processing offline transcoded jobs.

Path	Total Disk Space	Free Disk Space	Percentage Free
C	14.6 GB	8.49 GB	58%
E	203 GB	80.7 GB	40%
\\NAS\SHARE	101 GB	8.73 GB	9%

- Database Data Source – displays the address of the external database server, port and instance name.
- Database Name – displays the database (catalog) prefix you entered when you created the cluster and a suffix added by the TCS wizard ('3').
- Cluster Media Storage Location – displays the external NAS share name.

Database Location	
Database Data Source	External on 10.10.2.10 ,3050\clustertree
Database Name	fred3
Media Storage Location	
To change the current media storage location, log in to the TANDBERG Content Server via remote desktop and run the TCS Wizard.	
Media Storage Location	External on \\NAS\SHARE

## 5.3 Edit information specific to each Content Server in cluster.

Go to **Administrator Settings>Server Overview** page to edit information specific to each Content Server in a cluster.

This includes:

- System Name.
- Non-Live and Live H.323ID and E.164 system aliases.  
Non-Live and Live system aliases are required for registering to the gatekeeper.  
Note that it is not recommended to use those system aliases for dialing the cluster, as they will always (and only) be routed to a specific Content Server. Only calls made to recording aliases will be balanced across the cluster by the gatekeeper.

Server Overview		
<input type="button" value="Save"/> <input type="button" value="Return"/>		
System Information		
System Name	<input type="text" value="TCS 68"/>	
	Non-Live	Live
H.323 ID	<input type="text" value="11B0221468"/>	<input type="text" value="11B0221468.live"/>
E.164 Alias	<input type="text" value="1102214680002"/>	<input type="text" value="1102214680001"/>

Any changes made to the **System Name** and **Non-Live** and **Live** system aliases fields will only be applied to the Content Server which is not currently in call. Changes cannot be applied to a Content Server which is in call, so saving changes on this page will automatically put this server in Configuration Reload mode.

### NOTE:

In Configuration Reload mode incoming calls are not accepted and outgoing calls cannot be made from that Content Server.

Once all current calls are finished, the new settings are applied and Content Server mode changes back to Online.

The administrator may also choose to override Configuration Reload mode and apply changes immediately by ending calls manually on this Content Server. Clicking on **End All Calls** from the **Server Overview** page will stop all calls on this Content Server. When calls have ended, new settings will be applied to this Content Server and it will be in Online mode again, ready to accept new calls.

## 5.4 Edit information common to all Content Servers in cluster.

Any changes made in Site Settings, Users, Templates, Media Servers, Call Configurations, Categories, Import Conference and Cluster Overview are applied to all Content Servers in the cluster through the shared database. This section highlights some exceptions and special considerations when administering the cluster.

### 5.4.1 Site Settings

The **Administrator Settings>Site Settings** page is available for editing even if Content Servers are in call. Most settings from the Site Settings page can be changed and applied while Content Servers are in call.

The exceptions are:

- Cluster name
- Gatekeeper settings
- Advanced H.323 settings
- Default Recording Alias

Any changes made in those fields will only be applied to Content Servers which are not currently in call. Changes cannot be applied to Content Servers which are in call, so saving Site Settings will automatically put those servers in Configuration Reload mode.

#### NOTE:

In Configuration Reload mode incoming calls are not accepted and outgoing calls cannot be made from that Content Server.

Once all current calls are finished, the new settings are applied and the Content Server mode changes back to Online.

The administrator may also choose to override the Configuration Reload mode and apply changes immediately by ending calls manually on all Content Servers in call. Clicking on **End All Calls** from the **Cluster Overview** page will stop all calls on the cluster. When calls have ended, new settings will be applied to the Content Server and all Content Servers will be in Online mode again, ready to accept new calls.

#### 5.4.1.1 API

The clustering functionality requires that API be enabled. It is not possible to disable the API when Content Servers are clustered. It is important to ensure that the API password is changed from default on setup.

API	
API Enabled	<input checked="" type="checkbox"/> When in a cluster the API must be enabled.
User Name	admin
Password	.....
Password Confirm	.....

## 5.4.2 Import Conference

When importing conferences smaller than 2GB, use the network load balanced frontend address for importing conferences uploaded through the web interface.

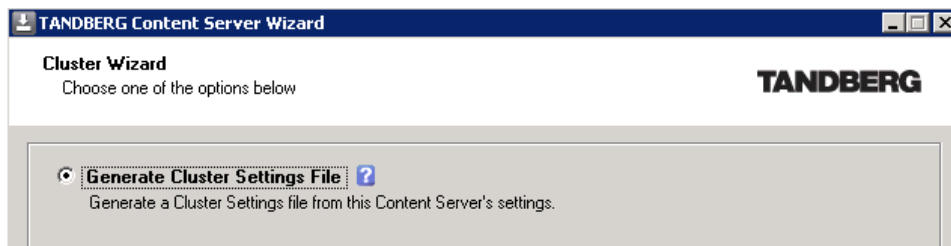
When importing conferences over 2GB in size, you need to place the import .tcb file in the Imports folder on a desktop of one of the clustered Content Servers. You then need to log in to the web interface of this Content Server (using its IP address or DNS name) to import the conference you uploaded. Once imported, the conference will be available to the whole cluster. However, the import file will only be visible on the Import Conference page of the Content Server to which it was uploaded.

## 5.5 Generate a Cluster Settings file

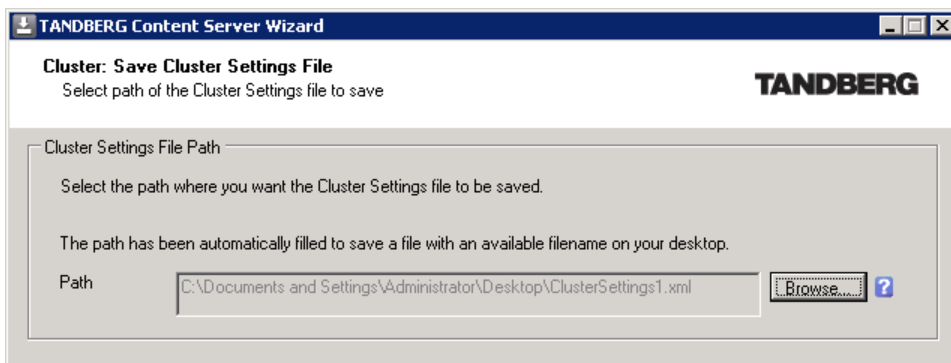
You need a Cluster Settings file if you want to add more Content Servers to an existing cluster. The Cluster Settings file makes adding Content Servers to a cluster quick and easy. It is an xml file which contains details of the external database and the TCS\_NAS\_USER, so you need to generate a new Cluster Settings file if those details have changed since the original setup and you want to add more Content Servers.

To generate a Cluster Settings file:

1. Log in to the Content Server via Remote Desktop and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the Cluster Management Wizard option will be available.
3. Select Generate Cluster Settings File.



4. Click Browse if you want to save the Cluster Settings file in a location other than the TCS desktop, then click Next.



5. Click Finish to exit the wizard.

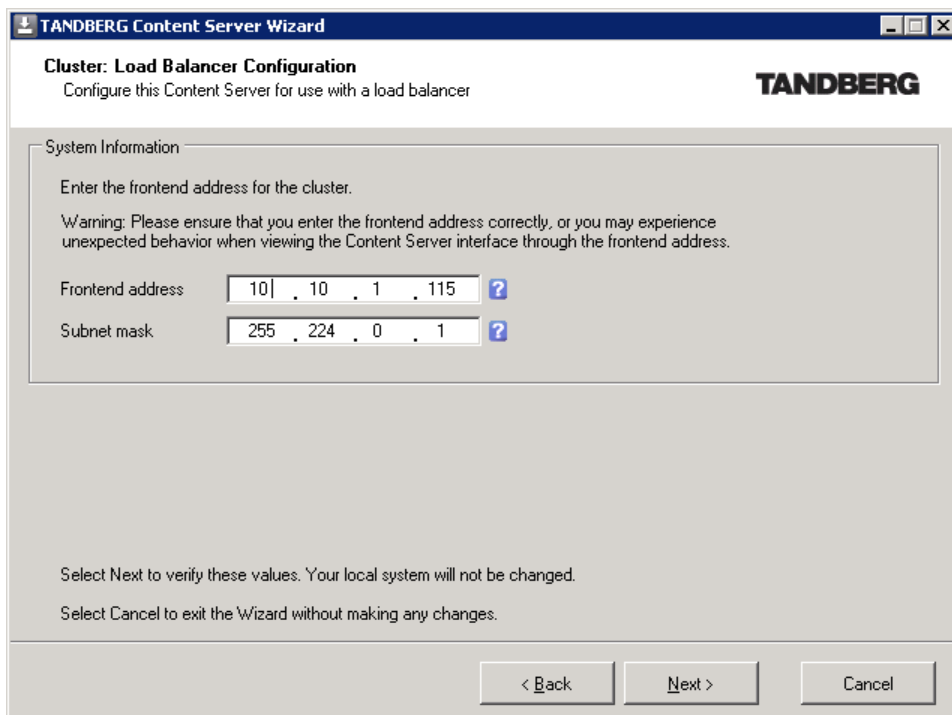
## 5.6 Update Load Balancer Configuration

If you have changed the virtual IP (VIP) address of the cluster on the load balancer, you need to update it on each Content Server using the TCS wizard.

1. Log in via Remote Desktop to the Content Server and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the **Cluster Management Wizard** option will be available.
3. Select **Configure Load Balancer Configuration**.
4. Select Update Load Balancer Configuration.



5. Enter the new virtual IP (VIP) address of the cluster you set up on the load balancer and/or the subnet mask of your network.



6. Click Next.
7. Click Configure for the wizard to update the loopback adapter. This might take some time.
8. Click Finish.

Repeat the steps above for each clustered Content Server.

Remember to also update the Frontend Address in Site Settings to the new VIP. See [Enter the virtual IP address of the cluster \(VIP\) as the Frontend Address on the TCS](#) for details.

**NOTE:**

The loopback adapter is automatically removed when you remove the Content Server from cluster. You can also remove it using the TCS wizard. Run the wizard as described above and select the **Remove Load Balancer Configuration** option. Note that doing this will only uninstall the loopback adapter on this TCS, you will need to manually remove the Content Server from your load balancer configuration.

## 5.7 Update Cluster Settings

You can update alternate media location (NAS) settings for the cluster using the TCS wizard.

The TCS wizard allows you to:

- Update the password for MYDOMAIN\TCS\_NAS\_USER account.
- Change the MYDOMAIN\TCS\_NAS\_USER account to another domain account.
- Change the location of the media files to a different NAS share.

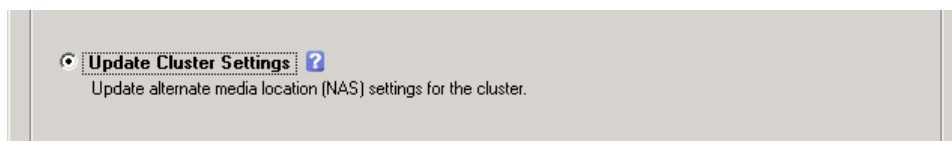
**NOTE:**

Alternatively, you could also remove all Content Servers from the cluster (see [Remove a Content Server from the cluster](#) section for details) and use the TCS NAS wizard on the LAST Content Server you removed from the cluster to update the password, change the account or change the media location (see the *TCS Administrator Guide* for details), and then create a new cluster and put the TCSs into the cluster again.

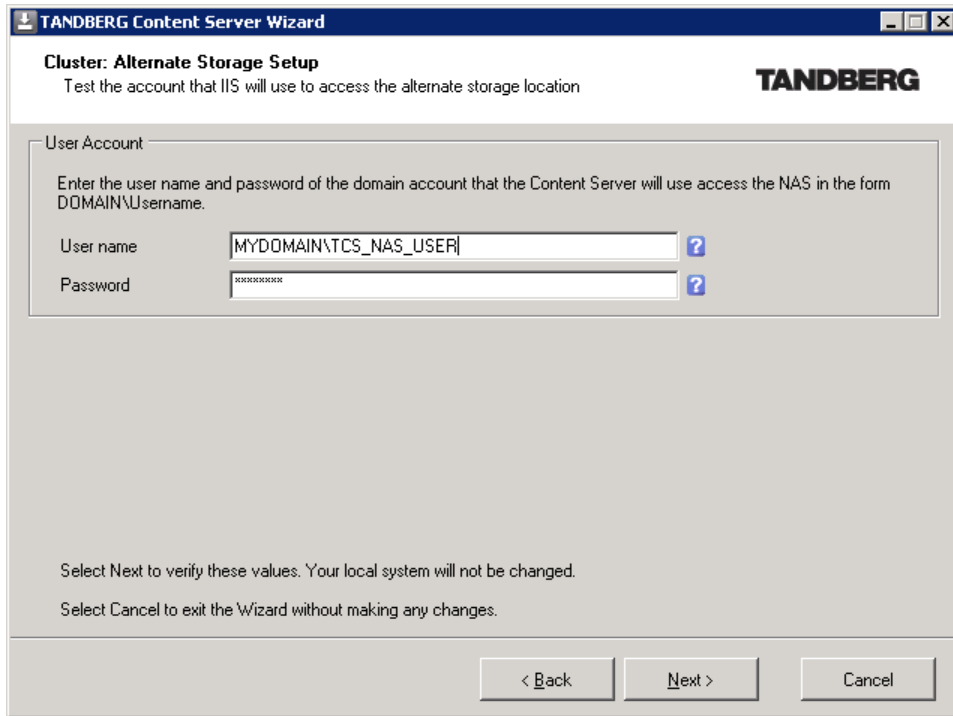
### 5.7.1 Update the password for MYDOMAIN\TCS\_NAS\_USER account.

If the password for the account that TCS cluster uses to connect to the NAS, MYDOMAIN\TCS\_NAS\_USER, expires, the cluster will not be able to connect to the NAS and media files will not be moved to their media location, so users will not be able to view conferences. The domain administrator needs to set a new password for the account on the domain, and then you need to run the TCS wizard on each clustered TCS to update the password on the cluster.

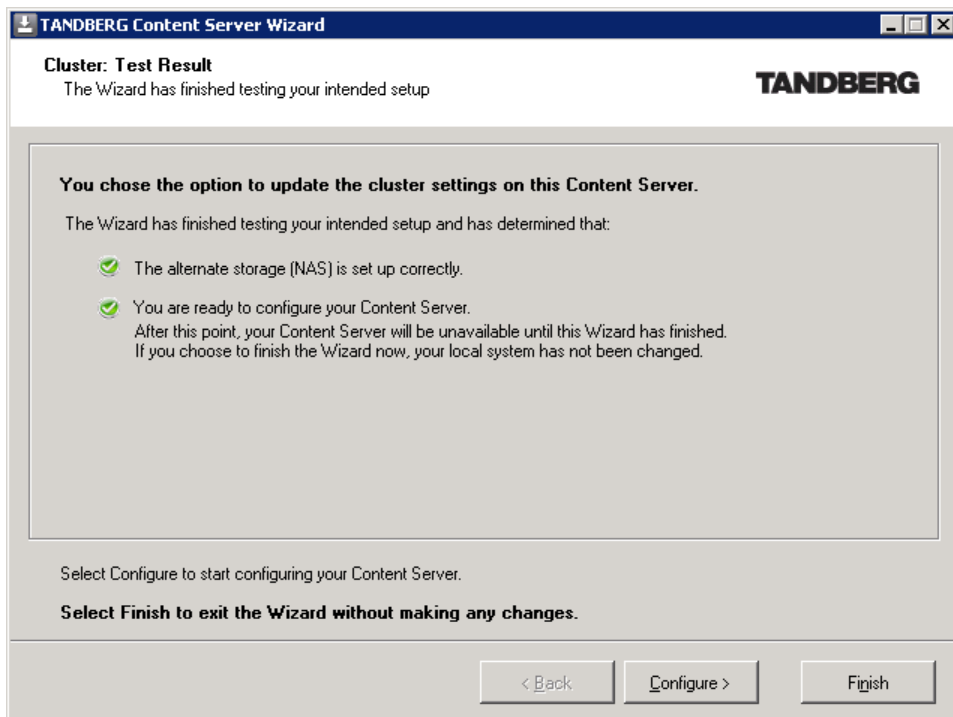
1. Log in to the Content Server via Remote Desktop as a domain administrator and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the **Cluster Management Wizard** option will be available.
3. Select **Update Cluster Settings**.



- The username and password of the account that the TCS cluster uses to connect to the NAS will be shown in the wizard. Change the password and click Next.



- The wizard will then show the current media location. Click Next.
- The Cluster: Test Result screen will display information about your intended setup. If all tests have been successful, click **Configure** to update the cluster settings. You may also click **Finish** to exit the wizard without updating the cluster settings.



- Next, the wizard will configure your system and update settings. This may take some time.
- Click Finish to exit the wizard.

Repeat this on each Content Server in the cluster.

### 5.7.2 Change the MYDOMAIN\TCS\_NAS\_USER account to another domain account.

If the account that the TCS cluster uses to connect to the NAS, MYDOMAIN\TCS\_NAS\_USER, needs to change, get the details of the new domain account from your domain administrator, then follow the steps below. We'll refer to the new account as MYDOMAIN\TCS\_NEW\_NAS\_USER.

Before running the TCS wizard:

- Add MYDOMAIN\TCS\_NEW\_NAS\_USER to the permissions on the NAS share and give it full control (see [Set permissions and security settings on the share](#) for details)
- Go to **Computer Management>System Tools>Local Users and Groups>Groups>Administrators** and add the domain account MYDOMAIN\TCS\_NEW\_NAS\_USER to the Administrators group on EACH clustered Content Server.

Now run the TCS wizard on each clustered TCS to enter the new account details.

1. Log in to the Content Server via Remote Desktop as a domain administrator and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the **Cluster Management Wizard** option will be available.
3. Select **Update Cluster Settings**.
4. The username and password of the account that the TCS cluster uses to connect to the NAS will be shown in the wizard. Change the username and password to the new account, MYDOMAIN\TCS\_NEW\_NAS\_USER, and click Next.
5. The wizard will then show the current media location. Click Next.
6. The Cluster: Test Result screen will display information about your intended setup. If all tests have been successful, click **Configure** to update the cluster settings. You may also click **Finish** to exit the wizard without updating the cluster settings.
7. Next, the wizard will configure your system and update settings. This may take some time.
8. Click Finish to exit the wizard.

Repeat this on each Content Server in the cluster.

### 5.7.3 Change the location of the media files to a different NAS share.

If you need to change the default media location for the cluster to a different NAS share, follow the steps below.

Before running the TCS wizard:

- Set up a new NAS share according to instructions in the [Configure the NAS](#) section.
- Ensure that all calls and all transcode jobs have finished on the cluster.
- Manually copy the DATA folder from the old NAS share to the new NAS share.

Now run the TCS wizard on one of the clustered TCSs to enter the new NAS share details.

1. Log in to the Content Server via Remote Desktop as a domain administrator and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the **Cluster Management Wizard** option will be available.
3. Select **Update Cluster Settings**.
4. The username and password of the account that the TCS cluster uses to connect to the NAS will be shown in the wizard. Change the username and password to a new account if required, or click Next.

- The wizard will then show the current media location. Enter the location of the new NAS share in the format \\servername\share.

The screenshot shows a window titled "TANDBERG Content Server Wizard" with a sub-header "Cluster: Alternate Storage Setup" and the instruction "Test the alternate storage location". The TANDBERG logo is in the top right. The main area is titled "Alternate Storage Location" and contains the text "Enter the remote server information in the form: \\ServerName\Share". Below this is a text box labeled "Path" containing the text "\\NAS\share" and a help icon. At the bottom, there are three buttons: "< Back", "Next >", and "Cancel".

- The Cluster: Test Result screen will display information about your intended setup. If all tests have been successful, click **Configure** to update the cluster settings. You may also click **Finish** to exit the wizard without updating the cluster settings.
- Next, the wizard will configure your system and update settings. This may take some time.
- Click Finish to exit the wizard.

Run the TCS wizard on each Content Server in the cluster to set the new media location details in IIS.

## 6 REMOVE A CONTENT SERVER FROM THE CLUSTER

You may remove one or more Content Servers from the cluster at any time and continue using them as standalone appliances. If you want to remove a Content Server from the cluster, you need to do this by running the TCS wizard.

### NOTE:

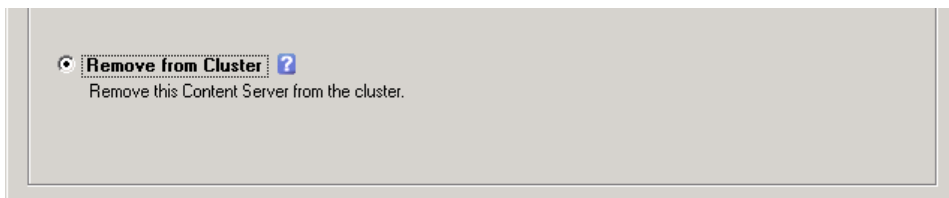
**IF YOU ARE REMOVING CONTENT SERVERS FROM A CLUSTER, THE ORDER IN WHICH YOU DO THAT IS IMPORTANT.**

None of the media or configurations from the cluster will be available on standalone Content Servers you remove from the cluster (they will become standalone installations with no content or configurations), with the exception of the **LAST** Content Server you remove from the cluster. When you run the TCS wizard on the last Content Server remaining in a cluster and select **Remove from cluster**, that Content Server will become a standalone appliance with media on a NAS. It will retain all content recorded by the cluster and all cluster configurations (such as recording aliases, templates, media servers, categories, etc). The external database instance will be dropped, and all data will be copied to the local database, while all media files will remain on a NAS.

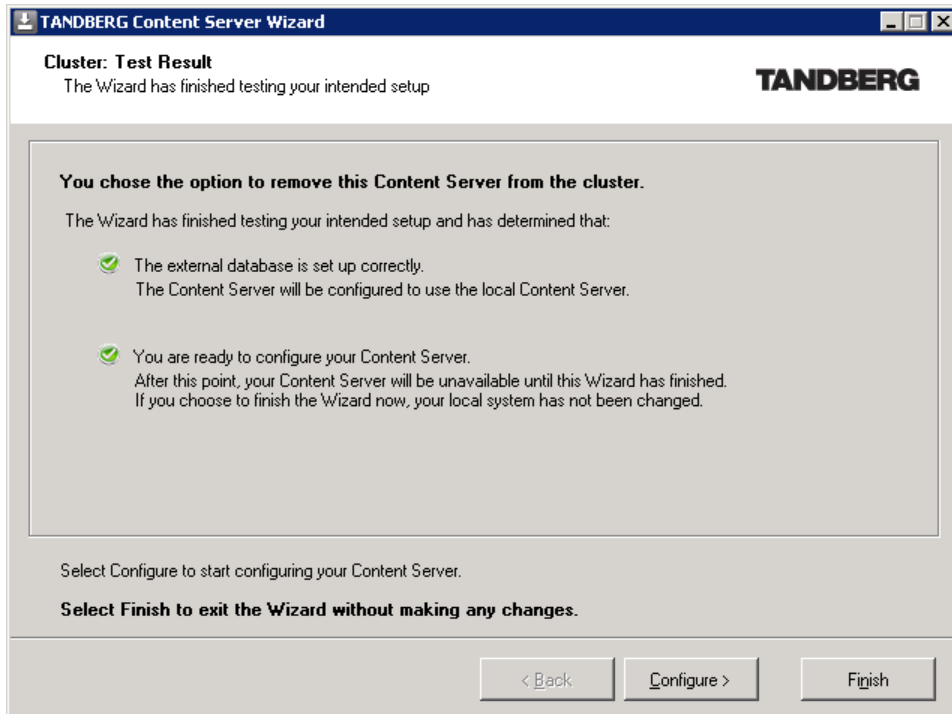
On this standalone Content Server, you can use the Alternate Storage (NAS) Wizard option to move the media files to another NAS location, or to move them back to the local drive on the Content Server (if the size of the recorded media allows it).

To remove a Content Server from the cluster:

1. Log in to the Content Server via Remote Desktop and run the TCS wizard.
2. The wizard will scan your system and if the TCS is in a cluster, only the Cluster Management Wizard option will be available.
3. Select **Remove from Cluster**.



4. At the Content Server Checks screen, confirm that the Content Server has been backed up and that antivirus software has been stopped (if it is installed). If the TCS has not been backed up and antivirus software has not been stopped, cancel the wizard and complete those actions, then run the wizard again.
5. The Cluster: Test Result screen will display information about your intended setup. If all tests have been successful, click **Configure** to remove the Content Server from the cluster. You may also click **Finish** to exit the wizard without removing the Content Server from the cluster. If the external database set up test failed, you will not be able to remove this Content Server from the cluster.



10. The wizard will configure your system and remove the Content Server from the cluster. This may take some time.

11. Click Finish to exit the wizard. The log location for the wizard will be displayed on this screen, should you need it.

The Content Server can be added back to the same or a different cluster by following the steps in the [Add a Content Server to an existing cluster](#) section.

**NOTE:**

Removing a Content Server from a cluster will delete the network load balanced loopback adapter from this TCS, but will not remove this Content Server from the load balancer setup. You will need to remove this Content Server from your load balancer configuration manually, otherwise the load balancer will keep trying to direct traffic to a Content Server that no longer belongs to a cluster.

## 7 USE TMS TO SCHEDULE CALLS ON A TCS CLUSTER

TMS 12.2 or higher can be used to schedule calls on a S3.3 TCS cluster. TANDBERG recommends that TCS clusters should either use TMS to schedule calls, or use ad hoc dialing. A mixture of scheduled and ad hoc dialing is not recommended.

To use TMS to schedule calls on a TCS cluster:




1. Ensure that the **Cluster Name** in TCS Site Settings is set to a meaningful name – it will be displayed by TMS in the Recording drop down menu on the New Conference Booking page.
2. Ensure that the **Frontend Address** in TCS Site Settings is entered and that it is the correct network load balanced address – it will be used to generate conference links in TMS.
3. Add one or more clustered Content Servers to TMS. You only need to add one clustered Content Server to be able to make calls to the whole cluster.
4. Check that users can select at least one live and one non-live recording alias in the Recording drop down menu on the TMS New Conference Booking page. Each live alias type (live and non-live) can be used to schedule a number of calls, to the maximum cluster capacity for this call type.

## 8 UPGRADE CONTENT SERVERS IN CLUSTER TO A NEW SOFTWARE VERSION

The TCS cluster will not be operational for the duration of the upgrade of the first Content Server in cluster, and will operate at reduced capacity until all the Content Servers have been upgraded. TANDBERG recommends that you take a short outage into account when scheduling the upgrade.

To upgrade the TCS cluster, log in to each of the Content Servers via Remote Desktop and run the software upgrade installer on one TCS at a time. You do not need to put clustered Content Servers into maintenance mode before starting the upgrade – the installer will ensure that they are not available for accepting calls during the upgrade. Once the installation process has been completed on the first Content Server, it automatically becomes available for making and accepting calls (to its call capacity).

During the upgrade, the web interface of the Content Servers which have not yet been upgraded will display: “Server under maintenance. This Content Server is being upgraded and is currently unavailable. For more information, please contact your local Administrator.” The Cluster Overview will display their mode as Upgrading and their status as Not OK. They will become available to the cluster once the installer has been completed on each of them.

Cluster Overview							
System Name	IP Address	Calls	Transcodes	Server Mode	Status	Links	
Overview		0	0				
TCS167 <a href="#">Details</a>	10.10.1.1	<input type="text"/>	0	Upgrading		<a href="#">Logs</a>   <a href="#">Windows Server</a>	<input type="button" value="Enter maintenance mode"/>
TCS164 <a href="#">Details</a>	10.10.1.2	<input type="text"/>	0	Online		<a href="#">Logs</a>   <a href="#">Windows Server</a>	<input type="button" value="Enter maintenance mode"/>

### NOTE:

You must run the upgrade installer on one Content Server at a time. Running upgrade installers simultaneously on two or more clustered Content Servers will cause SQL server errors and may damage your cluster installation.

## 9 LIMITATIONS

- The current solution will support up to 10 Content Servers in a cluster.
- The solution supports H.323 protocol only – SIP registration and SIP calling is not supported.
- Dialing into the cluster using the load balanced frontend address or IP addresses of Content Servers in the cluster is not supported. The cluster design relies on call balancing done by the gatekeeper, and that only occurs when recording aliases are dialed.
- The LCD panel ConfigRestore command (**Main Menu>Commands>Restore Defaults>ConfigRestore**) is not available when a TCS is in cluster.
- The LCD panel FullRestore command (**Main Menu>Commands>Restore Defaults>FullRestore**) will restore the TCS to its original settings, but will also cause it to lose its cluster settings, while the TCS cluster database will continue as if the TCS was still in cluster. Adding the TCS back to the cluster after running FullRestore is recommended. The TCS can then be removed from the cluster, if required, using the TCS wizard.
- Adding or removing the live output from a template results in a change of the gateway prefix of recording aliases that use that template.
  - Example:
    - The live gateway prefix on your cluster is **tcsccluster.live** and the non-live gateway prefix is **tcsccluster.nonlive**.
    - A recording alias with an H.323 ID of **tcsccluster.nonlive.myalias@company.com** uses a Windows Media switching template with no live streaming output. If a live streaming output is added to the template, the H.323 ID of the recording alias will change from **tcsccluster.nonlive.myalias@company.com** to **tcsccluster.live.myalias@company.com**. Calls to the original alias will fail.

See the release note for a list of other known issues for this release.

## **DISCLAIMERS AND NOTICES**

The objective of this Guide is to provide the reader with assistance in using and configuring their TCS cluster. Product capabilities of TANDBERG and other manufacturers' products change over time and so the required configuration may be different from that indicated here. If you have any suggestions for changes to this document, please feed them back to TANDBERG through your TANDBERG Authorized Service Representative.

If you need technical support, please contact your TANDBERG Authorized Service Representative.

The specifications for the product and the information in this Guide are subject to change at any time, without notice, by TANDBERG.

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