LEXI DR (Disaster Recovery) Product Manual

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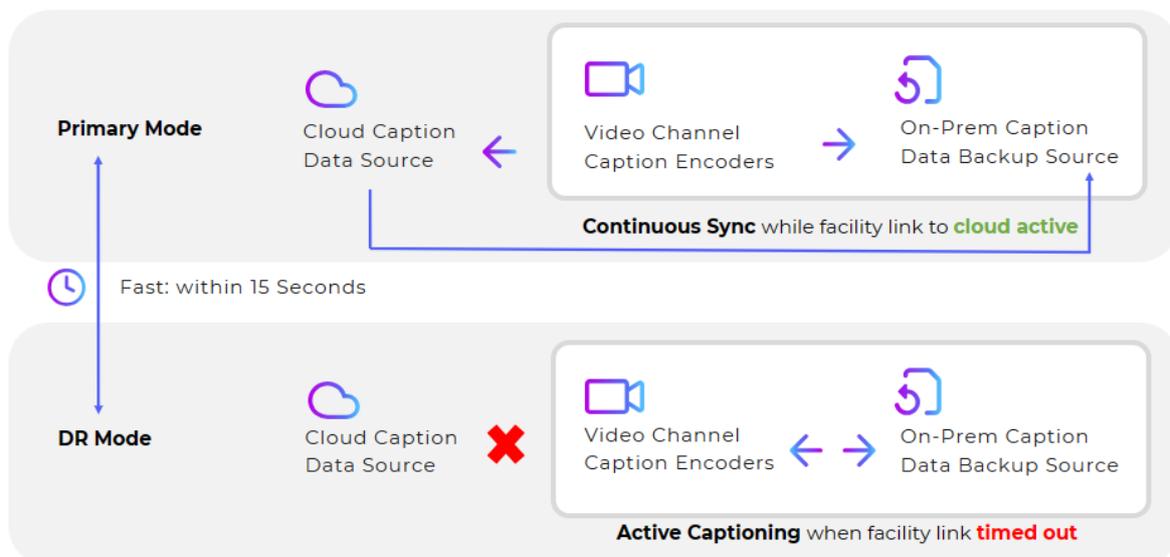A: 586 Main Street, Farmingdale, New York 11735

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What is LEXI DR and How Does it Work?

Concern

Due to the nature of live broadcasts, it is difficult to react to cases where there is a loss of closed captioning and resolve them within a timely manner (which due to government mandates has become increasingly important). A great majority of such cases of captioning downtime is due to issues with either outbound network connectivity / internet or with the Cloud service being provided, as neither are fully reliable mechanisms 100% of the time.

Resolution

With LEXI DR, the Cloud captioning server (EEG Cloud / Cloud iCap) is used as the primary source of captioning, while the encoder also establishes a simultaneous connection with the offline backup DR captioning server. If the encoder is unable to connect to the Cloud server (either EEG Cloud or Cloud iCap) for any reason (whether due to local internet or Cloud service issues), it will automatically and quickly failover to the backup DR server for captioning, ensuring essentially no downtime, and with no human intervention required. When the encoder regains connection the Cloud server (both EEG Cloud and Cloud iCap), it will automatically switch back to using the Cloud server as the active captioning source. This process is demonstrated via the diagram below.

Primary Mode — Cloud Caption Data Source ← Video Channel Caption Encoders → On-Prem Caption Data Backup Source
Continuous Sync while facility link to **cloud active**

Fast: within 15 Seconds

DR Mode — Cloud Caption Data Source ✖ Video Channel Caption Encoders ← → On-Prem Caption Data Backup Source
**Active Captioning** when facility link **timed out**

Important Notes

- Though this will resolve issues related to internet connection or Cloud service (ensuring coverage for nearly all cases), it will not currently account for all cases where captioning is supposed to be occurring but isn't, such as if there are issues with the encoder's audio or with the encoder itself. These would be best addressed via using redundant caption encoding channels.

- LEXI DR currently only supports workflows where LEXI automatic captioning in the Cloud is used as the primary captioning source and LEXI DR is used as the backup server, as opposed to human captioning or LEXI Local being used as the primary captioning source or EEG Cloud being used as the backup DR server. Those use cases currently may only be supported by manually switching to the server being used as the backup when the primary loses connection.

- Failover of LEXI Translate instances from EEG Cloud to the LEXI DR server is not supported in the initial version of LEXI DR. However, for multi-language support, you are able to set up a separate audio track / LEXI instance for each language (though with the note that in the case of the hardware encoders, this is currently supported only when controlling LEXI via EEG Cloud and not via the encoder. Within Alta, this is supported when controlling LEXI from either the Alta encoder channel or EEG Cloud).

- The LEXI DR server does not require to be connected to the internet for captioning to occur in cases of failover, however, outbound internet connection will be necessary periodically for:

    a) ensuring the syncing of data from EEG Cloud to the backup LEXI DR server (which is necessary for DR to properly function).

    b) usage reporting of data from the DR server to EEG Cloud (necessary for billing of LEXI usage, which will be at the same hourly rate, no matter the source of captioning).

Note: Ideally, you should aim to have the DR server connected to the internet (with certain ports open: see section below) as much of the time as possible or it will involve a more manual process of having to keep reconnecting the DR server periodically for the above data flow transfer to occur.

LEXI DR Setup

A. LEXI DR Server Setup

1. To enable such outbound connections from your DR server to EEG Cloud and iCap (in order for the syncing and usage reporting to occur, as described above), please ensure that your network settings allow it to communicate via HTTPS to port 443 on icap.eegapis.com (for syncing iCap info). and port 443 on eegcloud.tv (for syncing LEXI info and sending usage data).

2. Go to the web interface of the LEXI DR backup server you are utilizing and navigate to the Disaster Recovery page from the left menu.

3. On this page, you will first need to enable Disaster Recovery functionality by selecting the "Disaster Recovery Enabled" checkbox.
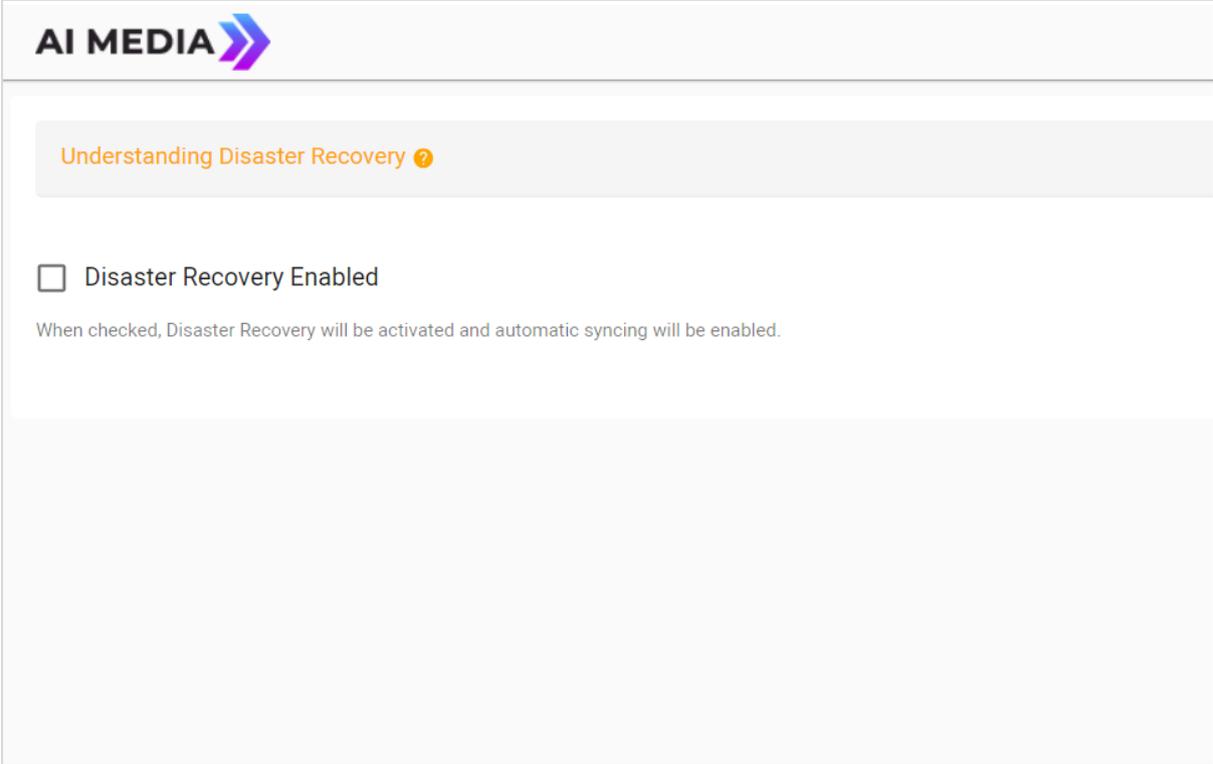
When this is enabled, the DR functionality and related fields will be made available and syncing of data and usage reporting will be able to operate. If disabled, both will cease, and any synced data will disappear until the next time it is enabled and data is synced again.


Note: *As indicated earlier, in order for syncing of data to occur, your LEXI DR backup server must be connected to the Internet.*

4. Select the Setting icon next to iCap Admin Login to enter the 'Username' and 'Password' of your iCap Admin account from Cloud iCap that you would like to sync data from (Access Codes and Devices) to the LEXI DR server. You can also

optionally change the iCap Server Address that you would like to connect to the LEXI DR server from the default of icap.eegapis.com (if preferring to use a proxy associated with a fixed IP address). Once configured, the data sync will occur automatically.

5. Select the Setting icon next to EEG Cloud Settings to enter the 'API Key' from your EEG Cloud account that you would like to sync data from (Instances, Access Codes, Topic Models, and scheduling data) to the LEXI DR server. Once configured, the data sync will occur automatically.

   - Once iCap and EEG Cloud accounts from the Primary server are linked to the LEXI DR backup server, any new incoming data from the primary server will continue to sync to the backup server at every even 10 minute interval (2:00, 2:10, etc).

   - Note: do not change the iCap Admin or EEG Cloud account configured with the DR system unless you are looking to replace all the synced data.

   - You can also choose to manually initiate a data sync at any time by clicking the 'Sync Now' button on this page (should take about 90 seconds on average, though this may vary depending on the amount of data from your Cloud account). You will see data start loading in during the sync.
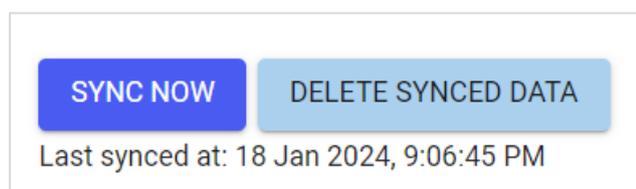
   - After each sync is complete, it will say when the last sync occurred on the Disaster Recovery page (though this may not update right away – if you'd like to confirm if a sync occurred, check to see if the data you want from the sync is there).

   - You can select the 'Clear Synced Data' button to clear the DR server of all data synced from the Cloud. This is so you can easily revert back to its original blank slate if something goes wrong during a sync, and then you can initiate a full data sync again at any point.

   - *Note: Please also do not enter any new data or perform a reboot while a sync is in progress.*

- Please note that data synced from the Cloud server to the DR server cannot be edited or deleted from the DR server (the edit and delete icons will be greyed out).

B. LEXI DR Setup on Hardware Encoders

1. Navigate to the encoder's iCap webpage. If not already applied, enter the Admin credentials (Company Name, User Name, and Password) of your Primary server's Cloud iCap account, along with the Primary iCap Server address (should be eegicap.com for Cloud iCap). When done, click the 'Apply' button to save changes.

iCap Web-based Configuration

Login

Company Name	EEGTV
User Name	492enc4020
Password	·········· 👁

Server Name

Primary iCap Server	eegicap.com

☐ Use SSL

Miscellaneous

⑦ Audio Program Count	1
☐ Signal Lexi Speaker Changes on GPI-H	
⑦ Speaker GPI Delay Compensation	
☐ Signal Lexi Speaker Changes on UDP port 6920	
☐ Monitor connection to server on GPO 3	

iCap Status

Status	Connected
Server Type	Main
Audio Packets Sent	0
Relay ID	1919220834
Version	4.6.2
iCap Running	Yes
View iCap Admin	

Optional Integrations

Remote Encoder 1 Status	Off
Remote Encoder 2 Status	Off
Backup Server Status	Connected

iCap Client

Start Stop

Apply Reset Connection

2. Navigate to the encoder's LEXI webpage and go to the 'General' tab, which is where all info for the EEG Cloud account being used as the Primary captioning server should be entered (if not already applied). This includes your EEG Cloud Username and Password, the Primary Server address (should be eegcloud.tv for EEG Cloud), the Access Code and LEXI Instance you would like to connect the encoder to (which will also be synced and utilized for the DR server), and any other applicable settings you would like to configure for it.

General	Disaster Recovery

Login

EEG Cloud Username	api_key
EEG Cloud Password	.... 👁
Primary Server Type	⦿ Cloud ○ Lexi Local
Primary Server	eegcloud.tv

☁ Speech Recognition ▲

Engine	Lexi 3.0
Language	English (Australian)
Topic Model	None
Safe Language Filter	Disabled
ⓘ Inactivity Timeout	600 seconds

☁ Caption Display ▲

Caption Service	CC1/S1
Number of Rows	3
Vertical Position	13
Horizontal Position	2
Force Capital Letters	Enabled
Use Lexi Vision Positioning	Enabled
Column Width	28

Status

Version	5.0.0
Lexi Status	🆑 No job running
Block Status	Shut off for SCTE104 trigger
Extend Event Status	Disabled

Instance Control

Access Code	4924020
Instance	Charlie 492
Instance URL	Instance page (eegcloud.tv)

[Start] [End]

Lexi Client

ⓘ Monitor on GPO-2	☐
ⓘ Toggle on GPI-E	☐
ⓘ Block on Serial Port	☐
ⓘ Block on Upstream	☐
ⓘ Block on SCTE-104	☑
ⓘ Lexi Block Mode	○ Pause ⦿ Shutoff
ⓘ Auto-Restart	☑ Medium sensitivit
ⓘ Extend Scheduled Event	☐

[Apply Settings]

3. Navigate to the 'Disaster Recovery' tab, which is where all configuration for the LEXI DR backup server will be applied. In the LEXI DR Login section:

Lexi™ Automatic Captioning

The Speech Recognition and Caption Display settings below can be managed via your instance's page on EEG Cloud. Lexi can be controlled through the encoder API.

General   **Disaster Recovery**

Server	Connection		Last Connected	Connected Since	Status
Primary	iCap	Connected	18 Jan 2024, 08:49:53 PM	18 Jan 2024, 04:40:31 PM	Active
	Lexi	Connected	18 Jan 2024, 08:49:52 PM	18 Jan 2024, 04:40:20 PM	
Lexi DR	iCap	Connected	18 Jan 2024, 08:49:53 PM	18 Jan 2024, 04:40:31 PM	Standby
	Lexi	Connected	18 Jan 2024, 08:49:52 PM	18 Jan 2024, 04:40:20 PM	

Lexi DR Login

Username	admin
Password	••••• 👁
Access Code	4924020
Instance	Charlie 492
Instance URL	Instance page (Lexi DR)
Lexi DR Address	172.27.2.36

☁ Currently, Lexi DR may only be used if the Primary Server is cloud-based.
☁ Instances, Speech Recognition Settings, Caption Display Settings, and Scheduling data are synced from EEG Cloud to Lexi DR.
👥 Click here to configure Lexi DR with EEG Cloud and iCap Admin credentials to perform the sync.

Settings

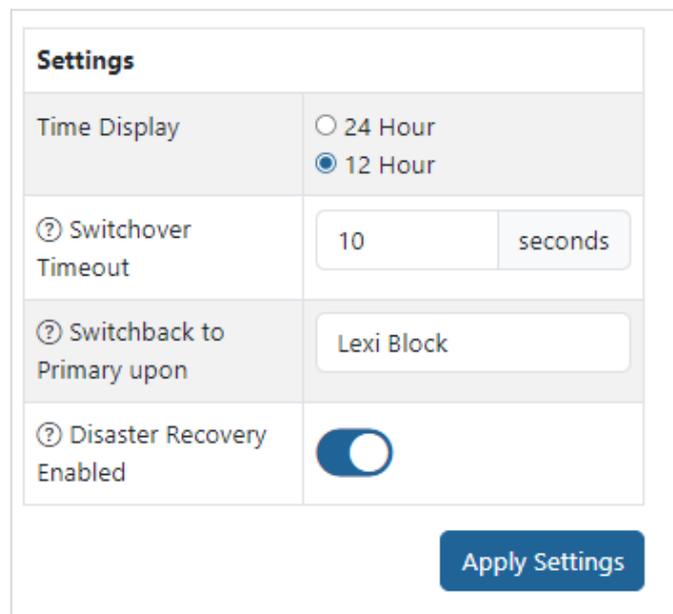|	
Time Display	○ 24 Hour ● 12 Hour
⑦ Switchover Timeout	10 seconds
⑦ Switchback to Primary upon	Lexi Block
⑦ Disaster Recovery Enabled	🔵

Apply Settings

a. Enter the 'Username and' 'Password' of a unique iCap admin User for the LEXI DR server (should be one supported by the LEXI DR server that you are connecting to the encoder as a DR backup server).

Note: The default Username and Password for LEXI DR iCap admin users is "admin" for both. It is recommended to either change the password for the user or create a new user (both from within the LEXI DR web interface).

b. Enter the IP address of the LEXI DR server being used as the backup to the Primary server in the LEXI DR Address field.

Note: Prior to data from the Primary Server being synced to the LEXI DR backup server, the Access Code and Instance values in this section will be blank and greyed out. Once data is synced, these values are automatically populated from the corresponding field entries for the Primary Server in the General tab (and will be greyed out / read-only). They can be changed by editing the corresponding field values in the General tab.

4. In the Settings section:

a. Enter the value in the 'Switchover Timeout' field (minimum of 10 seconds) for how long you would like the encoder's connection to the Primary server (ie: Cloud iCap and/or EEG Cloud) to remain lost for before failover to the DR server is initiated (note that the failover itself may incur an additional 10 - 15 seconds of captioning delay during the transition). This same value will represent how long, once after failover to DR occurs, the encoder's re-connection to the Primary server (both Cloud iCap and EEG Cloud) should be regained before once again becoming the active server (this switchback

to the Primary server may also incur an additional captioning delay of up to 15 seconds – however this can be prevented, as per 4b. below).

Note: *The value for this field should be what you consider to be an appropriate balance between a high enough number to account for potential false positives (due to inconsistencies or glitches in network or Cloud service connections) but low enough so that captioning can return as fast as possible in cases of long-term outages. Considering this, our general recommendation is 30 seconds, however, this may differ depending on your personal preferences or local network stability.*

b. With the "Switchback to Primary upon" setting, you can then choose whether you would like the encoder to switch back to the Primary server for captioning automatically upon connection being re-established (once the seconds value in the Switchover Timeout field passes) or for it to only automatically switch back once LEXI is in a "Blocked" state ('Shutdown' or 'Paused'). The latter would be to prevent a captioning gap during a live program (of up to 15 seconds), due to the transition between the servers.

c. Turn on the 'Disaster Recovery Enabled' toggle to turn on LEXI DR for the encoder (it is disabled by default).

d. You can also choose which type of 'Time Display' you would like for the Primary and LEXI DR connection status values from the top of the page.

5. Click the 'Apply Settings' button to save changes.

- If data from the Primary Server wasn't already synced to the LEXI DR server (see "LEXI DR Server Setup", in section A above), a "Click here" link will appear within the app notes on the page (as seen below), which you can click on to navigate directly to the webpage of that DR server to configure the syncing of data.

Lexi DR Login

Username	admin
Password	••••• 👁
Access Code	4924020
Instance	Charlie 492
Instance URL	Instance page (Lexi DR)
Lexi DR Address	172.27.2.36

☁ Currently, Lexi DR may only be used if the Primary Server is cloud-based.
♢ Instances, Speech Recognition Settings, Caption Display Settings, and Scheduling data are synced from EEG Cloud to Lexi DR.
👥 Click here to configure Lexi DR with EEG Cloud and iCap Admin credentials to perform the sync.

6. From the Status table on the top of the page, you can have visibility on which is currently the active captioning server (Primary or LEXI DR), the encoder's connection status to each of the iCap and LEXI servers for the Primary and LEXI DR Backup, and the time that the encoder was last connected to each server.

Server		Connection	Last Connected	Connected Since	Status
Primary	iCap	Connected	18 Jan 2024, 08:51:35 PM	18 Jan 2024, 04:40:31 PM	Active
	Lexi	Connected	18 Jan 2024, 08:51:34 PM	18 Jan 2024, 04:40:20 PM	
Lexi DR	iCap	Connected	18 Jan 2024, 08:51:35 PM	18 Jan 2024, 04:40:31 PM	Standby
	Lexi	Connected	18 Jan 2024, 08:51:35 PM	18 Jan 2024, 04:40:20 PM	

C. LEXI DR Setup in Alta

1. On the Alta web UI, navigate to *System -> iCap/LEXI* on the top of the screen.

2. Here, you will add and configure all your LEXI servers (both Cloud and LEXI DR) that you would like to utilize on the Alta system. You can also view data on, edit, delete, or run a LEXI Test on any of your existing servers from this page. For each new server you would like to add, select the "Add New Server" button and then enter a unique server name, specify if it is a Cloud or LEXI DR server, enter its *iCap Server Address, and input the LEXI server's credentials (Username and Password).

Add New Server

General Server Config

Name

Choose a unique name for this iCap/Lexi server

LexiDR3

Type

Select server type (Cloud or Lexi Local)
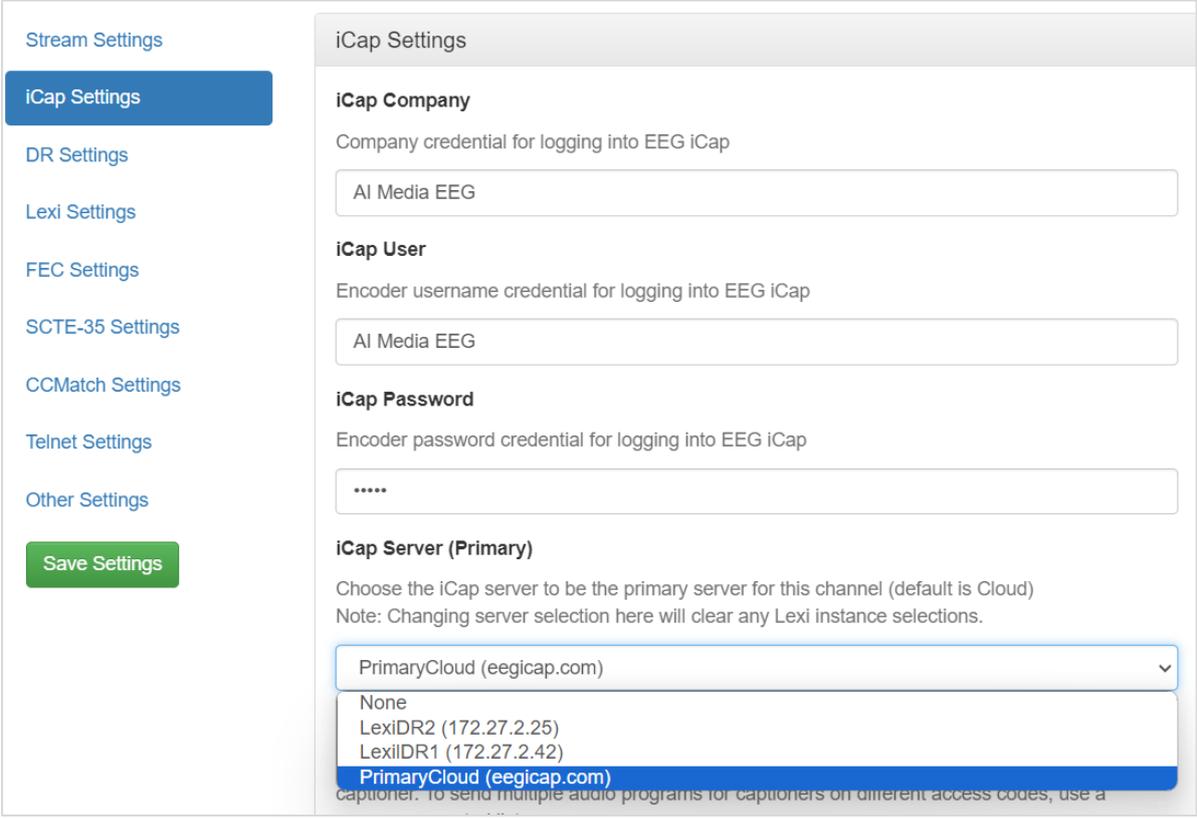
Lexi DR ▾

Address

172.27.2.25

Lexi Server Credentials

Username : admin

Password : ••••• ☐ Show

- For entering the iCap server address, if adding a new Cloud server, the address should be eegicap.com (in which case eegcloud.tv will be automatically used as the corresponding LEXI server address). If adding a LEXI DR server, the address should be the IP address of that LEXI DR server (which is then used as both, the LEXI DR server's iCap and LEXI server addresses).

3. Then, for each Alta channel's settings that you are utilizing DR on, navigate to the iCap Settings page. If not already applied, enter the Admin credentials (Company Name, User Name, and Password) of your Primary server's Cloud iCap account, along with specifying the Primary iCap Server for that channel from the drop-down,

which will be a populated list of the servers created in the global iCap/LEXI page from #2 above.

4. Next, go to the 'DR Settings' page within the channel settings for each Alta channel you are using for LEXI DR. On this page:

   a. Specify the LEXI "DR Server" from the drop-down that you would like to associate with the channel (and act as the backup for the selected Primary iCap Server from #3 above). The options will also be a populated list of the servers created in the global iCap/LEXI page.
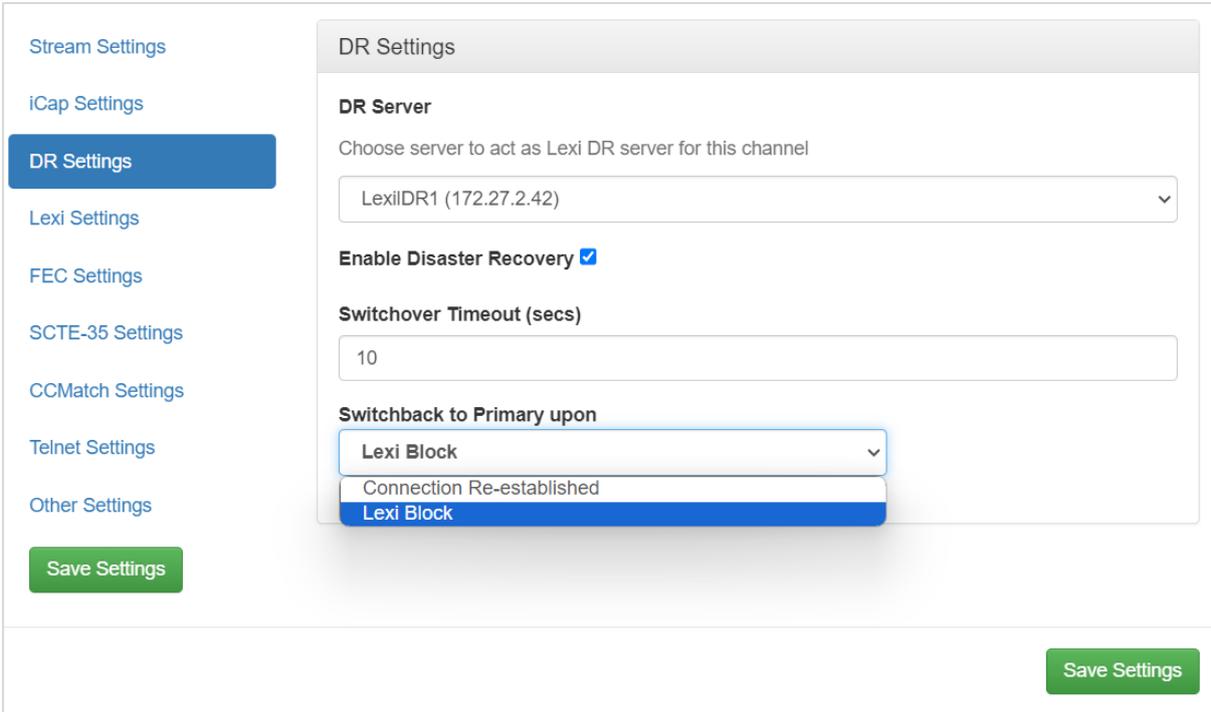
b. Ensure the 'Enable Disaster Recovery' checkbox is activated to turn on LEXI DR for the channel (will be disabled by default).

c. Define the "Switchover Timeout" value (minimum of 10 seconds) for the Alta channel. This value represents how long you would like the Alta channel's connection to the Primary Server (ie: Cloud iCap and/or EEG Cloud) to remain lost for before failover to the DR server is initiated (note that the failover itself may incur an additional 10 - 15 seconds of captioning delay during the transition).This same value will represent how long, once after failover to DR occurs, the Alta channel's s re-connection to the Primary server (both Cloud iCap and EEG Cloud) should be regained before once again becoming the active server (this switchback to the Primary server may also incur an additional captioning delay of up to 15 seconds – however this can be prevented, as per 4b. below).

Note: *The value for this field should be what you consider to be an appropriate balance between a high enough number to account for potential false positives (due to inconsistencies or glitches in network or Cloud service connections) but low enough so that captioning can return as fast as possible in cases of long-term outages. Considering this, our general recommendation is 30 seconds, however, this may differ depending on your personal preferences or local network stability.*

    d.   With the "Switchback to Primary upon" setting, you can then choose whether you would like the encoder to switch back to the Primary server for captioning automatically upon connection being re-established (once the seconds value in the Switchover Timeout field passes) or for it to only automatically switch back once LEXI is in a "Blocked" state ('Shutdown' or 'Paused'). The latter would be to prevent a captioning gap during a live program (of up to 15 seconds), due to the transition between the servers.

5.   Finally, go to the LEXI Settings page within the channel settings and set the LEXI instances for S1 – S6 that you would like to utilize for the channel. The selectable options for each service will be all Cloud LEXI instances associated with the selected Primary iCap Server from step #3 above. When done, click the 'Save Settings' button to apply changes.

    a.   Since the instances sync from EEG Cloud to the corresponding LEXI DR server, this instance data will be known to both server types, so during failover, the DR server will know which instance(s) to target for turning LEXI on/off.

6. You may also force a switchover from the primary server to the LEXI DR server and from the DR server back to the primary server for a particular Alta channel. This can be done either via "Switch to Primary" and "Switch to DR buttons" on the Alta channel's Status page (see image below) or via new 'switch_to_primary' and 'switch_to_dr' HTTP triggers sent to an Alta channel.

Status   Errors   SCTE35 Monitor   Channel Logs   Input Capture   Data Rates

State

OFF

Stream Health

Stream Type	Input Transport Rate	Output Transport Rate	Input Present	Captions Present

Licensing Status

Status	Type	Product	Last Renewed	Grace Period	Message/Info

Configuration

```
{
  "name": "111",
  "ofec": "0",
  "lcol": "10",
  "drow": "10",
  "icap_server_name": "PrimaryCloud",
  "dr_switchover_timeout": "10",
  "lexi_block_mode": "pause",
  "ccmatch": "0",
  "output_cc_coding": "atsc_user_data",
  "cea608_lang_order": "cc1,cc3",
  "cc_auto_erase": "16",
  "cc_es_only_fr": "fr_default",
  "text_style_color_bg": "0,0,0,1",
  "text_style_color_fg": "192,192,192,1",
  "dvb_justification": "none",
  "dvb_vertical_align": "none",
  "linebylinecc": "0"
}
```

Enable Test CC   Disable Test CC   Switch to Primary   Switch to DR

Action

Triggers a GPI preset for the specified instanceID

JSON parameters

POST /alta/alta_instances/<instanceID>/trigger_preset	type	Trigger types:'lexi', 'scte104', 'cc_encoder'						
	function	Lexi functions: 'speaker_change', 'turn_on', 'turn_off', 'pause', 'resume'	SCTE104 functions: 'start_normal', 'start_immediate', 'end_normal', 'end_immediate' 'cancel'	CC Encoder functions: 'enable_test', 'disable_test', 'switch_to_primary', 'switch_to_dr'				
	parameters	Lexi speaker change: 'delay_compensation' (float in seconds)	Lexi pause/resume: 'offset' (float in seconds)	Lexi on/off: 'instance_id' (Lexi instance ID)	SCTE104 start normal: 'event_id', 'program_id', 'break_duration' (1/10sec), 'preroll_time' (1/1000sec)	SCTE104 start immediate: 'event_id', 'program_id', 'break_duration' (1/10sec)	SCTE104 end normal: 'event_id', 'program_id', 'preroll_time' (1/1000sec)	SCTE104 end immediate + cancel: 'event_id', 'program_id'

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7. From the Status tables for each Alta channel, you can have visibility on which is currently the active captioning server (Primary or DR), the Alta channel's connection status to the iCap servers for the Primary and LEXI DR Backup, and the state + DR status of each LEXI instance.

iCap Status

Client Type	Name	Address	Status	Active Source	Server Type
Primary	PrimaryCloud	eegicap.com	Connected	true	Cloud
DR	LexiIDR1	172.27.2.42	Connected	false	Lexi DR

Telnet Type	Connected	Info
Telnet Clone 1	true	

Lexi Status

Service	Name	Instance ID	State	DR State
S1	Bradsenc S1 Lexi 3.0	asr_instance_qyfsR5tOuydaNbWo	ON	OFF
S2	Bradsenc S2 Lexi 3.0	asr_instance_D9eux7W8TpYvhLXS	OFF	OFF
S3	Bradsenc S3 Lexi 3.0	asr_instance_UVEcyHm0mQj2r2Cn	OFF	OFF
S4	Bradsenc S4 Lexi 3.0	asr_instance_ffEjiisJeepAwEaA	OFF	OFF
S5	Bradsenc S5 Lexi 3.0	asr_instance_jFQVSCM0YbweKvrX	OFF	OFF
S6	Bradsenc S6 Lexi 3.0	asr_instance_07GXEyqeHpr94NAa	OFF	OFF

LEXI DR Failover Process for Each Use Case of Controlling LEXI

1. Scheduling LEXI events from the Primary Server in advance

- No change in workflow is required upon failover, as all scheduling data automatically syncs from EEG Cloud to the backup LEXI DR server (pending internet connection enabling the data flow). During a scheduled event, LEXI will run simultaneously on both servers but with the encoder or Alta channel only accepting the data from the active server (and billing for LEXI usage only being incurred for the active one), so if failover to the backup server occurs, the scheduled event will instantly resume from the DR server without any human intervention necessary (the same is the case when the primary server regains connection).

2. Triggering LEXI from the encoder (Ex: encoder API, GPI, SCTE-104 messages, webpage)

- This also requires no change in workflow upon failover. When triggering LEXI via the encoder or Alta channel, the message will be received by whichever server is currently active, so LEXI will automatically trigger appropriately, regardless of the active server being the primary Cloud server or the backup DR server.

3. Triggering LEXI from EEG Cloud API

- If LEXI was triggered via Cloud API prior to the Primary cloud server losing connection, LEXI will continue to run or not run accordingly when the DR server becomes active. (The same will occur in the reverse scenario, where the Cloud server regains connection.)

- For use cases where prior to switching back to the primary server, you would like to turn LEXI off or if LEXI wasn't already running and you would like it to, you will need to account for this by either:

a. Always sending simultaneous API calls to both EEG Cloud and to the LEXI DR server that is serving as a backup to the Primary Server (though this is dependent on your system supporting sending API calls to 2 locations at once), with the encoder or Alta channel only accepting the data from the active server (and billing for LEXI usage only being incurred for the active one).

b. Primarily sending API calls to EEG Cloud, but upon failover, sending API calls to the associated backup LEXI DR server. This is dependent on being able to receive back failure messages if the EEG Cloud API call does not make it through (and having quick visibility to such messages).

c. Switching your workflow to controlling LEXI via the encoder or scheduling events (#1-2 above).

- For options a and b above, if you have multiple backup DR servers, you will need to be aware of which one is associated with the encoder or Alta channel + its authentication credentials, so that the correct DR server can be targeted when sending the LEXI DR API call.

4. Triggering LEXI from EEG Cloud Webpage

- Similar to the above use case (where LEXI is triggered via Cloud API), if LEXI was triggered from the Cloud webpage prior to the Primary cloud server losing connection, LEXI will also continue to run or not run accordingly (and the same in the reverse scenario).

- Also similar to when triggering via Cloud API, for use cases where prior to switching back to the primary server, you would like to turn LEXI off or if LEXI wasn't already running and you would like it to, you will need to account for this by either:

a. Navigating to the web interface of the LEXI DR server that is serving as a backup to the Primary Server and turning LEXI on / off from there.

b. Switching your workflow to controlling LEXI via the encoder or scheduling events (#1-2 above).