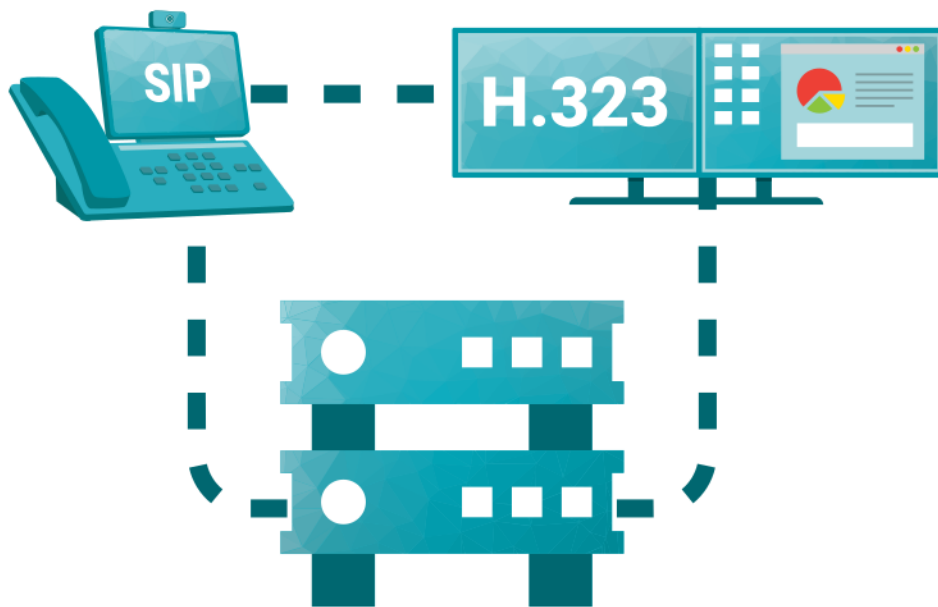




TrueConf IntegrIT Bridge Operator guide*



* for information purposes only

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Introduction

This is a user manual for video conferencing server *TrueConf IntegrIT Bridge* designed for organization and performing multipoint videoconferencing meetings in private and public networks. This document describes how to configure and use MCU and it is assumed that reader is familiar with basics of Linux administration.

TrueConf IntegrIT Bridge runs on *Astra Linux* Common / Special Edition that is fork of Debian Linux. To configure and use application reader shall use Firefox or Chrome web browser.

Purpose of the program

Videoconferencing server *TrueConf IntegrIT Bridge* designed to offer affordable alternative to the existed third party solutions. MCU incorporates standard videoconferencing features and offers high level of interoperability with third party equipment and software clients. *TrueConf IntegrIT Bridge* runs on *Astra Linux CE/SE* optionally on Debian or Ubuntu Linux. To run this program required:

- Hardware with Intel Core i5/i7/Xeon or AMD Ryzen processor. MCU effectively utilizes NUMA architecture to get maximum performance on 2xXeon server platforms.
- Virtual machines with VM Ware/KVM or similar hyper-visor

TrueConf IntegrIT Bridge features videoconferences with up to 256 participants and implements the following functions:

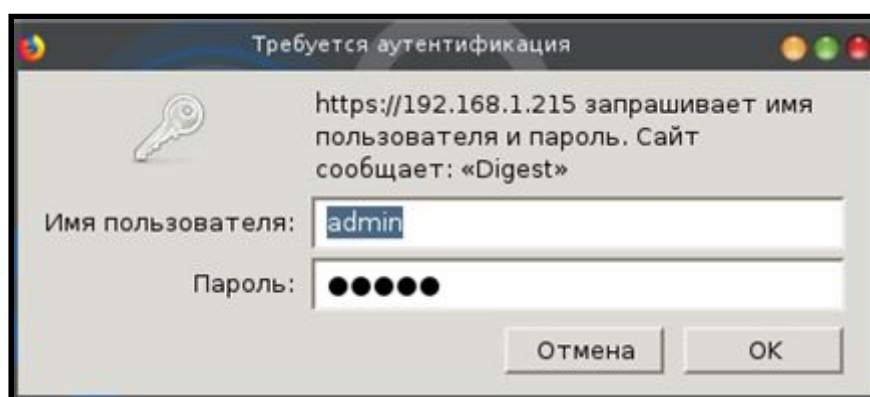
1. Conference Scheduling
2. Multipoint conferences
3. Preconfiguration of conference layouts
4. Dynamic conference layouts control and manipulation
5. Participants audio/video streams control and manipulation
6. Media content sharing (JPEG, BMP, PDF, AVI, MPEG4, PPT, PPTX)
7. Conference recording
8. RTMP streaming
9. RTSP IP cameras support

10. Local and external address book

Program execution

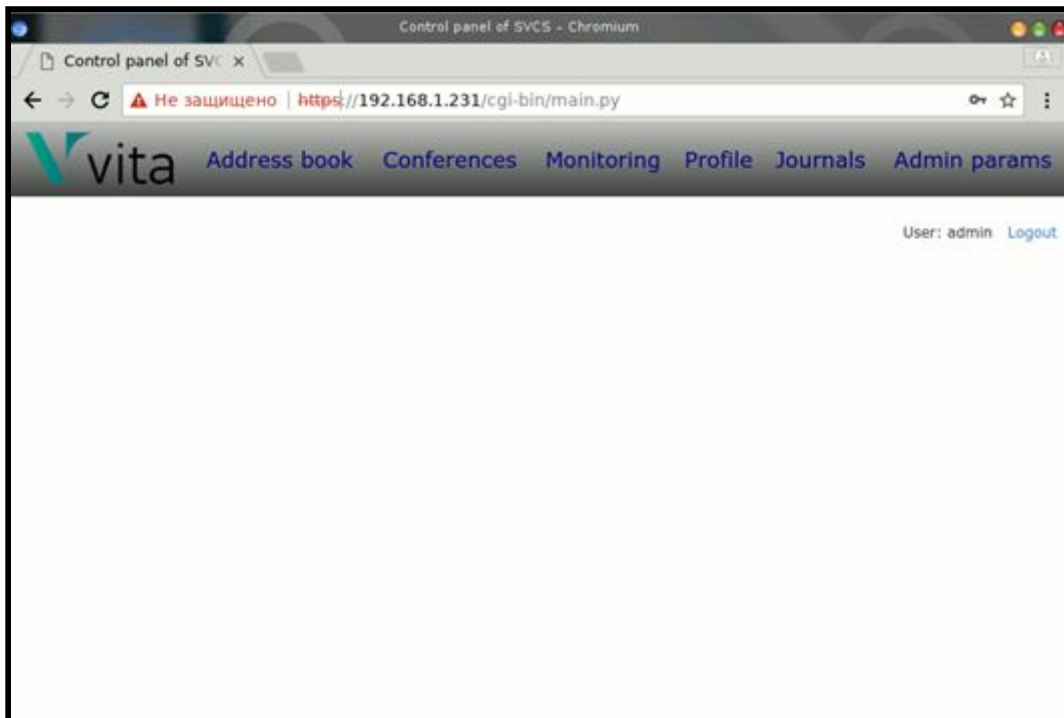
Program start and stop

TrueConf IntegrIT Bridge works as a Linux daemon service and starts on system boot up automatically. On system boot up control WEB panel is available on server IP address. User will be prompted for login and password, as per Picture below.



Picture 1: Login windows

On successful login full server control is available from the following window:



Picture 2: Main window

This is a main window of the server that consist of the following menu items:

- **Address Book** – users and groups management;
- **Conferences** – conferences scheduling and planning, conferences layout control;
- **Monitoring** – start/stop conferences, management of already running conferences;
- **Profile** – global server settings;
- **Journals** – conferences and system events logging;
- **Administration** – system administration and maintenance.

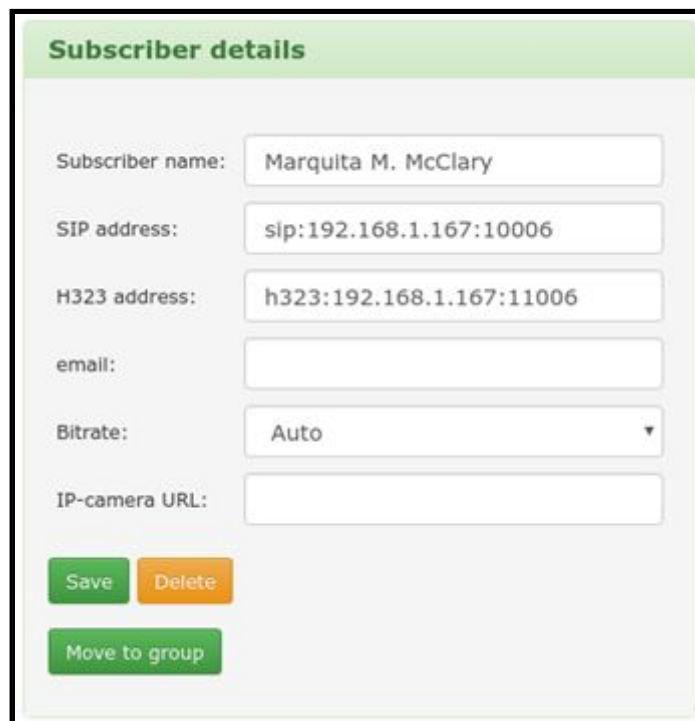
These features described in more details further.

Users and groups in Address book

To use server effectively conference participants should be added in the local address book. There are several fields in the address book that should be filled as needed.

Subscribers

To add subscribers contact details to the address book user shall click on reference **Address book** → **New subscriber** to open a window shown in the picture below.



The image shows a web form titled "Subscriber details" with a light green header. The form contains several input fields and buttons:

- Subscriber name:** A text input field containing "Marquita M. McClary".
- SIP address:** A text input field containing "sip:192.168.1.167:10006".
- H323 address:** A text input field containing "h323:192.168.1.167:11006".
- email:** An empty text input field.
- Bitrate:** A dropdown menu with "Auto" selected and a downward arrow.
- IP-camera URL:** An empty text input field.
- Buttons:** At the bottom, there are three buttons: a green "Save" button, an orange "Delete" button, and a green "Move to group" button.

Picture 3: Subscriber details

Fields descriptions:

Field	Description
Subscriber name	Subscriber name to be shown in conference
SIP address	SIP URI, shall be in format <code>sip:<SIP URI></code> , for example, <code>sip:alex@192.168.4.10</code> or <code>sip:ann@sipserver.com</code>
H.323 address	H.323 URI, shall be in format <code>h323:<H.323 URI></code> , for example, <code>h323:alex@192.168.4.10</code> or <code>h323:ann@gateway.com</code>
Email	Email address used to send invitation to the conference
Bitrate	Subscriber bitrate
IP camera URL	URL of RTSP IP camera if this profile belongs to compatible RTSP device.

If both **SIP address** and **H.323 address** are given then server will call this subscriber according to global server call priority defined in **Home** → **Profile** → **Calls configuration**.

Move to group button move participant to another subscriber group. To create new group click to **Address book** → **New group** reference.

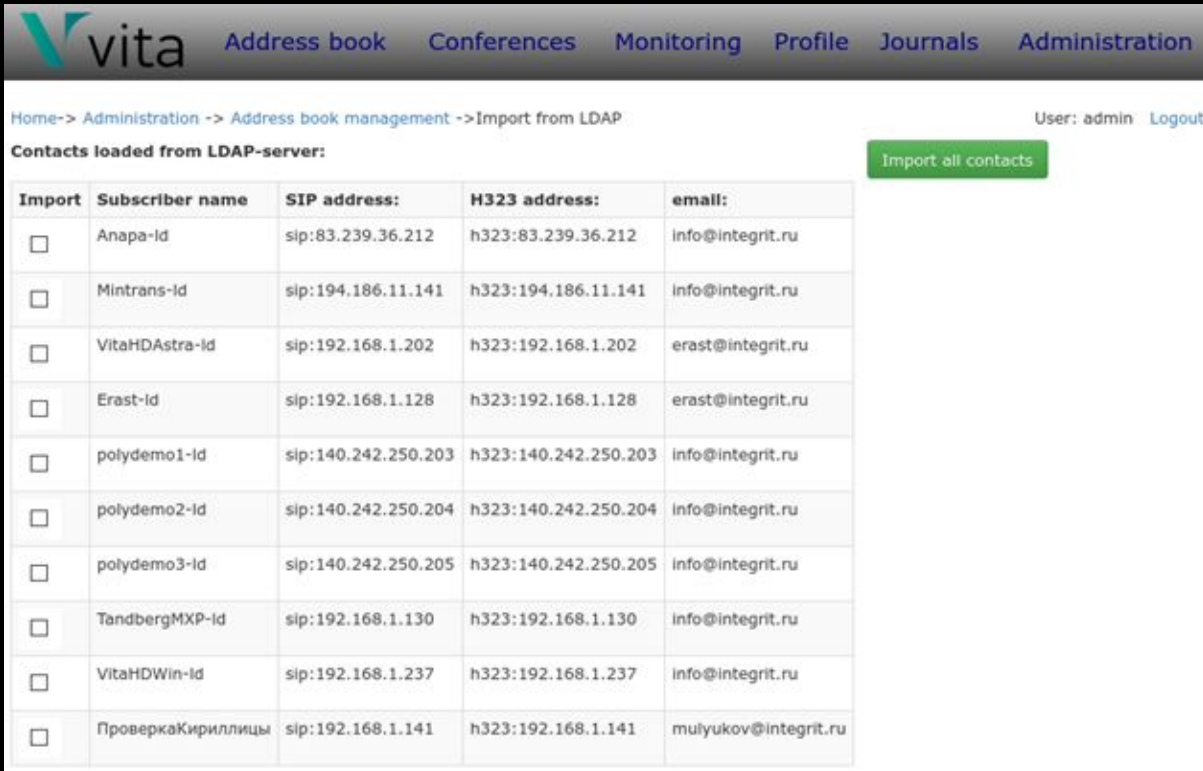
Importing address book from LDAP

To import/export address book from the local disk or import from LDAP directory go to **Administration** → **Address book management** menu.



Picture 4: Address book management

Click **Import from LDAP** to open list of extracted from the LDAP server contacts as per picture below:



Home-> Administration -> Address book management -> Import from LDAP User: admin Logout

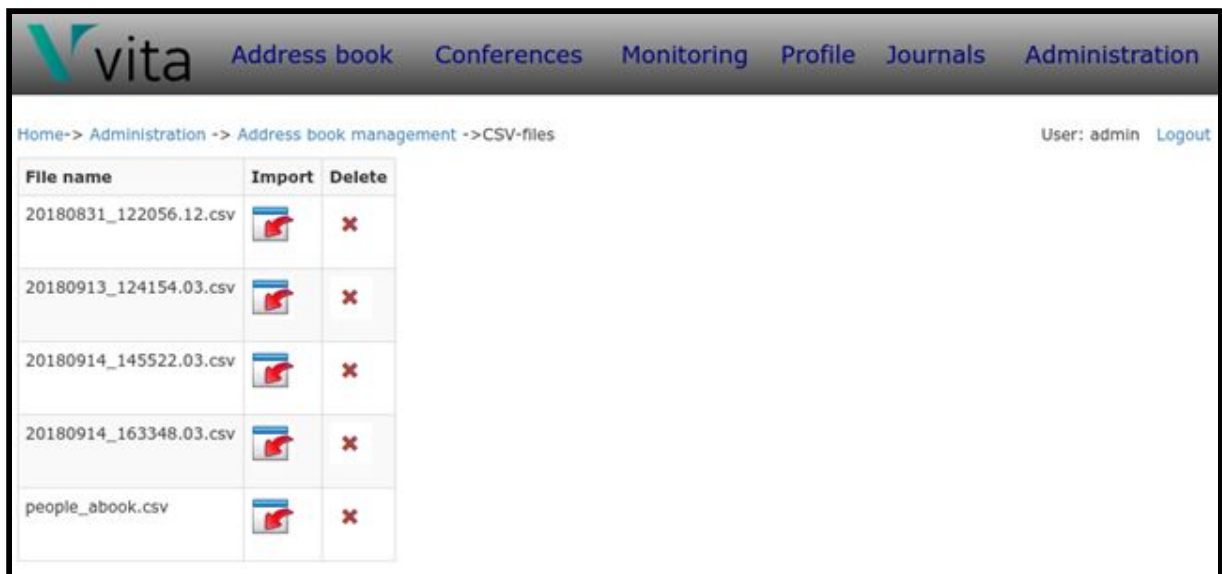
Contacts loaded from LDAP-server: Import all contacts

Import	Subscriber name	SIP address:	H323 address:	email:
<input type="checkbox"/>	Anapa-Id	sip:83.239.36.212	h323:83.239.36.212	info@integrit.ru
<input type="checkbox"/>	Mintrans-Id	sip:194.186.11.141	h323:194.186.11.141	info@integrit.ru
<input type="checkbox"/>	VitaHDAstra-Id	sip:192.168.1.202	h323:192.168.1.202	erast@integrit.ru
<input type="checkbox"/>	Erast-Id	sip:192.168.1.128	h323:192.168.1.128	erast@integrit.ru
<input type="checkbox"/>	polydemo1-Id	sip:140.242.250.203	h323:140.242.250.203	info@integrit.ru
<input type="checkbox"/>	polydemo2-Id	sip:140.242.250.204	h323:140.242.250.204	info@integrit.ru
<input type="checkbox"/>	polydemo3-Id	sip:140.242.250.205	h323:140.242.250.205	info@integrit.ru
<input type="checkbox"/>	TandbergMXP-Id	sip:192.168.1.130	h323:192.168.1.130	info@integrit.ru
<input type="checkbox"/>	VitaHDWin-Id	sip:192.168.1.237	h323:192.168.1.237	info@integrit.ru
<input type="checkbox"/>	ПроверкаКириллицы	sip:192.168.1.141	h323:192.168.1.141	muiyukov@integrit.ru

Picture 5: Import address book from LDAP server

To be added in the local address book a LDAP contact shall be selected. Selected subscribers are shown in **Address book** window combined together with local subscribers.

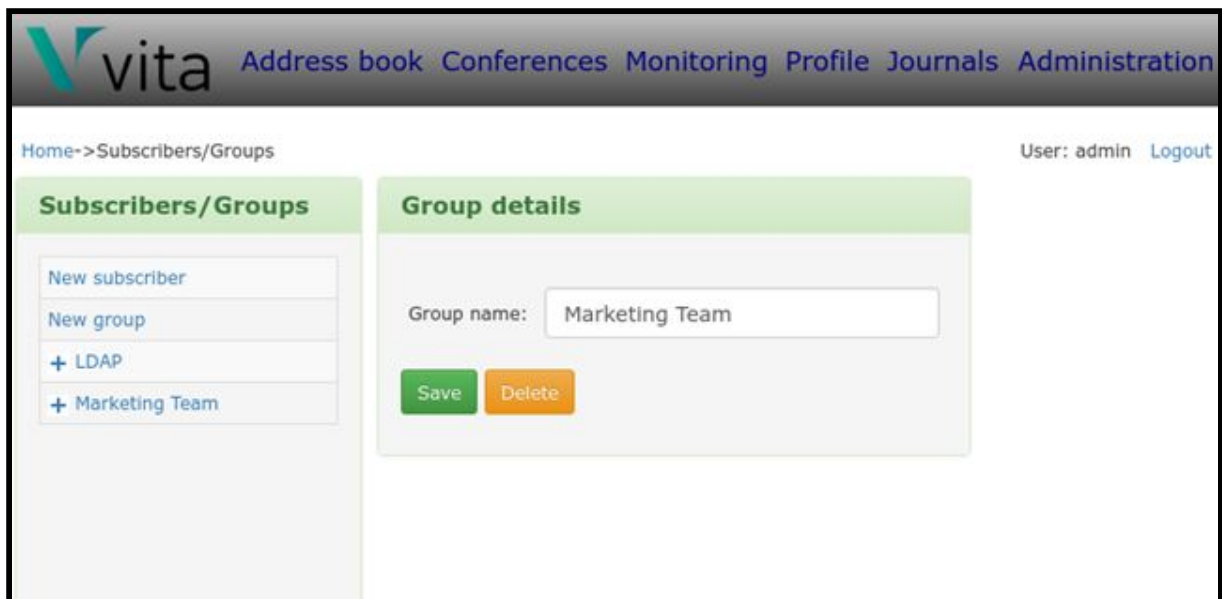
To import contact information from local file system just click on **Administration** → **Address book management** → **Import from CSV file** and select file to import or delete from the system, see picture below.



Picture 6: Import address book from local disk

Groups

Subscribers in the local address book can be combined in **Groups**. Groups simplify conference management adding whole subscribers groups in the conference in one click. To create new subscriber group go to **Home** → **Address book** window and click on **New group** reference, as per picture below.



Picture 7: Create new group

To move subscriber to another group just click on the subscriber and click on **Move to group**, see picture below. Subscriber can share several groups.

Table of groups contains subscriber 'Christopher I. Littlefield':

+/-	Group name
<input type="checkbox"/>	LDAP
<input type="checkbox"/>	Development
<input type="checkbox"/>	Sales
<input type="checkbox"/>	My bosses
<input checked="" type="checkbox"/>	Marketing Team

Picture 8: Groups of subscribers

Address book can be considered as a two level hierarchical tree where ungrouped subscribers lie on the first level and grouped subscribers on the second level.

Conferences

It is important to understand what is a conference and how to manage it. Lets define few terms.

Conference is a connection of several remote subscribers in one bi-directional multi-point audio/video call. VitaHD MCU supports multiple conferences simultaneously, depending on system resources available.

Conference profile is a set of conference properties which is used to establish the conference with subscribers and set predefined conference properties, layouts for every subscriber, calling properties and etc. Conference layout is stores in the local database and can be modified dynamically on established conference according to conference scenario. Conference profiles are stored in server database and can be copied and edited as needed.

Every subscriber can attach the conference in two ways:

- Server calls subscriber («call out» for server). For this case subscriber shall be previously added in the conference from the address book or called manually when the conference is already running.

- Subscriber calls server («call in» for server). In this case subscriber shall enter conference PIN code or conference operator shall pick it up from the **Waiting participants** queue in **Monitoring** window. If the subscriber was previously added in conference participant list then no PIN code required and subscriber will be connected to the conference automatically.

Layout specifies participants configuration on the screen of one or more conference participants. Server allows very flexible layouts configuration for one or more participants and program them statically or automatically. For every participant server allows to program who will be shown in which positions and for which number of conference participants, so for every participant layouts will be switched automatically according to the number of conference participants.

Layouts are divided into two types — global and individual. Global layout is common for one conference. It is seen for all participants who do not have it's own individual layout. For example, a participant attached to a conference through PIN code (unknown participant for the server) will get global layout.

- Individual layout can be defined in the conference profile before conference starts for every participant. These settings are stored in server database and can be retrieved as part of a conference profile.

- Individual layout can be defined dynamically when conference is already running. Dynamically defined layouts are existed on run time only.

! Every individual layout consumes additional server resources for transcoding, limiting maximum number of concurrent calls per server instance, so use do not use individual layouts with no need.

New Conference

To create new conference go to **Home** → **Conferences** and click on **New conferences**. The following window will be opened:

The screenshot displays the 'Select conference:' window. On the left is a table of existing conferences, and on the right is the 'Configuration of conference 'Marketing results':' form.

ID	Conferences	Start time	End time	Participants limit
0	New conference	-	-	0
4	Talks with my boss	-	-	4
3	Marketing results	-	-	10
2	Daily meeting	-	-	32
1	Wakeup meeting	-	-	16

Configuration of conference 'Marketing results':

Name: Marketing results

Infinite:

Start time: 27.09.2018 15:00

End time: 27.09.2018 18:00

Participants limit: 3

Meeting PIN-code:

PIN-code: 0022

Auto dialing:

RTHL server URL:

Recording source: android

[Edit participants](#)

[Edit layouts](#)

[Edit options](#)

Picture 9: Create new conference

Fields description:

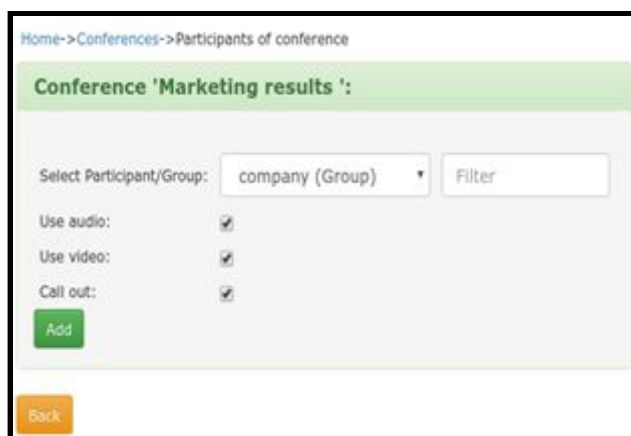
Field	Description
Name	Conference name
Infinite	Create conference with no limit in time
Start Time	Conference start time
End Time	Conference end time
Participants limit	Maximum number of participants in the conference. This value allows server resource management to be work in more effective way. Do not set this value too high with no need.
Meeting PIN-code	Use or not use PIN code for the conference
PIN code	PIN code to let incoming calls connect the conference
Auto dialing	Server will redial participant automatically if it was disconnected for some reasons.
RTMP server URL	URL of RTMP server to translate the conference to
Recording Source	Participant's layout to be translated by RTMP

There are the following conference configuration options are available:

Option	Description
Participants	Edit participants of the conference
Layouts	Edit layouts of the conference
Options	Advanced options of the conference
Save	Save conference settings
Delete	Delete conference
Make a copy	Make a copy of the conference
Invite participants	Send invitations for participants

Add participants to the conference

To add/remove/modify conference participants select conference in the **Home** → **Conferences** and click on **Participants**.



Picture 10: Add participants to the conference

Participants of conference 'Marketing results':						
N	Participant name	Address	Use audio	Use video	Call out	Action
1	Christopher I. Littlefield	sip:192.168.1.167:10003, h323:192.168.1.167:11003	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remove
2	Johanne M. Hansen	sip:192.168.1.167:10005, h323:192.168.1.167:11005	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remove
3	Mukoso Nkemjika	sip:192.168.1.167:10013, h323:192.168.1.167:11013	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remove
4	Patrick Quinn	sip:192.168.1.215:10015, h323:192.168.1.215:11015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remove

Added 4 participants from 10

Picture 11: List of participants


You can add participants individually or by group, as per Picture 10. For every participant the following options are available:

Option	Description
Use audio	Enable or disable audio stream from the participant
Use video	Enable or disable video stream from the participant
Call out	Server will dial participants number automatically










These options are part of the conference profile and valid when the conference starts. On running conference these options can be overridden.

Layouts configuration

Layouts customization for every conference is available clicking in **Edit Layouts** on Picture Create new conference. In the window operator can add/delete/edit global and individual layouts as needed. By default global layout is used by all participants. Global layout is edited by


clicking on **Edit global layout** button. Individual layout can be specified for the every participant clicking  icon.

Home->Conferences->Layouts configuration

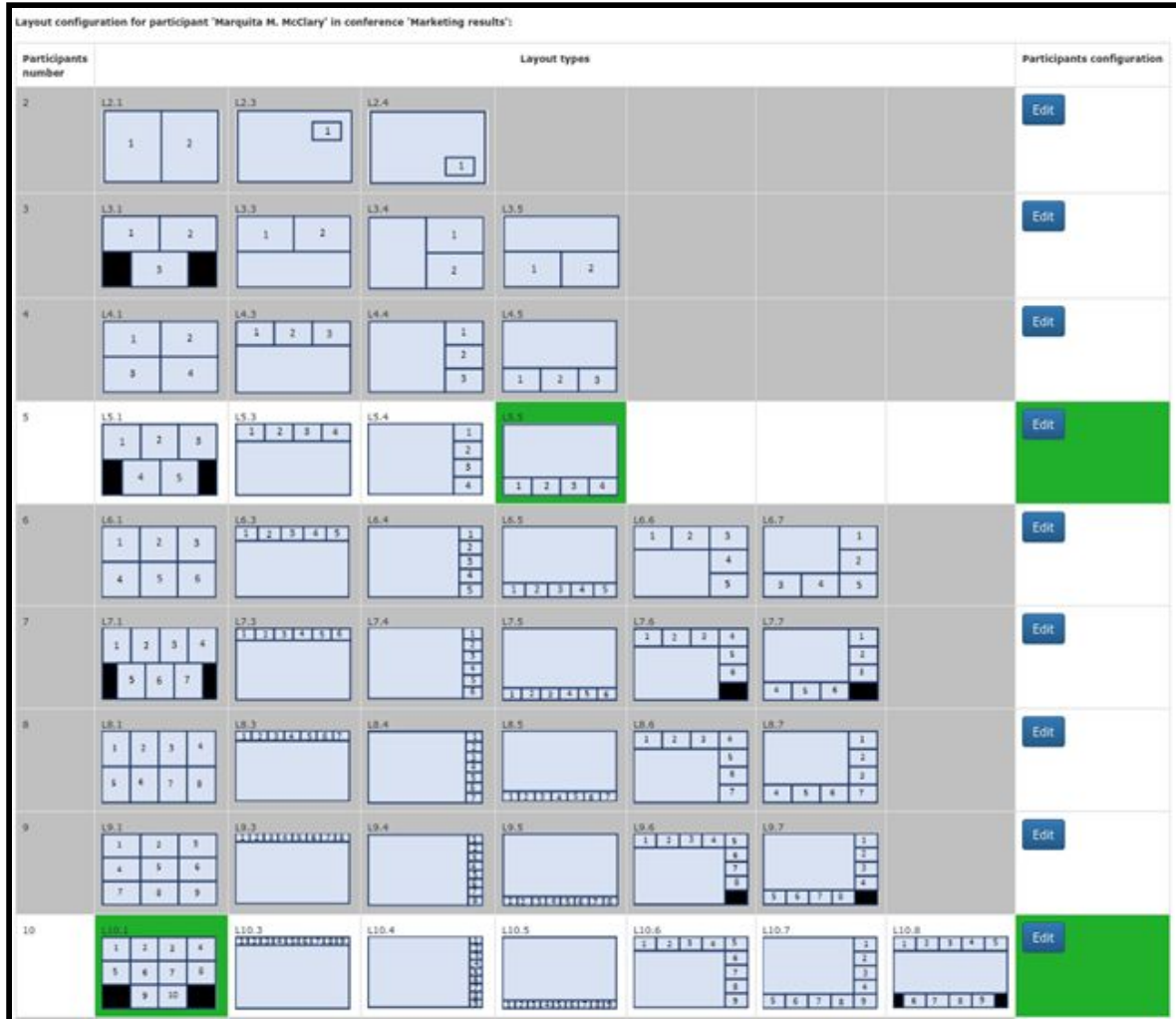
Participant name	Layout	Action	Action
Anas Yazeed Nazari	Global		Set all layouts automatically
Christopher I. Littlefield	Global		
Collette J. Gleaves	Global		
Corey C. Griffin	Global		
Gerwazy Zielinski	Global		
Novel Efremov	Global		
Patrick Quinn	Global		
Piotr Nowak	Global		
Valerie J. Beach	Global		

Edit global layout Reset global layout

Picture 12: layouts configuration

Set all layouts automatically is a special layouts configuration option that simplifies management of large conferences. For every participants it sets specific individual layout where the participant sees video of other participants but does not see its own video. Further individual layouts customization is available clicking  icon. Using this option it is possible to pin every participant to specific position in the layout which is available for given conference. Example of individual

layout configuration for the «Marquita M. McClary» is shown below. It specifies the following server behavior for the participant:

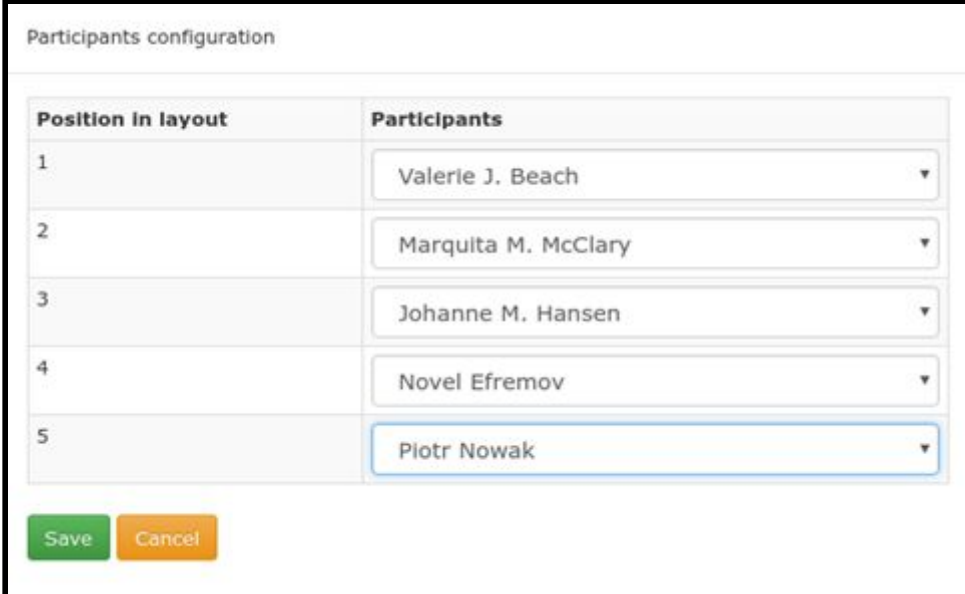


Picture 13: Individual layout configuration

- Generate layouts automatically if there are 2-4, 6-9 or 10+ participants in the conference.
- Generate layout L5.5 if there are 5 participants in the conference. Specific participants allocation for the layout L5.5 is available under **Edit** button.

- Generate layout L10.1 if there are 10 participants in the conference.

Clicking **Edit** button it is possible to set specific participants configuration for the given layout. An example of configuration is shown on the picture below.



Position in layout	Participants
1	Valerie J. Beach
2	Marquita M. McClary
3	Johanne M. Hansen
4	Novel Efremov
5	Piotr Nowak

Save Cancel

Picture 14: Participants allocation in the layout

Global layout has an additional feature **Automatic participants control** that automates and simplifies conference control and let the server manage global layout on its own.

Advanced conference options

Advanced conference options are available clicking **Edit Options** on Picture Create new conference. The options allow fine configuration of audio and video settings for the given conference as per Pictures 15

and 16. It may be useful for solving interoperability issues, channel bandwidth control and etc.

Home->Conferences->Options

Audio settings **Audio settings:**

Video settings

aac:

g.711:

g.726:

g.728:

g.722:

g.722.1: 24 kbit/sec:

32 kbit/sec:

g.722.1c: 24 kbit/sec:

32 kbit/sec:

48 kbit/sec:

g.729:

g.723.1:

Save

Picture 15: Conference audio settings

Home->Conferences->Options

Audio settings **Video settings:**

Video settings

Bitrate: 1600

h.261:

h.263:

h.264:

h.265:

Rate control:

Adapt rate:

FEC:

Max frame resolution: 1920x1080 30 FPS (16:9) ▼

Content type: Presentation ▼

Save

Picture 16: Conference video settings

Description of video options given in the following table.

Option	Description
Bitrate	Maximum bitrate for the conference available
Content type	Content type for the conference. Supports three predefined profiles: <ul style="list-style-type: none"> ● Presentation. Profile with large resolution and low FPS ● Video. Profile with moderate resolution and FPS ● Camera. Profile with high resolution and FPS

Invite participants

With **Invite participants** option server sends email notification to all users in the conference on email addresses specified in the server address book.

Conference control and monitoring

Before start conference it must be created using the **Home** → **Conferences** → **New conferences** page. In order to start conferences go to **Home** → **Monitoring** and click on the conference name. Example of this page is given on the Picture 17. It shows:

- Conferences;
- Status of conferences – Active/Inactive/Scheduled;
- Waiting participants for all conferences;
- Current connections on the server for all conferences;



Picture 17: List of conferences

Start new conference

To start conference select on the conference name and click “Start Conference” on the **Home** → **Monitoring** page. Initial state of any conference is Inactive or Scheduled. Inactive means that it shall be executed manually. Scheduled means that it shall start according to specified schedule some time.

Conference	State
Marketing results	inactive
Reporting to our boss	inactive
Sync Up meeting	Scheduled

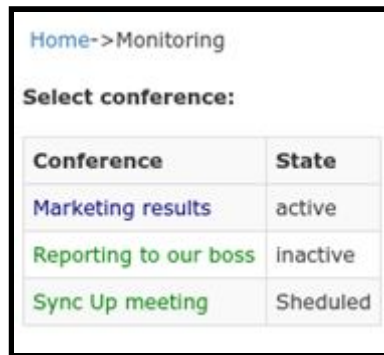
Picture 18: Inactive conference

The following picture shows conference status before start. All participants are disconnected, conference is inactive.

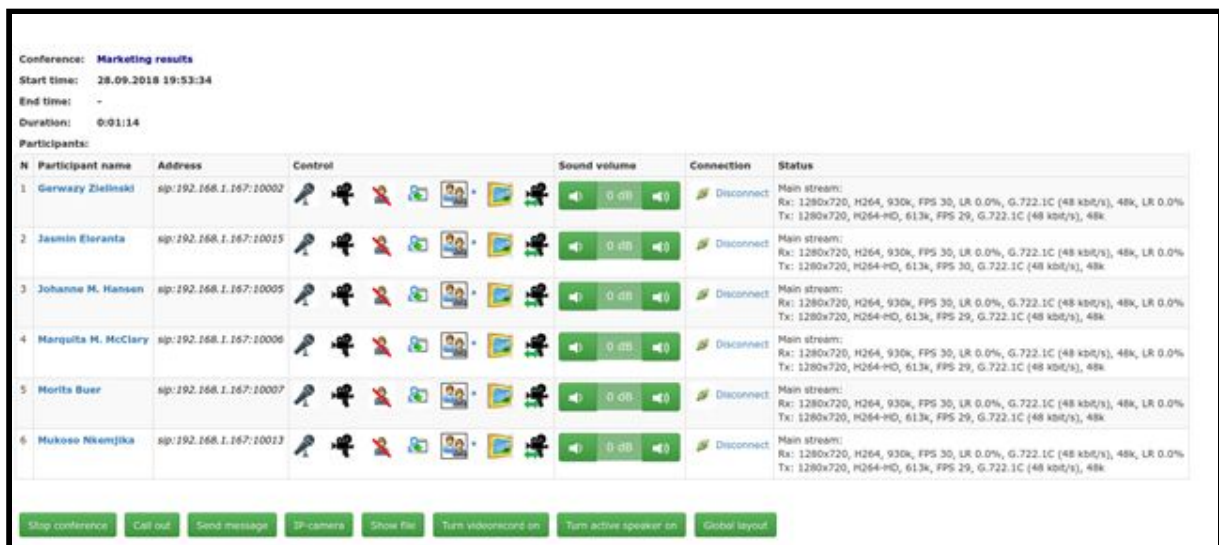
Conference: Marketing results						
Start time: -						
End time: -						
Duration: -						
Participants:						
N	Participant name	Address	Control	Sound volume	Connection	Status
1	Gerwazy Zielinski	sip:192.168.1.167:10002, h323:192.168.1.167:11002		0 dB	Connect	-
2	Jasmin Eioranta	sip:192.168.1.167:10015, h323:192.168.1.167:11015		0 dB	Connect	-
3	Johanne M. Hansen	sip:192.168.1.167:10005, h323:192.168.1.167:11005		0 dB	Connect	-
4	Marquita M. McClary	sip:192.168.1.167:10006, h323:192.168.1.167:11006		0 dB	Connect	-
5	Morits Buer	sip:192.168.1.167:10007, h323:192.168.1.167:11007		0 dB	Connect	-
6	Mukoso Nkemjika	sip:192.168.1.167:10013, h323:192.168.1.167:11013		0 dB	Connect	-

Picture 19: Start new conference

To start the conference click on **Start Conference** button. Server will call all participants simultaneously and build layouts as it was defined on **Home** → **Conference** page. An example of the running conference is shown below:



Picture 20: Conference in active state








Picture 21: Running conference







There is a large table shows general information about the conference.

Manage running conference

To manage and monitor running conference follow **Home** → **Monitoring**. Example of running conference is shown on Picture 21. Table fields description is as follows:

Field	Description
No	Serial number of the participant in the conference
Participant Name	Name of the participant as per address book
Address	SIP or H.323 URI of the participant
Control	Control buttons, see description below
Sound Volume	Participant audio volume control
Connection	Connection state. It is clickable to connect or disconnect participant manually.
Status	Technical information about the connection. It shows video resolution, audio/video codecs, bitrates, fps, etc.

Picture	Description
	Enable audio stream of the participant
	Disable audio stream of the participant
	Enable video stream of the participant
	Disable video stream of the participant
	Participant is not a selected speaker

	Modify layout for this participant.
	Move participant in another conference on this server.
	Symbol * means that participant is getting global layout, that can be edited clicking Global layout button
	Video stream preview
	Remote camera control
	Volume control

There are several buttons available, see next table for description.

Button	Description
Stop conference	Disconnect all connections and stop current conference
Call out	Add new participant to the running conference. The participant can be called selecting it from address book or directly by its URI.
Send message	Send a a text message in the conference. All participants see the message
IP-Camera	Add compatible RTSP IP-camera to the conference. Camera URL shall be given

Show file	Translate picture as a second stream in the conference. Supported formats are JPG, PNG
Turn video record on	Start recording of videoconferencing session in file
Turn active speaker on	Enable layout control by voice activity
Global layout	Modify global layout, i.e. add or remove participants, change position and etc.

Waiting participants and current connections

New participant may want to attend the running conference even if it is not listed in the server's address book. The participant shall call server through its URI and enter conference PIN-code. Upon incoming call server puts participant in a waiting queue and shows PIN code window. To attend the conference the participant shall enter conference PIN code using DTMF capabilities of its endpoint. While server is waiting for PIN-code from the participant it is possible to pick it up and forward to any active conference. To see participants in waiting queue press **Waiting participants** button on **Home** → **Monitoring** page.

To see all connections on the server in all conferences use **Current connections** button.