



# ORION-HMP Specification Guide



Video conferencing has become an integral part of day-to-day and business communications. As the era of NFV/SDN servers and WebRTC technology begins, successful deployment will be dependent on the ability to bridge modern and legacy networks, codecs and standards.

A revolution in multimedia communications and video conferencing, ORION-HMP is a video conferencing platform providing unmatched codec interoperability and call quality for all devices; regardless of network, signaling protocols or bandwidth, in addition to many other features and advantages.

### **Call Quality**

ORION-HMP includes advanced, high-quality encoding/decoding capabilities, enabling frame rates of 60 FPS (and even 120 FPS in certain scenarios). Resolution reaches 4K and full HD, while VGA and CIF are available for bandwidth restricted connection.

In addition, ORION-HMP overcomes low bandwidth connections via Bit-Rate and Resolution adaptation mechanisms, maintaining a high-quality experience for all users. And by dint of its unique GPU processing, it provides ultra-low processing latency (<30mSec).

### **Increased Capacity**

The ORION-HMP capabilities don't come at the expense of quantity. Rather, ORION-HMP leverages the GPU of any COTS INTEL server to exponentially increase concurrent conferences per server and participants count per conference. That's a dramatic increase in service sizing and at the same time a dramatic decrease in Operating Expenses, as well as cutting ongoing energy consumption by up to 90%!

### **Scalability for Business**

ORION-HMP is available either completely virtual, or preloaded on a NUC server.



### **Interoperability**

The software-based ORION-HMP fully supports WebRTC functionality with an embedded WebRTC server and client. Connectivity is hybrid – enabling multimedia sharing between WebRTC, SIP and every leading codec including H.323, HEVC/H.265 and VP8, VP9.

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## **Usability**

ORION-HMP allows users to define their selected screen layout and display capabilities, including full control over size, color, background, font type, language, transparency, positioning and additional features.

ORION-HMP also maintains full-screen pictures via automatic cropping, and eliminating the 4:3/16:9 on-screen mismatches. And in the near future, ORION-HMP will also support chat, whiteboard and file-sharing.

## **Enterprise Friendly**

The agile and fully scalable ORION-HMP is the first multi-party video conferencing designed specifically for SMBs/SMEs and ITSPs. ORION-HMP enables scheduling, email invitations and full work place collaboration, in addition to functioning as a Room System by connecting cameras and microphones to a NUC server.

In addition, ORION-HMP includes optional SRTP support for encryption, and sets the foundations for MS Lync/Skype, and business interoperability.

## **Email Invitations**

A conference scheduling tool on an intuitive GUI invites participants by email and automatically sets calendar events. The email includes a message and unique link to join the conference, as well as call-in details for SIP/H.323 clients.

## **Billing**

For service providers, there's a built-in CDR creation tool, creating usage and billing reports.

## **BFCP & H.323 Gateway**

In addition to the standard SIP Registrar available on ORION-MCU, ORION-HMP includes an internal H.323 Gatekeeper functionality. And for BFCP, ORION-HMP supports standardized content-sharing with SIP and Web-RTC clients.

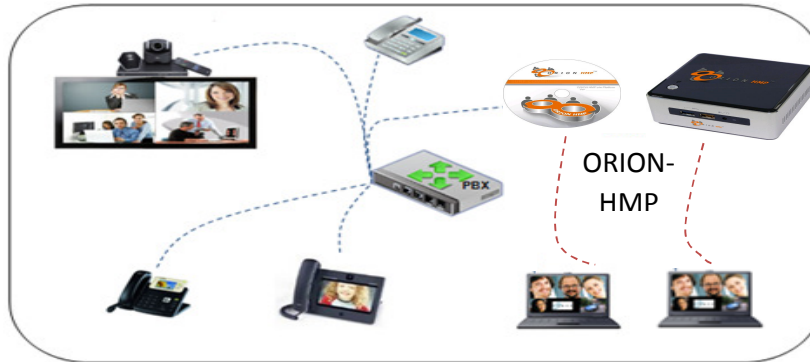
## **SAMPLE NETWORK TOPOLOGIES**

ORION-HMP is unique in its ability to perform under any topology. Leveraging the use of its internal SIP registrar and H.323 gatekeeper functionalities, it frees the customer from the complexity of adding external solutions required to register users. And with its built-in IVVR mechanism, it is equally capable of connecting as an extension to an existing IPBX/SIP Registrar/H.323 Gatekeeper, and welcome users registering through external entities.

In addition, its unique support of hybrid registration allows an exclusive working mode – where some users can register to an existing entity, and others can utilize the internal registering functionalities within ORION-HMP. And if desired, it equally allows for direct dialing into a conference without registration, granting the network manager complete control of its user's accessibility to this service.

All these features ensure maximum flexibility when deploying new networks, and a complexity-free integration to existing networks when being incorporated.

**ORION-HMP Mixed Registration (via PBX and/or Direct Connectivity)**



1. All (SIP via PBX/Gatekeeper) endpoints at the enterprise register to the IP PBX (The IP-PBX supports SIP and/or H.323 Signaling)
2. All (H.323 via PBX/Gatekeeper) endpoints at the enterprise can also register to the (IP PBX for PBX/Gatekeeper) ORION-HMP Internal SIP registrar or H.323 Gatekeeper
3. The ORION-HMP registers, or is configured as a trunk at the (SIP Registrar/H.323 Gatekeeper for PBX/Gatekeeper) PBX
4. ORION-HMP provides Mixing/Bridging/Switching and signaling interoperability.
5. Voice-only end-points can also connect to the bridge.

## CLIENT POLICY

The ORION-HMP video server enables connectivity at present with any SIP and H.323 standard compliant client (WebRTC, starting from next version). The following table presents a list of free clients, tested and certified by SURF for full compatibility with the ORION-HMP Video Server:

Windows	iOS	Android
<i>Linphone (Free; can be downloaded through the following link: <a href="http://www.linphone.org/release/s/windows/Linphone-3.9.1-win32.exe">http://www.linphone.org/release/s/windows/Linphone-3.9.1-win32.exe</a>)</i>	<i>Linphone (Free; can be downloaded from Apple's AppStore)</i>	<i>Linphone (Free; can be downloaded from Android's Google Play)</i>
	<i>Polycom RealPresence mobile. (Free; can be downloaded from Apple's AppStore)</i>	<i>Polycom RealPresence mobile (Free; can be downloaded from Android's Google Play)</i>

Users are encouraged to select their client of choice.

- From the next ORION-HMP Version, SURF will be releasing its WebRTC client to work in full compatibility with any legacy SIP and/or H.323 client
- The ORION-HMP WebRTC client will be available for use on any device supporting WebRTC browser-based functionality

## TECHNICAL SPECIFICATIONS

<b>Video codecs</b>	H.264 up to high profile level 5.1, VP8 - up to 720p, H.265*; VP9*
<b>Video Resolutions</b>	SQ-CIF; CIF; VGA/WVGA; 720p; 1080p*; ultra-HD 4K (3840 x 2160)*
<b>Frame Rates</b>	Up-to 60 Frames Per Second
<b>Audio codecs</b>	G.711a/μ, OPUS, G.722*, G.722.1*, EVS*, SILK*
<b>File play and record formats</b>	AVI, WAV
<b>Connectivity Resiliency*</b>	Bit-Rate Adaptation and Resolution-Adaptation mechanisms, to overcome bandwidth restrained connections
<b>Media processing and encapsulation</b>	IPv4/IPv6*, ICE/TURN/STUN
<b>Management Interfaces</b>	HTTPS Web Browser Manager and Monitor; XML over-TCP (API),
<b>Signaling Protocols</b>	WebRTC (SIP over WebSocket) SIP (RFC3261, 3263, 3264, 3268), SIP preconditions, H.323 (including H.235*, H.245)
<b>Access Control</b>	WebRTC & SIP: Built-in/external registrar ; H.323: Built in*/External Gatekeeper
<b>Content Sharing</b>	H.323:H.239 ; SIP:BFCP* ; WebRTC: Proprietary*
<b>Video and Audio Controls</b>	Extensive On-Screen Display (language, font, background); Full real-time statistics (per conference/participant); On-the fly, User defined layouts per conference; Voice Activation; User defined layouts per participant*; Adaptive Bit Rate*; Adaptive Resolution*; Audio & Video Mute/Unmute control per participant/full conference; Conference Call-in participants from registry list; Conference blocking (For privacy)
<b>Collaboration*</b>	Chat, Whiteboard, File Sharing
<b>Scheduler &amp; Invitations Mechanism*</b>	Pre-configured, scheduled events, mailing mechanism (automatic event setting in participant's Outlook calendar). Embedded link automatically created with the scheduled conference details for WebRTC immediate access into the conference
<b>Per User Video Layouts*</b>	User can select on-screen layout from pre-defined templates and up-to encoder per participant
<b>Aspect Ratio</b>	Automatic cropping tool, abolishing 4:3/16:9 on-screen mismatches – thus providing a full-screen picture
<b>Encryption and authentication</b>	Media: SRTP, DTLS for WebRTC, ARIA, AES (up to 256 bit keys, counter mode, F8), SHA-1 authentication (up to 160 bit), Signaling, TLS, https (for WebRTC)
<b>Video conference max concurrent conferences (per processor)</b>	7 on a single i7-5557U mobile processor, (higher capacity available on other models), using H.264 codec
<b>Video conference max participant performance (per processor)</b>	Variable, depends on a number of external factors: Frame-Rate, Bit-Rate, Network utilization and Processor Model Used
<b>OSD Controls*</b>	Size, Color, Background, Font Type, Language, Transparency, Positioning and additional control features over On-Screen Displays
<b>NUC "Pre-mounting" option</b>	Optional flavor to purchase ORION-HMP pre-mounted on an INTEL NUC server (Core i7-5557U)
<b>Optional "Room System" functionality*</b>	NUC pre-mounted option allows connecting via USB & HDMI a high-quality camera (up-to 4K), mic and display to the server whenever desired – and utilize the solution also as a room system

### \* Roadmap Features – Check for Availability

## SYSTEM REQUIREMENTS

Processors	It is recommended to use processors with 48EU [EU = Execution Units for the integrated graphics]
- Video	Any INTEL Processor, 5 <sup>th</sup> generation (Broadwell) and up, with INTEL HD Graphics
- Audio Only	Any INTEL Processor, 4 <sup>th</sup> generation (Haswell) and up. <b>[This applies to SURF HMP and SURF Motion-HMP, not to ORION-HMP]</b>
NUC:	<b>ORION-HMP Pre-installed:</b> NUC5i7RYH, 8G RAM, 120G SSD
Memory	8GB RAM
Hard Drive:	120GB [SSD Type Recommended]

### SIP+H.323

#### Number of Concurrent Conferences

PARTICIPANTS PER CONFERENCE	4p	6p	8p	16p
<b>RESOLUTION/FPS</b>				
4K	1	1	-	-
1080p@60FPS	1	1	1	1
1080p@30FPS	2	1	1	1
720p@60FPS	2	2	1	1
720p@30FPS, Symmetric	3	3	2	1
720p@30FPS, Asymmetric	4	3	3	1
VGA, Symmetric	6	6	5	3
VGA, Asymmetric	7	6	6	4

#### NOTE:

- \* Measurements conducted on a single INTEL Core-i7 5557U (**Mobile**) Processor. Stronger processors would provide higher capacities
- \* Future ORION-HMP versions would provide additional optimizations for higher capacities

#### About SURF Communication Solutions

SURF Communication Solutions (SURF) is an industry leader in high-capacity processing solutions for real-time multimedia communication systems and applications, delivering the multimedia processing engine behind the leading telecom solutions since 1996. Whatever the platform, network or multimedia requirement, SURF's innovative technologies and platforms deliver value added services to tens of millions of users daily;

The SURF-HMP products mark a new era in NFV/SDN implementations for WebRTC/LTE deployments, presenting the most comprehensive platform for vendors to develop any multimedia service. SURF's trend-setting solutions are available in various form factors (s/w based, appliance, board or chip level), affording unrivalled density, quality and optimal performance. SURF's renowned ORION-HMP family revolutionized the world of Video and Voice Conferencing, making it affordable for all. Whether handling media or signaling, to provide voice, video and/or data over any new or legacy network, bridging between communication islands in the ever-changing world of telecommunication, SURF solutions stimulate change in the way we communicate.