



*Tertiary Education and
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Videoconferencing-as-a-Service for African NRENs

An offer

Introductions



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- On secondment from Jisc – the UK NREN organisation
- Extensive experience of managing videoconferencing in higher education
- Ran research and development projects looking at organisational, financial and environmental factors involved in videoconferencing services for Jisc
- Working at TENET as an NREN Exchange Fellow till December 2016
- This presentation will outline offer for African NRENs for a videoconferencing shared service



A good time to look at VC shared service?



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- Videoconferencing has come of age
 - New software based architectures for video and audio routing and encode/decode
 - The Scalable Video Codec (SVC)
 - Desktop and mobile computing power
 - Flexible cloud like provisioning options
 - Integration options for existing H.323/SIP estate
 - Better intra-African network links

What's wrong with what we already have? (H.323/SIP Conferencing)

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- It's expensive
 - It needs proprietary room CODECs and back end MCUs
 - Licensing and support costs
- It's inflexible
 - Generally lacks cost effective clients for desktop/laptop/mobile use
 - Stuck in expensively equipped boardrooms
- It does not scale well for big meetings
 - Big meetings mean many MCU ports = more expense
- It is hard to share capacity among different users
- The quality is not that good
 - Tend to take quality down to lowest common denominator



Benefits of conferencing

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Consumer and Desktop



Web Conferencing



Integration Platforms



Others



SVC Based



'Legacy' (H.323) Conferencing



Open Source



Key Criteria



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- Must be capable of being hosted on the SANREN Network
- Must not rely on overseas (out of Africa) infrastructure
- Connects rooms to desktop and mobile devices and can easily include guests
- Good local support from suppliers/vendors
- Excellent Video and Audio quality

TENET's Service



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- Standardised on Vidyo
- Capacity sufficient to support all of South African Higher Education and Research institutions
- Support for existing H.323/SIP set ups
- Freely available desktop, web and mobile client endpoint software
 - Native WebRTC using SVC support next year
- “Free” at the point of use
- Integration with institutional Directory Systems

Vidyo characteristics

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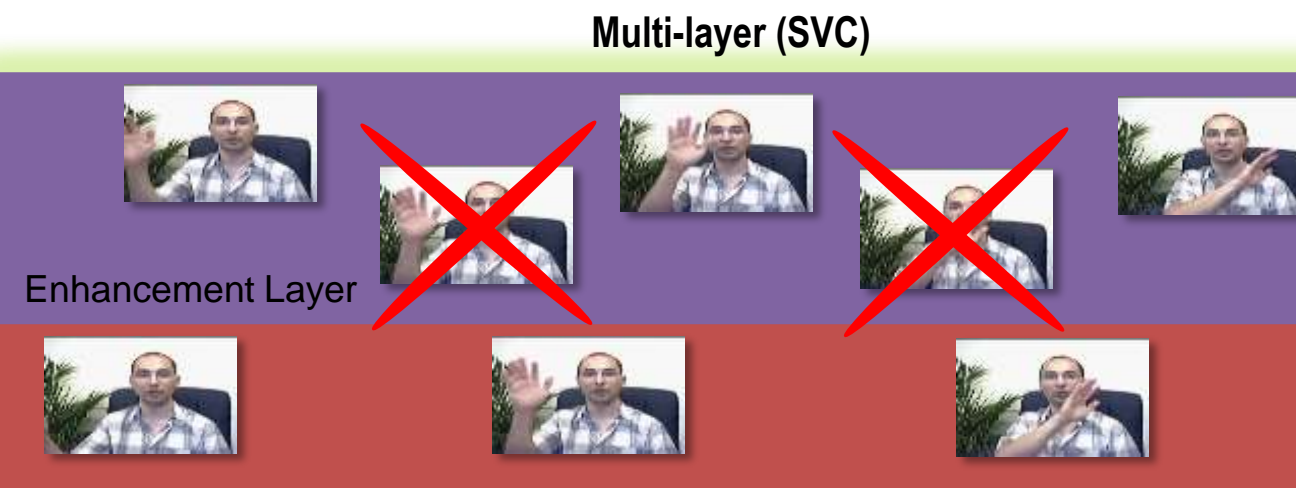
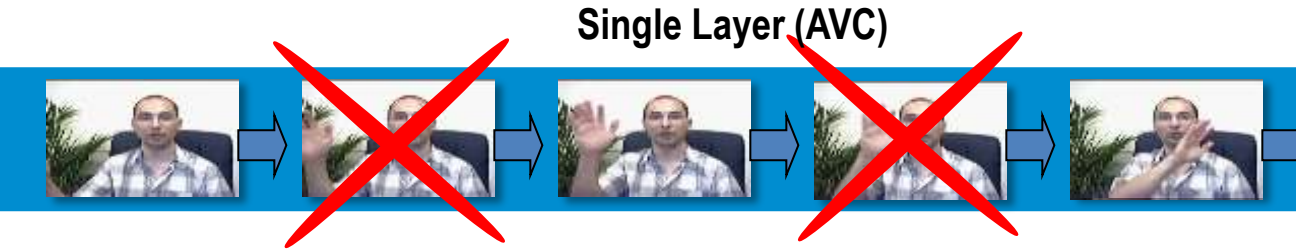
- One of the new software based videoconferencing systems
- Wholly software based
 - Infrastructure and clients (rooms and person devices) runs of off-the-shelf hardware
- High quality – up to 5K and 60fps on suitable hardware
- Uses SVC to allow it adapt well to fluctuating network conditions
- VidyoRouter does not encode/decode/composite – merely switches appropriate quality video and audio to endpoints
 - End points do the encode/decode/composition
- Support via transcoding Gateway for H.323/SIP endpoints
- Replay, Recording and Streaming
- Cross platform OS support
 - Windows, MacOS and Linux
 - iOS and Android
- High quality content sharing
- Supports distributed infrastructure deployment



AVC - Single Layer vs. SVC - Multi-Layer



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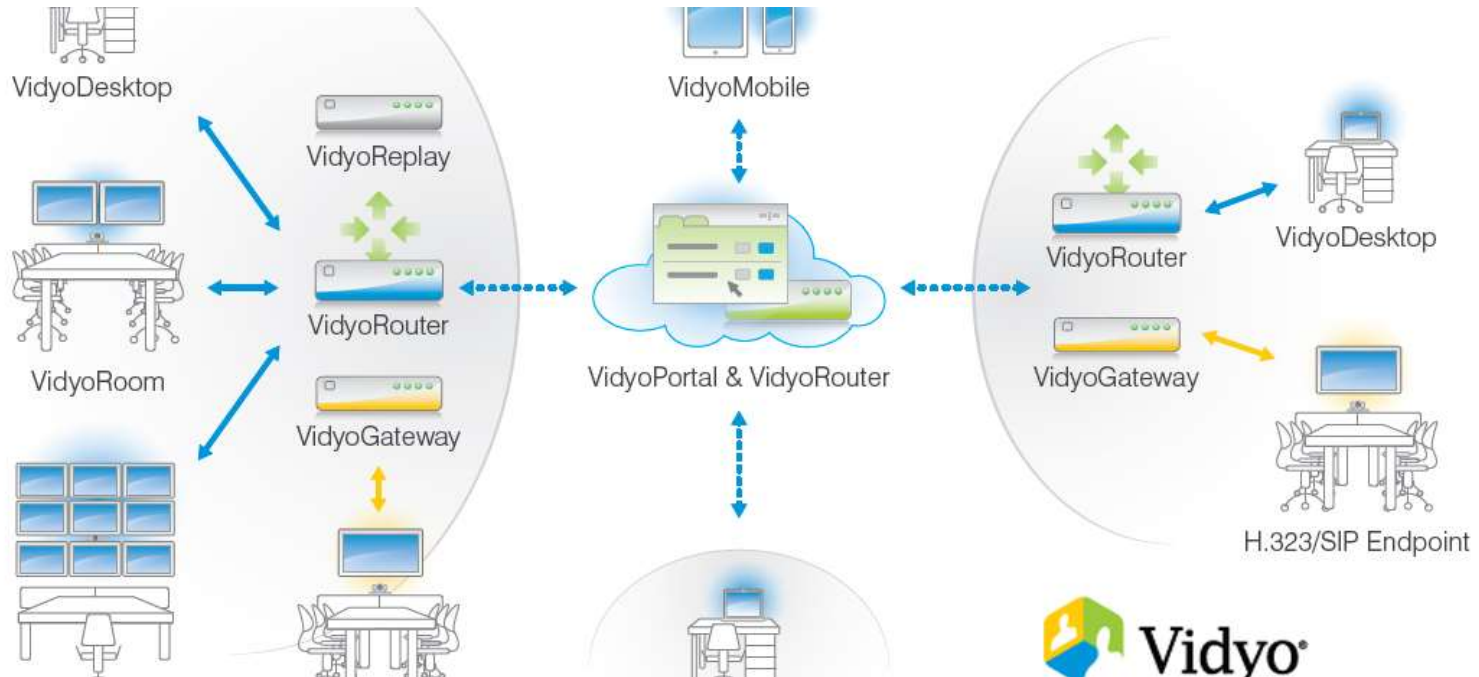


Source: Vidyo

The Vidyo Landscape



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Vidyo Endpoints



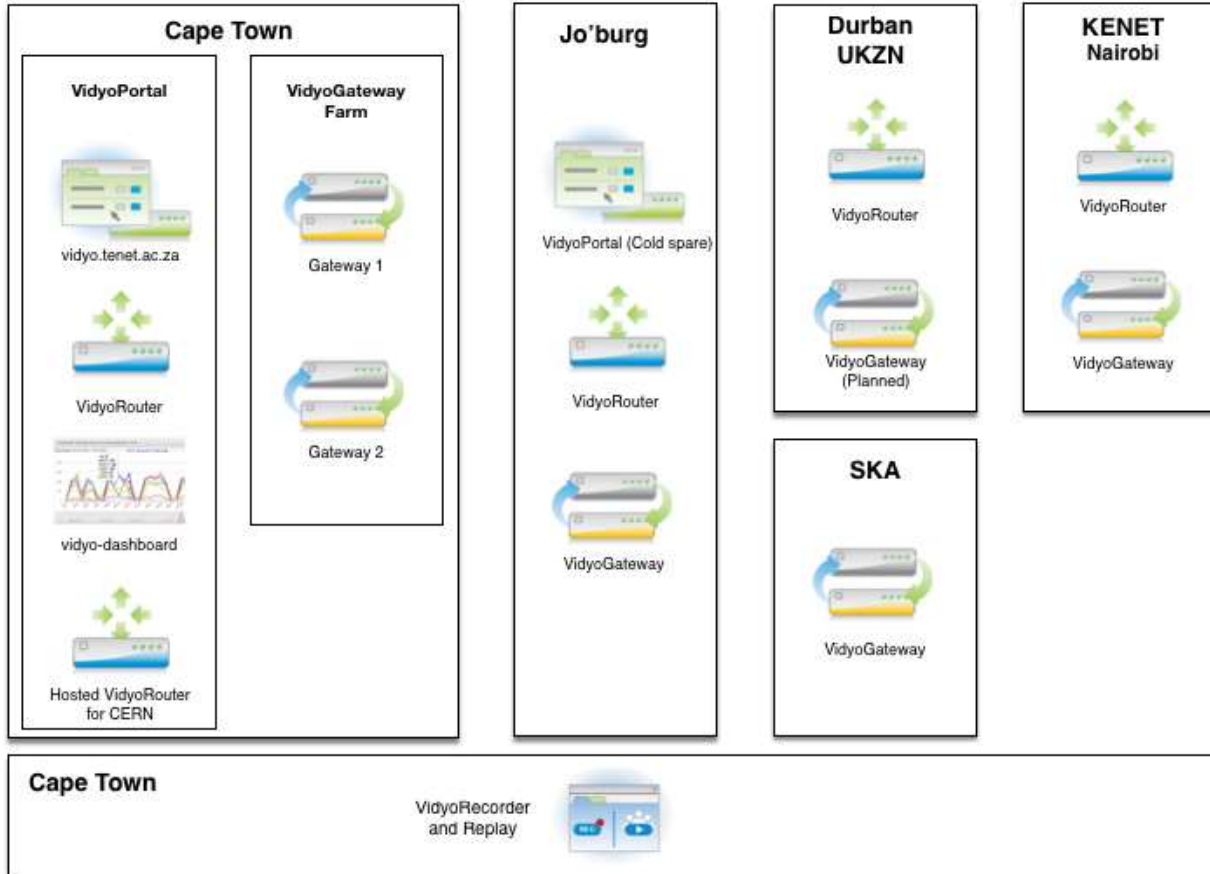
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- Desktop and Laptop
 - Clients for MacOS, Windows (XP – 10) and Linux
 - Up to 1080p30 encode and UHD 4K (3840x2160) Decode on suitable hardware (i7)
 - Show up to 8 participants and content on separate screen
 - Automatic Echo Suppression
- Invite unlimited guests
- Calendar integration
- Mobile
 - Android and iOS
- Web (for guests)
 - Small one-time plugin download currently
 - Native SVC based WebRTC coming soon

TENET Vidyo setup

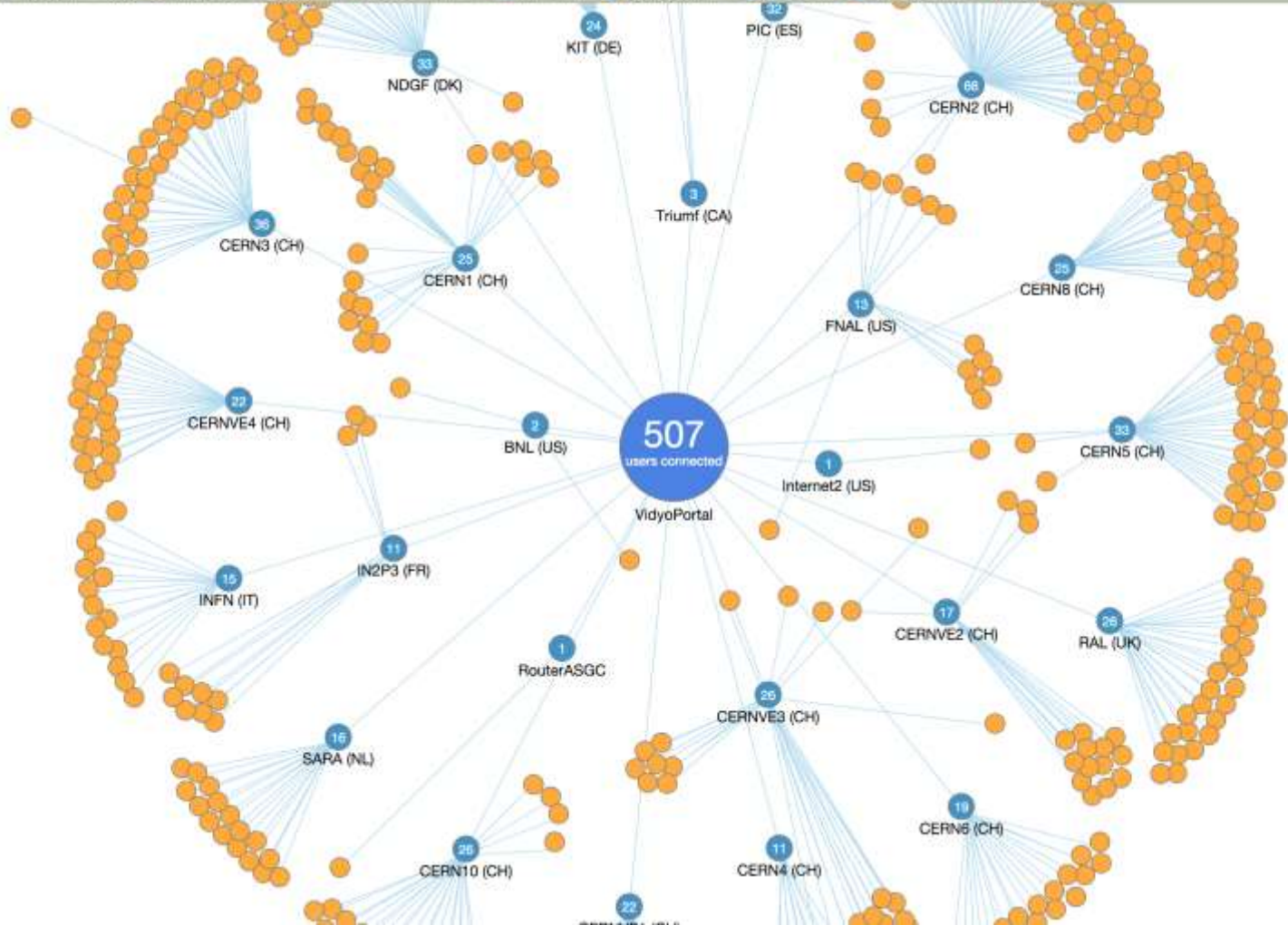
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Credit: SKA Organisation/TDP/DRAO/Swinburne Astronomy Productions





Extending the service

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- KENET have deployed a VidyoRouter and VidyoGateway
- Connected to TENET's VidyoPortal in Cape Town
- Traffic between Kenyan sites stays in Kenya
- Easy for Kenyan users to connect to South African users
- Only needed a VM instance with capability to run these components
- Has worked well in practice with some large meetings and no reports of instability or difficulties in connecting
- Kenyan users also have access to TENET Replay server in Cape Town for recording and streaming
 - Option to deploy Replay server locally (runs under virtualisation)

The offer



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- African NRENs can share TENET's Vidyo infrastructure
- Deploy VMs locally for VidyoRouters, Gateways and Replays as required
- TENET will hook these into its VidyoPortal and ensure that intra-NREN traffic stays local, while facilitating inter-national links
- NRENs can draw on support from TENET and the Vidyo suppliers
- TENET can offer training
- Access to very generous academic discount prices on Vidyo room endpoints and associated equipment
- Cost?
 - To be negotiated!
 - How to cost recover/share costs?
 - Likely to be considerably less than support costs on existing H.323 estate

Benefits



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- Cloud like shared service
 - One pool of licenses shared across multiple users and countries
 - Resilience
 - Extensibility
 - Start small, grow the infrastructure as needed
- Not “rip & replace” – existing H.323 estate can continue to participate
- Reach out to partners and collaborators world-wide
- Reduced costs from reduction in requirement to run expensive MCU setup
- A ready made service!





Thank you



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