

VCOS™ by VideoBureau

Part I: VCOS Overview

Part II: VCOS review by Wainhouse Research

Part III: VCOS Brochure

Part I: VCOS Overview

In 2002, VideoBureau developed a large body of software (VCOS) and intellectual property for the end-to-end control, monitoring and analysis of a fully integrated video communications operating system. The system ties together disparate industry-standard hardware and software components into a single networked entity that can be managed and monitored for large scale enterprise and inter-enterprise video communications. This body of work was sold in March 2003 to V-Span, a leading conference service provider.

Product Focus

Videoconferencing and streaming video technologies are being deployed in rapidly growing numbers worldwide, yet there exists no common operating environment to support the effective use of devices from multiple vendors. As the number of video-related devices continues to grow, the problems of management, maintenance and utilization of the devices grows as well. These problems, collectively, have prevented videoconferencing and streaming from achieving their full potential as a widespread medium for business communications. VideoBureau addresses each of these problems through software-based products that function to enhance the reliability, manageability and usability of complex video communications technologies.

VideoBureau's VCOS™

VideoBureau has designed and developed a software platform called VCOS™ (Video Communications Operating System) that integrates heterogeneous videoconferencing and streaming video devices and protocols into a single, logical platform. VCOS™ makes videoconferencing and video streaming less expensive, more reliable, and easier to deploy, maintain and use. VCOS™ creates an intelligent network to manage the video infrastructure. It enables key features such as:

- Least cost routing
- Automated device testing
- Network monitoring
- Automatic call recovery from device and network failures
- Online reporting and billing
- Remote management
- Intelligent adaptation to device features and functions

By providing support for both the users and facilitators (“backroom” video operators, administrators, network operators, etc.) of the technology, VCOS™ makes it possible for organizations to immediately increase the return on investment (ROI) they get from their

existing deployments while paving the way for network migration (from ISDN to IP) and expansion of current conference room and desktop deployments.

VCOS™ integrates the most commonly used video conferencing components (hardware devices and networks) so that they work as a complete system. VCOS™ does not replace these components; rather, it provides a system that coordinates the operation and management of each component. As such, it is not viewed as a competitive threat to the vendors of these devices. To the contrary, it is perceived by end users of these devices as adding value to the end users' existing investment in video conferencing infrastructure.

The VCOS™ product, by addressing the problems that have limited the acceptance, reliability and scalability of traditional video conferencing, has the potential to enable widespread growth of the use of videoconferencing within and between enterprises. VCOS™ also provides the tools for service providers to offer full featured video communication services to business, government and, ultimately, residential customers.

Part II: VCOS review by Wainhouse Research

Excerpted from Wainhouse Research Publication, ©2002 by Wainhouse Research, LLC:

Video Communications Management Systems

Video Network Management, Call Processing, & Scheduling Software

Industry Analysis & Market Forecast

September 2002

VideoBureau

VideoBureau is a small, scrappy startup with a big vision. Its ambition is to latch onto (or help foment) the transformation of video paradigms and become a provider of a "do-it-all," policy-based, device-independent management and user interface system. Its goal is to be strong on administrator tools, on network and device management, and on automating processes that enable users to conduct their meetings with a minimum of trouble, while receiving context-appropriate information. It calls its product the Video Communications Operating System (VCOSTM), the first release of which was undergoing beta-testing at potential customer sites during summer 2002. The company has stated that its goal is to ship the first formal release of VCOS by October 2002.

VideoBureau's founders have a strong background as integrators of videoconferencing for financial services and court/judicial systems. Three partners who worked together at what was formerly known as the NYNEX Multimedia Division (now part of Verizon) founded the company in 1999 and its first offering was custom video management software. In 2001 VideoBureau was purchased by Initia, a subsidiary of integrator/reseller York Telecom, and in 2002 a group of Initia employees, led by the former VideoBureau executive staff, purchased intellectual property and other assets from Initia and combined these with VideoBureau LLC to form VideoBureau Inc.

VideoBureau's custom video management software was integrated with codecs and switches to provide specialized solutions, and that software has evolved into the VCOS packaged software. It uses a Windows 2000, Java server-based architecture. It does not require a client use a browser for access but does support a browser for reporting purposes. Remote access is available from a Java-enabled terminal. (Installation of the latest version of client software is automatic through WebStart technology, Sun's Java™ Web Start -- a technology for simplifying deployment of Java applications that allows users to launch full-featured applications with a single click from a Web browser.

Basically, VideoBureau approaches the market by creating some sharp distinctions among user types and their requirements, and by attempting to provide an end-to-end solution. It is attempting to address distinct needs experienced by management staff (planners); operators who control and monitor devices and resources on behalf of end users; IS analysts responsible for network infrastructure (as the world moves to H.323 especially) who want some view on the health of the video deployment and network; and non-technical end-users who want a painless and productive video experience without caring about the distinctions between different video technologies.

To address the requirements of all of these type of individuals is a large task indeed, and only time (and a lot of code) will tell if VideoBureau can do it all. What it is attempting to deliver in VCOS is a combination policy manager, call processor, device monitor, and network manager, in a "self-healing" video network operating system—in effect it's attempting to be a complete network management system. Some of its stated capabilities include:

- Policy-based least cost routing (over ISDN and IP, local and wide area networks), minimizing wide area bandwidth costs. (VCOS includes its own embedded gatekeeper.)
- Automatic recovery from failed or failing video calls (retrying or rerouting calls).
- Real-time usage and fault reporting, providing a view of the availability and activity levels of systems and network bandwidth .
- Management of large-scale video deployments through directory services and user-based privileges and security settings—especially for desktop deployments.

To recover from a failure automatically, VCOS recognizes the failure, makes real-time changes to policy based on the failure, and makes an automatic best-effort attempt to "route" around the failure point. Such failures might include a device's ISDN network access device, a device's loss of multiway capability, a device's preclusion from routing payloads over congested IP segment, or inability to route over the default WAN. In many cases the failure is either failure of local ISDN link to endpoint, in which case we route on IP, or failure in the WAN backbone, in which case VCOS routes using the alternate path (IP or ISDN). VCOS also supports remote reboot of a system by an operator.

Systems and software that VCOS can be deployed with include Polycom ViewStation and iPower systems, Tandberg group systems, VCON Vigo, RADVISION ViaIP and onLAN bridge/gateways and ECS gatekeeper, Accord MCU & WebCommander, and Real Networks and Windows Media Streaming Encoders. In fact, VideoBureau wants to take the pain out of deploying streaming video and make video streams easy to deliver and seamlessly integrated into the videoconferencing experience (as a future release, not part of their Q3 2002 release).

VideoBureau is small and lacks a professional services group, preferring instead to sell directly to service providers and through reseller/integrator channels to enterprises for custom deployments. In that regard it differs from some of its competitors, like Forgent, AGT, Todd, and Magicsoft. VCOS itself bears some similarity in technology approach to the competitive products, using a combination of SNMP traps, telnet, http, XML and vendor-specific SDK libraries. If an IT administrator uses HP Openview or any other

SNMP manager, a pop-up screen opens to show alarms. They're also working on supplying their own MIB to Openview that will provide high-level performance parameters.

VCOS has a strong focus on policy management. Policies define bandwidth and protocols, as well as user policies; instead of policy being set at each individual system or call, parameters are set at the VCOS level. As an example, VCOS examines if an endpoint has an embedded MP capability and, if not, will automatically utilize a network's MCU. It does this even during a call so that, if a four-site MP call wishes to add a fifth site, the policy manager will determine if another embedded MP is available on one of the endpoints. If not, VCOS will disconnect the MP call, provide a message to the users asking that they standby while the call is reconfigured, and enable each endpoint to dial the MCU or have the MCU dial them (depending on pre-set policy).

The GUI is color-coded, with the display tied to error conditions or system availability and fairly simple to understand. In situations where network operators are responsible for establishing calls, they can be set up individually by dragging and dropping system icons, or by selecting multiple objects and creating a multipoint call.

A lot of intelligence is built into VCOS. When an operator requests VCOS to perform an action, the request is transmitted from the client to the server. The server determines if and how it should pass the request along to a device. This enables it to handle decision making about ISDN versus IP calls—and if an ISDN interface is not working on a dual-mode system, it might even make part of a call IP and part of it ISDN. A lot of device control is built in as well, over cameras, systems (auto answer or auto reject), and external A/V devices. As one example, camera control is available from VCOS, even in bridged calls (as long as the remote systems are all VCOS-networked devices instead of out-of-network devices). Certain vendor-specific capabilities, such as TANDBERG's DuoVideo and Polycom's Visual Concert, cannot be controlled.

Another differentiation for VCOS is its method for handling users. The VCOS interface is designed to eliminate the need for end users to know anything about equipment, protocols, addressing schemes, and network topology. At the same time, VCOS has its own log-in and security methods so that users can be assigned permission levels—and can be tracked even when they make calls from different endpoints. They can even call user-to-user as opposed to user-to-endpoint, which is part of VideoBureau's efforts to make the technology easier to use. This approach also improves efforts for billing and chargebacks, and in essence associates users with different privilege levels. (Charge codes are supported as well for billing support.)

Those privilege levels are an important differentiation for VideoBureau. The software will even downspeed during a call to lower bandwidth in cases of network congestion, depending on that user's privilege settings. VCOS will communicate onscreen to the user who receives the lower bandwidth indicating that the best possible bandwidth is being made available to them, and what that speed is. An entire enterprise can be segmented based on department, user groups, or class of users, useful for setting policy and

permission levels. (Some of these privilege levels are being promised in future releases, and will not be a part of Release 1.0.

VideoBureau is not the only software vendor addressing streaming video as an adjunct to two-way video. They attempt to address some of the various angles on streaming in a pretty broad fashion, though, by supporting live streaming, multicasting, and even creating video emails or recordings of meetings. This is to be contained in a future release, along with support for external schedulers and new types of user interfaces.

Strengths: VCOS is a nicely architected, well thought out, balanced approach to addressing some of the traditional hassles in videoconferencing. We like its entire approach to policy management, bandwidth management, and intelligent automated decision making. A dashboard available to a single policy manager, and the approach to different classes of users, together seem to be well conceived.

VideoBureau also seems to be going out of its way to provide answers for everyone in the videoconferencing "food chain." If an organization wants operator support, they can have it, but if they want to leave their end users alone to manage themselves, they can have that too. If it actually delivers all that the company is promising, VCOS could be a valuable tool that helps organizations wean themselves away from some of the traditional behaviors demanded by traditional videoconferencing, and really get end-to-end transparent network management.

Weaknesses: The VCOS scheduler is a very basic, text-based internal scheduler, essentially a placeholder for use by operators more than by end users. It is used to enter the information for auto-launching a call, and it will not let a conflicting call be scheduled, which presumably means higher-privilege users cannot bump lower-privilege users. VideoBureau makes an assumption that any scheduled call should bump an ad hoc call; it's not so clear from talking to users that they wouldn't want control over that policy. An operator can bump a scheduled call for an ad hoc call by manually editing the prescheduled call. This is something VideoBureau could fix easily in a future release. They are planning on an API to support external schedulers in a future release. Similarly, in their first release they cannot deliver firmware or software upgrades to endpoints, which means anyone accustomed to using GMS or TMS or some other approach to deliver firmware upgrades in batch mode would need to continue using their existing approach.

Some of the user interfaces are not very far along, and VideoBureau should beef up the information they provide to power users and technicians who can handle that information. They are promising a much more robust set of interfaces in their Release 1.1, including a toolbar that will coexist with a group system's IR control.

Finally, because they are a small startup, there are certain to be glitches. Because they have no professional services group, they will be only as good as their reseller and integrator partners can deliver. So they will need to partner well as they sign up channel partners.

Packaging/Pricing: VCOS is available with or without its internal gatekeeper, but VideoBureau will tout the advantages of buying that gatekeeper from them. Pricing starts at \$36,000 for 50 resources managed, and ranges up to \$123,000 for 200 resources managed—including the gatekeeper and light scheduler. They're specifically targeting and will provide custom quotes with sharper per-resource discounts for service providers.

Part III: VCOS Brochure:

10 YEARS OF MAKING VIDEO- CONFERENCING WORK ON USERS TERMS TAUGHT US A FEW THINGS.

Effective videoconferencing is a great way to communicate but too often the experience is filled with frustration.

The combination of different devices from different manufacturers with different interfaces over different types of networks and no central management is a recipe for a bad experience. At VideoBureau, our engineers have been solving those problems by doing custom integration for major end-user organizations for years.

Ultimately, we attacked the problem head-on through a software solution designed to give enterprises and service providers the ability to bypass all that integration and use our Video Communications Operating System (VCOS™) instead.

VCOS™ makes your videoconferencing...
**more reliable, easier to use, easier to manage,
cheaper to operate and extensible...**

**But don't just take our word for it!
See what the experts have to say...**

"VCOS is a nicely architected, well thought out, balanced approach to addressing some of the traditional hassles in videoconferencing. Its entire approach to policy management, bandwidth management, and intelligent automated decision-making is commendable. A dashboard available to a single policy manager, and the approach to different classes of users, together seem to be well conceived.

We especially like its intelligent handling of embedded MP and MCU resources, a cut above many other vendors.

VideoBureau also seems to be going out of its way to provide answers for everyone in the videoconferencing "food chain." If an organization wants operator support, it can have it, but if it wants to leave end users alone to manage themselves, it can have that too.

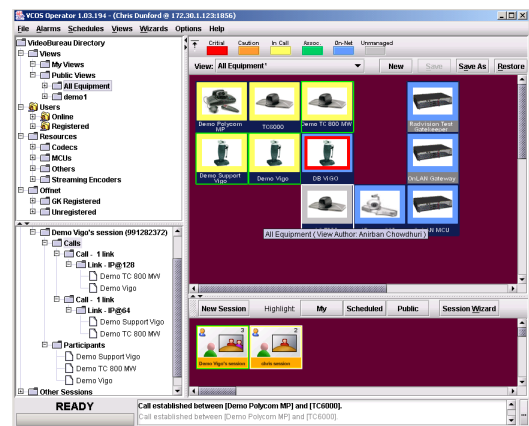
**-Wainhouse Research Report on Video
Network Management, September 2002**

How Does It Work?

The VCOS™ server acts as the clearinghouse for all videoconferencing-related transactions (calls, usage reports, alarms, etc.). Operators or users calls are routed automatically into a central system that finds the most reliable and most efficient route to the requested participants.

The ability of VCOS™ to know the capabilities of each of the devices and networks in the enterprise allows it to "look ahead" when a call is requested to find the best use of the existing components and to recover from failures automatically or route around potential problems.

VCOS™ works with existing devices and networks and as such it provides immediate ROI on the money enterprises have already spent on videoconferencing.



**Sample VCOS™ Operator Interface
VCOS is easy to deploy because it is:**

- **Multi-vendor** - works with the popular devices from leading device manufacturers such as Polycom (including PictureTel and Accord), Tandberg and Radvision.
- **Multi-protocol** - ISDN and IP transport networks supported with same degree of VCOS and video functionality
- **Scalable** - from small departments through multi-enterprise deployments and Service Providers
- **Non-invasive** - does not require changes to existing devices or networks.
- **Standards based** - Microsoft 2000 Server and database, Java clients
- **Policy based** - The VCOS™ rules engine allows each organization to customize the system according to their specific operating policy. Basic rules come as default settings that can be easily changed.
- **Extensible** - Support room-based usage **and** manage the move to the desktop, all within VCOS™.

For a more detailed product description and company information, please visit us at www.videobureau.com.