Vidyo Embedded in the Cloud
December 2017, Dave Michels

1. Overview

1. Vidyo, Inc., is a privately held, venture-funded company founded in 2005 that provides software-based visual communications technology, including products and services. Over the years, the company has raised $163 million in funding.

2. Vidyo disrupted the market with both its technical approach to videoconferencing and its embeddable approach to video-enabling applications.

3. Soon after the company launched its development stack, it used its own suite to create an enterprise videoconferencing solution that was competitive with vendors (at the time) such as Cisco, Tandberg, Radvision, and Polycom.

4. Though enterprise videoconferencing remains a viable market, Vidyo recently turned its focus back to developers with a cloud-centric platform approach.

5. **VidyoCloud** is a platform as a service designed to simplify the deployment and administration associated with video infrastructure. On top of VidyoCloud are three product services: VidyoConnect, VidyoEngage, and vidyo.io.

   a) **VidyoConnect** is an enterprise-grade videoconferencing-as-a-service solution that spans rooms, browsers, and mobile apps. In addition to a pure-cloud model, it supports hybrid deployments.

   b) **VidyoEngage** is a turnkey video-based engagement solution that powers customer/patient interactions. It can be implemented with websites, kiosks, and apps, and includes engagement features such as skills-based routing, queueing, video hold, and post-call surveys.

   c) **Vidyo.io** is a communications platform-as-a-service (CPaaS) offering that provides video APIs and SDKS – related development tools and services for the creation of customized, embedded, video-enabled applications and devices.

Key Pointz

- Vidyo continues on its mission to video-enable everything.
- The company has made an effective transition to cloud services.
- Vidyo revised and simplified its portfolio to VidyoConnect, VidyoEngage, and vidyo.io. All three are built atop VidyoCloud.

- Vidyo is well-positioned on several fronts:
  - Leadership in embedded video capabilities.
  - Momentum in several verticals.
  - Partnerships and alliances that include Google, Kaiser Permanente, and more.
  - Technological advantages in current and emerging video technologies.
- Visual communications are rapidly expanding into workflow and business processes.

2. Pay for Video?

1. There is a common misconception that video technologies are free and open, so there is no need to purchase proprietary solutions. This is only partially true.
2. In May 2011, Google released an open-source project for browser-based real-time communication known as WebRTC. Both the IETF and W3C standards organizations began to standardize the free technology suite.
3. Prior to WebRTC, the primary video technologies were licensed. Thus, WebRTC stimulated the marketplace with freely available video technologies.
4. In 2017, Microsoft and Apple joined Google and Mozilla in adding WebRTC support to their browsers, giving WebRTC more universal appeal. Both Android and iOS support WebRTC.
5. Today, WebRTC offers codecs and related technologies that sufficiently enable audio and video communications. WebRTC is not a complete solution stack. It's an endpoint solution that still requires video expertise regarding signaling, mixing, recording, and other services.
6. WebRTC is exceptional as an ad-hoc endpoint and ideal for guest access. Regular users generally prefer installed video clients over browser-based WebRTC clients, because they tend to provide a more comprehensive UI and experience.
7. Areas that are particularly challenging are interoperability across codecs, group conferencing, recording, and capacity planning. Although hard to confirm, it appears most organizations opt to outsource these complexities by choosing commercial platforms and services.
8. Video remains complex and specialized. Vidyo and others allow developers to focus on other aspects of their work and outsource (with support) the video stack and/or video operations.
9. Many predicted the end of the commercial PBX with the availability of open-source, free voice technologies such as Asterisk and OPUS. Yet proprietary telephony implementations remain viable and dominant. Enterprises place considerable value on support and maintenance.

3. Background on Scalable Video Coding (SVC)

1. To understand Vidyo, it is necessary to understand SVC.
2. From the beginning, Vidyo took a technically different approach to videoconferencing that leverages Scalable Video Coding (SVC).
3. SVC is conceptually simple. It refers to an encoding method that produces multiple layers within a single bitstream. The base layer alone carries a complete signal, and each optional layer enhances the signal. The total number of layers used determines the received quality and frame rate, which can vary during a session.
4. SVC is actually a subset of the broader approach known as Advanced Video Coding (AVC).
5. Most AVC implementations assume a consistent resolution and frame rate for each endpoint. These settings are determined during call setup. The different approaches use different architectural models:
   1.5.1. AVC systems rely heavily on network infrastructure to manage/control network links.
   1.5.2. SVC relies on intelligent endpoints to encode and decode successive signaling layers.

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