

Patent”); 9,729,594 (Compl. Ex. B) (the “594 Patent”); and 9,762,636 (Compl. Ex. C) (the “636 Patent”) to Harold Price (collectively, the “Asserted Patents”).

2. I am being compensated for my work in this matter by WAG Acquisition, L.L.C. (“WAG”), at the rate of \$450.00 per hour, with reimbursement for actual expenses. I have no personal or financial stake or interest in the outcome of the above-referenced litigation. My compensation is not tied to the outcome of this matter, is not based on the substance of the opinions rendered here, and I have no financial interest in WAG.

I. QUALIFICATIONS

3. I have a long professional background in information technology and network engineering, and for the past 20 years I have been the chief executive officer of a specialized Internet hosting company that I founded, which among other things provides Tier I Network Operations Center capabilities for corporations, local municipalities, Federal Government programs, and regulatory agencies in and around southern California. Over the course of my career I have developed extensive technical experience in the field of the Asserted Patents, as discussed briefly below, including experience concerning multimedia communication protocols over the Internet and computer networks. A copy of my curriculum vitae is attached as Exhibit A.

4. My day-to-day work in my present capacity involves direct hands-on as well as strategic involvement in the issues of networked data distribution and access, including without limitation architecting and configuring high-capacity content servers, proxy servers, content distribution networks (CDNs), edge and origin servers, peer-to-peer communications, as well as the lower-level routing and switching infrastructure and communications protocols and standards underlying such systems.

5. In prior positions, I was the Chief Technology Architect (in addition to being the CEO) for 15 years for a company I founded that was the original communications technology “skunk-works” for Novell Inc. In this capacity, I designed basic and advanced telecommunications and network interfaces for Novell and other companies and developed a mastery of the standards and protocols underlying the Internet. I authored the Network Communications Services Interface (“NCSI”) that became a de-facto communications software LAN/WAN standard, with more than 3 million deployments of software. I also developed protocol adjustments in Novell IPX Protocol for adaptive packet buffering required by LAN/WAN communication (Asynchronous and LAPB X.25) gateways, receiving Industry Product of the Year awards for successive years (1988, 1990, 1991 and 1996).

6. I previously served for 10 years architecting network information processing technologies for Goldman Sachs as a senior consultant. In this capacity, I was the architect, designer, development manager, and developer in Goldman’s Network Workstation Technologies Department. I was also the architect of Goldman’s product strategy and deployment of online delivery of consolidated live market data information into local and wide area network-based workstations for mission critical securities trading operations in the worldwide trading rooms of the firm. In particular, I developed proprietary adaptive buffering protocols to mitigate stream delays when terrestrial transatlantic data links were routed through backup satellite connections affecting the flow of streaming market data feeds used for program trading operations.

7. As Chief Technology Officer of ShowBizData Inc. between 2000 and 2002 as an “early adopter” pioneered the online Internet streaming of various lived events of the Cannes

Film Festival, BFTA Awards and the Sundance Film Festival using both commercial and proprietary systems we architected and developed.

8. I am also a Network Computing Paradigm Award recipient.

9. I believe that I am qualified to provide reliable technical opinions in the field of the Asserted Patents.

II. LEVEL OF SKILL IN THE ART

10. I have been asked to identify the level of training and/or experience that would qualify someone as a person of ordinary skill in the art (“POSITA”), in the field of the Asserted Patents (Internet streaming media), circa 1999-2000. In my opinion, a POSITA would have working familiarity with the basic standards applicable to distribution content over the Internet, including the most common video encoding and streaming protocols. In my view, the education and/or working experience necessary to acquire the requisite familiarity with the subject matter to qualify as a POSITA would have included either (1) a bachelor’s degree or equivalent in a field such as Electrical Engineering, Computer Engineering, or Computer Science, or an equivalent field that includes network engineering as a topic of study, plus at least one year of practical academic or industry technical experience in the computer network field, such as serving as an engineer for an streaming content provider performing network design, development, or configuration tasks, or as a software developer for network communications software or related utility software, or (2) or at least three years’ fulltime technical experience as stated (or an equivalent combination of academic study and work experience).

III. TECHNICAL BACKGROUND

11. I refer herein to text found in the specifications of the Asserted Patents. These patents differ in the claims appended at the end of the respective patent documents, but share a

common written description preceding the claims, and a common set of drawings. However, due to pagination and other incidents of the Patent Office printing process, the line and column citations for specific wording varies slightly from patent-to-patent. Unless otherwise noted, my citations are to the column and line numbers of the '594 patent (chosen only because that is the patent most cited by the Defendants in their submissions).

12. Digital media programming may be collected in the aggregate in a media file on an electronic storage device, e.g., a computer disk. *See* 1:57-60.

13. The programming may be distributed by distributing replicas of the physical medium (e.g., CDs or DVDs), or by download over a communications network of the entire file comprising the program.

14. However, it is often considered advantageous to stream the file rather than provide physical copies or a download of the entire program, for numerous reasons, including, for example, handling live programming where the program may be ongoing or concerns a current event, and should be delivered in at least perceived real time. *See, e.g.*, 1:60-67. It is also well appreciated that other reasons for streaming as opposed to download include efficiency of time and bandwidth utilization, limiting unauthorized copying, etc.

15. Digital media comprises a time-sequenced succession of data elements, into which an audio/video program is digitally encoded, and from which encoding it is electronically played out, in the proper sequence, in a player device. *See, e.g.*, 6:30-32.

16. Communicating a time-sequenced and continuous stream of data such as that in an audio/video encoding and playback places demands on the communications channel, especially where the channel is over the Internet. *See* 2:34-40.

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