IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

Case No.:

T5.2 LTD.,

        Plaintiff,

v.

CITRIX SYSTEMS, INC.

        Defendant.

_____/

COMPLAINT

Plaintiff T5.2 Ltd. ("Plaintiff" or "T5.2") files this Complaint against Citrix Systems, Inc. ("Defendant" or "Citrix") for patent infringement.

I. NATURE OF THE ACTION

1.   This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 271, *et seq.*, to enjoin and obtain damages resulting from Defendant's unauthorized and infringing manufacture, use, sale, offering for sale, and/or importation of methods and products incorporating the patented inventions, and Defendant's inducement of and/or contribution to the same conduct by others.

2.   T5 Labs Ltd. ("T5 Labs") is the owner of the following patents: U.S. Patent No. 7,916,147 (the "'147 patent"); U.S. Patent No. 8,081,192 (the "'192 Patent"); U.S. Patent No. 8,203,568 (the "'568 patent"); U.S. Patent No. 8,466,922 (the "'922 Patent"); U.S. Patent No. 9,113,146 (the "'146 Patent"); U.S. Patent No. 9,117,285 (the "'285 Patent"); U.S. Patent No. 9,424,621 (the "'621 Patent"); and U.S. Patent No. 9,852,490 (the "'490 Patent") (collectively, the "Patents").

3.   Pursuant to its exclusive license with patent owner T5 Labs, Plaintiff is the exclusive licensee with all right, title, and interest in and to the Patents.

The '147 Patent

4.   The '147 Patent, entitled "Centralised Interactive Graphical Application Server," duly and legally issued on March 29, 2011 from U.S. Patent Application No. 10/506,151, filed on March 3, 2003, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '147 Patent is attached hereto as Exhibit 1 and is incorporated by reference.

5.   T5.2 is the exclusive licensee of the '147 Patent with all substantial rights to the '147 Patent, including the exclusive right to enforce, sue, and recover damages for past and future infringement.

6.   T5.2 has standing to sue for infringement of the '147 Patent.

The '192 Patent

7.   The '192 Patent, entitled "Centralised Interactive Graphical Application Server," duly and legally issued on December 20, 2011 from U.S. Patent Application No. 13/032,401, filed on February 22, 2011, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '192 Patent is attached hereto as Exhibit 2 and is incorporated by reference.

8.   T5.2 is the exclusive licensee of the '192 Patent with all substantial rights to the '192 Patent, including the exclusive right to enforce, sue, and recover damages for past and future infringement.

9.   T5.2 has standing to sue for infringement of the '192 Patent.

The '568 Patent

10.   The '568 Patent, entitled "Sharing a graphical processing unit between a plurality of programs," duly and legally issued on June 19, 2012 from U.S. Patent Application No.

13/298,266, filed on November 16, 2011, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '568 Patent is attached hereto as Exhibit 3 and is incorporated by reference.

11.   T5.2 is the exclusive licensee of the '568 Patent with all substantial rights to the '568 Patent, including the exclusive right to enforce, sue, and recover damages for past and future infringement.

12.   T5.2 has standing to sue for infringement of the '568 Patent.

The '922 Patent

13.   The '922 Patent, entitled "Centralised Interactive Graphical Application Server" duly and legally issued on June 18, 2013 from U.S. Patent Application No. 13/369,280, filed on February 8, 2012, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '922 Patent is attached hereto as Exhibit 4 and is incorporated by reference.

14.   T5.2 is the exclusive licensee of the '922 Patent with all substantial rights to the '922 Patent, including the exclusive right to enforce, sue, and recover damages for past and future infringement.

15.   T5.2 has standing to sue for infringement of the '922 Patent.

The '146 Patent

16.   The '146 Patent, entitled "Centralised Interactive Graphical Application Server" duly and legally issued on August 18, 2015 from U.S. Patent Application No. 13/887,522, filed on May 6, 2013, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '146 Patent is attached hereto as Exhibit 5 and is incorporated by reference.

17.   T5.2 is the exclusive licensee of the '146 Patent with all substantial rights to the

'146 Patent, including the exclusive right to enforce, sue, and recover damages for past and future

infringement.

18.   T5.2 has standing to sue for infringement of the '146 Patent.

The '285 Patent

19.   The '285 Patent, entitled "Centralised Interactive Graphical Application Server"

duly and legally issued on August 25, 2015 from U.S. Patent Application No. 14/138,065, filed on

December 21, 2013, naming Graham Clemie and Dedrick Duckett as the inventors. A true and

correct copy of the '285 Patent is attached hereto as Exhibit 6 and is incorporated by reference.

20.   T5.2 is the exclusive licensee of the '285 Patent with all substantial rights to the

'285 Patent, including the exclusive right to enforce, sue, and recover damages for past and future

infringement.

21.   T5.2 has standing to sue for infringement of the '285 Patent.

The '621 Patent

22.   The '621 Patent, entitled "Centralised Interactive Graphical Application Server"

duly and legally issued on August 23, 2016 from U.S. Patent Application No. 13/887,538, filed on

May 6, 2013, naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct

copy of the '621 Patent is attached hereto as Exhibit 7 and is incorporated by reference.

23.   T5.2 is the exclusive licensee of the '621 Patent with all substantial rights to the

'621 Patent, including the exclusive right to enforce, sue, and recover damages for past and future

infringement.

24.   T5.2 has standing to sue for infringement of the '621 Patent.

The '490 Patent

25.   The '490 Patent, entitled "Centralised Interactive Graphical Application Server" duly and legally issued on December 26, 2017 from U.S. Patent Application No. 15/212,349, filed on July 18, 2016 naming Graham Clemie and Dedrick Duckett as the inventors. A true and correct copy of the '490 Patent is attached hereto as Exhibit 8 and is incorporated by reference.

26.   T5.2 is the exclusive licensee of the '490 Patent with all substantial rights to the '490 Patent, including the exclusive right to enforce, sue, and recover damages for past and future infringement.

27.   T5.2 has standing to sue for infringement of the '490 Patent.

II.   THE PARTIES

28.   Plaintiff T5.2 is a company existing under the laws of England and Wales, with its principal place of business located at 31 Belitha Villas, London N1, IPE, U.K.

29.   Citrix is a corporation organized under the laws of Delaware with its principal place of business at 851 West Cypress Creek Road, Fort Lauderdale, Florida 33309. Citrix can be served with process by serving its registered agent in Florida, Corporation Service Company, at 1201 Hays Street Tallahassee, Florida 32301-2525.

III.   JURISDICTION AND VENUE

30.   Because this action arises under the Patent Laws of the United States, in particular 35 U.S.C. §271 *et seq.*, this Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§1331 and 1338(a).

31.   This Court also has personal jurisdiction over Citrix because, among other things, (i) Citrix maintains a regular and established place of business in the State of Florida and in this District; (ii) Citrix employs staff and sells products and services to customers in the State of

Florida and in this District; and (iii) the patent infringement claims arise directly from Citrix's conduct and continuous and systematic activity in the State of Florida and this District.

32.   This Court has general and/or specific personal jurisdiction over Citrix in that it has, directly or through agents and/or intermediaries, committed acts within the State of Florida and this District giving rise to this action and/or has established minimum contacts with the State of Florida and this District such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

33.   Defendant directly and/or through its agents and/or intermediaries makes, uses, designs, manufactures, distributes, imports, offers for sale, sells, and/or advertises its Accused Instrumentalities and components and affiliated services thereof in the State of Florida and this District. Defendant also induces others, and contributes to the infringement of others, including without limitation, its customers and/or end users to use and make the Accused Instrumentalities.

34.   Defendant has placed, and continues to place, Accused Instrumentalities and components thereof into the stream of commerce, through an established distribution channel, with the knowledge and/or understanding that such products and components thereof are sold in the United States, including in the State of Florida and specifically in this District.

35.   Defendant transacts substantial business with entities and individuals in the State of Florida and in this District.

36.   Defendant has committed acts of patent infringement within the State of Florida and this District by directly infringing one or more claims of the Patents. Defendant also has committed acts of patent infringement within the State of Florida and this District by inducing and/or contributing to direct infringement of one or more claims of the Patents by users of its products in the State of Florida and this District.

37.   On information and belief, Defendant derives, and has derived, substantial revenue from its infringing activity occurring in the State of Florida and within this District and/or should reasonably expect its actions to have consequences in this State of Florida and this District.

38.   Venue is proper in this District pursuant to 28 U.S.C. §§ 1331, 1338(a), 1391(b), (c), & (d), and 1400(b) because Defendant has a regular and established place of business in the District, has transacted business in this District, and has committed, induced, and/or contributed to acts of patent infringement in this District.

IV.   NOTICE

39.   Defendant has received actual and/or constructive knowledge of the Patents and the infringing conduct.

40.   On August 14, 2013, Citrix received notice of "U.S. Patent Nos. 8,466,922; 8,081,192; […] 8,203,568; 7,916,147 as well as pending continuations" (which included applications that ultimately issued as U.S. Patent Nos. 9,113,146 and 9,424,621) by email that identified Citrix's products and stated that Citrix may be interested in licensing the patented technology.

41.   On or about July 29, 2016, Citrix received further notice of its infringement of "United States Patent Nos. 9,117,285, 9,113,146, 8,466,922, 8,203,568, 8,081,192, 7,916,147 […] and its other patent pending intellectual property." The letter stated that "[t]he T5 Patents cover commercially significant developments in the fields of 'virtual desktop infrastructure' (VDI), 'virtual applications,' 'desktop as a service' (DaaS) and 'cloud gaming'" and that such markets are supported by Citrix's product lines. The purpose of the July 2016 notice was to "provide Citrix the opportunity to acquire rights in the T5 Patents and related intellectual property . . . ."

42.   On or about October 31, 2022, Citrix received further notice by letter, identifying "U.S. Patent Nos. 7,916,147, 8,081,192, 8,203,568, 8,466,922, 9,113,146, 9,117,285, 9,424,621, [and] 9,852,490 [. . .]" and stating "Citrix, including its subsidiaries and affiliates, has and continues to infringe the Patents."

43.   On information and belief, Citrix also has received actual and/or constructive knowledge of the Patents and the infringing conduct by way of Citrix's own prosecution activities.

44.   The PCT (Patent Cooperation Treaty) Publication Number for the PCT application to which the Patents claim priority, WO2003075116A2, "Centralised interactive graphical application server," was cited by the examiner as a ground for rejection during the prosecution of Citrix's application for EP2315122B1, "Methods and Systems for Remoting Three Dimensional Graphics" on April 4, 2011.

45.   The PCT (Patent Cooperation Treaty) Publication Number for the PCT application to which the Patents claim priority, WO2003075116A2, "Centralised interactive graphical application server," was cited to the examiner during the prosecution of Citrix's U.S. Pat. No. 8,665,265, "Methods and systems for remoting three dimensional graphics" on September 17, 2013.

46.   The PCT (Patent Cooperation Treaty) Publication Number for the PCT application to which the Patents claim priority, WO2003075116A2, "Centralised interactive graphical application server," was cited to the examiner during the prosecution of Citrix's U.S. Pat. No. 8,751,844, "Systems and methods for attributing an amount of power consumption to a workload" on September 26, 2013.

47.   On information and belief, while investigating T5's WO2003075116A2 for the purpose of Citrix's patent applications, Citrix also learned of the '147 Patent no later than April 4,

2011. On information and belief, as a result of investigating T5's WO2003075116A2 for the purpose of Citrix's patent applications, Citrix also learned of the '192 Patent, '568 Patent, '922 Patent, '146 Patent, '285 Patent, '621 Patent, and '490 Patent shortly after their issuance on December 20, 2011, June 19, 2012, June 18, 2013, August 18, 2015, August 25, 2015, August 23, 2016, and December 26, 2017, respectively.

48.   In the alternative, Defendant learned of the Patents no later than the date Plaintiff filed this Complaint.

49.   T5.2 and T5 Labs have complied with the requirements of 35 U.S.C. § 287 with respect to each of the Patents.

50.   Given Defendant's knowledge of the Patents, Defendant knew or was willfully blind to the fact that its products infringed the Patents.

V.   PATENTS

51.   T5 Labs, the owner of the Patents, is the developer of software applications and other technologies related to interactive graphics processing.

52.   The origin of T5 Labs began when one day Mr. Graham Clemie, the founder of T5 Labs and a named inventor on the Patents, attempted to download a video game only to discover that his computer was not powerful enough to run the video game.

53.   Mr. Clemie's background is in telecommunications and cable TV, having previously worked at companies such as Ericsson and NEC. As a potential solution to his problem, Mr. Clemie began looking into whether remote computer processing power could be utilized to run a video game, as opposed to relying solely on the processing power of, for example, a user's home computer. In other words, Mr. Clemie began researching whether the processing power of centralized servers (e.g., what is now called the "cloud") could be utilized to expand the availability

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of video games and other interactive graphical applications to remote users with limited computing power.

54.   As part of their efforts at T5 Labs, Mr. Clemie, and his co-inventor, Mr. Dedrick Duckett, invented the technologies and solutions claimed by the Patents. The Patents are directed to technical advancements arising within the field of video compression for improved hosting and operation of interactive graphical applications on centralized computer platforms. The claims of the Patents disclose systems and methods that were not well-understood, routine, or conventional at the time of the application for the Patents. The various claims of the Patents describe inventive features and combinations of features that improved upon prior art systems and methods for (a) improving the quality of video compression for computer-generated graphics and (b) reducing latency in systems hosting the operation of interactive graphical applications on centralized computer platforms.

55.   Operating interactive graphical applications on a centralized platform or server allows the interactive applications to perform necessary processing and image rendering on the server instead of the user's hardware, permitting the user to interact with the applications through a broadband network connection. As a result, the user's hardware device merely needs to be capable of transmitting the user's mouse and keyboard commands to the remote server and of receiving and displaying the video stream transmitted to it from that server. Examples of these systems include virtual desktops, also known as virtual desktop infrastructure (VDI), desktop as a service (DaaS), and virtual applications. Such systems remove the necessity of purchasing and updating expensive user hardware, increase security by storing application data remotely, and allow interactive application providers to instantly provide updates and fixes to the applications. Given the rise of remote working, this is a field that has seen enormous growth.

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56.   Although broadband networks have relatively high bandwidth, such systems must address two technical problems: (1) quality of compression—the graphics images created by the interactive applications at the centralized server must be heavily compressed before transmission; and (2) network latency—the delay between the user pressing a key, the associated command being processed by the server, and the new graphics scene being calculated, compressed, transmitted, and decompressed must be negligible to the user.

57.   Video comprises, for example, 25 or 30 frames per second. A key aspect of video compression is to remove redundant information by detecting which parts of the screen have changed between two points of time (frames)—for example, as a result of the user scrolling down a page or typing into a document. These changes are commonly referred to as "dirty regions." There is no need to transmit pixels that were previously transmitted so knowing which regions are "dirty" is a key technique of video compression for reducing the bandwidth consumed and thus cost. The problem however is how to determine what regions have changed.

58.   Typically, standard compression techniques measure changes through brute force: they compare every pixel of the screen between two points of time. A typical computer screen comprises millions of pixels, so this pixel-by-pixel comparison requires a large amount of processing. With brute force, the compression system would have to blindly check the entire screen—millions of pixels—and compare each one against those of the screen a fraction a second previously and repeatedly do so many times a second. Such a process increases the cost of the image compression and increases network latency.

59.   Prior attempts to address these technical problems required the interactive applications to be specially written, often so that they could run on non-standard processing platforms, and with specific routines added to assist the compression process. This caused extra

expense to the application developers and reduced the choice of applications that were able to work on such systems. Some prior attempts were incompatible with graphical processing units (GPUs) and so could not be used with certain types of interactive graphical applications, again reducing the choice of applications. Another prior attempt relied upon the use of specific hardware in graphics workstations to rapidly approximate the on-screen motion of each pixel in a scene. That approach, however, only worked with screen objects' vertex matrices and is incapable of coping with modern graphical applications that, for example, use vertex shaders to calculate positions of objects' vertices and therefore affect on-screen motions of pixels in a scene.

60.   The claims of the Patents are directed to solutions to such problems by disclosing specific improvements in the functionality of computers and computer networks—new systems and methods that provide, among other things, (1) improvements to the quality of compression of graphics images created by interactive graphical applications operating on a centralized server and (2) reduction of network latency. In addition, the claimed solutions can be constructed (a) in a modular fashion without specialized components and (b) without requiring specially written modifications to the interactive applications.

61.   The images and text produced by the interactive graphical applications are synthetically generated. The pixels representing these images and text result from the processing of graphics commands. The solutions disclosed by the claims of the Patents exploit knowledge of those commands to gain access to information relating to the pixels before their rendering. By processing this information in parallel with the rendering of the pixels, the processing required to perform the compression may be reduced and the level of compression can be increased thereby reducing the amount of bandwidth used.

62.   For example, instead of having to use brute force to determine which parts of a user's screen have changed, the solutions disclosed by the Patents can analyze the graphics commands issued by the applications. A single graphics command could affect just a small area of the screen and thus only a small number of pixels would need to be transmitted to the user. The Patents' claimed solution analyzes the single graphics command that had been outputted by the application to identify this small number of pixels. By reducing the amount of data to be compressed and transmitted, the claimed solution can reduce the amount of processing required to perform the compression, increase the quality of compression, reduce the network bandwidth required, and also reduce latency.

63.   In addition, the solutions disclosed by the Patents may implement the functionality of more than one graphics processor module on a single dedicated graphics processor using, for example, a time slice processing scheme. In other words, a single graphics processor can be shared amongst multiple, concurrent users. This reduces capex costs by enabling the same, standard server hardware to be shared. The unconventional nature of the claimed inventions is apparent when the claims are read in light of the specification and prosecution histories of the Patents.

VI.   DEFENDANT'S CONDUCT

64.   Defendant's infringing products and services include Citrix Hypervisor (also currently and formerly known as XenServer) and other Citrix products that offer virtual desktop infrastructure and virtual application capabilities, including, for example Citrix DaaS (also formerly known as Citrix Virtual Apps and Desktops), and products and services that include HDX and   Thinwire   technologies, including   without   limitation   servers and/or   other hardware owned and/or controlled by Citrix that operate in conjunction with the foregoing products and services, and all other products and services that operate in a substantially similar

manner ("Accused Instrumentalities"). The Accused Instrumentalities include without limitation on premises and cloud deployments of the foregoing Citrix products and services. Through its actions, Defendant, individually and/or jointly with others, has infringed the Patents, actively induced others to infringe the Patents, and contributed to the infringement of the Patents by others, throughout the United States.
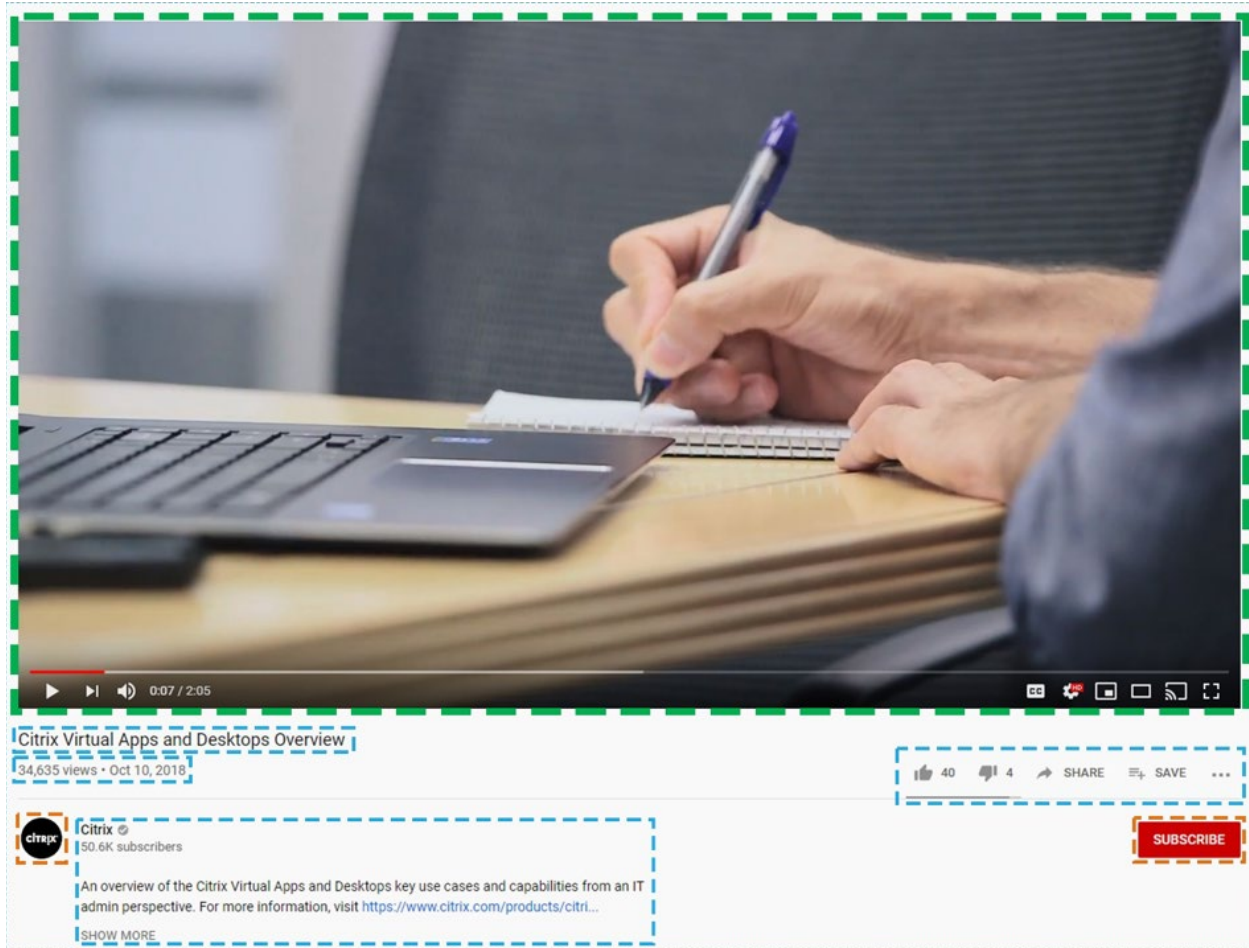
65.   Defendant directly and indirectly infringed and continues to infringe the Patents by providing and using—and encouraging, directing, and/or controlling its customers' and/or end users' use of—the Accused Instrumentalities based upon the allegations set forth in Sections VI - XIV and Exhibits 9 - 16.

66.   With knowledge of its infringement of the Patents, Defendant advertises the compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities and intentionally encourages, directs, and/or controls its customers' and/or end users' use of the compression assistance, processing, and/or GPU-sharing functionality by providing services and instructions (including, by way of example, the resources and materials available on its website) for the installation and the infringing operation of the Accused Instrumentalities to its customers and/or end users, who, like Defendant, directly infringe through the operation and use of those products. Defendant further instructs its customers and/or end users in the proper operation of the Accused Instrumentalities.

67.   For example, regarding its Virtual Desktop Infrastructure products, Citrix states:

> As we deliver graphic content for applications or desktops the HDX [high definition experience] graphics encoding engine, Thinwire, dynamically categorizes display data into three types:
> - Text, Simple Images and Solid Colors
> - Static Image Content
> - Moving (or Fluid) Images.

https://docs.citrix.com/en-us/tech-zone/design/design-decisions/hdx-graphics.html   (May   23,

2022).   Citrix   further   states   that   "Within   Citrix   Virtual   Apps   and   Desktops,   Thinwire   can   take

different   approaches   for   display   analysis,   compression,   and   delivery: Citrix   adapts   the   use   of

industry   leading   standards,   H.264,   and   H.265   for   efficient   delivery   of   high-quality   video   content

in   its   'Full-Screen'   and   'Selective'   codec   implementations."

68.   Citrix   describes   its   "Selective   H.264"   as   follows:

Choosing   to   **Configure   Thinwire   to   not   use   the   Video   Codec**   or   **Configure
Thinwire   to   use   the   Video   Codec   for   Actively   Changing   Regions**   allows
Thinwire   to   sense   regions   of   transient   content   (fluid   images   or   video)   and   encodes
it   based   on   set   policy   and   capabilities   detected   on   the   endpoint.   Thinwire   encodes
these   "selected"   (or   transient)   regions   either   as   Adaptive   JPEG   or   H.264   /   H.265.
Adaptive   JPEG   and   "Selective"   H.264   /   H.265   are   considered   subfeatures   as
Thinwire   is   the   core   technology.   The   remaining,   non-transient   regions   (encoded   as

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JPEG and Run-Length Encoding (RLE)) are then combined to complete the in-session display.

https://docs.citrix.com/en-us/tech-zone/design/design-decisions/hdx-graphics.html   (May   23,

2022).

69.   Citrix further encourages, directs, and/or controls its customers' and end-users' use

of the infringing Accused Instrumentalities' compression assistance and processing functionalities

by touting this mode of operation as "our most balanced setting." Citrix "recommend[s] starting

with this mode as you begin to baseline policies within your environment since it covers a wide

user base (for example Office worker with occasional video playback)." https://docs.citrix.com/en-

us/tech-zone/design/design-decisions/hdx-graphics.html (May 23, 2022).

70.   Citrix's October 17, 2022 Product Documentation for Citrix Virtual Apps and

Desktops further instruct how to set the Graphics policy to "Use video codec when preferred,"

which, on information and belief, corresponds to the Selective H.264 / Actively Changing Regions

described above. The Product Documentation also shows the screen on which this setting can be

selected (images from pages 538 and 539 below):

Configuration

Thinwire is the default display remoting technology.

The following Graphics policy setting sets the default and provides alternatives for different use cases:

- Use video codec for compression
  - **Use video codec when preferred**. This is the default setting. No additional configuration is required. Keeping this setting as the default ensures that Thinwire is selected for all Citrix connections, and is optimized for scalability, bandwidth, and superior image quality for typical desktop workloads. This is functionally equivalent to **For actively changing regions**.
- Other options in this policy setting continue to use Thinwire with other technologies for different use cases. For example:
  - **For actively changing regions**. The adaptive display technology in Thinwire identifies moving images (video, 3D in motion) and uses H.264 or H.265 only in the part of the screen where the image is moving.

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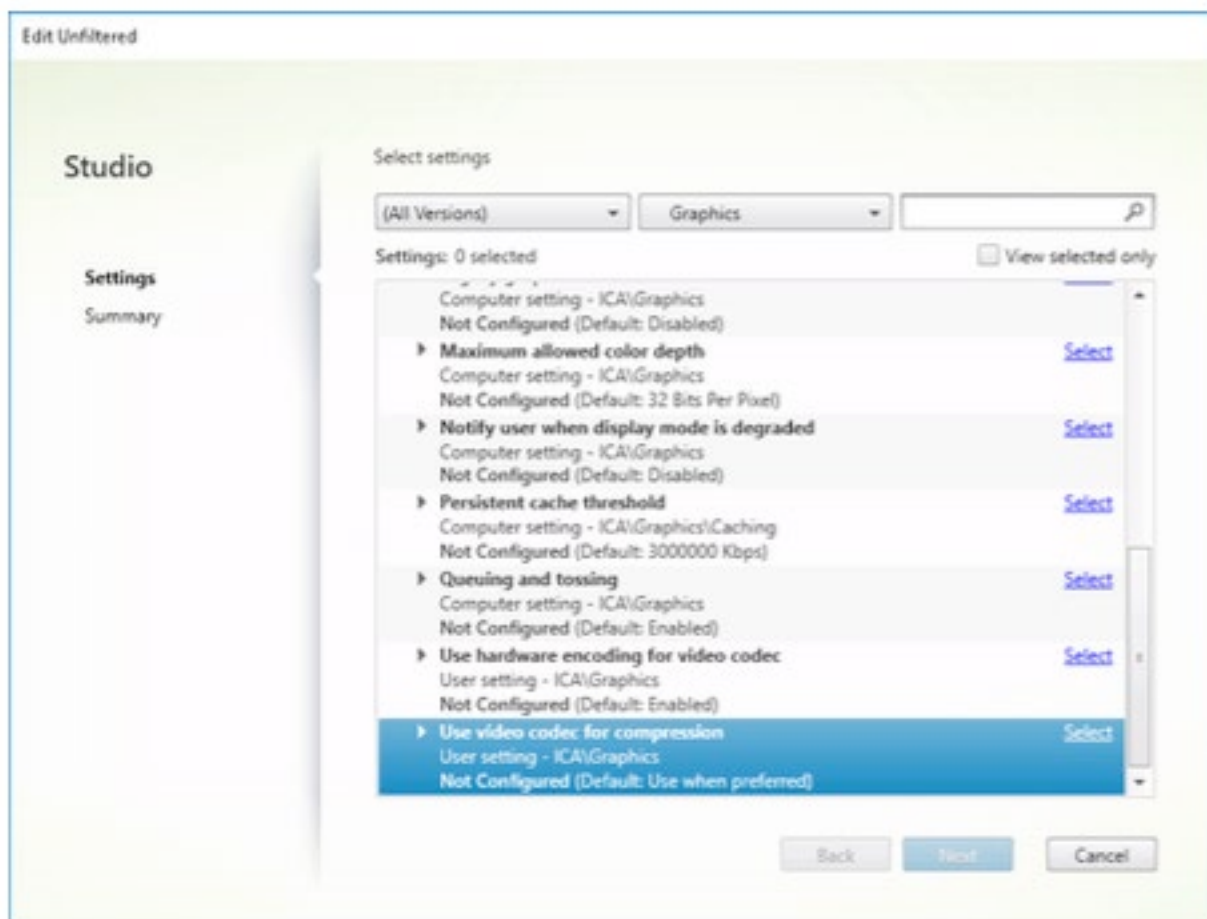
71.   Citrix also encourages, directs, and/or controls its customers' and end-users' use of the infringing Accused Instrumentalities' GPU-sharing functionalities, including for example by stating the benefits of GPU sharing, including greater performance, and the need for fewer graphics cards.

Shared GPU

Shared GPU allows one physical GPU to be used by multiple VMs concurrently. Because a portion of a physical GPU is used, performance is greater than emulated graphics, and there is no need for one card per VM. This feature enables resource optimization, boosting the performance of the VM. The graphics commands of each virtual machine are passed directly to the GPU, without translation by the hypervisor.

https://docs.citrix.com/en-us/citrix-hypervisor/graphics.html (December 31, 2022).

72.   Citrix further instructs customers and end-users on how to configure GPU-sharing, functionality as in part below:

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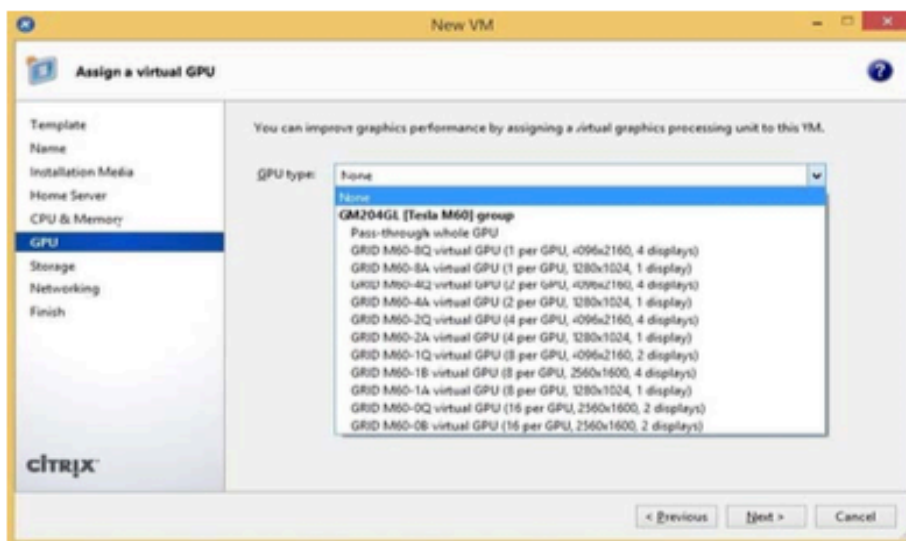⌂ | **CITRIX HYPERVISOR 8.1**

Create vGPU enabled VMs

▱ September 10, 2019 | Contributed by: ©

This section provides step-by-step instructions on how to create a virtual GPU or GPU pass-through enabled VM.

> **NOTE:**
>
> If you are using the Intel GPU Pass-through feature, first see the section *Enabling Intel GPU Pass-through* for more configuration, and then complete the following steps.

1. Create a VM using XenCenter. Select the host on the Resources pane and then select **New VM** on the VM menu.

2. Follow the instructions on the **New VM** configuration and select the **Installation Media, Home Server**, and **CPU & Memory**.

3. GPU-enabled servers display a **GPU** configuration page:

4. Click **Add**. From the **GPU Type** list, select either **Pass-through whole GPU**, or a virtual GPU type.

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https://docs.citrix.com/en-us/citrix-hypervisor/graphics/vm-graphics-config.html   (April   11,

2019). In the above instructions, the number of supported vGPU's per physical GPU is listed as

"[Number] per GPU" in the parenthetical following the virtual GPU type.

73.   Citrix, its customers, and end-users of Citrix's Accused Instrumentalities benefited

from Citrix's implementation of these compression assistance, processing and/or GPU-sharing

functionalities.

74.   Citrix stated "With Citrix Virtual Apps and Desktops, you can rapidly provision

desktops or applications to thousands of employees from any public cloud, on-premises or hybrid

solution. Your users will have the freedom and flexibility to work on the devices and networks at

their   disposal,   while   you   manage   everything   in   one   secure   central   console."

www.citrix.com/digital-workspace/enable-remote-work.html (December 30, 2020).

75.   Citrix continued, "Citrix Virtual Apps and Desktops ensures your users will have

crystal-clear voice, video and imagery at all times—regardless of network quality and location."

www.citrix.com/digital-workspace/enable-remote-work.html (December 30, 2020).

76.   Citrix noted that "Virtualization technology lets you provide the same reliable IT

services that are traditionally bound to hardware, but without the need for extensive use of physical

machines." www.citrix.com/solutions/app-and-desktop-virtualization/ (January 25, 2021).

77.   Discussing its HDX technology, Citrix's website explained how Citrix's Virtual

Apps   and   Desktops   "provide[d]   a   high-definition   experience   on   any   device."

www.citrix.com/digital-workspace/hdx/ (June 20, 2020). Citrix further explained, "People expect

real-time response from virtual apps and desktops, regardless of network quality and location."

www.citrix.com/digital-workspace/hdx/ (June 20, 2020). Citrix stated that its "HDX technology

is baked into every edition of Citrix Virtual Apps and Desktops, giving you an instant advantage."

www.citrix.com/digital-workspace/hdx/ (June 20, 2020).

78.   Citrix also stated "Optimized for Citrix Virtual Apps and Desktops, Citrix Hypervisor simplifies your operational management, ensuring a high definition user experience for intensive workloads. Citrix Hypervisor is free for our Citrix Virtual Apps and Desktops customers to further enhance your environment."   https://www.citrix.com/products/citrix-daas/citrix-virtual-apps-and-desktops.html (July 29, 2022).

79.   The Citrix Hypervisor enables GPU Virtualization, and vGPU Live Migration among other features.   https://www.citrix.com/products/citrix-hypervisor/feature-matrix.html (July 4, 2022). The Hypervisor "[e]nables high-end 3D graphics within VMs and VDI deployments for variety of use cases, including CAD/CAM, HPC and Citrix Virtual Apps published applications."   https://www.citrix.com/products/citrix-hypervisor/feature-matrix.html (July 4, 2022).

80.   Citrix also implements contractual protections in the form of license and use restrictions with its customers to preclude the unauthorized reproduction, distribution, and modification of the Accused Instrumentalities.

81.   Moreover, Citrix implements technical precautions to thwart its customers and end users from circumventing the intended operation of Citrix's Accused Instrumentalities.

82.   For the reasons stated above, Citrix directly and indirectly infringes the Patents by practicing, providing, and using—and encouraging, directing, and/or controlling its customers' and/or end users' use of the compression assistance, processing, and/or GPU-sharing functionality provided through the Accused Instrumentalities. Further, Citrix induces its customers and/or end users to infringe and contributes to such infringement by instructing or specifying that they engage

and use the compression assistance, processing, and/or GPU-sharing functionality in the Accused Instrumentalities in an infringing manner.

83.   The normal, intended operation of Citrix's Accused Instrumentalities, as described above and in Exhibits 9 - 16, is to provide compression assistance, processing, and/or GPU-sharing functionality that infringes the Patents. The compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities therefore have no substantial non-infringing uses.

84.   Citrix therefore induces its customers and/or end users to directly infringe the Patents or contributes to the direct infringement of the Patents by others, including its customers and/or end users.

85.   T5.2 has been and will continue to suffer damages as a result of Citrix's infringing acts.

VII.   PATENT INFRINGEMENT
COUNT 1 — INFRINGEMENT OF U.S. PATENT NO. 7,916,147

86.   Plaintiff realleges and incorporates preceding paragraphs herein.

87.   Plaintiff is the exclusive licensee of the '147 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

88.   The '147 Patent is valid and enforceable.

89.   Claim 1 of the '147 Patent states as follows:

1. A method of generating a compressed video data signal using a graphics processor module, comprising the steps of:

a) intercepting a first set of instructions for said graphics processor module, said first set of instructions relating to how to render image frames;

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b) generating a second set of instructions for said graphics processor module;

c) processing said first set of instructions or said second set of instructions or a combination thereof in said graphics processor module to generate first graphics data, said first graphics data comprising image frames;

d) processing said second set of instructions in said graphics processor module to generate second graphics data;

e) processing said second graphics data to generate compression assistance data; and

f) processing said first graphics data using said compression assistance data to generate a compressed video data signal;

wherein the generation of said second set of instructions comprises analyzing said first set of instructions to determine which instructions of said first set of instructions are useful for the generation of compression assistance data.

90.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 1 of the '147 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '147 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '147 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '147 Patent is literally present in the Accused Instrumentalities.

91.   Defendant jointly and directly infringes the '147 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

92.   Specifically, Defendant provides third parties, including customers and/or end-users, with the Accused Instrumentalities.   Through its design and implementation of the compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities, among other things, Defendant conditions its customers' and/or end-users' receipt of the benefits of (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency on the performance of one or more steps of the patented methods by the customers or end-users.   When Defendant's Accused Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing functionality   described herein in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs.

93.   Defendant jointly infringes the '147 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant places the patented invention into service, controls the system as a whole, and obtains benefit from it.

94.   Specifically, on information and belief, Defendant places and has placed the patented invention into service at least by providing cloud services with the Accused Instrumentalities, and/or providing third parties and/or end-users with Accused Instrumentalities. Through the design and implementation of the Accused Instrumentalities, Defendant controls the compression assistance, processing, and/or GPU-sharing functionality of its users' infringing virtualization systems.   Defendant dictates when and how infringement occurs by virtue of

providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs, thereby controlling the system as whole. Defendant benefits from at least (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency. Therefore, through the functionality of the Accused Instrumentalities as designed and established by Defendant, Defendant places the infringing system into service, controls the system as a whole and obtain benefits from it.

95.   Defendant also jointly and directly infringes the '147 Patent to the extent that it is the final assembler of infringing systems by, for example, installing or configuring its Accused Instrumentalities thereon, such that Defendant makes the infringing systems even if it does not make every component thereof. On information and belief, Defendant installs or configures its Accused Instrumentalities on third-party systems, including for example, those of cloud service providers. The installed Accused Instrumentalities are the final missing elements such that these systems subsequently infringe, and Defendant is the final assembler.

96.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

97.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '147 Patent, including actively inducing infringement of the '147 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or

should know infringe one or more claims of the '147 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '147 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '147 Patent.

98.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '147 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '147 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users. .

99.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '147 Patent; (ii) are specially made or adapted to infringe the '147 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '147 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed compression assistance, processing, and/or GPU-sharing functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

100.   At least since the date upon which Defendant learned of the '147 Patent and its infringement of the '147 Patent, Defendant has willfully infringed the '147 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '147 Patent.

101.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

VIII.   PATENT INFRINGEMENT
COUNT 2 — INFRINGEMENT OF U.S. PATENT NO. 8,081,192

102.   Plaintiff realleges and incorporates preceding paragraphs herein.

103.   Plaintiff is the exclusive licensee of the '192 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

104.   The '192 Patent is valid and enforceable.

105.   Claim 1 of the '192 Patent states as follows:

1. A method of generating a compressed video data signal using at least one graphics processor module, comprising the steps of:

a) intercepting graphics instructions outputted by graphics generating software;

b) analyzing the graphics instructions to determine which of the graphics instructions are useful for generation of compression assistance data;

c) generating a second set of instructions responsive to the results of the analysis;

d) processing the graphic instructions or at least a portion of the second set of instructions or a combination thereof, in the graphics processor module to generate graphics data comprising one or more image elements;

e) processing at least a portion of the second set of instructions to generate compression assistance data; and,

f) processing at least a portion of the graphics data using at least a portion of the compression assistance data to generate the compressed video data signal.

106.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 1 of the '192 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '192 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '192 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '192 Patent is literally present in the Accused Instrumentalities.

107.   Defendant jointly and directly infringes the '192 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

108.   Specifically, Defendant provides third parties, including customers and/or end-users, with the Accused Instrumentalities. Through its design and implementation of the compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities, among other things, Defendant conditions its customers' and/or end-users' receipt of the benefits of (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency on the performance of one or more steps of the patented methods by the customers or end-users. When Defendant's Accused

Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing functionality described herein in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs.

109.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

110.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '192 Patent, including actively inducing infringement of the '192 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '192 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '192 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein.   Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '192 Patent.

111.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '192 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '192 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

112.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '192 Patent; (ii) are specially made or adapted to infringe the '192 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '192 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

113.   At least since the date upon which Defendant learned of the '192 Patent and its infringement of the '192 Patent, Defendant has willfully infringed the '192 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '192 Patent.

114.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

IX.   PATENT INFRINGEMENT
COUNT 3 – INFRINGEMENT OF U.S. PATENT NO. 8,203,568

115.   Plaintiff realleges and incorporates preceding paragraphs herein.

116.   Plaintiff is the exclusive licensee of the '568 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

117.   The '568 Patent is valid and enforceable.

118.   Claim 1 of the '568 Patent states as follows:

1. A method of sharing a graphics processing unit (GPU) between a plurality of programs, the method comprising the steps of:

a) outputting instructions by a first program of the plurality of programs to create a first set of instructions for generating a first frame;

b) outputting instructions by a second program of the plurality of programs to create a second set of instructions for generating a second frame;

c) providing control instructions to control how the GPU processes instructions of the first set of instructions and instructions of the second set of instructions;

d) processing at least part of the first set of instructions by the GPU to produce the first frame;

e) processing at least part of the second set of instructions by the GPU to produce the second frame;

f) signalling to an encoder when the GPU has completed rendering the first frame;

g) compressing at least part of the first frame by the encoder into a first compressed data signal and transmitting the first compressed data signal to a first remote processing device;

h) compressing at least part of the second frame by the encoder into a second compressed data signal and transmitting the second compressed data signal to a second remote processing device;

wherein the control instructions comprise instructions to cause the GPU to store a majority or all of the first frame in different GPU accessible memory locations than GPU accessible memory locations of the second frame.

119.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others,

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at least claim 1 of the '568 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '568 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '568 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '568 Patent is literally present in the Accused Instrumentalities.

120.   Defendant jointly and directly infringes the '568 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

121.   Specifically, Defendant provides third parties, including customers and/or end-users, with the Accused Instrumentalities. Through its design and implementation of the compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities, among other things, Defendant conditions its customers' and/or end-users' receipt of the benefits of reduced capex costs by enabling the same, standard server hardware to be shared on the performance of one or more steps of the patented methods by the customers or end-users. Defendant also conditions its customers' and/or end-users' receipt of the benefits of (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency on the performance of one or more steps of the patented methods by the customers or end-users. When Defendant's Accused Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing functionality described herein in the

manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs.

122.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

123.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '568 Patent, including actively inducing infringement of the '568 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '568 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '568 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '568 Patent.

124.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly

infringing at least claim 1 of the '568 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '568 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

125.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '568 Patent; (ii) are specially made or adapted to infringe the '568 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '568 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

126.   At least since the date upon which Defendant learned of the '568 Patent and its infringement of the '568 Patent, Defendant has willfully infringed the '568 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '568 Patent.

127.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

X.   PATENT INFRINGEMENT
COUNT 4 — INFRINGEMENT OF U.S. PATENT NO. 8,466,922

128.   Plaintiff realleges and incorporates preceding paragraphs herein.

129.   Plaintiff is the exclusive licensee of the '922 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the

exclusive right to enforce, sue, and recover damages for past and future infringements, and the

exclusive right to settle any claims of infringement.

130.   The '922 Patent is valid and enforceable.

131.   Claim 1 of the '922 Patent states as follows:

1. A method of generating a plurality of compressed image data signals, comprising the steps of:

a) outputting graphics instructions by a plurality of graphics generating computer programs;

b) determining at least one difference between at least one of the graphics instructions and another of the graphics instructions;

c) generating compression assistance data responsive to the difference:

d) processing at least one of the graphics instructions to generate first graphics data comprising a first plurality of pixels;

e) processing at least a second of the graphics instructions to generate second graphics data comprising a second plurality of pixels:

f) processing at least a portion of the first plurality of pixels using at least a portion of the compression assistance data to generate a first of the compressed image data signals;

g) processing at least a portion of the second plurality of pixels to generate a second of the compressed image data signals;

h) transmitting the first of the compressed image data signals to a first remote decompression device; and

i) transmitting the second of the compressed image data signals to a second remote decompression device.

132.   On information and belief, Defendant, without authorization or license from T5.2

or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others,

at least claim 1 of the '922 Patent, as infringement is defined by 35 U.S.C. § 271(a), including

through making, using (including for testing purposes), selling, and offering for sale the Accused

Instrumentalities that infringe at least claim 1 of the '922 Patent, including without limitation,

Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant

is thus liable for direct infringement of the '922 Patent pursuant to 35 U.S.C. § 271(a). Each and

every element of the '922 Patent is literally present in the Accused Instrumentalities.

133.   Defendant jointly and directly infringes the '922 Patent to the extent that the acts

necessary to give rise to liability for direct infringement are shared between Defendant and a third

party because the acts of the third party can be legally attributed to Defendant. In such case,

Defendant conditions participation in an activity or receipt of a benefit upon performance of a step

or steps of a patented method and establishes the manner or timing of that performance.

134.   Specifically, Defendant provides third parties, including customers and/or end-

users, with the Accused Instrumentalities. Through its design and implementation of the

compression assistance, processing, and/or GPU-sharing functionality of the Accused

Instrumentalities, among other things, Defendant conditions its customers' and/or end-users'

receipt of the benefits of (a) reduced processing required to perform video compression (and thus

more efficient and faster performance), (b) increased quality of compression, (c) reduced network

bandwidth requirements and costs, and (d) reduced latency on the performance of one or more

steps of the patented methods by the customers or end-users. When Defendant's Accused

Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing

functionality described herein in the manner designed and established by Defendant, the

performance of the infringing functionality occurs. Defendant dictates when and how infringement

occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how

the performance of the infringing functionality occurs.

135.   To the extent infringement is not literally present, Plaintiff reserves the right to

proceed under the doctrine of equivalents.

136. On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '922 Patent, including actively inducing infringement of the '922 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '922 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '922 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '922 Patent.

137. On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '922 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '922 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

138. Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '922 Patent; (ii)

are specially made or adapted to infringe the '922 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '922 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

139.   At least since the date upon which Defendant learned of the '922 Patent and its infringement of the '922 Patent, Defendant has willfully infringed the '922 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '922 Patent.

140.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

XI.   PATENT INFRINGEMENT
COUNT 5 — INFRINGEMENT OF U.S. PATENT NO. 9,113,146

141.   Plaintiff realleges and incorporates preceding paragraphs herein.

142.   Plaintiff is the exclusive licensee of the '146 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

143.   The '146 Patent is valid and enforceable.

144.   Claim 1 of the '146 Patent states as follows:

1. A method of generating compressed image data comprising the steps of:

a) outputting graphics instructions by a graphics generating computer program;

b) identifying at least one of the outputted graphics instructions having an influence on a co-ordinate associated with the image data;

c) generating compression assistance data responsive to the identified graphics instruction, the compression assistance data comprises information relating to the co-ordinate of at least one pixel in the plurality of pixels of step (d);

d) processing at least one of the outputted graphics instructions to generate a plurality of pixels;

e) processing at least one of the plurality of pixels using at least part of the compression assistance data to generate the compressed image data.

145. On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 1 of the '146 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '146 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '146 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '146 Patent is literally present in the Accused Instrumentalities.

146. Defendant jointly and directly infringes the '146 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

147. Specifically, Defendant provides third parties, including customers and/or end-users, with the Accused Instrumentalities. Through its design and implementation of the compression assistance, processing, and/or GPU-sharing functionality of the Accused

Instrumentalities, among other things, Defendant conditions its customers' and/or end-users' receipt of the benefits of (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency on the performance of one or more steps of the patented methods by the customers or end-users. When Defendant's Accused Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing functionality described herein in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs.

148.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

149.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '146 Patent, including actively inducing infringement of the '146 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '146 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '146 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing,

and/or GPU-sharing functionality as described herein.   Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '146 Patent.

150.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '146 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '146 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

151.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '146 Patent; (ii) are specially made or adapted to infringe the '146 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '146 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

152.   At least since the date upon which Defendant learned of the '146 Patent and its infringement of the '146 Patent, Defendant has willfully infringed the '146 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '146 Patent.

153.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

XII.   PATENT INFRINGEMENT
COUNT 6 — INFRINGEMENT OF U.S. PATENT NO. 9,117,285

154.   Plaintiff realleges and incorporates preceding paragraphs herein.

155.   Plaintiff is the exclusive licensee of the '285 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

156.   The '285 Patent is valid and enforceable.

157.   Claim 1 of the '285 Patent states as follows:

1. A system for producing compressed image data comprising:

i) an image data compressor;

ii) an instruction interception module;

iii) a graphics processor module (GPM) accessible by the instruction interception module;

iv) memory accessible by the image data compressor and the GPM;

such that operation of the system causes the system to perform at least the following steps:

   a) intercepting processor instructions by the instruction interception module;

   b) identifying at least one of the intercepted processor instructions having an influence on a co-ordinate associated with the image data;

   c) generating compression assistance data (CAD) or compression assistance instructions (CAI) or a combination thereof that are responsive to the

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identified graphics instruction, the CAD comprises information relating to the co-ordinate of at least one pixel of a plurality of pixels of step (d);

d) processing at least one of the intercepted processor instructions by the GPM to generate a plurality of pixels to be stored in the memory; and

e) processing at least a portion of the plurality of pixels using at least part of the CAD or at least part of the CAI or a combination thereof to generate compressed image data.

158.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 1 of the '285 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '285 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '285 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '285 Patent is literally present in the Accused Instrumentalities.

159.   Defendant jointly infringes the '285 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant places the patented invention into service, controls the system as a whole, and obtains benefit from it.

160.   Specifically, on information and belief, Defendant places and has placed the patented invention into service at least by providing cloud services with the Accused Instrumentalities, and/or providing third parties and/or end-users with Accused Instrumentalities. Through the design and implementation of the Accused Instrumentalities, Defendant controls the compression assistance, processing, and/or GPU-sharing functionality of its users' infringing virtualization systems.   Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance

of the infringing functionality occurs, thereby controlling the system as whole. Defendant benefits from at least (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency. Therefore, through the functionality of the Accused Instrumentalities as designed and established by Defendant, Defendant places the infringing system into service, controls the system as a whole and obtain benefits from it.

161. Defendant also jointly and directly infringes the '285 Patent to the extent that it is the final assembler of infringing systems by, for example, installing or configuring its Accused Instrumentalities thereon, such that Defendant makes the infringing systems even if it does not make every component thereof. On information and belief, Defendant installs or configures its Accused Instrumentalities on third-party systems, including for example, those of cloud service providers. The installed Accused Instrumentalities are the final missing elements such that these systems subsequently infringe, and Defendant is the final assembler.

162. To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

163. On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '285 Patent, including actively inducing infringement of the '285 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '285 Patent. Defendant instructs its customers and

end-users to make and use the patented inventions of the '285 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '285 Patent.

164. On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '285 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '285 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

165. Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '285 Patent; (ii) are specially made or adapted to infringe the '285 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '285 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

166. At least since the date upon which Defendant learned of the '285 Patent and its infringement of the '285 Patent, Defendant has willfully infringed the '285 Patent by deliberately

or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '285 Patent.

167. Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

XIII. PATENT INFRINGEMENT
COUNT 7 — INFRINGEMENT OF U.S. PATENT NO. 9,424,621

168. Plaintiff realleges and incorporates preceding paragraphs herein.

169. Plaintiff is the exclusive licensee of the '621 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

170. The '621 Patent is valid and enforceable.

171. Claim 1 of the '621 Patent states as follows:

1. A method of generating a plurality of compressed image data transmissions comprising the steps of:

a) outputting graphics instructions by a first graphics generating computer program;

b) outputting graphics instructions by a second graphics generating computer program;

c) modifying at least one of the graphics instructions outputted by the first graphics generating program to create a first set of modified graphics instructions;

d) modifying at least one of the graphics instructions outputted by the second graphics generating program to create a second set of modified graphics instructions;

e) processing by a graphics processing unit at least one graphics instruction of the first set of modified graphics instructions to generate a first plurality of pixels;

f) processing by the graphics processing unit at least one graphics instruction of the second set of modified graphics instructions to generate a second plurality of pixels;

g) processing at least one of the first plurality of pixels to generate a first of the compressed image data transmissions;

h) processing at least one of the second plurality of pixels to generate a second of the compressed image data transmissions;

i) transmitting the first of the compressed image data transmissions to a first remote decompression device;

j) transmitting the second of the compressed image data transmissions to a second remote decompression device;

wherein the steps of modifying comprise at least one action selected from a group consisting of adding at least one graphics instruction, removing at least one of the outputted graphics instructions, replacing at least one of the outputted graphics instructions, translating at least one of the outputted graphics instructions and any combination thereof; and

wherein the steps of modifying are performed to facilitate the generation of the plurality of the compressed image data transmissions.

172.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 1 of the '621 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 1 of the '621 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '621 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '621 Patent is literally present in the Accused Instrumentalities.

173.   Defendant jointly and directly infringes the '621 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case,

Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

174.   Specifically, Defendant provides third parties, including customers and/or end-users, with the Accused Instrumentalities.   Through its design and implementation of the compression assistance, processing, and/or GPU-sharing functionality of the Accused Instrumentalities, among other things, Defendant conditions its customers' and/or end-users' receipt of the benefits of (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency on the performance of one or more steps of the patented methods by the customers or end-users.   When Defendant's Accused Instrumentalities are engaged to use the compression assistance, processing, and/or GPU-sharing functionality described herein in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs.

175.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

176.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '621 Patent, including actively inducing infringement of the '621 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the

Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '621 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '621 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '621 Patent.

177.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 1 of the '621 Patent under 35 U.S.C. § 271(c) and/or 271(f), by contributing to the direct infringement of the '621 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

178.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '621 Patent; (ii) are specially made or adapted to infringe the '621 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '621 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

179.   At least since the date upon which Defendant learned of the '621 Patent and its infringement of the '621 Patent, Defendant has willfully infringed the '621 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '621 Patent.

180.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

XIV.   PATENT INFRINGEMENT
COUNT 8 — INFRINGEMENT OF U.S. PATENT NO. 9,852,490

181.   Plaintiff realleges and incorporates preceding paragraphs herein.

182.   Plaintiff is the exclusive licensee of the '490 Patent and holds all substantial rights in the same. Among other rights, Plaintiff maintains the exclusive right to exclude others, the exclusive right to enforce, sue, and recover damages for past and future infringements, and the exclusive right to settle any claims of infringement.

183.   The '490 Patent is valid and enforceable.

184.   Claim 11 of the '490 Patent states as follows:

11. A system for producing a compressed image data transmission comprising:

i) a graphics instruction modification module (GIMM);

ii) a graphics processor unit (GPU) accessible by the GIMM;

iii) a transmission module;

iv) memory accessible by the transmission module and the GPU;

wherein operation of the system causes the system to perform at least the following steps:

a) receiving a first set of unmodified graphics instructions from a first graphics generating computer program;

b) modifying at least one of the first set of unmodified graphics instructions by the GIMM to create at least one modified graphics instruction;

c) processing at least one of the first set of unmodified graphics instructions or at least one of the modified graphics instructions or a combination thereof by the GPU to generate a plurality of pixels;

d) determining at least one difference in at least one pixel of the plurality of pixels between two different points in time, or determining at least one similarity between at least one pixel of the plurality of pixels between two different points in time, or a combination thereof;

e) compressing at least one of the plurality of pixels to generate compressed image data;

f) transmitting the compressed image data by the transmission module for decompression by a remote decompression device;

wherein the step of determining facilitates the compression;

wherein the step of modifying comprises at least one action selected from a list consisting of adding at least one graphics instruction, removing at least one of the graphics instructions, replacing at least one of the graphics instructions, translating at least one of the graphics instructions and any combination thereof; and

wherein the step of modifying facilitates the generation of the compressed image data transmission.

185.   On information and belief, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently directly infringing, individually and/or jointly with others, at least claim 11 of the '490 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling, and offering for sale the Accused Instrumentalities that infringe at least claim 11 of the '490 Patent, including without limitation, Defendant's Hypervisor, virtual application and virtual desktop infrastructure products. Defendant is thus liable for direct infringement of the '490 Patent pursuant to 35 U.S.C. § 271(a). Each and every element of the '490 Patent is literally present in the Accused Instrumentalities.

186.   Defendant jointly infringes the '490 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party because the acts of the third party can be legally attributed to Defendant. In such case, Defendant places the patented invention into service, controls the system as a whole, and obtains benefit from it.

187.   Specifically, on information and belief, Defendant places and has placed the patented invention into service at least by providing cloud services with the Accused Instrumentalities, and/or providing third parties and/or end-users with Accused Instrumentalities. Through the design and implementation of the Accused Instrumentalities, Defendant controls the compression assistance, processing, and/or GPU-sharing functionality of its users' infringing virtualization systems.   Defendant dictates when and how infringement occurs by virtue of providing software in the Accused Instrumentalities that dictates when and how the performance of the infringing functionality occurs, thereby controlling the system as whole. Defendant benefits from at least (a) reduced processing required to perform video compression (and thus more efficient and faster performance), (b) increased quality of compression, (c) reduced network bandwidth requirements and costs, and (d) reduced latency. Therefore, through the functionality of the Accused Instrumentalities as designed and established by Defendant, Defendant places the infringing system into service, controls the system as a whole and obtain benefits from it.

188.   Defendant also jointly and directly infringes the '490 Patent to the extent that it is the final assembler of infringing systems by, for example, installing or configuring its Accused Instrumentalities thereon, such that Defendant makes the infringing systems even if it does not make every component thereof. On information and belief, Defendant installs or configures its Accused Instrumentalities on third-party systems, including for example, those of cloud service

providers. The installed Accused Instrumentalities are the final missing elements such that these systems subsequently infringe, and Defendant is the final assembler.

189.   To the extent infringement is not literally present, Plaintiff reserves the right to proceed under the doctrine of equivalents.

190.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 11 of the '490 Patent, including actively inducing infringement of the '490 Patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents. Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing third parties, including Defendant's customers and end-users, to use the Accused Instrumentalities, alone and/or with other products, in a manner that Defendant knows or should know infringe one or more claims of the '490 Patent. Defendant instructs its customers and end-users to make and use the patented inventions of the '490 Patent by operating Defendant's products in accordance with Defendant's specifications. Defendant specifically intends its customers and end-users to infringe by implementing its compression assistance, processing, and/or GPU-sharing functionality as described herein. Direct infringement is the result of activities performed by third parties in relation to Defendant's Accused Instrumentalities, including without limitation by third parties enabled and encouraged by Defendant to install, operate, and use Defendant's Accused Instrumentalities in their normal, customary way to infringe the '490 Patent.

191.   On information and belief, at least since receiving notice of the Patents, Defendant, without authorization or license from T5.2 or T5 Labs, has been and is presently indirectly infringing at least claim 11 of the '490 Patent under 35 U.S.C. § 271(c) and/or 271(f), by

contributing to the direct infringement of the '490 Patent, either literally or under the doctrine of equivalents, by others, including without limitation customers and/or end users.

192.   Specifically, Defendant knows that the components of the Accused Instrumentalities: (i) constitute a material part of the inventions claimed in the '490 Patent; (ii) are specially made or adapted to infringe the '490 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in systems that infringe one or more claims of the '490 Patent. The hardware and/or software components are not a staple article or commodity of commerce because they are specifically designed to perform the claimed functionality. Any other use of the hardware and/or software components would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental.

193.   At least since the date upon which Defendant learned of the '490 Patent and its infringement of the '490 Patent, Defendant has willfully infringed the '490 Patent by deliberately or intentionally engaging in acts of infringement on an ongoing basis with knowledge of the '490 Patent.

194.   Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff in an amount that adequately compensates it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

XV. JURY DEMAND

195.   Plaintiff demands a trial by jury of all matters to which it is entitled to trial by jury, pursuant to FED. R. CIV. P. 38.

XVI. PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief against Defendant as follows:

a.   Judgment that one or more claims of U.S. Patent Nos. 7,916,147, 8,081,192, 8,203,568, 8,466,922, 9,113,146, 9,117,285, 9,424,621, and 9,852,490 have been infringed, either literally and/or under the doctrine of equivalents, by Defendant;

b.   Award Plaintiff past and future damages together with prejudgment and post-judgment interest to compensate for the infringement by Defendant of the Patents in accordance with 35 U.S.C. §284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. §284;

c.   That the Court declare this an exceptional case and award Plaintiff its reasonable attorney's fees and costs in accordance with 35 U.S.C. § 285; and

d.   That Plaintiff be granted such other and further relief as the Court may deem just and proper under the circumstances.

Dated: November 5, 2024

Respectfully submitted,

/s/Alexander D. Brown
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ATTORNEYS FOR PLAINTIFF T5.2 LTD.

COMPLAINT