

## Background

Movidity is bringing the future of multimedia to the mobile world, today.

Our breakthrough in multimedia mobility unleashes previously impossible capabilities for carriers, content providers, and even individuals. Now everyone can realize the advantages of multimedia over today's wireless networks, by leveraging common Internet technology.

Movidity is so unique, that it's been called a disruptive technology. As such, we receive frequent questions about the company, the technology and the application of our products. In this paper, we answer a number of these Frequently Asked Questions (FAQs).

## Frequently Asked Questions

### 1) Who is Movidity?

Movidity is a privately held corporation, headquartered in Toronto, Canada, that specializes in video and audio on-demand technology.

### 2) What does Movidity do?

Movidity sells, integrates and supports a highly innovative technology in the field of multimedia encoding, transmission and playback for use over resource constrained networks and devices.

### 3) Who uses Movidity products?

Movidity markets its products globally to a range of clients including wireless carriers, multimedia content creators / providers, public and private enterprises, along with individuals for home / private use.

### 4) What are your products?

Movidity is a unique software based system that provides transcoding, transmission and playback of video and audio media, with significantly better quality and lower overhead than traditional media streaming technology.

### 5) What makes Movidity unique?

Several things make Movidity both unique and superior to streaming media technology. First, Movidity does not rely on the traditional model of bit-streaming data, but rather a new (patent pending) concept called Media Objects. Second, Movidity uses a highly optimized Java midlet as a media player, allowing a very small footprint with exceptional performance. These and other features combine to provide significantly higher performance with dramatically reduced infrastructure requirements for delivering multimedia to mobile devices, whether you're a multi-national carrier or an end user at home.

### 6) How is the product structured?

Movidity consists of 4 software based components: Object Server, Edge Server, Indexing Server and Media player. The server components can be installed on one or more machines (for scalability), and the Media Player is downloaded to mobile devices such as a cell phone.

### 7) What other hardware / software is required?

Movidity requires minimal resources, which include the Linux O/S running on an acceptable PC platform, and a Java capable mobile device. Dedicated multimedia streaming servers, complex

mobile gateways and other expensive, dedicated infrastructure is not required. Please refer to the Movidity Product Overview sheet for further details.

### **8) How is Movidity licensed?**

Movidity licensing is based on concurrent CAL's (Client Access Licenses). Movidity server modules (Object Server, Indexing Server and Edge Server) can be installed on one or more server machines within a single organization without limitation.

Movidity is available in "base kits", which include the server modules and anywhere between 2 and 1000 CAL's. Additional licenses can be purchased in defined packages of 5 to 1000 CAL's.

### **9) What is the Personal Mobile Empowerment version of Movidity?**

Personal Mobile Empowerment (PME) is a 2 (two) CAL base license of Movidity, which includes the Object Server module. PME allows individuals to create their own mobile multimedia environment by installing Movidity on a home (or other) PC.

Movidity PME allows a user to create a mobile multimedia environment for things such as home surveillance, mobile video library, music-on-demand, etc. An exceptional value, Movidity PME brings to the individual what was once only found in the domain of large wireless carriers and corporations.

### **10) From what original formats can you encode media?**

The Movidity Transcoder is a high performance encoding engine that takes original media formats and encodes them into Movidity Media Objects. Its flexibility allows for a range of media formats to be encoded, including: AAC, AMR, AVI, ASF, MOV, MPEG1, MPEG2, MPEG3, MPEG4, RM, WMV.

### **11) How much storage is required for Media Objects?**

Storage requirements can vary considerably based on the original format (MPEG4, etc.) and quality (video frame rate, audio bit rate) of the media. A general rule-of-thumb would see one hour of video content (encoded into Objects) requiring approximately 18MB of storage space (at reasonable quality of 10fps).

### **12) How quickly can your transcoder convert media into Objects?**

The Movidity Transcoder (which is a function of the Object Server) can encode media at multiples of real-time. Depending on the original media format and hardware performance of the Object Server, media can be encoded into Objects at well over 20X real-time. With live feeds (television, etc), a latency factor of approximately 8 seconds (from real time feed to reception on mobile device) can be expected.

### **13) What network protocols are required for transmission?**

Movidity Objects can be carried in either HTTP (appearing as web pages) or via TCP/IP (on any port number). When transmitted as HTTP, web server software is typically required (i.e. Apache). When transmitted with TCP/IP (Objects are carried as segments of TCP data payload), a basic Linux server is all that is required. Movidity does not require any other specific mobile networking protocols.

### **14) What is the effective video frame rate of the Movidity Media Player on a cell phone?**

Video frame rate is dependant on several factors, including the hardware capabilities of the mobile

device and available bandwidth. In particular, one must pay attention to the requirement of synchronizing audio to video, which is a difficult task within a resource constrained infrastructure. The Movidity Media Player has been tested at over 30 frames per second on current cell phone platforms.

#### **15) How much bandwidth is required over the cellular network?**

The sustainable video frame rate and audio reproduction quality of the Movidity Media player is more of a function of the hardware capabilities of the mobile device rather than the directly available network bandwidth. The Movidity Object transmission model uses an adaptive bit rate algorithm to sense and adjust to bandwidth rates presented by the network.

The Movidity Media Player will function (that is, play video & audio) at bandwidth rates as low as 2.2Kbytes/sec.

Testing has shown an improvement of 20% to 100% over comparable streaming technologies at similar levels of bandwidth consumption.

#### **16) What kind of cell phone / PDA do I need to run the Movidity Media Player?**

The Movidity Media player is a Java midlet that runs on devices that support J2ME with MIDP 2.0 and CLDC 1.0 (DoJa / J2ME is also supported for DoCoMo i-mode networks).

The Movidity Media player contains significant intelligence that interrogates the capabilities of the mobile device (CPU, memory, display, etc) and auto-optimizes a number of parameters including frame rate, display characteristics, memory usage,

etc.

#### **17) Can the Movidity Media Player take advantage of underlying hardware acceleration on mobile devices?**

The Media Player can leverage underlying media acceleration hardware found in mobile devices to provide even greater performance. The Media Player can also take advantage of platforms based on the ARM processor with the Jazelle DBX / RCT acceleration technology.

#### **18) Can you really play video/audio on a cellphone that is not video enabled?**

The Movidity Media Player was built from the ground-up to run as efficiently as possible. As a Java midlet, the Media Player can run on any platform that provides the underlying J2ME facility. The Media Player has been shown to run well on lower-cost cell phones that cannot normally support video! Future versions of the media player will also be able to run on non-Java platforms including PC's.

#### **19) Can you control the media feed (rewind, fast-forward) from a cell phone?**

Movidity allows for the control of media (either live or archived) from the mobile device through familiar controls including pause, rewind and fast-forward. The Movidity player buffers a viable amount of media on the local device, along with interacting with the Object and Edge Server to create this functionality. A time-based media index is created for each media segment and when used in conjunction with the aforementioned controls, allows a user to enter the media segment at any point in the index.

**20) How many users can run from a single server?**

Depending on the hardware capability of the server platform which Object/Edge Server are installed, several thousand concurrent clients can easily run from a single platform.

**21) What is two-way capability, and how does it work?**

Two-way capability is the ability for Movidity to take input from the client (on the mobile device) and pass it to other systems for which this data is useful.

An example would be a user watching a complete video segment, upon which the media provider would then poll the user (with questions) on the segment they just watched. Polling questions would be presented to the user on the mobile device screen, and the user would answer the questions accordingly. Data sent back to Movidity could then be passed to another application, which would register the users' answers, and perhaps provide them with an electronic gift coupon as a part of a promotional program.

**22) Is there any security embedded in the product?**

As Movidity does not employ a "channel" based or streaming transmission model, there is no general requirement for channel encryption.

Both the Movidity Java midlet and individual Movidity Media Objects are "keyed" to playback from a specific Movidity server component. The player cannot be used to play video from an alternative server, unless it is a registered Edge Server.

Movidity media objects appear as pages of HTTP data, which is unintelligible except to the Movidity player.

**23) Where can I find more information on Movidity?**

Product, technical and sales information can be found on the Movidity web site at [www.movidity.com](http://www.movidity.com)

**24) How can I contact Movidity?**

General inquiries can be sent via email to [info@movidity.com](mailto:info@movidity.com).



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