



## Introducing Citrix MetaFrame Access Suite Licensing

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## Executive Summary

In response to user requests for improvements in licensing systems, Citrix introduces MetaFrame® Access Suite licensing with MetaFrame Presentation Server 3.0 and MetaFrame Conferencing Manager 3.0. While initially only MetaFrame Presentation Server and MetaFrame Conferencing Manager will use MetaFrame Access Suite licensing, eventually all Citrix® products will use it. This document provides an overview of the benefits of MetaFrame Access Suite licensing, the architecture and components that enable these benefits, and the effects of this new infrastructure on the user's environment. The document is intended to be a "first look" at licensing and to provide high-level guidelines to those implementing MetaFrame Presentation Server 3.0 and MetaFrame Conferencing Manager 3.0. More detailed information and recommendations will be available with the respective product releases.

The key benefits of the new licensing architecture are:

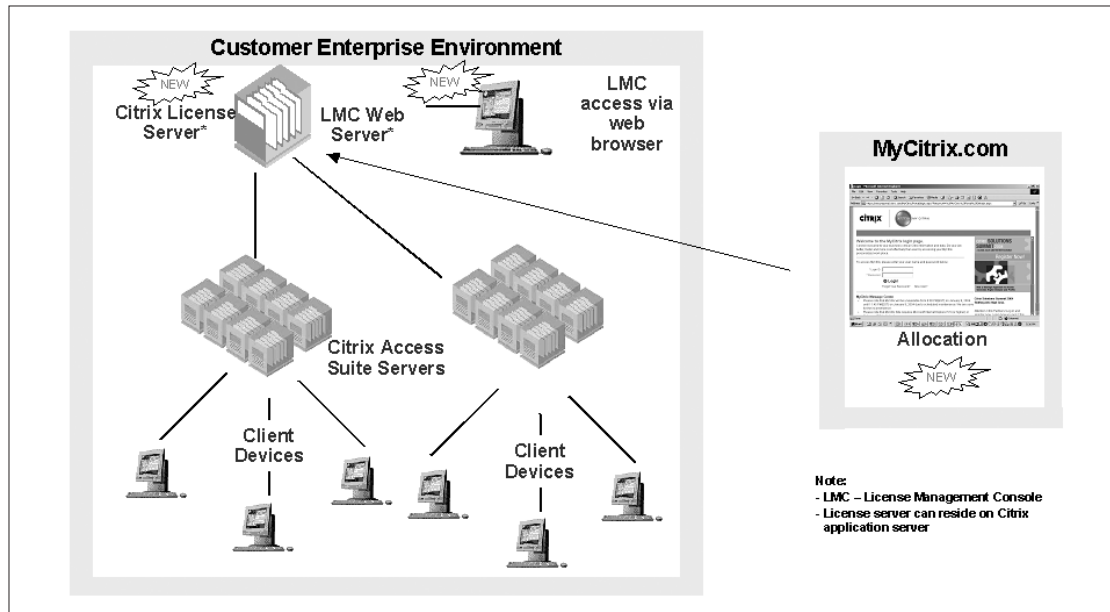
- A reduction in licensing administration
  - Fewer user licensing interactions with Citrix are needed
  - Product upgrades become a benefit of Subscription Advantage™. You can now "License Once/Run Yearly": licensing the product once entitles you to use any upgrade released during your Subscription Advantage period.
- Enhanced license management through a Web interface
  - Tools to measure licensing compliance through more comprehensive license tracking and management
  - Real-time reporting, historical reporting, and alerting for license expiration and license shortfalls
- A single, consistent licensing system across all Citrix products. All MetaFrame Access Suite product licenses are managed from a single point
- Sharing licenses across server farms (for MetaFrame Presentation Server). This eliminates the need to design farms around licensing

## The MetaFrame Access Suite Licensing Architecture

The benefits of MetaFrame Access Suite licensing described above result from three new licensing technology components:

- **Citrix license server:** MetaFrame Presentation Server 3.0 and MetaFrame Conferencing Manager 3.0 require you to install the Citrix license server. The license server is used to store the license file, which specifies the parameters for product usage. The products then request licenses from the license server when users log on.
- **License Management Console:** The License Management Console is a Web-based administration tool that provides real-time and historical license usage reporting as well as passive license alerting.
- **License allocation process:** You must obtain license files from MyCitrix.com.

The diagram below shows the user environment on the left, where the Citrix license server and the License Management Console reside along with the Citrix product. The box to the right and the arrow pointing away from it illustrate passing a license file for placement on the license server.



**Figure 1: MetaFrame Access Suite Licensing Architecture**

The License Allocation section on page 4 provides more detail about the interaction between these licensing components.

### **CITRIX LICENSE SERVER**

The Citrix license server abstracts licensing functionality from individual Citrix products (removing it from IMA in the case of MetaFrame Presentation Server) and puts it into a common central server. This eventually allows all Citrix products to share a central licensing mechanism. The customizable license file that resides on the license server defines which products are licensed and how they can be used.

When a client tries to log on to a MetaFrame Access Suite product, that product checks out a license from a pool, provided one is available. When the client logs off, the product checks the license back in to the license server. The Citrix product maintains ongoing, periodic communication with the license server to ensure availability. The Fault Tolerance section describes what happens when communication between the product server and the license server fails.

### **CITRIX LICENSE MANAGEMENT CONSOLE**

The License Management Console is an administrative Web-based user interface used to catalog license inventory, chart historical usage, monitor real-time license usage, and provide passive alerting. The License Management Console houses all the licensing management and reporting functionality for the product.

Note that the License Management Console Web server must be hosted on the same machine as the license server.

- The License Management Console displays real-time license availability and consumption information for any single license server.
- Historical reports show reporting data from one or more license files as a graphical chart.
- Passive alerting is a mechanism that displays updates relating to significant events or conditions on the License Management Console. You can configure the alerting thresholds for events or conditions.

Note: If you are not running IIS, you cannot install the License Management Console. Instead, you can manage the license server using command-line tools.

### LICENSE ALLOCATION

Allocation is the act of retrieving a license file from the MyCitrix.com Web site. After you successfully install the license server and the License Management Console, you must obtain license files from Citrix. Your license files are generated when you allocate your license entitlement. To obtain license files, go to <http://www.mycitrix.com> and use your license code to allocate your license entitlement. Additional information about obtaining license files is provided in *Obtaining Licenses from Citrix* section.

## System Requirements

This section describes the system requirements for licensing and the software platforms supported. It explains how to estimate hardware, CPUs, disk space, memory, and network bandwidth requirements. The product user documentation provides a more comprehensive set of guidelines for planning licensing implementations. More detailed guidelines can also be found in the Advanced Concepts Guide for MetaFrame Presentation Server.

### SOFTWARE PLATFORMS

You can install MetaFrame Access Suite licensing on servers running the following Microsoft® operating systems:

- Windows® Server 2000 family: Windows Server 2000, Windows Advanced Server 2000, and Windows 2000 Datacenter Server. Citrix recommends that you install the latest Microsoft service pack for the operating system.
- Windows Server™ 2003 family: Windows Server 2003, Standard Edition, Enterprise Edition, and Datacenter Edition.

Sun™, Solaris™, HP-UX®, and IBM AIX® will be supported in the future.

The License Management Console Web server runs on the following:

- **Browser support:** HTML 3.2 or later; Netscape 4.7, 7.0 or later; IE 5.0 and 6.0 or later
- **Web servers:** IIS 5.0 or later
- **Servlet engine:** Tomcat 4.1.24 (included in the License Management Console installation)
- **Java™ environment:** Sun Java Runtime Environment (JRE) 1.4.1. If your system does not have the JRE, Version 1.4.1 is installed as part of the License Management Console installation.

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## **SIZING SYSTEMS**

The license server and License Management Console Web server can reside either on a MetaFrame Access Suite product server or on a dedicated server. Farm size and the number of concurrent users indicate whether or not you should have a machine dedicated to serving licenses. If there are 50 or more servers, use a dedicated machine for the license server for performance reasons. For installations with fewer than 50 servers running MetaFrame Presentation Server, you can install the license server on any machine.

## **CPU REQUIREMENTS**

One of the most important considerations in determining your license server requirements is the processor speed of the machine running your license server. For the best performance, the license server should be on a machine that has at least a 1GHz CPU.

In environments that have only a small number of client devices, the license servers use very little CPU time: perhaps only a few seconds over several days. In environments with large numbers of clients or high license check-out/check-in activity levels (hundreds per second), the amount of CPU time used may start to become more significant. Even so, benchmarking tests show that such levels of scalability are easily handled on a dedicated license server machine. Citrix has benchmarked at levels above 500 client logons per second, which easily accommodate the largest of implementations.

Note that the license server is a single-threaded program. When choosing equipment to run the license server, it is better to choose a fast processor than four processors of a lower speed, because the license server cannot take advantage of four processors.

## **DISK SPACE REQUIREMENTS**

The only output files the license server creates are the debug and report usage log files. Debug log files contain status and error messages useful for debugging the license server. The license server always generates debug log output. Usage log files contain license usage information (for example, license check-out and check-in operations) used by the License Management Console to generate reports.

The most significant factor in determining hard drive space requirements is the amount of space usage logs require. This is determined by two factors:

- The length of time you want to keep your report log files
- The amount of licensing (check-out, check-in) activity

The more license activity on your license server, the bigger the usage log gets. You need to consider how long you want to keep this information and how frequently you want to archive and/or rotate these files. For best performance, limit the size of report logs to 100MB, and then rotate the files. If disk space is limited, you can suppress usage log file output. For this reason, you may choose to store your usage logs on another machine. However, Citrix recommends that the log files be local files on the server machines to avoid networking dependencies.

**MEMORY REQUIREMENTS**

MetaFrame Access Suite licensing does not use much memory unless it is deployed in large environments. Memory usage does increase depending on the size of the license file and the options file as well as the number of concurrent users; however, their memory requirements are minimal. For the best performance, the license server should be on a machine that has at least 512MB of RAM.

**NETWORK BANDWIDTH REQUIREMENTS**

The two key considerations in estimating network bandwidth requirements are license check-out/check-ins and the heartbeat that is maintained between the license server and the MetaFrame Access Suite product. The equation to use to determine bandwidth required is 1KB times the number of logons per second at peak times. Information about the number of logons per second are located in the Citrix Management Console, provided the functionality to record this is enabled. Both of these processes and their bandwidth requirements are described below in greater detail.

When a user logs on to a MetaFrame Access Suite product that supports the new licensing infrastructure, the product requests a license from the license server. When the license server grants the request, the product reserves a license for its use from the license server. This is known as checking out licenses. When the user logs off from the product, the product returns the license to the license server. This is known as checking in licenses. For the MetaFrame Access Suite product to function properly, it must be able to check a license in and out, and access the license server at all times.

The license server and the product server exchange heartbeat messages to indicate to each other that they are still functioning. The heartbeat messages are exchanged approximately once every 120 seconds. For smaller licensing systems, the bandwidth consumed by transactions is minimal. This means that licensing component communications can be effectively run over slow networks (such as dial-up lines) for small numbers of clients.

Although licensing transactions send relatively small amounts of data across the network (often less than 1KB), you may need to take network bandwidth into account if your network has large numbers (hundreds) of published applications and/or servers. In this situation, the product server and the license server should be on the same local area network. If your product servers point to a license server across a WAN, make sure the network bandwidth is sufficiently robust to handle the traffic anticipated, based on the information provided above.

The *Advanced Concepts Guide for MetaFrame Presentation Server* provides detailed guidelines for network bandwidth and latency requirements.

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## Fault Tolerance

Fault tolerance lets clients continue working without interrupting their access to critical applications. Such scenarios arise when MetaFrame Presentation Server or MetaFrame Conferencing Manager cannot access the license server due to network outages or license server failure. Citrix has several mechanisms to ensure continuous client access in the event of license server failure:

- **Windows Management Interface (WMI) alerting.** A WMI provider can be used to provide immediate notification of license server communication failure through Resource Manager, Microsoft Operations Manager (MOM) Pack, or other third-party tools. In addition, MetaFrame Presentation Server generates an event log entry that you can use through Resource Manager or MOM.
- **Four-day grace period.** A grace period is provided so that when communication with a license server fails, each Citrix product automatically becomes its own license server with an allocation of licenses equal to the number of licenses available on the license server. Furthermore, clients can still access their applications during this grace period. For most license server interruptions, four days grace provides enough redundancy to resolve network issues, reinstall the license server, or address any other issues.
- **Backup license server.** You can set up a backup license server and use it to manually replace the primary server.
- **Microsoft clustering.** Microsoft clustering of the licensing server will be supported. Additional information will be forthcoming.

## Securing Citrix Licensing

Install the license server on a machine in a physically secure location (that is, a location where it cannot accidentally be unplugged, easily damaged, and so on). You can use the server operating system's security features to grant access only to licensing administrators.

If the license server is not on the same LAN as the product servers, put a VPN between the product server and the license server to secure communication between the two.

By default, the license server communicates over port 27,000. If you want it to use a different port, you must change references to the port number in the product and on the license server. You can change product references to port numbers during installation, but you can change license server port numbers only after installation.

Use the License Management Console over Secure HTTP (S-HTTP), unless you access it only from the same machine on which it was installed. The Management Console uses basic authentication, so it transmits passwords and other data as unencrypted, plain text. When passwords are transmitted over a LAN, the passwords are not encrypted unless you use S-HTTP.

## Deployment Scenarios

There are several possible license server deployment scenarios to consider when planning system rollout:

- One product server/farm\* pointing to a single license server. A single farm is depicted in Figure 2 below. This is the most likely scenario for smaller users.
- Multiple product server/farms\* pointing to a single license server. Two farms are depicted in Figure 3 below. This scenario applies if you want to share licenses across server farms.
- One or multiple product server/farms\* each pointing to a different license server are depicted in Figure 4 below. You may need to deploy multiple license servers in the following cases:
  - When the number of clients and their associated license check-in/outs activity require dedicated license servers
  - When geographically dispersed organizations want local license servers
  - Departments or organizations need separate license servers for ownership and security purposes

\* Farms are referred to in the context of MetaFrame Presentation Server.

Note that multiple license servers cannot run on the same machine and a single product server cannot point to multiple license servers simultaneously.

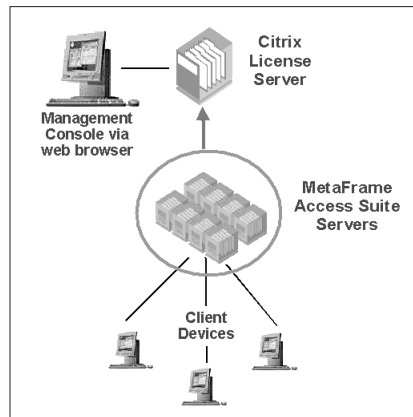


Figure 2: Single Farm

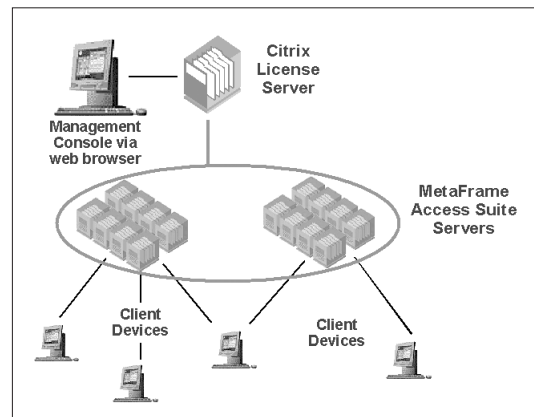


Figure 3: Two Farms

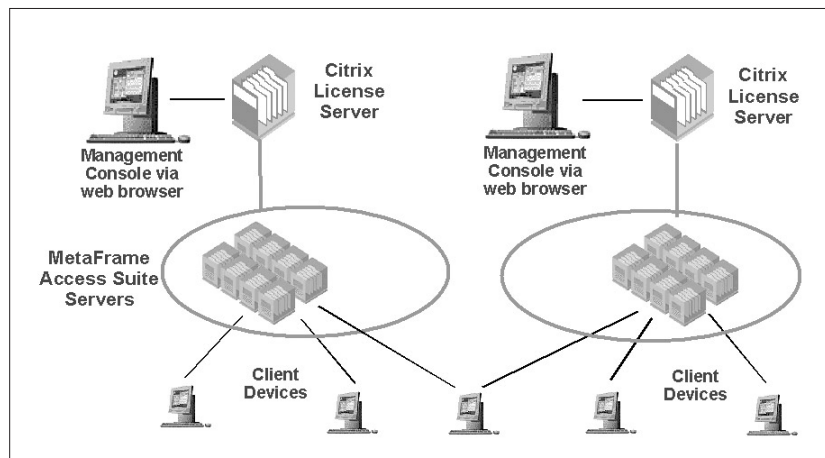
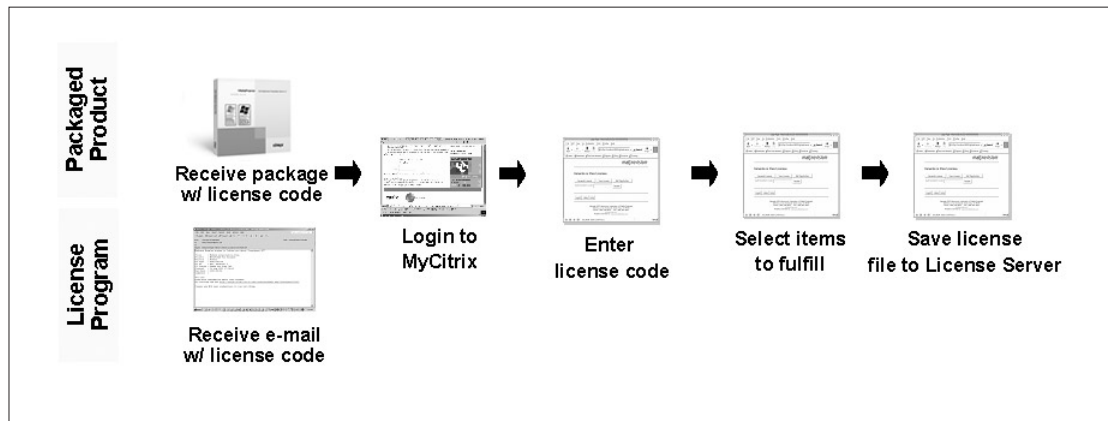


Figure 4: One or Multiple Farms

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## Obtaining Licenses from Citrix

The process of obtaining licenses has undergone a fundamental change: license activation is not part of the licensing process with products that use MetaFrame Access Suite licensing. Instead, you must download and install license files for a specific license server. This process is known as license allocation. The process is described below.



**Figure 5: Obtaining Licenses from Citrix**

After successfully installing the license server and the License Management Console, you must obtain your license files from Citrix. Your license files are generated when you allocate licenses from your purchased entitlements. The license files reference a specific license server's host name. After generation, you download the license files.

To obtain license files:

1. Receive a license code through email or with the product package.
2. Log on to <http://www.mycitrix.com>.
3. Enter the license code.
4. Select the type and quantity of licenses wanted for download. You do not have to download all the licenses you are entitled to at the same time; for example, you may want to dedicate a specific number of licenses for a specific license server.
5. Specify the name of the server on which the license server software was installed (not shown in Figure 5).
6. If you are downloading a license file to a machine other than the one on which licenses are stored, you can use the License Management Console to copy license files to the license server.

As described in Step 4 above, you may choose to allocate your entitlement at different times and across multiple license servers. This is known as partial allocation. Note that the Subscription Advantage period begins when the first license is allocated if purchased as a packaged product, or when the order is placed if purchased as part of a license program.



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## Access Suite License Management Tools

The License Management Console is launched from the Access Suite Console, which is a Microsoft Management Console (MMC) snap-in.

The Citrix Management Console (CMC) is used to point the MetaFrame Presentation Server to a license server. A farm-wide setting exists to allow you to point all servers to a license server. There are no other licensing functions in the CMC. The product roadmap will include tighter integration between the License Management Console and the MMC.

License server outage events are captured by the Windows Management Interface (WMI) provider and passed to Microsoft Operations Manager (MOM). You can also acquire third-party products to provide active alerting based upon these events.

## Product-Specific Licensing Issues

### **METAFRAME SECURE ACCESS MANAGER LICENSING**

MetaFrame Secure Access Manager does not currently support MetaFrame Access Suite licensing, but will support it in an upcoming release. Until then, MetaFrame Secure Access Manager will maintain a standalone licensing infrastructure that requires users to activate their licenses.

### **METAFRAME CONFERENCING MANAGER LICENSING**

MetaFrame Conferencing Manager 3.0 works in conjunction with MetaFrame Presentation Server 3.0. As described earlier, it uses MetaFrame Access Suite licensing. However, if you use MetaFrame Conferencing Manager 3.0 with MetaFrame XP™ Presentation Server, Feature Release 3, it uses the legacy IMA licensing infrastructure.

A MetaFrame Presentation Server license is consumed when you connect to the MetaFrame Conferencing Manager user interface. A MetaFrame Conferencing Manager license is consumed only when you join or create a meeting.

### **METAFRAME PASSWORD MANAGER LICENSING**

MetaFrame Password Manager does not currently support MetaFrame Access Suite licensing but will support it in an upcoming release. Until then, MetaFrame Password Manager will maintain a standalone licensing infrastructure that requires users to activate their licenses.

### **METAFRAME PRESENTATION SERVER FOR UNIX LICENSING**

MetaFrame Presentation Server for UNIX® does not currently support MetaFrame Access Suite licensing, but will support it in an upcoming release. Until then, MetaFrame Presentation Server for UNIX will maintain a standalone licensing infrastructure that requires users to activate their licenses.

## Conclusion

Over the past few releases, Citrix has gained an understanding of the concerns and issues that users have raised regarding licensing. MetaFrame Access Suite licensing marks the culmination of a dedicated effort to address many of these issues.

The introduction of a new licensing architecture facilitates these benefits. You will continue to see improvements in MetaFrame Access Suite licensing so that it becomes a tool to aid you with licensing planning and compliance.

## Additional Resources

Product Documentation:

*MetaFrame Access Suite Licensing Guide*

*Advanced Concepts Guide for MetaFrame Presentation Server*

Licensing Webinar:

<http://www.placeware.com/cc/citrix/view?id=Licensing%20Oct2003&pw=380603>

MetaFrame Access Suite licensing Frequently Asked Questions:

Will be available on the Citrix website with MetaFrame Presentation Server 3.0 and MetaFrame Conferencing Manager 3.0

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## Glossary

### **Allocation**

The act of retrieving a license file from the Citrix Web site. A license allocation is made against an entitlement. Multiple license allocations can be made against a single entitlement across multiple license server hosts.

### **Entitlement**

An entitlement represents what you are entitled to receive in terms of the product licensed and the total number of licenses.

### **Host name**

The host name of the machine on which the license server will run. Host name information is required because the license file will include information about which license server that file will be linked to.

### **License code**

Your license code is required when you download license files. It comes from an email or your product's packaging.

### **License file**

The license file contains information required by the license server to manage licenses. The license file, or a copy of it, must be accessible from every machine that runs a Citrix license server.

### **License Management Console**

An optional Web-based tool that runs on the license server. The License Management Console helps you to download license files from Citrix, copy license files to the license server, and run reports to evaluate license usage.



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