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ICA Session Monitoring with MetaFrame XP Presentation Server

By Citrix Consulting

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Version History		
1.0 – September 6, 2002	Jo Harder	
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Introduction

Prior to the availability of MetaFrame XP Presentation Server, Feature Release 2, limited tools were available to MetaFrame XP and network administrators for assessing the network bandwidth utilization of applications and ICA sessions. Until that time, only the limited ICA-related counters within Windows 2000 Performance Monitor were available.

With Feature Releases 2 and higher, not only have the Windows 2000 Performance Monitor counters been expanded, but now independent software vendors and developers now have access to ICA session API calls within the ICA Session Monitoring and Control (SMC) module of the Citrix Server Software Development Kit (SDK). This kit contains programming and sample code that is particularly applicable to the development of programs with the intent of understanding the network requirements of the MetaFrame XP environment.

This document provides an overview of the capabilities of both tools and references to existing documents.

Windows 2000 Performance Monitor Counters

With MetaFrame XP Presentation Server, Feature Release 2 and above, the number of objects and counters available within Windows 2000 Performance Monitor are as follows:

Object: Citrix IMA Networking
- Bytes Sent/sec
- Network Connections

Object: Citrix MetaFrame XP
- Application Enumerations/sec
- Application Resolution Time (ms)
- Application Resolutions/sec
- Data Store Connection Failure
- DataStore bytes read/sec
- DataStore bytes written/sec
- DataStore reads/sec
- DataStore writes/sec
- Dynamic Store bytes read/sec
- DynamicStore bytes written/sec
- DynamicStore reads/sec
- DynamicStore writes/sec
- Filtered Application Enumerations/sec
- LocalHostCache bytes read/sec
- LocalHostCache bytes written/sec
- LocalHostCache reads/sec
- LocalHostCache writes/sec
- Zone Elections
- Zone Elections Won

Object: ICA Session
- Input Audio Bandwidth
- Input Clipboard Bandwidth
- Input COM 1 Bandwidth
- Input COM 2 Bandwidth
- Input COM Bandwidth
- Input Control Channel Bandwidth
- Input Drive Bandwidth
- Input Font Data Bandwidth
- Input Licensing Bandwidth
- Input LPT 1 Bandwidth
- Input LPT 2 Bandwidth
- Input Management Bandwidth
- Input PN Bandwidth
- Input Printer Bandwidth
- Input Seamless Bandwidth
- Input Session Bandwidth
- Input Session Compression
- Input Session Line Speed
- Input Text Echo Bandwidth
- Input ThinWire Bandwidth
- Input VideoFrame Bandwidth
- Latency - Last Recorded
- Latency - Session Average
- Latency - Session Deviation
- Output Audio Bandwidth
- Output Clipboard Bandwidth
- Output COM 1 Bandwidth
- Output COM 2 Bandwidth
- Output COM Bandwidth
- Output Control Channel Bandwidth
- Output Drive Bandwidth
- Output Font Data Bandwidth
- Output Licensing Bandwidth
- Output LPT 1 Bandwidth
- Output LPT 2 Bandwidth
- Output Management Bandwidth
- Output PN Bandwidth
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- Output Seamless Bandwidth
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- Output Session Compression
- Output Session Line Speed
- Output Text Echo Bandwidth
- Output ThinWire Bandwidth
- Output VideoFrame Bandwidth

ICA Session Monitoring and Control (SMC)

The ICA Session Monitoring and Control (SMC) portion of the Citrix Server Software Development Kit (SDK) Version 2.3 can be downloaded from the Citrix Developer Network (CDN) web site at http://www.citrix.com/cdn. Specifically, the entire SDK or its individual components can be downloaded from http://apps.citrix.com/cdn/SDK/server_sdk_v23.asp.

According to that site, "The ICA Session Monitoring and Control (SMC) Software Development Kit is an API that network administrators and third-party software developers can use to write applications that monitor, measure, prioritize and control bandwidth usage by ICA traffic on servers running MetaFrame XP Feature Release 3 for Windows."

With the SMC SDK you can develop:

- Custom applications that monitor a particular SMC parameter for all ICA sessions on the network.
- Software applications or agents that monitor bandwidth usage of ICA sessions on a server, and subsequently exercise limited control over a particular ICA session."

SMC Console Tools

Within the SMC download, there are two files of special interest.

- *ICA Session Monitoring and Control SDK API Specification* – Details each of the functions available, parameters, and return values. The SDK itself, as well as this document, can be used to develop custom applications.
- SMCConsole.exe – Contains a usable example of a user interface that was written using the SMC SDK.

SMC Console

- Below are screen shots from the SMCConsole.exe. This executable file can be executed without modification on a MetaFrame XP Presentation Server, Feature Release 3 server. Also, it does not impact existing sessions.

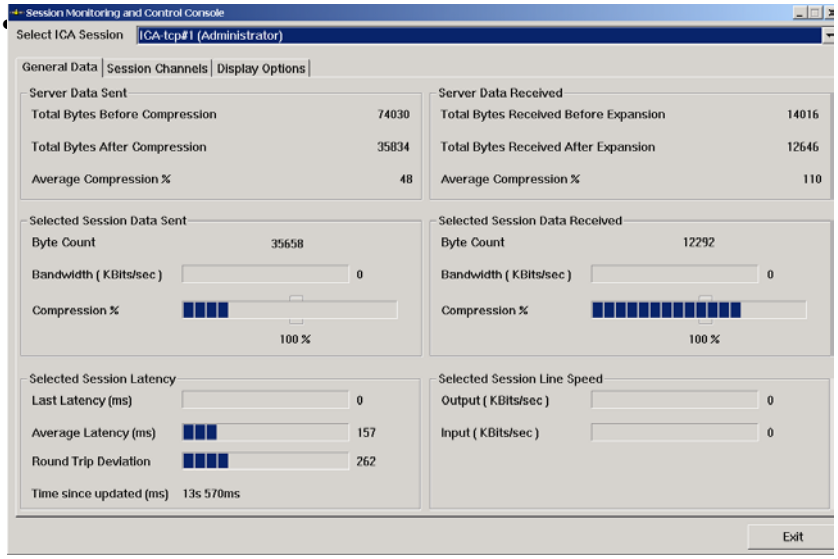


Figure 1:

General Data Screen

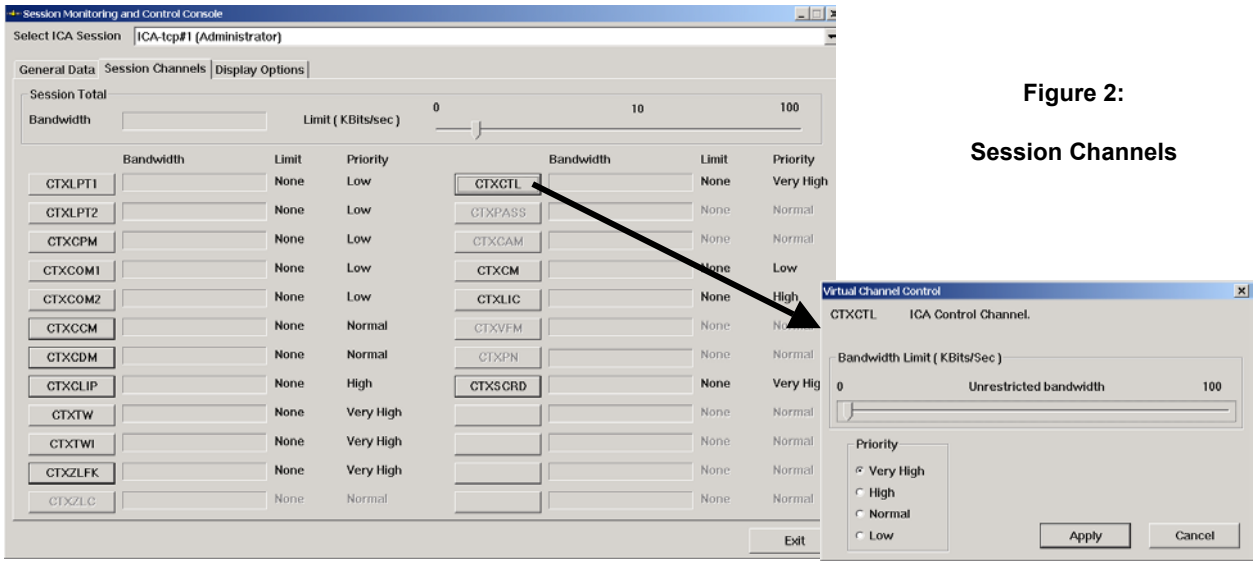


Figure 2:

Session Channels

Figure 3: Configuring Each Virtual Channel

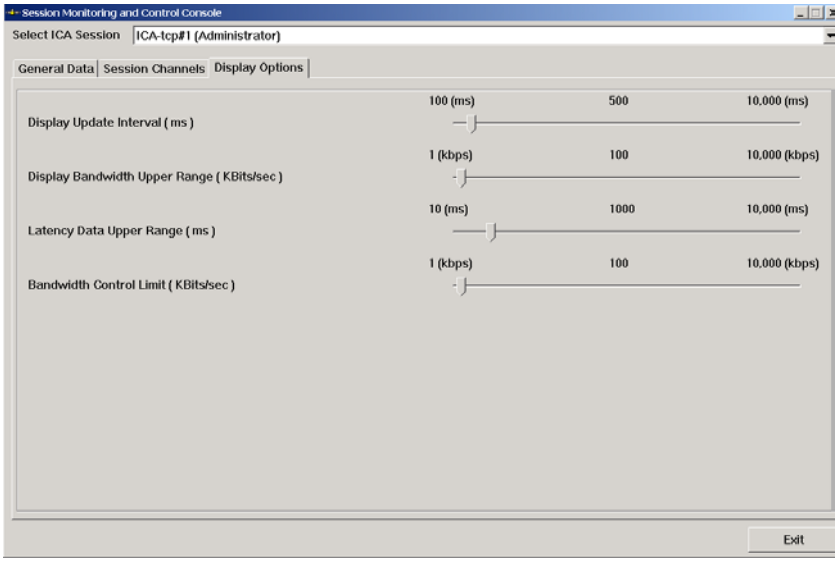
- 

Figure 4:

Display Options

Applicability

There are many uses for the SMC Console by MetaFrame XP Administrators. Some examples of these uses are:

- If network bandwidth is limited, administrators can test the impact of using less than the recommended 20 Kbps per session.
- Administrators can test the effects of limiting bandwidth per virtual channel, such as printing.
- If Quality of Service (QoS) is being implemented on the network, the impact can be fully tested prior to implementation and without expensive network equipment.

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Summary

It has become much easier to understand the network bandwidth that is required for ICA Sessions with the release of the additional Windows 2000 Performance Monitor objects and the Citrix SMC SDK. In particular, the SMC Console provides out-of-the-box monitoring capabilities that are useful for MetaFrame administrators.

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