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GATE 3.0 VALUES API Modification Announcement

Related Eurex Circulars: 014/01, 027/01

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Content may be most important for:	**Attachments:**
➲ IT / System Administration	GATE 3.0 VALUES API Modification Announcement - Overview and Volume 1 – Call Interface

You will find attached the Modification Announcement concerning Release 3.0 of GATE, which will be introduced with Eurex Release 5.0.

The document will also be published on our web-site “www.eurexchange.com ” under ‘market place > programming to eurex > release 5.0 / GATE 3.0’.

The Planning Version of Volume 2 of the Member Front End Development Guide is undergoing the final stages of review, and will be placed on our web-site as soon as possible.

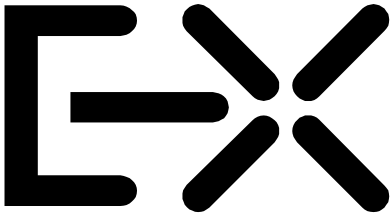
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GATE 3.0

VALUES API Modification Announcement

Overview and Volume 1 - Call Interface

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1 Overview

The VALUES API (Virtual Access Link Using Exchange Services Application Programming Interface) has proven to be a stable and reliable interface to electronic exchange services. This Modification Announcement states the amendments to the Call Interface introduced with GATE Release 3.0, as compared to the previous version, GATE Release 2.1.

GATE Release 3.0 will be introduced with Eurex Release 5.0, Xetra Release 7.0 and Xontro Release 19. Xetra Release 6.0 will still be shipped along with GATE 2.1. It is only affected by the changes described in this document when used in combination with GATE Release 3.0, because GATE 3.0 does not support CVN_010.

GATE Release 3.0 will implement a new Call Interface version, designated as CVN_012. The new Call Interface version enables broadcast authorization; this means subscribing to a broadcast stream is only possible within a valid login context. Furthermore, the subscription callback can be invoked multiple times per incoming broadcast. These two features are not necessarily enabled for all releases of Exchange software bundled with GATE Release 3.0.

GATE 2.1's native Call Interface Version, CVN_011, is still supported by GATE 3.0. When using this version, a VALUES API-based application will not be affected by the Call Interface changes introduced with GATE 3.0.

The native Call Interface version of GATE 2.0, which is CVN_010, will not be supported by GATE 3.0. Especially applications that used this CVN to disable the threading/reentrancy error checks introduced by GATE 2.1 will have to be updated.

2 Changes to VALUES API Call Interface

This chapter outlines the enhancements in the VALUES API Call Interface introduced by Call Interface version CVN_012, which is implemented with GATE 3.0.

2.1 Broadcast Extension

The enhancements described in this section – Broadcast Authorization and Broadcast Clustering – do not necessarily take effect with all Exchange applications that are bundled to GATE Release 3.0. Instead, each electronic exchange has to enable these features explicitly for them to become effective.

Eurex Release 5.0's Xervices will have Broadcast Extension enhancements implemented. Although Xetra Release 7.0 and Xontro Release 19 will come with GATE 3.0, it has not yet been defined if they will already implement the Broadcast Extension.

For Xervices that do not implement Broadcast Extensions, the following subsections on Broadcast Authorization and Broadcast Clustering are not applicable.

2.1.1 Broadcast Authorization

Subscriptions to broadcast streams are only allowed within a valid login context. The introduction of this security concept allows data access authorization. When using Call Interface Version CVN_10 the data access authorization is unavailable. For data access authorization, the field *loginID* of the request's control block (*ReqCntrlT*) used with VCI_Subscribe is not reserved any more, but has to be set to a valid ID established by a successful login to the related Xervice. For any invalid login ID, the new return code *ELB_TECH_NOT_LOGGED_IN* is returned.

Up to CVN_011 there was no event, except either calling VCI_Disconnect or losing the connection to GATE, that would terminate an active subscription. From CVN_012, a valid login context is needed for getting subscribed. Thus, losing the valid login context (forced by VCI_Logout, Xervice unavailable, VCI_Disconnect, losing the connection to GATE) means immediate termination of all subscriptions belonging to that login context. The following table shows the exceptions and the related completion codes the subscription callback is invoked with.

Exception	Completion code	Description
Xervice unavailable	ELB_TECH_PENDING_ REQUEST_DELETED	Pending subscription requests belonging to the related Xervice
	ELB_TECH_SUBSCRIPTION_ DELETED	Active subscriptions belonging to the related Xervice
VCI_Logout (i.e., receipt of the related response via VCI_Dispatch)	ELB_TECH_PENDING_ REQUEST_DELETED	Pending subscription requests belonging to the related login context (i.e., login ID and Xervice)

Exception	Completion code	Description
	ELB_TECH_SUBSCRIPTION_ DELETED	Active subscriptions belonging to the related login context
Non-transparent failover	ELB_TECH_PENDING_ REQUEST_DELETED	Pending (un-)subscription requests belonging to the related Xervice
GATE unavailable (i.e., losing the connection to GATE)	Same behavior as for CVN_011	
VCI_Disconnect	Same behavior as for CVN_011	

Table 2.1: Completion codes

2.1.2 Broadcast Clustering

By sending multiple broadcast messages via the same VALUES message queue (VMQ) message, GATE 3.0 achieves performance improvements (I/O overhead reduction).

Until GATE Release 2.1, a broadcast event on the VMQ triggered only one callback invocation on calling VCI_Dispatch. With GATE Release 3.0, a broadcast event can cause multiple callback invocations when VCI_Dispatch is used on it. This amendment concerns both CVN_11 and CVN_12. Applications that rely on receiving only one broadcast callback per call to VCI_Dispatch need to be adapted. For example, applications writing to static or global variables inside callback code, in order to make data available to the main program, need to be checked if multiple callback invocations may overwrite data before the main program has a chance to process it.

2.2 VALUES Validation for Thread Usage and Reentrancy

When using Call Interface Version CVN_012, the constraints stating that VALUES API

- is not thread safe and
- does not allow for VCI-calls inside callbacks triggered by VCI_Dispatch

are protected by a library check that makes sure no further VALUES call is currently active. Offending VCI-calls will fail with status ELB_TECH_NOT_REENTRANT. This behavior is identical to Call Interface Version CVN_11.

Please note GATE Release 3.0 does not provide backward compatibility to Call Interface Version CVN_10. Thus, currently existing applications that still use CVN_010 in order to avoid the threading/reentrancy check within GATE 2.1's CVN_011, will no longer work.

Note: The statement "VALUES API is not thread safe" still allows to write multi-threaded VALUES programs. However, care has to be taken not to issue concurrent calls to VCI-functions within one process. That is, if more than one thread is able to perform VCI-calls, the well-known locking mechanisms have to be used in order to enforce exclusive VCI-access.

3 Upgrade of Operating System, Compiler and Linker

This chapter specifies the required versions of the operating systems. Furthermore, the recommended versions of the linkers and compilers that can be used for developing VALUES API-based applications are listed. GATE 3.0 and Eurex 5.0 do not support VALUES on the IBM AIX platform. Xetra Release 6.0 will still be shipped along with GATE 2.1, and thus will continue to support IBM AIX. Table 3.1 summarizes the Operating Systems which are supported by GATE 3.0.

Operating System	**Version**	Compiler/Linker
Microsoft Windows NT (Intel)	4.0 (Service Pack 5)	Visual C++ 6.0a (German Version)
Sun Solaris	8 / 64 Bit	Sun C/C++ Forte 6 compiled with 32bit

Table 3.1: Supported Operating Systems and recommended Compiler and Linker/Platform Configurations