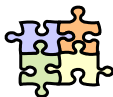# CICS Transaction Gateway Strategy for v6 and beyond

CICS Connectors, strategy and future development.

What is the CTG?

1. **Plumbing** - Connectivity into CICS
   - Primary inbound connector to CICS
   - COMMAREA (ECI) and 3270 (EPI) based connectors

2. **Interfaces** - Java and non-Java APIs
   - JCA API is strategic and provides enhance QoS
   - Base Java, C, COBOL and COM are stabilised

3. **Integration** - WebSphere and CICS and others
   - 10 versions of CICS supported
   - 3 versions of WAS on 7 platforms
   - Java + 4 other languages (C, C++, COBOL, COM)
   - 5 SNA servers (AIX, Windows, zLinux)

CICS Transaction Gateway - Positioning
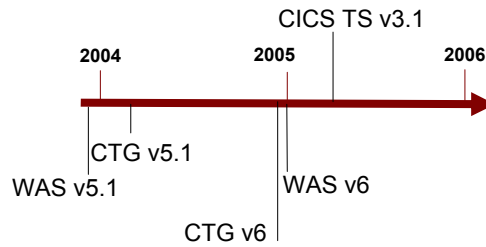
- Preferred implementation for JCA
  Access <u>all CICS servers</u> from WebSphere Application Server.

- High performing, secure, scalable and tightly integrated access method

- Ease of installation and flexible configuration
  It requires (minimal changes to CICS, - usually no changes to existing CICS applications).

- Supports a range of non Java clients
  including C, C++ COBOL and COM

CTG timeline – current release history

- **CTG v3.12**
  Entitled product, now EOS

- **CTG v4**
  Chargeable product, withdrawn from marketing

- **CTG v4.02**
  First J2EE support with WAS v4
  Linux/390 support

- **CTG v5**
  Dynamic tracing
  ARM support
  JSSE SSL 128

- **CTG v5.01**
  WAS z/OS v5 support - 1 Aug 2003, GA

- **CTG v5.1 – Current release**
  1Q/04 release, Java 1.4.1 and WAS 5.1

- **CTG v6**
  Dec 2004, Customer value function and WAS v6 support

- **CTG v6.1/v7**
  ~3Q05/1Q06

CICS TG v6, WAS v6 and CICS TS v3 –release plan

CICS TG v6 Announce: 30th Nov 2004   CICS TS v3.1 Announce: 30th Nov 2004
CICS TG v6 eGA: 10th Dec 2004   CICS TG v3.1 GA: 25th March 2005
CICS TG v6 GA: 14th Jan 2005

CICS TS v3.1

2004   2005   2006

CTG v5.1

WAS v5.1   WAS v6

CTG v6

CICS TG v6 includes following products:
• CICS TG v6 for z/OS
• CICS TG v6 for multi-platforms
• CICS UC v6

CICS TG v6 development strategy

1. Interoperation and standards
   ▪ Standards are key to our interoperation strategy

2. Customer value
   ▪ Build on our customer value proposition
   ▪ Deliver key requirements

▪ Four areas of requirements:
   1. Architectural limits
   2. Systems control
   3. Log and trace
   4. API

CTG v6 – What's in the box?

- JCA 1.5 and WebSphere v6 interoperability

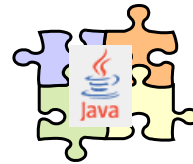- Performance/Scalability

- Systems Management

- Security

- Ease of Use

CTG v6 – Main features

Theme	Feature	Description
Standards	13205	SMP/E installer and Value unit pricing enablement
Standards	15406	ISMP standard packaging and installation
Standards	15795	Support for NPTL/SLES9 on zLinux and Intel
Standard	16748	APPC support on zLinux
Standards	13198	JCA 1.5 RAR and RAD tooling integration
Customer Value - Architectural limits	14500	Address 100 EXCI pipes limit + CICS TS v2 DCR 7496
Customer Value - Systems control	14829	Basic system controls
Customer Value - Systems control	13473	Consolidated JES logging CTGBATCH replacement for BPXBATCH
Customer Value - Systems control	SSL hardening 13645/15221/13775/14899	JSSE consolidation (no SystemSSL) JCE 4758 Crypto support + RACF keyrings

JCA 1.5 - WebSphere App. Server

- WebSphere App. Server v6 = JCA 1.5 = J2EE v1.4 spec level

- CICS TG v6 ECI and EPI Resource Adapters will support JCA 1.5 only
  - i.e. CICS TG v6 RARs support WebSphere Application Server v6 only
  - WebSphere v5/5.1 customers can use CICS TG v5.1 (JCA 1.0) RARs to talk to a **remote** CICS TG v6 Gateway daemon
  - CICS TG v5.1 RARS (JCA v1.0) will be made available for download from the internet

- JCA 1.5 provides
  - J2EE 1.4 Application Server compliance
  - Connection Optimizations
  - Note: There is no plan to provide JCA 1.5 inbound support for the CICS TG

- Tooling support:
  - Rational/WebSphere Studio tooling integration will continue to be provided

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Performance - improvements

- CTG z/OS
  - Improved scalability with EXCI pipes
  - Compiler optimizations (~upto ~10K instructions saved)
  - Null truncation optimization (up to ~200K instructions saved in z/OS JNI code)
  - zSeries crypto support for SSL handshakes via JSSE
  - zAAP (IFA) support for CPU offload (~50% offload potential)

- CTG/CUC on multi-platforms
  - Internal runtime tracing improvement upto ~10% general throughput improvement
  - NPTL Linux threading model on SLES9 and RHEL3 – higher scalability

- JCA 1.5
  - Connection optimisations
    - Lazy transaction enlistment – improved performance if RA not enlisted
    - Smart handles – improved connection pooling with get-use-cache

- Java/J2EE remote client
  - Optimized performance when returning data to Java client

EXCI pipe scalability

- **Description:**
  - CICS limits max of 100 allocated EXCI pipes to all CICS regions per each CTG or WAS address space
  - Requirement was for better availability, predictable usage, high performance, and better diagnostics

- **CTG Feature 14500 – EXCI Pipes**
  - Improve error diagnostics as limit is approached - to provide better warnings
  - Provide new option for *one pipe per thread*
    - Existing allocated pipes are de-allocated if the thread needs to allocate to a new region
    - Ensures max number of pipes is equal to max number of threads

- **CICS APAR PQ92943**
  - New user modifiable LOGONLIM in SYS.PARMLIB for each MVS image
  - Default will be 100, maximum will be 250 pipes per EXCI address space
  - Improved performance of EXCI pipe de-allocate in CICS TS v2.3 (~20%)

- **CICS TS v2.3**
  Improved performance of EXCI pipe de-allocate in CICS TS v2.3 (~20%)

Systems Management: F14829 – Basic system control

- Aim:
  Allow Gateway daemon to be shutdown in a controlled manner
  Provide operator interface for basic administration
  Integrate support with dynamic trace support
  Align support with standard operating system facilities

- Function
  - Shutdown of Gateway daemon on all platforms
  - Immediate and quiesce shutdown supported
  - SDSF operator interface for MVS
  - Command line interface on UNIX/Windows
  - No impact on local mode for WAS

Systems management function - distributed

- Quiesce support
  - Normal and immediate shutdown options
  - Normal shutdown allows running transactions to terminate

- Improved administration tool
  - Integrated with dynamic trace and shutdown functions
  - New ctgadmin command line interface

- Ability to run as a Windows service or UNIX daemon
  - Standard UNIX script provided (ctgd)

- Improved file handler for Gateway daemon log
  - Manages wrapping and max file size

- APPC support on zLinux
  - Improved connectivity for CTG on Linux on zSeries

System management function – z/OS

- SDSF administration interface
  - New z/OS console administration interface
  - Shutdown and trace admin functions available from z/OS console

- Logging to JES
  - New CTGBATCH shell launcher supports logging to JES (SYSOUT=*) or other DDs.
  - No longer required to run with non-shared address spaces
  - Improved diagnostics when running CTGBATCH

- Improved support for multiple Gateway regions
  - ctgenvvar configuration file does not need to be shared amongst all regions
  - ctgenvvar can be migrated to STDENV DD member

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Security - JSSE

- Aim:

  Consolidate all SSL function onto JSSE

  Support JSSE implementation as provided by IBM SDK 1.4.2 (no JSSE or JCE shipped)

  Remove SSLight and SystemSSL handlers (as per CICS TG v5.1 announce letter)

  Provide equivalent function in JSSE as SystemSSL and SSLight

  Harden SSL support

  Build on z/OS qualities of service

Security

- Function

  RACF keyrings - store SSL certificates in RACF

  Utilize zSeries hardware crypto support for JSSE SSL handsakes

  Provide Ciphersuite select option to enforce security level

  Improve diagnostics

Ease of use

- Eclipse infocenter
  - Re-designed searchable on-line documentation
  - Install on workstation or view on ibm.com

- Simplified installation and migration
  - SMP/E standard install on z/OS
  - ISMP standard install on Unix/Windows platforms

- Miscellaneous
  - Lower case configuration files
  - Precompiled EAR samples for WebSphere

Beyond v6 - Future strategy:

1. Interoperation and standards
   - Maintain position as de-facto connector for CICS
     - Aim: "Connectivity from any WebSphere to any CICS"
   - Support IBM and industry wide standards
   - Enhance JCA qualities of service

2. Customer value
   - Build on our customer value (performance, security and scalability)
   - Deliver key requirements

CICS TG – Future development items

Interoperation/Standards:

- 64 bit WAS z/OS

- IP v6 - IP v6 into CTG from WAS

- eWLM – IBM SWG strategy

- Enterprise Extender - migration for TCP62 customers

- TCP/IP hardening – improved timeouts and usability

Architectural limits

- JCA XAResource (2PC) for CTG z/OS
  Two phase commit support from Any WAS to a remote CTG on z/OS
  High priority and long standing requirement from marketing

Customer value

- Monitoring function for Gateway daemon – phase 2 of System Control
  - Provision of access to system metrics
  - Ability to query current state of transactions within the CICS TG

- Log and trace
  - Improved Gateway trace usability and performance
  - Integrated local mode messages with WebSphere message logging