# CUSTOM SUMMIT API FOR STORED PROCEDURE EXECUTION IN ORACLE

## SUMMIT TRICKS AND TRAPS

SERIES - 1 / ARTICLE - 2

MAY 4, 2022

By **Bimal Raj Gopinathan**

GreenPoint> Summit

info@greenpointsummit.com

International Corporate Center, 555 Theodore Fremd Avenue, Suite A102 Rye, NY 10580

**With the release of v6.3 version of Summit, Finastra has stopped supporting Sybase as a core database. Clients who are currently using Sybase should plan their transition to other databases such as Oracle if they intend to upgrade their Summit versions in the near future.**

As a result of this, one of our clients decided to migrate its Summit database from Sybase to Oracle. GreenPoint undertook the conversion of their current Sybase stored procedure to Oracle.

In this article, we describe the challenges that the client faced and how GreenPoint migrated their stored procedures from Sybase to Oracle.

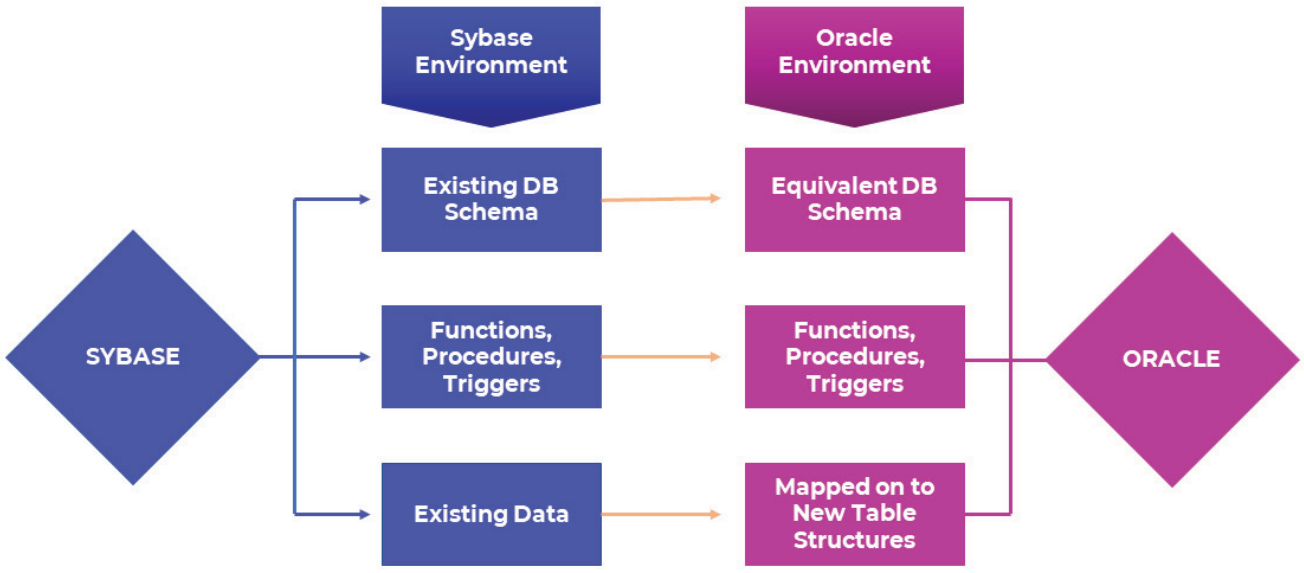
Please note that in the following description we do not delve into comparing the nuances of Oracle and Sybase as both the databases have their unique characteristics.

## Migration to Oracle from Sybase can be Conceptualized as follows:

- The existing Sybase database schema will be replicated on Oracle.
- All attendant Sybase software artifacts will be converted to Oracle, including Stored Procedures, Triggers, and Functions.
- All existing data should be seamlessly and accurately migrated from Sybase to Oracle.

The following diagram shows how the migration will occur:

**Figure 1**




## Summit Supported Achieving this Migration with Minimal Disruption

Summit provides an off-the-shelf application programming interface (API) called "sSybResultList" that executes queries, stored procedures, and other SQL statements, and produces tabular results. Clients use this API to create periodic reports.

However, some features of this API are limited across Sybase and Oracle:

**Table 1**

| Execution | Sybase | Oracle |
|---|---|---|
| Queries | Y | Y |
| Stored Procedure | Y | N |

As a result, after a database has been migrated from Sybase to Oracle, using this API in the code base leads to errors in the program causing the execution to fail. This has a significant impact on the transfer of the entire application.

In general, clients do not use complex stored procedures with unions and multiple selects. However, the client executable using the API sSybResultList along with multiple select unions failed to contact an Oracle stored procedure. If the institution is unable to find a solution, the migration project will be interrupted, putting its operations at risk.

## GreenPoint Resolved this Complexity

We created and implemented a custom API with the capability to execute stored procedures in the Oracle database, with the following built-in features:

- Drop-in replacement for standard API.
- Generate execution results in tabular form.
- Support for large data volumes in minimal execution time.

## Drop-in Replacement for Standard API

- **Simple initialization Interface**
  Custom API uses database connectivity details from the environment and establishes a database connection without any additional parameters.
- **Like-to-like parameters**
  Input parameters for Custom API are kept as 'standard ', which means minimal changes in the code base to replace the core API.

## Generate Execution Results in Tabular Form

The execution result in tabular form is one of the most important features of standard API and has been implemented to provide a seamless transition.

## Support for Large Data Volumes in Minimal Execution Time

This is the most critical feature required for this Custom API wherein:

- Custom API provides an option for a user to customize the number of records to be fetched during execution.
- Custom API has a default number set, based on the volumes, and the user can change this parameter to improve system performance.

## Fixing Performance Issues

During implementation there was a performance issue while retrieving the data. GreenPoint's team addressed the problem and resolved the underlying hurdles. The initial performance metrics of this API in a client environment without any inbuilt optimization are represented in Table 2.

**Table 2**

| With Stored Procedure with OLD API (SYBASE) | Total Time to Get Postings (In Milliseconds) | Application Processing (In Milliseconds) | DB Processing (In Milliseconds) | Impact in % |
|---|---|---|---|---|
| **Trade ID** | | | | |
| 1148XXXXX | 3,000 | 2,892 | 108 | |
| 1260CXXXXE | 1,000 | 940 | 60 | |
| XXXXXX05507 | 3,000 | 2,950 | 50 | |
| XXXXXX005155 | 1,000 | 950 | 50 | |
| **With Stored Procedure using NEW API (ORACLE)** | | | | |
| **Trade ID** | | | | |
| 1148XXXXX | 22,000 | 21,973 | 27 | 633% |
| 1260CXXXXE | 7,000 | 6,981 | 19 | 600% |
| XXXXXX05507 | 32,000 | 31,982 | 18 | 967% |
| XXXXXX005155 | 11,000 | 10,982 | 18 | 1,000% |
| **With embedded SQL using OLD API in Code (ORACLE)** | | | | |
| **Trade ID** | | | | |
| 1148XXXXX | 3,000 | 2,950 | 50 | |
| 1260CXXXXE | 1,000 | 932 | 68 | |
| XXXXXX05507 | 6,000 | 5,972 | 28 | |
| XXXXXX005155 | 1,000 | 965 | 35 | |

This performance bottleneck was resolved by using the PREFETCH option in Oracle OCI and introducing a configurable parameter to change the value of the fetch size.

This improved the system performance multifold as described below as compared to the processing time needed by the old API for fetching the data.

**Table 3**

| With Stored Procedure using NEW API (ORACLE) | Total Time to Get Postings (in Milliseconds) | Total Records Fetched |
|---|---|---|
| 1148XXXXX | 1,138.31 | 55,602 |
| 1260CXXXXE | 421.953 | 19,090 |
| XXXXXX05507 | 2,119.35 | 92,730 |
| XXXXXX005155 | 667.88 | 28,730 |

GreenPoint's team addressed this challenge by creating a bespoke API that performed the same functions as the core API. This enabled us to support the clients, for executing their Oracle migration effectively.

GreenPoint> Summit

## ABOUT GREENPOINT SUMMIT

- GreenPoint Summit is a comprehensive platform encompassing new implementations, version and module upgrades, product and application development, test automation, cloud migration, and system maintenance
- Our quantitative services and platforms include Libor Replacement Simulation Tool (LRST), curve creation, recreation and management, model validation and documentation, and creation of challenger models for regulatory compliance.
- Our summit professionals also provide data porting, migration and management as well as cloud services.
- Over the last year we have completed several projects including full system upgrades, Libor/RFR migration, replacement of valuation frameworks, and custom code creation and testing for large global banks and insurers.

GreenPoint> Financial

## ABOUT GREENPOINT FINANCIAL

- GreenPoint Financial is a division of GreenPoint Global, which provides software-enabled services, content, process and technology services, to financial institutions and related industry segments.
- GreenPoint is partnering with Finastra across multiple technology and services platforms.
- Founded in 2006, GreenPoint has grown to over 500 employees with a global footprint. Our production and management teams are in the US, India, and Israel with access to subject matter experts.
- GreenPoint has a stable client base that ranges from small and medium-sized organizations to Fortune 1000 companies worldwide. We serve our clients through our deep resource pool of subject matter experts and process specialists across several domains.
- As an ISO certified company by TÜV Nord, GreenPoint rigorously complies with ISO 9001:2015, ISO 27001:2013, and ISO 27701:2019 standards.

## Sanjay Sharma, PhD

**FOUNDER AND CHAIRMAN**

Sanjay provides strategic and tactical guidance to GreenPoint senior management and serves as client ombudsman. His career in the financial services industry spans three decades during which he has held investment banking and C-level risk management positions at Royal Bank of Canada (RBC) Goldman Sachs, Merrill Lynch, Citigroup, Moody's, and Natixis. Sanjay is the author of "Risk Transparency" (Risk Books, 2013), Data Privacy and GDPR Handbook (Wiley, 2019), and co-author of "The Fundamental Review of Trading Book (or FRTB) - Impact and Implementation" (Risk Books, 2018).

Sanjay was the Founding Director of the RBC/Hass Fellowship Program at the University of California at Berkeley and has served as an advisor and a member of the Board of Directors of UPS Capital (a Division of UPS). He has also served on the Global Board of Directors for Professional Risk International Association (PRMIA).

Sanjay holds a PhD in Finance and International Business from New York University and an MBA from the Wharton School of Business and has undergraduate degrees in Physics and Marine Engineering. As well as being a regular speaker at conferences, Sanjay actively teaches postgraduate level courses in business and quantitative finance at EDHEC (NICE, France), Fordham, and Columbia Universities.

## Bimal Raj Gopinathan

**SENIOR TECHNICAL LEAD**

Bimal has over 16 years of experience in enterprise financial technology platforms. He most recently worked as Senior Summit Developer with Credit Agricole CIB where he was part of the Summit v6 migration project and feature development. Previously, he has worked at Deutsche Bank on behalf of HCL and was part of multiple Summit upgrade projects as well as in managing application development. He also worked with Finastra in India for two Summit Implementation projects as the lead developer. He has also worked at Kanbay Technologies and other technology companies.

Bimal holds a B Level (MCA) from DOEACC, New Delhi. He lives with his family in Calicut, India.

**Marcus Cree**

**MANAGING DIRECTOR AND CO-HEAD**

**Mothiram K**

**DELIVERY HEAD - TCM**

**Maraimani Chakkaravarthy**

**DELIVERY HEAD - GREENPOINT SUMMIT**

**Yu Dai**

**SENIOR QUANTITATIVE MANAGER**