

Statement of Work Version 1.1

Proof of Concept for SERP™
(Storage Enterprise Resource Planner)

to:



Provided By:
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1 EXECUTIVE SUMMARY

Enterprise-wide infrastructure reporting is a common objective in the super-enterprise, but one rarely achieved. Although it is a necessary step in proactive IT infrastructure management, executives often have a limited view into utilization of resources within their organizations. Over the last decade, cycles of fast-paced growth and consolidation hampered efforts to track and manage storage related assets. Advancements in storage hardware technology outpaced the development of management toolsets, while the convergence and further integration of backup, recovery, and network technologies made this task increasingly complex. Furthermore, the desire of IT managers to test and implement hierarchical data management policies resulted in the need to support additional functionality.

Tool integration and custom, environment-specific deployment are the keys to successful use of today's storage management tools. All of the mature tools available today are targeted at the 'middle of the market' and assume dependency on a single vendor. As a result, each has associated scaling issues and a limited ability to incorporate external data and develop an enterprise-wide view. Because NovusCG focuses exclusively on the super-enterprise customer, our engineering team brings a unique set of knowledge and experience to bear on this problem. In addition to proven and streamlined methods of tool deployment in the super-enterprise, NovusCG is continually called upon for custom tool enhancement and integration. NovusCG has closed the functionality gap for super-enterprise clients and enabled storage management tools to have their desired business impact.

NovusCG's experience and knowledge are well matched to the needs of Citi:

- NovusCG fills gaps between ECC and enterprise requirements with its SERP (Storage Enterprise Resource Planner) product, allowing business-correlated storage reporting to be a reality including ownership/location/application/tier correlation of storage assets, storage consumer demand reporting and quality-of-service informed chargeback.
- NovusCG has performed the planning, architecture, deployment, and ongoing management of the world's largest SRM deployments, creating its GSRM offering and best practices along the way.
- NovusCG has seen particular success in large SRM deployments for its tier-1 financial services clients, providing solutions to complex financial services requirements for clients the scale of Citi.

This Statement of Work for SERP details services that will allow Citi to meet their SRM goals. Specifically:

- NovusCG will review the current ECC deployment in London and will design a solution that meets the requirements to deploy SERP successfully.
- NovusCG will provide services for a Proof of Concept (PoC) of their business-correlated storage reporting product (SERP) free of charge, allowing Citi to see near-term business impact from their SRM investment. This toolset will be integrated to the deployed ECC solution in order to provide flexible enhanced storage reporting to Citi.

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2 STATEMENT OF WORK

NovusCG is pleased to submit this Statement of Work (SOW) for deployment of its Storage Enterprise reporting tool in a PoC for Citi. This SOW is effective beginning on date of last signature below and will remain in effect until completion of the PoC. Transactions performed under this SOW will be conducted in accordance with and be subject to the terms and conditions of this SOW.

Changes to this SOW will be processed in accordance with the procedure below. The investigation and the implementation of changes may result in modifications to the SOW, and/or other terms of the *Agreement*. In addition NovusCG realizes that during the course of this project, Citi priorities may change. In such instances NovusCG will request, in writing, a change request.

2.1 Introduction

2.1.1 Introduction

Citi have already deployed an SRM tool in the UK, EMC Control Centre (ECC). The implementation is in two separate data centre, Riverdale & CGC. As part of this implementation, host agents have been deployed on to the hosts residing on the SAN infrastructure.

The native reporting capabilities of the ECC toolset do not provide Citi with 'evergreen' correlation of information on storage devices and their relation to business metrics such as Tiers, Lines of Business, Cost Centers, Applications, etc. This correlation is necessary to turn massive amounts of environmental *data* into actionable *information* on the storage environment. While ECC does have significant data collection, device management & reporting capabilities, these functions were written to the specifications of storage administrators and managers and not to meet the full requirements of the complex service management challenges of an organization such as Citi.

The PoC, which will run from six (6) weeks from start of implementation, will have specific goals to successfully demonstrate the ability of SERP to provide:

- Storage capacity and utilization reporting by business unit
- The ability to drill down to application and host level within each business unit
- Configuration and exception reporting
- Link to pull data from the Citi TAS system
- A facility to provide trending information around storage consumption
- Output in graphical views
- Storage reclamation and re-use opportunities
- Authenticated access to different SERP users
- Ability to post reports to a webpage
- The ease and flexibility to define customer reports

2.2 Scope of Effort

The proposed solution is designed to meet the specific reporting requirements of the global storage resource management environment needed by Citi. ***NovusCG has discussed these requirements with Citi and determined that the most expedient course of action is to execute a PoC of the SERP solution.***

Project Deliverables and Milestones

As described above, the PoC is intended to give the Citi project team the opportunity to validate the solution architecture, functionality and benefits before it is considered for global deployment. The main tasks to be accomplished during the PoC are as follows:

Phase I –Design

NovusCG will review the current ECC deployment and will design a SERP solution for the PoC which meets the reporting requirements of Citi and which will validate SERP as the preferred reporting tool.

Deliverables:

Hardware and Software Prerequisite Document (NovusCG) – Details any prerequisite hardware and software for the PoC.

Architecture Document (NovusCG) – A simple document will be provided that illustrates how SERP has been deployed in the Citi PoC environment.

Reporting Requirements Documentation (Citi/NovusCG) – Reporting requirements will be detailed for use in Phase III. Reporting requirements will be documented by the Citi project team in the NovusCG SERP Reporting Requirements template. The amount of customer report design will be limited to a maximum of 40 Hours for this PoC.

Asset Integration Workshop (Citi/NovusCG) – Citi will provide direct, in-person access to staff capable of helping NovusCG perform development services for custom asset integration to the TAS system. NovusCG will provide export templates for Citi's usage in providing all requisite asset management data required for SERP correlated reporting.

Test and Acceptance Plan (NovusCG/Citi) – The success criteria for the PoC are as detailed in Appendix A of this SoW.

Project Milestone:

- PoC Design Review – When the early-stage design, architecture, and deploy documentation has been completed a review meeting will be held to finalize the go-forward PoC plan. Successful completion of this Design Review will signify the commencement of the field deployment of the pilot infrastructures.

Phase II – Deployment, Testing, and Training

PoC Deployment – In this phase the architecture and deployment documentation from Phase I will be used to deploy SERP into the Citi environment.

All architecture documentation & deployment procedures will be validated for use in any future Citi deployments.

Deliverables:

Provision of Hardware and Software Prerequisites (Citi) – Any required hardware and software prerequisites will be provisioned as detailed in the Hardware and Software Prerequisite Document.

Completed Test & Acceptance Plan (NovusCG/Citi) – Detailing the completion of all functionality test plans provided in the Planning and Design task above.

Test & Acceptance procedures will validate all documented & functional product components

The test & acceptance document will be reviewed by Citi and agreed upon before the start of Phase II

Custom Training – In order for the Citi team to become familiar with the SERP solution custom training will be prepared and provided at a Citi location. This training will be delivered locally in the UK but could also be broadcasted via Webex/Webinar technology for viewing of remote resources.

Deliverables:

Assignment of SERP Subject Matter Expert (SME) (Citi) – One or more individuals will be assigned by Citi as SME's for the duration of the PoC. These people will be trained and mentored in the application and the production of custom reports

On-site trainer/mentor (NovusCG) – An expert in SERP will be positioned on site with Citi for the implementation phase and subsequent training period. It is agreed that NovusCG personnel will not be on-site for the whole duration of the PoC.

Project Milestone:

- Deployment, Testing, Training Review – Once SERP has been installed, tested verified and Citi personnel have received training this phase will be deemed to have been completed.

Phase III – SERP Customer Reporting

During this phase any Custom Reports required by Citi and defined in Phase I will be created. Although it is easy to create reports this custom report writing will be limited to a maximum of 40 hours of effort.

Project Milestones:

- Production of any Citi specific reports which are defined in Phase I

Phase IV – Agreement to completion of the PoC

The PoC is limited to six (6) weeks. At the end of this period a meeting will be held to review SERP against the original PoC success criteria as set out in Appendix A of this document.

2.2.1 Deployment Strategy

A PoC approach has been chosen to mitigate risk associated with an immediate full-scale rollout. In this fashion Citi will be able to validate the full functionality of SERP and the requirements of infrastructure. Once this functionality has been demonstrated and accepted, a global deployment can take place.

SERPs modular design means that a global roll-out can be easily facilitated by implementing more SERP instances (Child) in parallel with other EMC or HDS SRM instances which were not covered by this PoC. Global views will be obtainable by rolling-up these Child SERP instances to a single instance (Mother).

Advantages to this approach include but are not limited to:

1. Pre-validation of solution in the PoC phase relieving a significant part of time-consuming field testing.
2. Standardization of documentation and deployment strategy. One set of documentation for deployment and management procedures will be valid for all infrastructures, minimizing costs associated with training, documentation, and management overhead.

Both the PoC effort and the modular delivery strategy will provide the most flexible solution to Citi team, mitigating risk while improving time-to-market for the solution.

2.2.2 Project Management and Change Control

In order to ensure that the PoC stays within defined boundaries the following timeline and milestones will be in force:

Phase	Elapsed Time	Milestone
Installation of SERP	1 Week	Fully Installed and tested SERP
Training / Mentoring of Citi Staff	1 Week	Completion of 2 day class room formal training and 3 day mentoring
Customer Report creation	1 week	Creation and agreement of customer reports defined during Phase I
PoC Citi testing and validation	3 Week	Review Meeting
Total	6 Weeks	

The NovusCG and Citi project managers will hold a weekly project status review to discuss project status, team action items, and any outstanding change control actions. This meeting will also give the project team an opportunity to evaluate future project risk and to discuss project success metrics.

Changes to the project scope will be handled by the standard NovusCG change control process. In this fashion, when a change to the scope of the project comes up it will be documented in a change request form and presented in writing to Citi.

2.2.3 Project Resources & Staffing

NovusCG believes strongly in the idea of an integrated team effort for the delivery of PoC solutions. This approach consists of coordination points in both the management team and in the technical delivery team.

2.2.3.1 NovusCG - Team Make-up

The solution delivery team will be made up of a combination of NovusCG and Citi resources. Staffing at any given time will vary based on level of effort for each project phase and resource consistency will be maintained wherever possible. The following team is proposed for this Statement of Work:

- Project Manager - The Project Manager will coordinate the delivery of the solution, hold project status meetings and provide project status documentation. This resource will man the PMO and has responsibility for the timelines and logistics of the delivery effort.
- Technologist – The Technologist is the most senior technical resource that NovusCG fields. In this case he/she will be a technical SRM subject matter expert who owns the solution architecture and manages technical escalations.
- Solutions Engineer – The Solutions Engineer is a hands-on delivery resource responsible for technical execution of the solution architecture. These resources work closely with the Technologist to ensure quality of delivery and receive daily direction from the Project Manager. It is agreed that this resource will not be required on-site for the whole duration of the PoC.

NovusCG Subject Matter Expert(s):

- Report Writer – The Report Writer is a subject matter expert adept in the use of the SERP Report Builder tool. He or she will be engaged in Phase III to deliver the customer reports defined by Citi during Phase I. This resource will be part-time and this work will be performed mostly offsite.

Team Management:

- Overall responsibility for successful delivery of the PoC to Citi will be the Client Executive. The CE will work closely with Citi Management and act as first point for escalation.

2.2.3.2 Citi Staffing Requirements

During PoC delivery NovusCG will need regular access to Citi staff to assist them with execution of their tasks. This assistance can take many forms, a few examples of which are listed below:

- Submittal and tracking of Change Control forms
- Assistance with planning and detailing requirements
- Provisioning hardware and base OS builds for SERP servers
- Provisioning network and SAN connectivity (as needed) for SERP servers
- Ensuring that ECC Agents are up and running for the required devices and hosts

-
- Assistance with access to work facilities including phone, power, and network
 - Assistance with network performance and load testing while tuning the solution

This assistance typically decreases as the project timeline moves forward and the consulting staff becomes more familiar with client operational procedures. This requirement can be *significantly increased* when security measures prevent non-employees from direct access to server logins and other resources. It also will change based on the particular activity that the project phase is focused on.

NovusCG *estimates* that Citi project staffing will be as follows:

- Citi project manager.
- Regional engineering focal points (one per pilot site). This resource shall be directed by the Citi project manager.
- Access to cross-functional resources from operations, architecture, network, monitoring, and storage groups. These resources shall be directed by the Citi project manager.

2.3 Out of Scope

While the scope of this engagement is flexible through formal change control procedures, all project activity not specifically described in this document is considered out of scope.

During this engagement NovusCG WILL NOT:

- Deploy EMC infrastructure and host-based agents.
- Be responsible for Bank change control measures/processes in any fashion.
- Provide any reporting on data backup and recovery operations.
- Implement any hardware or software solutions not specifically supported by the providing vendor organization. Applications for support of the solution (where needed) are the responsibility of Citi under their vendor product support contracts. NovusCG will provide all design specifications to facilitate this process and will provide consultative expertise to Citi in the effort.
- Be responsible for configuration and/or maintenance of the storage infrastructure.
- Execute changes to hosts in the environment that are not specifically related to the implementation and integration of the solution described in this document.
- Be responsible for physical installation of servers, storage arrays, fibre-channel equipment, etc.
- Be responsible for fiber optic cabling in any capacity while engaged in this project.

2.4 Assumptions

2.4.1 Overall Assumptions:

- Citi will complete provisioning of hardware and software prerequisites include testing ahead of the commencement of the PoC. Failure of delivery will result in a project change request and may result in delay.
- Citi will complete the required deployment of all necessary EMC ECC infrastructure and host-based agents.
- Citi will provide details and extracts of asset and line of business data in a pre-defined format ahead of the commencement of the PoC.
- Citi is responsible for providing NovusCG documentation of what objects are to be managed by the PoC ahead of the commencement of the PoC.
- NovusCG will provide the appropriate SERP architecture with an average and maximum configuration that details the number of storage, switch, and host objects that can be managed based on information provided by Citi.
- ECC will be configured to capture all host, SAN switch, SAN storage, and NAS storage information for the environment.
- Citi will dedicate the necessary human resources to the PoC that facilitate Citi's independence in the software

2.4.2 Technical Assumptions:

- Citi will be responsible for all host/device remediation required to bring storage-related objects into supported configurations.
- Required firewall ports for ECC agent communication will be opened between all required IP networks.
- Citi will provide NovusCG with access to a DB View or extract of the asset management system that SERP will integrate (A DB View is preferred).
- Citi will provide detailed reporting requirements to assist NovusCG in getting the solution's approval/acceptance.
- Procedures, processes and line of responsibility are established internally to ensure that all host agents are installed and working on any hosts to be reported.

3 PRICING PROPOSAL

Pricing information for custom integration and deployment services detailed in this Statement of Work is divided into two categories.

3.1.1.1 Services

During the PoC, NovusCG will provide all of their necessary resources free of charge as defined in the project timeline.

3.1.1.2 Software

The NovusCG SERP product will be provided free of charge to Citi on an evaluation basis only for the duration of the PoC. There is NO commitment on Citi's part to purchase this software. Pricing for NovusCG software including the SERP correlation tool is standardized and available to Citi upon request. In the case that Citi should not wish to purchase SERP after the PoC, NovusCG will de-install it from the PoC environments at no charge to Citi. All SRM environments will be fully functional and complete without this software but will not provide the full reporting functionality achievable with this tool.

3.1.1.3 Hardware

Citi is solely responsible for the cost and provisioning of hardware prerequisites for this project.

3.2 Services Pricing

Costing is provided for services only as software licenses will be provided on a trial basis:

NovusCG Service resources will be provided Free of Charge during the 6 week PoC.

3.3 Terms and Conditions

3.3.1 The Customer's Duties

3.3.1.1 Current Software & Systems

Citi shall maintain an adequate system environment suitable for Professional Services. In addition to its general duty to manage, Citi shall be assumed to be backing-up, protecting and securing data on at least a daily basis using all due care.

3.3.1.2 Contact

Citi shall appoint at least one contact person and a substitute contact person for all technical communications with NovusCG in connection with Professional Services (the "Contacts") and shall notify NovusCG in writing about any change of the Contacts.

3.3.1.3 Cooperation

Citi shall make available to NovusCG, free of charge, all required information and access to facilities, office space and support (telephone, internet access, photocopier etc.).

3.3.2 Resource Allocation and Payment Schedule

3.3.2.1 Allocation of Resources

NovusCG shall use commercially reasonable efforts to allocate Resources to Citi as expediently as possible.

3.3.2.2 Payment Schedule

No payment, other than the reimbursements of travel expenses are required for the activities described in this SoW.

3.3.2.3 Travel Expenses

No travel expenses will be chargeable during the PoC.

4 AGREEMENTS

This Statement of Work # CITI0001 is effective beginning on date of last signature below and will remain in effect until completion of the scope of work described in this document. This Statement of Work represents a contract for services rendered to Citi.

Signatures

By signing this document, Citi agrees with the terms and work to be performed during this effort.

By _____
(Signature)

(Print name & title)

Citi

(Date)

By _____
(Signature)

George Village, CFO

Novus Consulting Group

(Date)

5 APPENDIX A

The following table details the agreed criteria for successfully proving SERPs functionality to Citi during this PoC.

Functionality	Success Criteria
Link to pull data from the Citi TAS asset system	Data from the TAS system is required in order to produce Line of Business (LoB) reports. If LoB reports can be produced then import of the TAS system data will be deemed proven.
Storage capacity and utilization reporting by business unit	Standard Reports exist in SERP to report allocated and used storage by LoB. On successful completion of the import from TAS these reports will be produced.
Output in graphical views	SERP is able to provide graphical views of all data. Citi will be using these views extensively during the PoC.
The ability to drill down to application and host level within each business unit	From both graphical and tabular reports it is possible to drill down to the next level in the hierarchy whether that is a data centre, tier, LoB or Application. This will be demonstrated to Citi staff who will gain extensive experience of using drill-down capability.
Configuration and exception reporting	SERP 4.1 allows for the configuration of 'Gold' standards. Standard reports exist that will show assets that do not conform to the defined 'Gold' standards and may expose Citi to some Risk.
Storage reclamation and re-use opportunities	Standard reports exist that show reclamation opportunities at three levels: Orphaned – Allocated but not seen by host Reclaim – Allocated, seen by host by no VG or FS exists Resize – Configuration parameters allow visibility of under-utilized FS. For example, FS >50GB < 10% used. These reports will be demonstrated to Citi. The output of these reports will be retained by

	NovusCG as they can have significant value to Citi. On purchase of SERP these reports are available.
Authenticated access to different SERP users	For the PoC different USERS will be created that will demonstrate how SERP authentication allows access to different data sets depending on privilege.
The ease and flexibility to define customer reports	SERP report creation is intuitive. Objects for reporting or selection can be dragged and dropped to create desired reports. This will be shown as part of the training and mentoring and can be used by Citi during the three (3) week PoC.
A facility to provide trending information around storage consumption	During each nightly collection of the ECC data the data is written to the SERP database. SERP then uses this historical information to create trends that show future consumption of storage. This will be demonstrated during the PoC.
Ability to post reports to a webpage	Reports from SERP can be posted to websites are required. This will be demonstrated during the PoC and proven by the ability to view the web pages.