

Attachment 4.1

Canada Border Services Canada
Data Warehouse Foundation
**Data Management &
Data Warehouse**

MANDATORY REQUIREMENTS

Corporate Experience and Project References

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
1.	The Bidder must have experience in the manufacture, supply, marketing, integration, testing and maintenance and support of a solution similar in size and scope to CBSA's requirement.		
2.	The Bidder must describe in sufficient scripted detail the extent of their overall corporate experience in the manufacture, supply, marketing, integration, testing and maintenance and support of a solution similar in size and scope to CBSA's requirement.		
3.	The Bidder must have experience as prime Contractor within the last 3 years for the manufacture and supply of their Data Warehouse solution similar in size and scope to Canada's requirement.		
4.	<p>The Bidder must describe in sufficient scripted detail and identify a minimum of 3 project references regarding the extent of their overall corporate experience in the manufacture and supply of a solution similar in size and scope to CBSA's requirement in the last 3 years. For each project reference, the Bidder must provide:</p> <ul style="list-style-type: none"> • Name of the client of the referenced project and project title; • Contact information of 2 senior client officials ; • A brief description of the project's major milestones, objectives, outcomes, and narrative which demonstrates the similarity of scope, value, nature, complexity, and relevance of the project(s). 		
5.	The Bidder must have experience in the last 3 years as prime Contractor to manage the integration and testing of a solution similar in size and scope, to the CBSA's requirement		
6.	The Bidder must describe in sufficient scripted detail, and identify a minimum of 3 project references regarding their overall corporate experience as prime contractor, to manage the integration and testing of their Data Warehouse solution for the purpose of meeting a Business Intelligence related data base processing requirement for a complete Data Warehousing Database Solution environment consisting of a hub and spoke based Data Warehousing model to client organizations having a requirement similar in size and scope to CBSA's requirement in the past 3 years. For each project		

	<p>reference, the Bidder must provide:</p> <ul style="list-style-type: none"> • Name of the client of the referenced project and project title; • Contact information of 2 senior client officials ; • A brief description of the project's major milestones, objectives, outcomes, and narrative which demonstrates the similarity of scope, value, nature, complexity, and relevance of the project(s). 		
7.	The Bidder must have experience in the last 3 years as prime Contractor to manage the maintenance and support of a solution similar in size and scope, to the CBSA's requirement		
8.	<p>The Bidder must describe in sufficient scripted detail, and identify a minimum of 3 project references regarding their overall corporate experience as prime contractor, to manage the maintenance and support of their Data Warehouse solution for the purpose of meeting a Business Intelligence related data base processing requirement for a complete Data Warehousing Database Solution environment consisting of a hub and spoke based Data Warehousing model to client organizations having a requirement similar in size and scope to CBSA's requirement in the past 3 years. For each project reference, the Bidder must provide:</p> <ul style="list-style-type: none"> • Name of the client of the referenced project and project title; • Contact information of 2 senior client officials ; • A brief description of the project's major milestones, objectives, outcomes, and narrative which demonstrates the similarity of scope, value, nature, complexity, and relevance of the project(s). 		

3.0 Mandatory Technical Requirements

Bidders must demonstrate their understanding of the requirements contained in the Statement of Requirements (SOR) and explain how their solution will meet these requirements. Bidders must demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

Simply repeating the statement contained in these articles is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the evaluation criteria under the same headings and identify the specific paragraph and page number where the subject topic is addressed.

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.1.1	The Bidder must certify that the solution is Appliance based and complies with the definition of a “COTS System” as defined in Appendix 3 of the SOR.		
3.1.2	The Bidder’s solution must be comprised of components which are the latest version released by the OEM and Generally Available.		
3.1.3	The Bidder’s solution must be rack mountable or self-standing.		
3.1.4	Rated Requirement		
3.1.5	The Bidder must identify the number of licences that would be included as part of their solution, for both the baseline requirement and scaled versions of the solution for the Primary and Disaster Recovery locations as identified.		
3.1.6	The Bidder’s solution must have a constant availability of 99.95%.		
3.1.7	The Bidder’s solution must be capable of loading a minimum of 2 TB in 1 hour.		
3.1.8	The Bidder must agree that all technology aspects of their solution as included under the Contract are to be replaced by latest available technology from the Bidder as released for sale in the marketplace at no additional cost to Canada during the life of the contract and any extensions issued thereto.		
3.1.9	The Bidder must deliver, install, and maintain the solution at a separate primary location and a Disaster Recovery location in the National Capital Region.		
3.1.10	The Bidder’s solution must store objects consisting of up to a minimum of 2 Gigabytes per object of image, audio and video data.		
3.1.11	The Bidder’s solution must permit a minimum of 16 tables in a single query join.		
3.1.12	The Bidder’s solution must support English and Canadian French character sets.		
3.1.13	The Bidder’s solution must include a data extract capability which will spawn multiple concurrent processes to unload records from a table without preventing queries on that table.		

3.1.14	The Bidder must include on-site support during the installation and integration of the solution at both Primary and Disaster Recovery site.		
3.1.15	The Bidder must include a detailed delivery, integration and acceptance schedule as approved by the Technical Authority.		
3.1.16	Rated Requirement		
3.1.17	The solution must provide isolation between Sandbox, Development/Test, Pre-Production and Production environments such that the workload , modifications or outage in one environment cannot impact another environment; furthermore, the Production and Disaster Recovery environments must be physically isolated from other environments. <ul style="list-style-type: none"> a. Sandbox b. Development/Test c. Pre-Production d. Production e. Disaster Recovery Production 		
3.1.18	The Bidder's solution must not degrade Query response times by more than 10% when tables being queried begin receiving updates regardless of data size.		

3.2 Baseline Requirement

Please see Table 1 in the SOR for baseline capacity requirements and the number of concurrent users in various raw data categories.

3.2.2 Configuration and Capacity

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.2.2.1	The Bidder must provide a baseline solution that is + or – 10% of the usable storage capacities shown in the Table 1 of the SOR.		
3.2.2.2	The Bidder must identify the configuration and capacity of their solution and all related components by product number, version number and description for the Primary site.		
3.2.2.3	The Bidder must include a diagram that shows all related components required for the Primary site to interconnect within the environment as shown in Appendix 2 "Future		

	Design Overview and Dataflow”.		
3.2.2.4	The Bidder must identify the configuration and capacity of their solution and all related components by product number, version number and description for the Disaster Recovery site to be established at a separate location.		
3.2.2.5	The Bidder must include a diagram that shows all related components for the Disaster Recovery site to interconnect within the environment as shown in Appendix 2 “Future Design Overview and Dataflow”.		
3.2.2.6	The Bidder must identify the configuration and capacity of their solution and all related components by product number, version number and description for the Primary site to interconnect with the Disaster Recovery site.		
3.2.2.7	The Bidder must include a diagram that shows all related components for the Primary site to link with the Disaster Recovery site within the environment as shown in Appendix 2 “Future Design Overview and Dataflow”.		

3.3 Scalability Requirement

Please refer to Table 2 in the SOR for the scaling capacity requirements and the increased number of concurrent users for the scaled solution.

3.3.1	The Bidder must identify whether their approach to scaling from 100 TB to 200TB and beyond would include removal and replacement of a previously supplied existing capacity with a higher capacity version or whether the increased scaled capacity would be an add-on to the existing capacity.
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3.3.2 Configuration and Capacity

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.3.2.1	The Bidder must provide a scaled solution that is + or – 10% of the usable storage capacities shown in Table 2 of the SOR.		
3.3.2.2	The Bidder must identify the configuration and capacity of their solution and all additional related components by product number, version number and description for the Primary site to scale to the identified scaled level.		
3.3.2.3	The Bidder must include a diagram that shows all additional related components and the associated connectivity required for the Primary site to scale to the identified scaled level within the environment as shown in Appendix 2 “Future Design		

	Overview and Dataflow”.		
3.3.2.4	The Bidder must identify the configuration and capacity of their solution and all additional related components by product number, version number and description for the Disaster Recovery site to the identified scaled level.		
3.3.2.5	The Bidder must include a diagram that shows all additional related components and the associated connectivity required for the Disaster Recovery site to scale within the environment as shown in Appendix 2 “Future Design Overview and Dataflow”.		
3.3.2.6	The Bidder must identify the configuration and capacity of their solution and all additional related components by product number, version number and description for the Primary site to interconnect with the Disaster Recovery location at the identified scaled level.		
3.3.2.7	The Bidder must include a diagram that shows all additional related components and the associated connectivity required for the above noted Primary site to interconnect with the Disaster Recovery site at the scaled level within the environment as shown in Appendix 2 “Future Design Overview and Dataflow”.		
3.3.2.8	Rated Requirement		
3.3.2.9	The Bidder’s solution must automatically (without Canada’s internal resource intervention) rebalance/redistribute data across an expanded environment without the need to manually offload/reload data.		
3.3.2.10	The Bidder’s solution must not permit a degraded query response time from the query processing level regardless of the level of scale.		
3.3.2.11	The Bidder’s solution must enable scaling beyond 200TB to at least 600 TB of usable storage building upon the same underlying vendor technology as provided in the Bidder’s initial supplied configuration.		
3.3.2.12	The Bidder must describe how they will scale from 200TB to at least 600 TB as described in 3.3.1.11.		

3.4 Query Processing

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.4.1	The Bidder must allow Canada to load applicable data into the		

	solution prior to handing off the solution for testing on the identified queries scenarios.		
3.4.2	<p>Query #1 The Bidder's solution must provide a combined elapsed time of 200 seconds or better to execute the 5 queries identified within the Definitions section of this SOR by utilizing the following process:</p> <ul style="list-style-type: none"> • The 5 queries identified in the Query Pack will be submitted "back to back" serially and independently from five separate windows using the Bidder 's provided GUI based SQL interface. • When the first query finishes the second query will be launched. • The elapsed time for each query to run and fetch the first 1000 rows of the result set will be captured. • The 5 individual query elapsed times will be summed and compared to the Bidder's response to Rated Article 3.4.3. 		
3.4.3	Rated Requirement		
3.4.4	The Bidder must identify all related components which would be additionally required to further decrease query elapsed time as identified in the Bidder's response to Rated Article 3.4.3		
3.4.5	<p>Query #2 The Bidder's solution must provide a combined elapsed time of 500 seconds or better to simultaneously execute the 5 queries identified within the Definitions section of this SOR by utilizing the following process:</p> <ul style="list-style-type: none"> • The 5 queries identified in the Query Pack will be submitted serially from five separate windows by using the Bidder's provided GUI based SQL interface. • Queries to be executed roughly 1 second apart in a serial sequence from 1 to 5. • The elapsed time for each query to run and fetch the first 1000 rows of the result set will be captured. • The 5 individual query processing times will be summed and compared to the Bidder's response to Article 3.4.6 		
3.4.6	Rated Requirement		
3.4.7	The Bidder must identify all related components which would be additionally required to further decrease the query elapsed time as identified in the Bidder's response to Rated Article 3.4.6.		
3.4.8	<p>Query #3 The Bidder's solution must provide a combined elapsed time of 1,000 seconds or better to execute all of the 5 queries from the Query Pack simultaneously, wait 10 seconds then execute the same 5 queries simultaneously again by utilizing the following process:</p> <ul style="list-style-type: none"> • For both runs, the 5 queries identified in the Query Pack will be submitted serially from five separate windows 		

	<p>using the vendors provided GUI based SQL interface.</p> <ul style="list-style-type: none"> • There will be a 10 second pause from end of 1st run to start of second run • For each of the two runs, the 5 queries are launched roughly 1 second apart in a serial sequence from 1 to 5. • The elapsed time for each query to run twice and fetch the first 1000 rows of the result set will be captured. • Total of all 10 queries will be summed and compared to the Bidder's response to Rated Article 3.4.9 		
3.4.9	Rated Requirement		
3.4.10	The Bidder must identify all related components which would be additionally required to further decrease the query elapsed time from the Bidder's response to Rated Article 3.4.9.		
3.4.11	<p>Query #4 The Bidder's solution must not increase query response times by more than 10% when tables being queried begin receiving updates regardless of data size, by utilizing the following process:</p> <ul style="list-style-type: none"> • One of the 5 queries in the query Pack will be submitted and a process will be started which will update approximately 1% of the records in the existing table; • A comparison will be made to a baseline elapsed query time for same query without the update activities competition to determine any increased time factor; • The level of increase will be compared to the Bidder's response to one of the query processing times as selected by Canada. 		

3.5 Monitoring

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.5.1	The Bidder's solution must include a monitoring component which is GUI based.		
3.5.2	The monitoring component of the Bidders solution must be configurable so that additional overhead may be minimized, (e.g. polling interval or number of metrics being collected).		
3.5.3	<p>The monitoring component of the Bidder's solution must be able to monitor and report on:</p> <ol style="list-style-type: none"> Hardware (E.G. CPU, disk, memory, network) utilization; Hardware errors; and Operating system errors. 		
3.5.4	Rated Requirement		

3.6 Usage Tracking (Real Time)

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.6.1	<p>The Bidder’s solution must include real time performance measurement metrics for all of the following criteria:</p> <ol style="list-style-type: none"> 1. The metrics must be visible using a graphical user interface (GUI); 2. The metrics must come from a central collection process that allows multiple users of the GUI to view the same metrics; 3. The polling interval for the metrics must be configurable; 4. The granularity (where applicable) of the metrics must be configurable using the GUI; 5. Real time metrics must include: <ol style="list-style-type: none"> a. CPU usage statistics; b. Memory usage statistic; c. Disk usage statistics; d. I/O statistics; and e. Active process metrics (e.g. queries, loads, backups): <ol style="list-style-type: none"> i. Statement being executed; ii. Number of rows being read from the database; iii. Number of rows being inserted; iv. Number of rows being updated; v. Number of rows being deleted; vi. Number of rows selected; vii. Elapsed time; viii. Associated USERID; and ix. Workload grouping (if applicable). 		
3.6.2	The Bidder must include a listing of all additional real time performance measurement metrics that can be accessed by Canada through the Bidder’s solution.		
3.6.3	Rated Requirement		

3.7 Usage Tracking (Historical)

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.7.1	Rated Requirement		
3.7.2	The Bidder’s solution must include the capability for Canada to obtain resource usage reports over configurable time periods and granularities on memory, CPU, I/O, and storage utilization		

	via a GUI interface.		
3.7.3	The Bidder's solution must include the capability for Canada to obtain workload based reports over configurable time periods and granularities via a GUI interface.		
3.7.4	The Bidder's solution must include the capability for Canada to produce data usage reports for data archival considerations.		
3.7.5	<p>The Bidder's solution must include historical performance measurement metrics for all of the following criteria:</p> <ol style="list-style-type: none"> 1. The metrics must be visible using a graphical user interface (GUI); 2. The GUI must include built-in reporting against the historical metrics; 3. The reporting time period must be configurable in the GUI, dynamically updating the report(s); 4. The reporting granularity must be configurable in the GUI, dynamically updating the report(s); 5. The metrics must come from a central repository that allows multiple users of the GUI to view the same metrics; 6. The retention period for the metrics must be configurable; 7. The granularity (where applicable) of the metrics in the repository must be; 8. Historical metrics must include: <ol style="list-style-type: none"> a. CPU usage statistics; b. Memory usage statistics; c. Disk usage statistics; d. I/O statistics; and e. Process metrics (e.g. queries, loads, backups, etc.): <ol style="list-style-type: none"> i. Statement being executed; ii. Number of rows read from the database; iii. Number of rows inserted; iv. Number of rows updated; v. Number of rows deleted; vi. Number of rows selected; vii. Elapsed time; viii. Associated USERID; and ix. Workload grouping (if applicable). 		
3.7.6	Rated Requirement		
3.7.7	The Bidder's solution must include a facility that provides reports based on the historical statistics of executed queries.		

3.7.8	Rated Requirement
3.7.9	Rated Requirement
3.7.10	Rated Requirement
3.7.11	Rated Requirement
3.7.12	Rated Requirement
3.7.13	Rated Requirement
3.7.14	Rated Requirement

3.8 *Health/Event Monitoring*

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.8.1	<p>The Bidder's solution must include a GUI capability which displays:</p> <ol style="list-style-type: none"> 1. Information on warnings and abnormal events which may indicate a required intervention; 2. Information about critical and non-critical errors which will or may impact users; 3. Overall appliance health and allows user to drill-down to more detail on any monitored components; and 4. Information about appliance infrastructure incidents in detail. 		
3.8.2	Rated Requirement		
3.8.3	Rated Requirement		

3.9 *Setup and Configuration Overhead*

3.9.1	Rated Requirement
3.9.2	Rated Requirement

3.10 *Central Management*

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.10.1	The Bidder's solution must include a GUI based management component which provides complete solution management		

	capabilities		
3.10.2	The management component of the Bidder's solution must include role based access controls.		
3.10.3	The management component of the Bidder's solution must be available through GUI and command line interfaces.		
3.10.4	The Bidder's proposal must identify any difference in capabilities in the command line verses the GUI.		
3.10.5	The management component of the Bidder's solution must include the ability to cancel any inflight database workload without jeopardizing the solution's integrity.		
3.10.6	The management component of the Bidder's solution must include the ability to resume interrupted database workload without jeopardizing the proposed solutions integrity.		
3.10.7	The Bidder's solution must allow Canada to terminate any process at any time without disrupting other non-related processes.		
3.10.8	Rated Requirement		

3.11 Data Technology and Integrity

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.11.1	The Bidder's solution must generate a unique identifier thereby ensuring that each record in a table can be uniquely identified.		
3.11.2	The Bidder's solution must include the following capabilities: <ol style="list-style-type: none"> 1. Identify and resolve deadlock situations; 2. Enforce primary key constraints; 3. Enforce constraints to ensure that no duplicate values are entered in specific columns that do not participate in a primary key; 4. Enforce constraints on data values; 5. Enable and disable constraints; and 6. Assign user-defined default values to columns. 		
3.11.3	Rated Requirement		
3.11.4	Rated Requirement		

3.12 Database Access

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.12.1	The Bidder's solution must include an Open Database Connectivity (ODBC) driver.		
3.12.2	The Bidder's solution must include a capability to execute dynamic SQL.		
3.12.3	The Bidder's solution must include a native call level interface that allows (or "includes") application programs access to function or procedures for processing dynamic SQL statements.		
3.12.4	Rated Requirement		
3.12.5	Rated Requirement		
3.12.6	Rated Requirement		
3.12.7	The Bidder's solution must include a JDBC 2.0 or higher driver of type 2 or 4.		

3.13 Tools

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.13.1	The Bidder's solution must identify and include all relevant GUI based tools that enables tuning of the solution.		
3.13.2	The Bidder's solution must include a GUI based capability that includes full lifecycle provisioning for DDL change management.		
3.13.3	Rated Requirement		
3.13.4	The Bidder's solution must include a GUI based query capability.		
3.13.5	The Bidder's solution must include a GUI based capability which displays key metadata, metrics and statistics.		
3.13.6	The Bidder's solution must include a GUI based capability which gives the ability to prioritize specific workloads among all competing active workloads.		

3.14 Utilities

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.14.1	The Bidder's solution must enable utilities to be invoked from a GUI interface as well as direct command line mode.		
3.14.2	The Bidder's solution must include a data load utility which will spawn multiple concurrent processes to read from one input dataset to load a table without preventing queries on target table to be loaded.		
3.14.3	The Bidder's solution must include a data load utility that provides checkpoint re-start capabilities.		
3.14.4	The Bidder's solution must include any proprietary high speed adapters/interfaces necessary to achieve the fastest data loads possible with technology being proposed.		
3.14.5	The Bidder's solution must include integration with IBM's Infosphere Information Server Suite (Information Analyzer, Quality Stage and Data Stage). The tools mentioned above must be able to access metadata from the Bidder's solution and must be able to bulk load data into the Bidder's solution.		
3.14.6	The Bidder's solution must be integrated with IBM's Infosphere Information Server (IIS) within 6 months of General Availability of a new IIS release.		
3.14.7	Rated Requirement		

3.15 Backup and Recovery

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.15.1	The Bidder's solution must include capability to allow backups taken at table or database level of granularity to be used for restore of same object in another database of same technology.		
3.15.2	The Bidder's solution must integrate with the current backup solution which is currently Tivoli Storage Management.		
3.15.3	The Bidder's solution must backup and restore at a minimum rate of 4 TB an hour.		

3.15.4	The Bidder's solution must meet a "Recovery Point Objective" (RPO) of the last successfully loaded/inserted/updated or deleted data in case of any Appliance failure where it is not immediately re-startable and recovery is necessary.		
3.15.5	The Bidder's solution must include the capability to backup: 1. an entire database; 2. a single table; 3. a set of tables; and 4. part(s) of a table.		
3.15.6	The Bidder's solution must include the capability to incrementally backup: 1. an entire database; 2. a single table; 3. a set of tables; and 4. part(s) of a table. where only the changes to the database or tables are backed up.		
3.15.7	The Bidder's solution must include the capability to allow read and write access to tables during a backup of the same tables.		
3.15.8	The Bidder's solution must include the capability to display metadata about the backups that have been taken. Metadata must include: 1. When the backup was started; 2. When the backup completed; 3. The type of backup; 4. The database and tables included in the backup; and 5. The size of the backup.		
3.15.9	The Bidder's solution must include the capability to restore and recover 1. a complete database; 2. a single table; 3. a set of tables; and 4. part of a table.		
3.15.10	Rated Requirement		
3.15.11	Rated Requirement		
3.15.12	The Bidder's solution must include a capability which ensures that in any crash recovery scenario that data integrity is maintained and the database remains in the same state as it was just prior to the point before the crash occurred.		

3.15.13	Rated Requirement		
3.15.14	<p>The solution must meet a “Recovery Time Objective” (RTO) from time of failure and be returned to a fully operational state within the following timelines:</p> <p>a. Severity Level 1 (if supporting critical queries): 4 hours</p> <p>b. Otherwise: 24 hours</p>		

3.16 Primary Site Availability

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.16.1	The Bidder’s solution must offer redundancy of all physical components such that there is no single point of failure.		
3.16.2	The Bidder’s solution must maintain availability of 99.95% over a 24/7, 365 day cycle (outside scheduled shutdowns).		
3.16.3	<p>The solution must meet a “Recovery Time Objective” (RTO) from time of failure and be returned to a fully operational state within the following timelines:</p> <p>a. Severity Level 1 (if supporting critical queries): 4 hours</p> <p>b. Otherwise: 24 hours</p>		
3.16.4	The Bidder’s solution must identify and include all necessary components to implement a hot-site failover in a secondary data center in the case of the critical data marts not being recoverable within 4 hour RTO.		
3.16.5	The Bidder’s solution must meet a “Recovery Point Objective” (RPO) of the last successfully loaded/inserted/updated or deleted data in case of any solution failure where it is not immediately re-startable and recovery is necessary.		

3.17 Disaster or Elongated Outage Availability

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.17.1	The Bidder’s solution must offer a redundant system at the Disaster Recovery Site such that there is no single point of failure.		
3.17.2	The Bidder’s solution must enable an automatic data replication/migration process to be initiated from the		

	Primary database to the Disaster Recovery database.		
3.17.3	The Bidder's solution must include a pre-packaged or database provided mechanism to keep the critical data mart(s) at the Disaster Recovery site up to date automatically without Canada's internal resource development.		
3.17.4	The Bidder's solution must ensure that the process identified in Articles 3.17.2 and 3.17.3 takes no more than 5 minute data latency from Primary database to the Disaster Recovery database.		
3.17.5	The Bidder's solution must maintain availability of 99.95% over a 24/7, 365 day cycle (outside scheduled shutdowns) of components at the Disaster Recovery location		
3.17.6	In case of a required recovery scenario affecting only the Disaster Recovery site - all solution components at that site must meet a "Recovery Time Objective" (RTO) of 4 Hours from time of failure inclusive of the Disaster recovery database being re-synced with primary DB.		
3.17.7	The Bidder must include a physical diagram of their solution and provide a list of hardware and software components that would facilitate the hot-site failover capability.		
3.17.8	Rated Requirement		
3.17.9	The Bidder's solution must meet a "Recovery Point Objective" (RPO) of the last successfully loaded/inserted/updated or deleted data in case of any solution failure where it is not immediately re-startable and recovery is necessary.		

3.18 Data Dictionary

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.18.1	The Bidder's solution must include a catalogue (or data dictionary) capability that is updated automatically each time Data Definition Language (DDL) is applied.		
3.18.2	The Bidder's solution must include SQL query able metadata that is updated automatically in real-time each time Data Definition Language (DDL) and Data Manipulation Language (DML) is executed on the database.		
3.18.3	The Bidder's solutions must include a capability on the installed platform to access the catalogue and retrieve information related to database objects.		

3.19 General Security Requirements

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.19.1	<p>The Bidder's solutions must include an audit capability which records the following information for the database updates, insertions, deletions and selects by individual users on individual objects:</p> <ul style="list-style-type: none"> a. Database USERID (ID as stored in the database); b. Date/time stamp (date and time of action); c. Transaction type (select, insert, update, or delete); d. Database Name; e. Target object(s); and f. DML submitted. 		
3.19.2	<p>The Bidder's solution must provide external access to security audit information through one or more of the following methods: syslog logging to a remote system, ODBC database access, SNMP Trap messages, Microsoft Windows Event log, or Text based log file that is software readable.</p>		
3.19.3	<p>The Bidder's solution must record security events in system log files.</p>		
3.19.4	<p>The Bidder's solution must have audit records including the following event data: event(s) occurred, source(s), outcome, identity, and type.</p>		
3.19.5	<p>The Bidder's solution must provide time stamps for audit records.</p>		
3.19.6	<p>The Bidder's solution must provide user activity auditing that provides an administrator the ability to determine all commands which have been run by a user.</p>		
3.19.7	<p>The Bidder's solution must have logs that are in human readable form and if binary format logs are used, there must be an application included that translates these into human readable format in near real-time (i.e. as soon as created the binary format is translated within a few seconds to human readable format)</p>		
3.19.8	<p>The Bidder's solution must record the SIEM event severity level in the security log</p>		
3.19.9	<p>The Bidder's solution must ensure that violations of access control events are recorded.</p>		

3.19.10	The Bidder's solution must ensure that security event logs containing any number of events are not overwritten before archival. Minimum archive period is 36 hours.		
3.19.11	The Bidder's solution must ensure SIEM log file integrity.		
3.19.12	The Bidder's solution must record relevant data or detail concerning security events such as: IP addresses, user identity, port, file name, path, and trusted time stamp.		

3.20 Access Control

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.20.1	The Bidder's solution must integrate with LDAPv3-Compliant Directory.		
3.20.2	The Bidder's application software must require a user name and password login.		
3.20.3	The Bidder's solution must prompt the user to enter and confirm a new password on the date the old password expires if credentials are stored locally.		
3.20.4	The Bidder's solution must enable passwords to expire at various times as predetermined by Canada if credentials are stored locally.		
3.20.5	The Bidder's solution must permit only one instance of a password per account at any given time.		
3.20.6	The Bidder's solution must not allow any operation to be performed on any one database object unless the user is authorized to conduct the operation concerned.		
3.20.7	The Bidder's solution must include the ability to enable adjustment to the degree of details captured by the auditing capability as required.		
3.20.8	Rated Requirement		
3.20.9	The Bidder's solution must allow the functionality to set the length of time that the user's password(s) will be valid.		
3.20.10	The Bidder's solution must include the user with the option to set the number of failed access attempts that will be allowed.		
3.20.11	The Bidder's solution must support authentication at the application level using user-ID and password and at the		

	network level using a VPN Client and token.		
3.20.12	The Bidder's solution must include integration with CA E-trust Directory LDAP for authorization and authentication to the solution.		
3.20.13	Rated Requirement		
3.20.14	The Contractor must read, sign and adhere to an Acceptable Use Policy (AUP) when accessing DCH, DCSL and/or DCWQ data centres. See Appendix 5.		

3.21 Operating Software and Software Upgrades

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.21.1	The Bidder must include Canada with End User License Agreements for all commercial and shareware software products acquired for use with the solution. See Appendix 3 for definition of Software.		
3.21.2	The Contractor must complete the installation and regression testing of any software upgrades during the, warranty period or any period of Maintenance and Support service during the life of the contract and all extensions issued thereto.		
3.21.3	The Bidder's solution must work with and must not interfere with the Canada's Software.		
3.21.4	The Bidder must provide Canada with the right to subject any software upgrades to an acceptance process and approval.		
3.21.5	The Bidder must, prior to installation of any software upgrade, provide Canada with a copy of their software release notes that identify the new software version numbers, any changes incorporated into the software upgrade, any issues or deficiencies the upgrade has corrected, and any outstanding issues or problems that are still open.		
3.21.6	The Bidder must provide Canada with the opportunity to perform any testing deemed necessary to proposed software upgrades before deployment.		
3.21.7	The Bidder must support regular updates to the software used by the solution.		
3.21.8	The Bidder must address any known vulnerabilities within their software and agree to address any 3 rd Party software		

	vulnerabilities used within the solution within 30 days from date of identification.		
3.21.9	The Bidder must identify and include all application software upgrades based on the Bidder's recommendation and Canada's acceptance of that recommendation through the warranty period or during the period of any extended Maintenance and Support.		
3.21.10	The Bidder must provide a minimum of 3 years support on previous versions of their software.		
3.21.11	The Bidder must guarantee the safety and integrity of the data stored on the solution during any upgrade activities.		
3.21.12	The Bidder must describe in sufficient scripted detail and documented illustration, their application upgrade procedures, data integrity precautions and the recovery procedures in the event of an upgrade failure.		
3.21.13	The Bidder must acknowledge that Canada's current platforms can be changed at any time and that the Bidder must work with the Technical Authority to resolve any software integration issues over the life of the Contract and any extensions issued thereto.		
3.21.14	<p>Shipment and delivery services by the Bidder for software updates must include:</p> <ul style="list-style-type: none"> • Packaging all software and licenses; • Associated Commercial Documentation; • Prepare and submit any necessary Canadian and US Customs forms; • Identify and contract for any required broker services; • Insure all shipped goods, for full value, either with the shipper or self-insure them as per your corporate policy; • Ship the material with a bill of lading that corresponds to the shipping package tracking number; delivery site; commercial software product, version, and serial number; proprietary software version and any serial numbers; and BOM item number for use by Canada in verifying the receipt of all shipped software; and • Fax a copy of the Bill of Lading to Canada at the time of the shipment(s). 		
3.21.15	The Bidder must provide all appropriate end user license agreements at no cost to Canada.		
3.21.16	The Bidder must provide Canada with End User License Agreements for all commercial and shareware software products acquired for use with the procured solution.		
3.21.17	The Bidder must provide, as part of the Contract and any extensions issued thereto, all appropriate upgrades at no		

	<p>cost to Canada resulting from the following:</p> <ul style="list-style-type: none"> • patches and newer versions of software to eliminate failures or bugs discovered by the vendor; • provision of software to support new hardware, substituted by the vendor; and • maintain support and interoperability between newer and older versions of hardware and software. 		
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3.22 Network Environment

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.22.1	The Bidder's solution must include the capability for backups to be sent directly to Canada's current backup solution "IBM's Tivoli Storage Manager" by using the SAN fabric connection (not over network).		
3.22.2	The Bidder's solution must connect to the network using either 1Gb copper or 10Gb SFP fiber optics connections.		
3.22.3	The Bidder's solution must have redundant network ports in order to remain operational in the event of a Network Interface Card (NIC) failure		
3.22.4	The Bidder's solution must have a separate network connection for hardware management that is completely isolated from the NIC's used to transmit data. The concept of hardware management network or lights out management. Allowing remote power on/off, reboots, firmware upgrades and other similar functions.		
3.22.5	The Bidder must ensure that the power and cooling units of the primary site solution is bottom-vented, and the disaster recovery site solution is top-vented.		
3.22.6	The Bidder's solution must have all devices come with dual power and dual NIC connections.		
3.22.7	The Bidder's solution must have electrical connections tiered, so that if one connection fails on one grid, the other active connection will still support the entire unit at full power.		
3.22.8	The Bidder's solution must have power supplies supporting both single and three-phase power.		
3.22.9	The Bidder's solution must have all devices in the DC (Data Centre) operating at a minimum of 230 volts.		
3.22.10	The Bidder's solution must have power connectors from the customer equipment to our internal grid and supporting L6		

	type connectors.		
3.22.11	The Bidder must ensure that all devices and power units are CSA (Canadian Safety Associated) approved.		
3.22.12	The Bidder must ensure that any devices which are not self-standing comply with standard 19" rack mount systems.		
3.22.13	The Bidder must ensure that all devices other than self-standing must be rack mountable and not exceed 42" in depth		
3.22.14	The Bidder must ensure that all solution components fit through the Data Centres access doorway systems which are 53" x 81" in sizing.		
3.22.15	The Bidder must ensure that the solution complies with a cooling system with a hot and cold aisle system using air.		

3.23 Technical Documentation

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
3.23.1	The Bidder must identify all documentation that is available and would be included to Canada in support of each element of the solution.		
3.23.2	The Bidder must include all documentation written in English.		
3.23.3	The Bidder must allow Canada to internally host the documentation internally for multi-user access to support the solution.		
3.23.4	The Bidder must provide Canada with accessibility to all documentation updates covering enhancements and/or replacement releases within 10 days following release of General Availability announcement.		
3.23.5	The Bidder must identify the format in which all documentation updates covering enhancements and/or replacement releases will be made available.		

4.0 Corporate Requirements

4.1 General Requirements

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
4.1.1	The Bidder must include project management services to plan, monitor, report, track, and manage the successful delivery, integration and testing of the solution. As part of the project management plan, the Bidder must describe the approach to be taken by the project management resource to implement, manage, resolve, and report on issues/problems and risk management procedures.		
4.1.2	The Bidder must address potential risks to the project and how they will identify and assess risks, mitigation strategies, eliminate or minimize, and recover from identified risks.		
4.1.3	The Bidder must define how they will ensure that project documents and data are controlled for the life of the contract including all extensions issued thereto.		
4.1.4	The Bidder must identify an escalation process that exists within their corporate structure to which issues can be elevated up to and including senior corporate management in the event considered necessary.		

4.2 Bidder Resources

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
4.2.1	<p>The Bidder must identify and assign one or more project resource(s) that will be responsible for overseeing the delivery, integration and acceptance testing of the solution. This resource(s) will be responsible for performing the following project managerial and technical responsibilities, but not limited to:</p> <ul style="list-style-type: none"> a. Work with Canada to align the Bidder activities and deliverables with the Bidder's project plan, schedule and requirements; b. Work with Canada to implement processes that will ensure that the Bidder can interface with Canada to address delays, issues, and address any issue needing correction; and c. Provide technical services on an as and when 		

	requested basis to assist with the development of the interface and the overall integration and exploitation of the solution		
4.2.2	The Bidder must identify a primary and backup Project Manager and Systems Engineer/Integration Specialist that have an approved Canadian Government security clearance at the Enhanced Reliability level.		
4.2.3	The Bidder's primary and back up Project Manager must have the following minimum qualification and substantiated with the provision of resumes: <ul style="list-style-type: none"> a minimum of 5 years of experience within the last 8 years in integrated appliance technology on a similar delivered project with similar related duties. 		
4.2.4	The Bidder's primary and backup Systems Engineer/Integration Specialist must have the following minimum qualifications and substantiated with the provision of resumes: <ul style="list-style-type: none"> a minimum of 3 years of experience within the last 3 years in the installation, configuration, troubleshooting, performance analysis and tuning of in integrated appliance technology on a similar delivered project. 		
4.2.5	For the duration of the Contract and any extensions issued thereto, the Bidder must include: <ol style="list-style-type: none"> Support for all technical and non-technical inquiries; A representative who will coordinate information between the Technical Authority and the successful Bidder with respect to Contract Deliverables, Technical Substitutions, Problem Reports, and Certification. 		
4.2.6	The Bidder must identify the corporate resource that will coordinate information to the Technical Authority with respect to Contract Deliverables, Technical Substitutions, Problem Reports, and Certification.		
4.2.7	The Bidder, at their own expense, must attend progress review meetings with the Technical Authority. Meetings will be held at a location as specified by the Technical Authority.		

5.0 Warranty

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
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5.1	The Bidder's 12 month warranty services period must be included for all solution delivered software, firmware and hardware as established following completion of the POP testing process.		
5.2	The Bidder's 12 month warranty coverage must include any application software and/or firmware upgrades required to support revisions to the solution.		
5.3	The Bidder's 12 month warranty coverage must include all on-site remedial software, firmware and hardware support as well as telephone or online support.		
5.4	The Bidder's Solution must maintain an availability level of 99.95% percent during the Bidder's warranty period.		
5.5	<p>The Bidder's solution must meet "Recovery Time Objectives" (RTO) from time of failure and be back operational from time of notification by Canada during the life of the Contract or any extensions issued thereto in accordance with the following timelines:</p> <ul style="list-style-type: none"> a. Level 1 (if supporting critical queries): 4 hours b. Otherwise: 24 hours 		
5.6	<p>The Bidder's warranty requirements must include:</p> <p>Call Center support to include:</p> <ul style="list-style-type: none"> ▪ toll free phone support; ▪ telephone based technical support for critical outages 24/7, 365 days a year; ▪ On site resolution as required; ▪ If the Customer Support Center is not able to resolve the issue within 1 hour then the next level of support will be applied; and ▪ Regular repair or replacement of failed parts and software maintenance/upgrades. <p>Canada reserves the right to elevate an issue to higher support levels.</p>		
5.7	The Bidder's warranty coverage must include on-site preventive maintenance and remedial hardware, firmware and software support as well as telephone or online support for all delivered hardware and software at no additional cost to Canada.		
5.8	The Bidder must furnish all labour and solution components required to restore the solution to a fully operational condition during the warranty period.		
5.9	The Bidder must identify the 1-800 call intake centre phone number to which the GOC will make the initial call for warranty service.		

5.10	The Bidder must include Technical Support Services during the warranty period at no additional cost to Canada.		
5.11	The Bidder must include warranty services to investigate specifics about the functioning of covered products to determine whether there is a defect in the solution.		
5.12	The Bidder's responsibilities to include Technical Support Services must be limited to the current Standard Release plus the two (2) prior Standard Releases (collectively referred to as "Covered Standard Releases").		
5.13	The Bidder's solution must meet a "Recovery Point Objective" (RPO) of the last successfully loaded/inserted/updated or deleted data in case of any solution failure where it is not immediately re-startable and recovery is necessary.		

6.0 User Training

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
6.1	The Bidder must include training for all components of the proposed solution.		
6.2	The Bidder must identify all of their training programs available for systems users and technical support relative to the identified requirement.		
6.3	The Bidder must include a comprehensive draft training strategy plan for Canada's review and approval.		
6.4	The Bidder must provide user training in English as requested by Canada.		
6.5	The Bidder must identify the methodology (ies) which are available to Canada for their training programs (I.E. Hard copy, CD-ROM, online, etc.).		
6.6	The Bidder must include training documentation in English to train resources on the technical use, configuration, troubleshooting and maintenance of the Bidder's solution, within 10 calendar days following contract award.		
6.7	The Bidder must modify the Training Plans as required by Canada.		
6.8	The Bidder must include the right for Canada to copy the training material for Canada's internal mentoring and		

	training.		
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7.0 Maintenance and Support Service Plan

Article	MANDATORY REQUIREMENT	Compliant Yes/ No	Location of justification within proposal I.E. Page & Reference No
7.1	The Bidder must identify all of the various solution support programs and associated terms and conditions that they have available to provide Maintenance and Support services following the Warranty period.		
7.2	The Bidder's Solution must maintain an availability level of 99.95% during the life of the contract and any extensions issued thereto.		
7.3	Maintenance and support coverage must begin immediately at the end of the Bidder's 12 month warranty period.		
7.4	The solution must meet "Recovery Time Objectives" (RTO) from time of failure and be back operational from time of notification by Canada during the life of the Contract or any extensions issued thereto in accordance with the following timelines: <ul style="list-style-type: none"> a Level 1 (if supporting critical queries): 4 hours b Otherwise: 24 hours 		
7.5	The Bidder's solution must meet a "Recovery Point Objective" (RPO) of the last successfully loaded/inserted/updated or deleted data in case of any solution failure where it is not immediately re-startable and recovery is necessary.		
7.6	The Bidder must include continuous effort to repair a reported problem during the Principal Period of Maintenance (24 hours a day, 7 days a week for 365 days a year)		
7.7	The Bidder must ensure the solution can be returned to fully functional capability within the timeframes identified in Article 7.4 above from time of notification by Canada during the life of the Contract or any extensions issued thereto.		
7.8	The Bidder's maintenance and support requirements must include the following during the life of the Contract or any extensions issued thereto: Call Center support to include: <ul style="list-style-type: none"> ▪ 1-800 phone support ▪ telephone based technical support for critical outages 24/7, 		

	<ul style="list-style-type: none"> ▪ 365 days a year ▪ On site resolution as required; ▪ If the Customer Support Center is not able to resolve the issue within 1 hour then the next level of support will be applied; ▪ Regular repair or replacement of failed parts and software maintenance/upgrades <p>Canada reserves the right to elevate an issue to higher support levels.</p>		
7.9	The Bidder's maintenance coverage must include on-site preventive maintenance and remedial software, firmware, hardware and overall solution support during the life of the contract and any extensions issued thereto.		
7.10	The Bidder must furnish all labour and parts required due to normal wear to restore the solution to a full operating condition during the life of the Contract and any extensions issued thereto, at no additional cost to Canada.		
7.11	All of Canada's requests for services must be made initially to the call intake centre whose number the Bidder will provide to Canada prior to commencement of services.		
7.12	The Bidder must include unlimited Technical Support Services and correction of Residual Errors during the Principal Period of Maintenance (PPM).		
7.13	The Bidder must include Technical Support Services during the life of the Contract and any extensions issued thereto to investigate specifics about the functioning of the solution to determine whether there is a defect in the solution.		
7.14	The Bidder must include available Product Releases, in accordance with Supplemental General Conditions, 4004 (2010-08-16) – Maintenance and Support Services for Licensed Software. Any such services will be performed in accordance with a mutually-agreed schedule.		
7.15	The Bidder must provide a minimum of 3 years support on previous versions of their software.		
7.16	The Bidder's solution or any component of the solution must be supported for a minimum of 3 years from date of installation.		
7.17	The Bidder's Technical Support Services must be limited to the current Standard Release plus the two (2) prior Standard Releases (collectively referred to as "Covered Standard Releases") during the life of the Contract and any extensions issued thereto.		

7.18	Notwithstanding Article 7.16, the Bidder must include Technical Support Services during the life of the Contract and any extensions issued thereto for a Standard Release that precedes the Covered Standard Releases unless such error has been corrected by a Covered Standard Release.		
7.19	<p>At Canada's request, the Bidder must include during the life of the Contract and any extensions issued thereto:</p> <ul style="list-style-type: none"> (a) a current list of compatible hardware operating system releases, if applicable; and (b) a list of the Bidder's Software Supplemental or Standard Releases. 		
7.20	The Bidder must work with Canada's technical resources for the duration of the Contract and any extensions issued thereto to include Canada's technical resources with hands on technical familiarization and knowledge transfer for the delivered solution.		
7.21	The Bidder must agree to an annual review of the maintenance and support included for the previous contract year by Canada during the life of the Contract and any extensions issued thereto.		

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