

Software Requirements Specification

(Short form) for

**VisProactive Diameter Feed SRS**

Tracking#: PR\_3629

Version: 1.0 in process

August 14, 2014

Written by Nancy Jones, updated by Tamara Lynch

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The document is based on SRS Template (short form) Version 4.13 (August 2013)

*Note: Items in blue italics are included in the template to stimulate thought and discussion. After the requirements have been reviewed, you may wish to hide these hints.*

**Revision History**

|  |  |  |
| --- | --- | --- |
| **Version** | **Date** | **Release Reason - Description of Changes** |
| 1.0 | In process | Document approved as Version 1.0 with the following change:  Deleted 3.5.3 Copy Feature for IMSIs per results of 7/29 feedback as this is existing functionality (ie, is not a new requirement) |
|  | August 14, 2014 | Changed 3 references to Alarm Pod to Alert Pod |
| 0.12 | July 29, 2014 | Meeting with Bob and Tamara.  Document distributed for review/agreement.   1. Renumbered  Section 3.4.4  Select Date Range and Interval Screen Changes as Section 3.5 2. Section 3.5.3 Copy Feature for IMSIs  - address question below  * Rod, Noemi, Mateena, Josie:  should this requirement be deleted as VisPro doesn’t have details for a single IMSI? Or What is this requirement supposed to say?  1. Section 3.7.2 Drill Down to Detail Errors  * We Added this as a new requirement (this is existing functionality in other feeds but is new for Diameter)  1. Section 3.9 Alert Pod requirements  * We Added this as a new requirement (this is existing functionality in other feeds but is new for Diameter)  1. Section 3.10 Crossroads: We updated the following sub-sections    1. 3.9.1 New Menu Item    2. 3.9.2 CTP Permissions    3. 3.9.3 Company Level Permissions    4. 3.9.4 Add a New Grouping:  VisProactive – Diameter    5. 3.9.4 User Permissions |
|  | June 24, 2014 | Meeting with Bob and Tamara. Bob will talk with Lisa on her email. |
|  | May 12, 2014 | Tamara picket up project from Nancy |
| 0.11 | June 17, 2014 | Updates from Bob Bruce and Nancy Jones. |
| 0.10 | May 10, 2014 | Updates to section 3.4.2.2 Aggregation Requirements (Desired) |
| 0.09 | May 10, 2014 | Bob’s changes in document |
| 0.08 | 21 April 2014 | Updates from meeting held on April 15. |
| 0.07 | 26 March 2014 | Updates from the meeting held on 26 March. |
| 0.06 | 7 March 2014 | Updates from review meeting on 7 March 2014. |
| 0.05 | 4 March 2014 | Updates from the review meeting held on 2/20. |
| 0.04 | 17 February 2014 | Updated by Nancy Jones with the requirements for Crossroads |
| 0.03 |  | Input from 011414 and 011614 meetings. |
| 0.02 |  |  |
| 0.1 | 11/18/2013 | Initial Release |

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# Introduction

## Description of the Enhancement Request/Scope

The purpose of this document is to describe and capture the requirements necessary to add a Diameter feed to the VisProactive application.

Currently, Diameter information is only available in Visibility and is not available in VisProactive.  With the completion of this effort, a feed from Visibility will be incorporated into VisProactive, and along with other modifications/additions to VisProactive such as a GUI interface, Operators will have the ability to monitor, within VisProactive, the roaming status of their LTE roaming subscribers using Diameter S6A.

The remainder of this document will describe the software requirements from the perspective of what work effort will need to be done to include this feed in the VisProactive footprint.  How these changes will be accomplished will be described in the High-level and Detail design documents to follow.

### Impacted Pods

The specific VisProactive pods included in this release are:

* Heat Map
* Unique Roamer
* Traffic
* Most Active
* Most Active Unique Roamer
* Alert Pod
* Trending Traffic
* Trending Unique Roamer

### Multiple Releases

The features documented in these requirements will be implemented in separate releases.

Requirements in this SRS shall be applicable to ALL releases unless specific release(s) are noted for a requirement.

(Refer to the project plan for release schedule.)

## Impacts to Existing Processes

### Assets Impacted

The following assets have been identified as being impacted by this project.

1. VisProactive
2. Crossroads
3. Visibility Services
4. RTI – Rules Engine

### Open Issues

1. VisPro Bypass for Diameter (we could then sell VisPro without Vis) – Do we need requirements for this included in this document? There are no special requirements for VisPro with the possible exception of Billing.

### Assumptions

1. We will have live data from Visibility Services for 2 weeks before implementing the first customer (for testing purposes)

*Note: Before this data is available, Test will use the process that Dev has to get the data. Certain Functionality will not be available with only 2 weeks of data.*

1. A User Interface Specification will be developed by the Solution Architect team.
2. A data feed reconciliation process is not required because the MFT process will cover reconciliation.
3. There shall be no implied permissions associated with features and functions available to the user provisioned for VisProactive. All features and functions will require a separate and distinct user level permission as documented herein.
4. The Diameter feed functions like the SS7 GSM feed and therefore the Crossroads permissions are being set up for the initial draft of the document in a similar way.
5. The Diameter feed which goes to Vis Pro must be loaded into the VIS database.

### Possible Future Enhancements

1. Provisioning of Sponsorship details.
2. Add Error Drill-down in Unique Subscriber pod for Diameter.
3. Add Error Drill-down in Most Active Pod.
4. Application Context breakdown (to show what Traffic caused a country to turn red).
5. Putting the alerts on the heat map.
6. Group view

## Other Impacts/Supplemental Requirements

Unless otherwise noted, all requirements in section 1.3 are applicable to all releases.

|  |  |  |
| --- | --- | --- |
| **Ref SRS** | **Supplemental Requirements** | **Impact** |
|  | *Application GUI Requirements*   1. *User Experience Guidelines* 2. *Use Cases* 3. *Prototyping* 4. *Usability Testing* 5. *Task Flow* 6. *Legacy Applications* | Application GUI Requirements are as follows:   1. User Experience guidelines shall be adhered to and the UIS team shall be consulted on any deviations from the guidelines. Additionally, the team shall be consulted if any significant design changes are proposed by Development. 2. Use cases shall be updated to reflect the Diameter data components. 3. Early and frequent updates to prototypes are Desired to ensure a shared understanding by all impacted teams as the project design evolves. 4. Usability testing is not required. 5. A task flow shall be created for each user story as time permits. TBD who will be responsible for this. |
|  | *Provisioning Requirements*   1. *Enterprise Provisioning Requirements* 2. *Crossroads Requirements* 3. *Data Initialization/Conversion Requirements* 4. *Automated Provisioning Interface requirements* | Provisioning Requirements are not applicable.   1. Not Applicable 2. See section 3.10 for Crossroads Requirements 3. Not Applicable 4. Not Applicable |
|  | *Interface Requirements*   1. *User/System Interface Requirements* 2. *Hardware Interfaces Requirements* 3. *Network Interfaces Requirements* 4. *Software/Communications Interfaces Requirements* | The Interface Requirements will be identical to those for the SS7 GSM interface for alert notifications as far as the RTI platform is concerned.  The link to the Diameter to VIS interface document is:  <http://central.syniverse.com/sites/TECH/proddev/vispro/Diameter/VisPro-Diameter_DataFeed_Reference_V1%204.docx> |
|  | *Performance Requirements*   1. *Volume and Frequency of Information* 2. *Data Retention Requirements* 3. *Throughput* 4. *Response Times* 5. *Number of Terminals* 6. *Number of Simultaneous Users and User-Concurrent Transactions* 7. *Availability* | Performance Requirements are business as usual for all items except Data Retention.  Detailed subscriber data is being kept for 90 days (still 7-10 days for data in the Input table). |
|  | *Enterprise Requirements*   1. *Syniverse Enterprise/Infrastructure* 2. *Disaster Recovery* 3. *Security Requirements & System Access* 4. *Data Privacy* 5. *Internationalization* 6. *Support Multilingual* 7. *Backup and Recovery Controls* 8. *Job Scheduling Controls* 9. *SLA Requirements* 10. *Standard Operational* 11. *Provide Basic Troubleshooting GUI* | Enterprise Requirements   1. TBD 2. Required – Dallas and Chicago operational in active- active, networks set up to pull files from each location 3. Business as usual 4. Business as usual 5. Business as usual 6. Not Required 7. Business as usual 8. Business as usual 9. Business as usual 10. Business as usual 11. Business as usual |
|  | *Billing*   1. *Financial Billing* 2. *Billing Support* 3. *Billing Data Retention* 4. *Billable Elements (aka INVARs)* 5. *Interim Billing Requirements (Pre-Automation)* | Billing Requirements  There is no impact to Billing as it is the responsibility of Visibility Services. |
|  | *Revenue Assurance*   1. *Reconcile Production data to summarized Billing data* 2. *Reconcile Production data to other Interfaced Systems (Analyzer & Accessibility)* 3. *Transaction Monitoring & Alarming* | Revenue Assurance Requirements are not applicable.   1. Not Applicable 2. Not Applicable 3. Not Applicable |
|  | *Supplemental Reports*   1. *Reports* 2. *Report Validation Requirements* | Supplemental Reports   1. Not applicable. No reports have been identified associated with this project. 2. Not Applicable |
|  | *Testing*   1. *Application Testing* 2. *Operational Testing* 3. *Other (UAT, alpha, Beta, etc.)* | Testing Requirements   1. A System Test Plan shall be developed 2. Not Applicable 3. Not Applicable |
|  | *Documentation and Training*   1. *User Documentation* 2. *User Training* | Documentation and Training Requirements   1. Documentation materials will need to be updated to reflect the components of the Diameter feed. 2. It is expected that the documentation shall be available in the same method and location as existing VisProactive documentation. 3. Page level help is NOT required for this release because it would be inconsistent with the other VisProactive documentation. 4. Documentation team shall be responsible for providing Development with the location/URL planned for the published documentation. This URL shall be provided a minimum of 1 month in advance of Go Live so any links from within the application can be developed and tested. 5. Any new functionality identified shall also be documented and included in future user training. Basically, business as usual for training materials. |
|  | *Internal/Support Requirements*   1. *Auditing* 2. *Application Monitoring/Support Tools* 3. *Network Monitoring/Support Tools* 4. *Customer Support Tools* 5. *Enterprise Provisioning/CTP/Tables Tools* 6. *Training and Documentation Tools* 7. *Test Tools* 8. *Implementation Tools* 9. *Sales Tools* 10. *Internal Documentation (Product Support Plan, Operations OA&M, Implementation)* 11. *Internal Training* | Internal/Support Requirements   1. Business as usual 2. Business as usual 3. Business as usual 4. Business as usual 5. Business as usual 6. Business as usual 7. Business as usual 8. Business as usual 9. Not required 10. Business as usual 11. Business as usual |

## Definitions, Acronyms, and Abbreviations

Provide definitions of all pertinent terms, acronyms, and abbreviations referenced within the document.

| **Acronyms and Abbreviations** | **Description** |
| --- | --- |
|  |  |

## Reference Documents

Provide a list of pertinent standards, sources, and reference documents.

| **Document Title, Version #, Date** | **Description** |
| --- | --- |
| Backend Data Feed HLD | <http://central.syniverse.com/sites/TECH/proddev/vispro/Diameter/Visproactive%20Diameter%20Backend%20Data%20Feed%20High%20Level%20Design.docx> |
| Data Extract HLD: | <http://central.syniverse.com/sites/TECH/proddev/vispro/Diameter/VisDiameterDataExtract_HighLevelDesignDocument.doc> |
| Data feed Reference Document: | <http://central.syniverse.com/sites/TECH/proddev/vispro/Diameter/VisPro-Diameter_DataFeed_Reference_V1%204.docx> |
| Diameter Interface Link | <http://central.syniverse.com/sites/TECH/proddev/vispro/Diameter/VisPro-Diameter_DataFeed_Reference_V1%204.docx> |
| Data Privacy Office | [Syniverse Data Privacy Office](http://central.syniverse.com/sites/FIN/GRC/DPO/SitePages/Home.aspx?RootFolder=%2Fsites%2FFIN%2FGRC%2FDPO%2FShared%20Documents%2FProgram%20Information&FolderCTID=0x012000095106CCD6435B4EB22DD8103878D1E2&View=%7bF4F369CC-9671-4A4C-99E8-D5C191CD6ABA%7d) |
| Global Security Policies | [Security Policies](http://central.syniverse.com/sites/sec/sec/Security%20Policies/Forms/AllItems.aspx) |
| Global Training &Documentation (GTD)  Request for Training/Documentation | [Global Training &Documentation](http://central.syniverse.com/sites/CUST/pc/train/Shared%20Documents/Forms/AllItems.aspx?InitialTabId=Ribbon%2EDocument&VisibilityContext=WSSTabPersistence) |
| Syniverse Billing Interface File (BIF) Format | [Syniverse Billing Interface File (BIF) Format](http://central.syniverse.com/sites/sec/APPS/BLASR/SitePages/Home.aspx?RootFolder=%2Fsites%2Fsec%2FAPPS%2FBLASR%2FShared%20Documents%2FDocumentation%2FInput%20Files&FolderCTID=0x012000B0DECA26EEFE154FB38C99D1708BA871&View=%7b1F699D7C-AE89-483D-8F63-66FCCB91005C%7d&InitialTabId=Ribbon%2EDocument&VisibilityContext=WSSTabPersistence) |
| User Experience Website | [User experience website](http://central.syniverse.com/sites/TECH/arch/exp/SitePages/Home.aspx) |
| Global Customer Operations Corporate Policies | [Global Customer Operations CorpPolicies](http://central.syniverse.com/sites/CUST/CorpPolicies/Forms/AllItems.aspx) |
| Operations Quality Control Handbook - A Guide to Best Practices | <http://skrcollab.syniverse.com/gm/folder-1.11.61595> |

## Correction and Revisions

This document will evolve as these requirements are reviewed. Please direct comments or suggestions for modification, preferably via email, to:

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# Overall Description – Background (Reference Section 1.1)

# Incorporate New Data Feed for Diameter Data

The VisProactive BI engine shall use the Diameter data feed from Visibility Services to provide the functionality described herein.

## Visibility Services Requirements

Visibility Services shall provide the data to VisProactive in the manner determined during design.

**Diameter Databroker**

*Background information: Currently (April 2014), only the Tekelec DSR provides the Diameter feed. The Syniverse Diameter Databroker has not been tested. VisPro receives Diameter data from Vis Services not, from Databroker directly, therefore, when the Diameter Databroker goes into production, no changes to Vis to VisPro interface are expected but may be possible. Testing will be necessary to validate if changes are necessary.*

*In the future, if multiple data brokers are used, it is expected that the Session ID will be the same for identical transactions, regardless of where it is captured, and the Session ID would still be the element used to join.*

### Vis to VisPro Interface

Vis shall have 2 different phases for the Vis to VisPro interface:

1. A short term solution which is about to go into production
2. A later phase solution for adding MFT.

The system must be able to accept data from either interface.

## Data Analysis and Preparation

### Preprocessor

A preprocessor shall be developed to process the data received from Visibility Services. This is expected to be needed only for filtering and standardization and data conformance.

*Note: There will not be a control file for this feed because it’s a non-Tandem process on the Vis Svc side.*

For details of the following items, see the Design Documents in SharePoint. (See Section 1.5 for the links to SharePoint.

#### Data Rules/Conditions

#### File Naming Conventions

#### Timestamps and Other Identifiers

#### Validation Rules

All of the fields received from Visibility Services shall contain a value, that is, no field shall be blank.

### Aggregation

VisProactive shall use the Session ID to aggregate transactions that are sent in more than 2 legs.

#### Timestamps

##### Start Timestamp

The Start Timestamp shall determine which quarter hour that row will be counted against.

##### End Timestamp

The End Timestamp shall be captured for duplicates detection and in order to eventually be able to analyze issues.

## Pod/Feed Selection

Diameter data shall be available via selectable pods/feeds in the VisProactive user interface in the manner of the existing VisProactive pods/feeds.

*Note: The introduction of the new version of Crossroad, MySyniverse, may impact some of the look and feel from the user perspective, however, within VisProactive, the interface will be basically the same as it is today.*

The pods shall be labeled as noted below, and the expansion text shall be provided in the manner of the existing VisProactive pods/feeds.

The user shall be able to select and deselect the pods to view.

|  |  |
| --- | --- |
| Pod/Feed Label | Expansion Text |
| Diameter - Heat Map | A map of the world showing hot spots of activity. |
| Diameter - Unique Roamer | Graphs of current counts over historical norms for Unique Roamers |
| Diameter – Traffic | Graphs of current counts over historical norms per Traffic Type |
| Diameter - Most Active | Graphs of the most active Countries, operators, or Nodes by counts of messages |
| Diameter - Most Active Unique Roamer | Displays information about the most active countries, operators or nodes by counts of unique roamers. |
| Diameter - Alert Pod | Lists alerts that are currently in an active state |
| Diameter - Trending Traffic | Graphs of current counts per Traffic Type for trending analysis for up to 16 countries, operators or nodes |
| Diameter - Trending Unique Roamer | Graphs of current counts of Unique Roamers for trending analysis for up to 16 countries, operators or nodes |

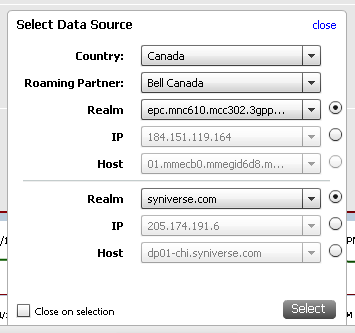
## Location Menu Hierarchy and Drill Downs

Host, IP or Realm are directly selectable after operator is selected. The Host may also be refined by selecting either REALM or IP. The rules are:

1. After selecting Realm or IP you can only select Host.
2. You cannot select a Realm and an IP in the same request.
3. IMSI list can be accessed by selecting Realm, IP or Host.
4. The default selection shall be the Realm.

**Prototype of the location menu:**

*Note: This is an illustration only and is not to be considered the requirement.*



Location Menu:  A REALM, IP or HOST can be directly selected after an Operator has been chosen.  If a REALM or IP was selected the user can then also select a HOST and the list of applicable hosts will be reduced based on the selected Realm or IP.

### Exception – Most Active Pod

In the Most Active pod, after Operator selection, the next view shall be a choice for user to select from Realm *or* IP *or* Host.

For example, if you select the 10 most active, then select an operator, the next step is to select the view of the data to see next: Realm, IP or Host.

1. The default selection shall be the Realm.
2. Alternatively, the user shall have the ability to select IP or Host.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operator  (same for Home and Serve side) | | | | |
| Realm | -*OR*- | IP | -*OR*- | Host |
| -*AND*- |  | -*AND*- |  |  |
| Host |  | Host |  |  |

### Allow User to Drill Down

#### Time Increments for Drill Downs

Drill downs shall be possible for all of the data points at these time increments:

**Aggregation Data Retained Maximum on graph Minimum**

1. ¼ hour (Default) (90 days) 7 days 3 periods (45 minutes)
2. 1 hour (24) (90 days) 30 days 3 hours
3. 1 day (27 months) 27 months 3 days
4. 1 week (27 months) 27 months 3 weeks
5. 1 month (27 months) 27 months 3 months

#### Custom Report Selection Requirements (Desired)

Keep the current approach, but **‘desired’** requirements: (reference Section 3.5 Select Date Range and Interval Screen Changes)

##### User selection – allow 2 choices

1. (Option 1) Allow user to first select an aggregation period. (15 minutes, hourly, daily, weekly, monthly)
   * Once the user selects an aggregation period, the user may select a report period which is constrained to the appropriate choices. For example, hourly, you can select up to 90 days
2. (Option2) Allow the user to select a report period. (to the extent of the data )
   * Once the user selects a report period, the user may select an aggregation period which is constrained to the appropriate choices. For example, if he selects an 8 days report period only hourly or daily would be available.

##### User Defined Week

*For a weekly report period the user shall be able to select any day of the week to start a week. (e.g. they can set up a weekly report period beginning on Saturday instead of Sunday).*

*Note: this is useful for countries like Saudi Arabia that follow different conventions for weeks.*

*Note: However, the report must include periods of full weeks. e.g. we would* ***not*** *let the user select to start a report on Wednesday and have Wed – Saturday as week 1 and Sunday – Saturday as week 2.*

*If the user selects a Wednesday to start a weekly report period, the end report period shall be constrained to dates that are Tuesday and are at least 3 weeks after the beginning of the weekly report period.*

*Monthly report periods must start on the 1st and end on the last of the month (i.e. a calendar month).*

#### Country Drill Down

##### Default to All Countries

##### Upon selection of a country, “All Operators” for that country shall appear

###### Operator Drill Down

Default to All Operators

Upon selection of an operator, the Realm, or IP, or Host shall appear.

Realm and IP shall also allow drill down to Host level.

#### Headers/Titles for Customized View

When a user has customized the Realm, IP, Host, operators, or countries, upon which to view data, the title of the view shall reflect that the selection is customized. The title of the IMSI list view and the Duration shall also reflect the customized selection.

The title text shall provide detail as to what data is being displayed on the graph/grid.

#### Allow the user to change the chart type.

Within any level of drill-down, the application shall allow the user to change the chart type from graph to grid and vice versa.

### Allow the User to Drill Up

The application shall allow a user to drill up to the next highest level in the hierarchy when the user has drilled down.

## Select Date Range and Interval Screen Changes

### Custom Date Ranges

The application shall allow custom date range searches only in GMT time. Search shall be available by:

1. Start Date and Time
2. End Date and Time
3. Interval
4. 15 minutes
5. 1 hour
6. Last Calendar Day
7. Last Calendar Week (total Duration shall be at least 3 weeks otherwise will see only one data point) Calendar week is Sunday through Saturday
8. Last Calendar Month (at least 3 months)

Note: Any ranges greater than one hour need at least 3 data points (e.g., 3 weeks or 3 months) or the data will not be visible on the screen.

### Select Range List Changes

1. Last 6 Hours - GMT
2. Last 12 Hours - GMT
3. Last 24 Hours - GMT
4. Last 5 Days - GMT
5. Last 30 Days - GMT
6. Last 90 Days - GMT
7. Last 180 Days - GMT
8. Last Year
9. All Available Data (Optional Requirement)

### Many to Many Relationships

The application shall support many to many relationships. This may vary depending on the size of carrier and how that carrier interpreted the protocol.

One Host can be shared by multiple realms or IPs.

## Traffic Types

The following traffic types are available:

### Request Code – Message Direction = Serv -> Home

* 1. **316**) ULR/ULA (Update-Location-Request/Answer):
     + MME stores its own identity at HSS and fetches subscriber data from HSS.
  2. **318**) AIR/AIA (Authentication-Information-Request/Answer):
     + MME fetches Authentication data from HSS to authenticate subscriber.
  3. **321**) PUR/PUA (Purge Request/Answer):
     + MME informs the HSS that UE is inactive for a long period and MME has deleted the Subscriber Data received in previous ULR from its end.
  4. **323**) NOR/NOA (Notification-Request/Answer):
     + MME stores PDN address and other attach information at HSS.

### Request Code - Message Direction = Home -> Serv

* 1. **317**) CLR/CLA (Cancel-Location-Request/Answer):

Invoked by HSS to detach the subscriber.

* 1. **319**) IDR/IDA (Insert-Subscriber-Data-Request/Answer):

Invoked by HSS only when a subscriber is attached and there is change in subscriber profile at HSS end then same change to be reflected at Subscriber profile at MME (sent in ULA) end as well.

* 1. **320**) DSR/DSA (Delete-Subscriber-Data-Request/Answer):

Invoked by HSS only when Subscriber is attached and some data is deleted at HSS. Now HSS informs MME with this message that some part of subscriber data is deleted at HSS.

* 1. **322**) RSR/RSA (Reset-Request/Answer):

Invoked by HSS, to inform MME that HSS has gone down for some time, sync the data and send fresh location/PDN information at HSS.

### All Traffic Types

Provide the ability to display All Traffic Types which includes all of the above types in the GUI.

## Error Codes

The application shall provide the ability to drill from a count of All Errors to a list of specific errors and from there to the representation of an individual error.

Result Grouping : (found in: resolution\_value and correspond to the first digit of the more granular Answer Codes)

|  |  |
| --- | --- |
| **Resolution Value** | **Counts as** |
| 0 = Indicates Timeout | Timeout |
| 1 = Informational | Success |
| 2 = Success | Success |
| 3 = Protocol Error | Error |
| 4 = Transient Failure | Error |
| 5 = Permanent Failure | Error |

*Note: There are no requirements to group errors at this time. Once we get more data we might be able to do groupings.*

*Shading in the table represents examples that have been seen in the tranlog.*

Answer Codes:

|  |  |
| --- | --- |
| 1001 | MULTI\_ROUND\_AUTH |
| 2001 | SUCCESS |
| 2002 | LIMITED\_SUCCESS |
| 3001 | COMMAND\_UNSUPPORTED |
| 3002 | UNABLE\_TO\_DELIVER |
| 3003 | REALM\_NOT\_SERVED |
| 3004 | TOO\_BUSY |
| 3005 | LOOP\_DETECTED |
| 3006 | REDIRECT\_INDICATION |
| 3007 | APPLICATION\_UNSUPPORTED |
| 3008 | INVALID\_HDR\_BITS |
| 3009 | INVALID\_AVP\_BITS |
| 3010 | UNKNOWN\_PEER |
| 4001 | AUTHENTICATION\_REJECTED |
| 4002 | OUT\_OF\_SPACE |
| 4003 | ELECTION\_LOST |
| 5001 | AVP\_UNSUPPORTED |
| 5002 | UNKNOWN\_SESSION\_ID |
| 5003 | AUTHORIZATION\_REJECTED |
| 5004 | INVALID\_AVP\_VALUE |
| 5005 | MISSING\_AVP |
| 5006 | RESOURCES\_EXCEEDED |
| 5007 | CONTRADICTING\_AVPS |
| 5008 | AVP\_NOT\_ALLOWED |
| 5009 | AVP\_OCCURS\_TOO\_MANY\_TIMES |
| 5010 | NO\_COMMON\_APPLICATION |
| 5011 | UNSUPPORTED\_VERSION |
| 5012 | UNABLE\_TO\_COMPLY |
| 5013 | INVALID\_BIT\_IN\_HEADER |
| 5014 | INVALID\_AVP\_LENGTH |
| 5015 | INVALID\_MESSAGE\_LENGTH |
| 5016 | INVALID\_AVP\_BIT\_COMBO |
| 5017 | NO\_COMMON\_SECURITY |

Drill down from IMSI list – drill down to all errors.

### Invalid Answer Code

Provide the ability to translate an invalid answer code to a valid answer code and request code combination while preserving the original data.

*Note: This problem is within the data received from xDR and we have observed invalid values. xDR has no plan at this time to fix this so we need to find a way to correct the invalid data while preserving the information received.*

### Drill Down to Detail Errors

The application shall provide the ability to drill down to Detail Error in both the Heat Map and Traffic pods.

For example: In the Traffic Pod, the user shall be able to click a point on the error line to see the breakout of specific detailed errors (ie, Error Codes and Descriptions as defined in the table in Section 3.7 Error Codes).

## General VisProactive Requirements

This section contains general VisProactive requirements from previous releases. We need to review these to determine if there is an impact from the switch to the new GUI technology and the Crossroads Portlets.

### Exporting and Printing

The application shall provide a mechanism for users to print and export data, as noted in the following sections.

#### Export to CSV

The user shall be able to export the data from a grid view directly to a csv format without having to insert the data into another software application first.

The exported file shall contain the following:

Release/Customer and User info/Time Stamp string

This shall indicate the time zone setting that is in effect in the viewing/exporting user’s Crossroads User Profile at the time of the export, in the body/content of Excel files exported from VisProactive using the VisProactive export tool.

##### Include Titles When Exporting to CSV

When exporting data to csv format, the heading and the date range of the data being exported shall be included in the exported data. The heading includes the … suggestion: and all settings such as perspective, country/roaming partner/node selection, traffic type, so the user could recreate the output

### Print Function

The user shall be allowed to print the view in all of the pods directly, without having to capture and save the data or save it in another software application first.

#### Print Area

The print area to be used for this print function is a 8 ½ by 11 inch standard sheet of paper with ½ inch margins on the top, bottom, left and right.

##### Grid View Printing

From the grid view, the printed result shall include:

* The entire selection of data that is being displayed within a pod at the time that the user clicked the print function within that pod.
* The heading and date range of the data being exported.

Additionally, the data shall be formatted in columns, appropriately spaced to fit the data being printed.

##### Graph View Printing

From a graph view, the printed result shall include the entire contents of the pod.

##### Heat Map Printing

From the heat map, the print result shall include the entire contents of the pod.

### Time Display/GMT Offset

#### Indicate Time Zone Offset on VisProactive Screens

##### Time Zone to Release and Company Name String

The application shall display the viewing user’s Time Zone information, based on that user’s Crossroads User Profile “Time Zones” selection, in the top section of the screen in the same line as the release number text.

Note: Subsequent references to this string in this SRS will be as the Release/Customer and User info/Time Stamp string.

For example:



Each time zone label within this string shall match its corresponding time zone label in the Crossroads User Profile “Time Zones” dropdown list.

For example, “(Sam -11) Samoa” is a Crossroads label, and VisProactive will use the same label/wording.

##### Graph/Grid Title

The application shall display the viewing user’s Crossroads time zone/timestamp in the section of the screen that displays the title of each graph or grid.

Note: This will occur even if the user’s date range selection returns data results based on GMT time.

##### Screen Captures

When a user captures a screen shot using the VisPro “Save as Image” tool

## Alert Pod Requirements

In the Alert Pod, the user shall be able to use controls similar to other data feeds’ Alert Pods (e.g. GSM, GTPc, Rev C, etc) including sorting, filtering multiple columns, changing width of columns, adding or deleting columns from the view, etc.

## Crossroads Requirements

The following changes shall be made in Crossroads.

### New Menu Item

There shall be a new menu item for VisProactive Diameter under the Mobile Data tab.

The sub-menu shall consist of

* Alert Pod
* Heat Map Pod

Future sub-menus shall consist of

* Unique Roamer Pod
* Traffic Pod
* Most Active Pod
* Most Active Unique Roamer Pod
* Trending Traffic Pod
* Trending Unique Roamer Pod

### CTP Permissions

VisProactive Diameter customers shall require assignment of the Visibility Services Diameter permission. This is an existing permission labeled “Diameter option” (Note: this under the “Visibility Services” Grouping not the “Visibility Services-CTP option” grouping.)

### Company Level Permissions

A new company level permission is required. This permission shall be labeled/named in a manner consistent with the existing VisProactive company level permission naming conventions. Based on current permissions, the recommended label is:

* VisProactive (grouping)
  + “Diameter (requires Visibility Diameter Options)” (permission)

### Add a New Grouping: VisProactive – Diameter

A grouping labeled VisProactive – Diameter Pods shall be added to Crossroads in the permissions area containing the other VisProactive feed permission groupings (e.g., GTP-c, Mobile Data Roaming).

### User Permissions

The following new User level permissions shall be added for providing users with access to the Diameter data/feed via VisProactive. These permissions shall be added to Crossroads Admin tab subordinate to the new **VisProactive – Diameter Grouping = Diameter Pods**

*Note: In all cases, the user shall have access only to data to customers/Operators associated with the user’s company.*

1. **Heat Map Pod** – when this permission is selected for a user, the user shall have access to Diameter data in the Heat Map pod.
2. **Unique Roamer Pod**– when this permission is selected for a user, the user shall have access to Diameter data in the Unique Roamer pod.
3. **Traffic Pod** – when this permission is selected for a user, the user shall have access to Diameter data in the Traffic pod.
4. **Most Active Pod** - when this permission is selected for a user, the user shall have access to Diameter data in the Most Active – Traffic pod.
5. **Most Active - Unique Roamers Pod** – when this permission is selected for a user, the user shall have access to Diameter data in the Most Active – Unique Roamers pod.
6. **Alert Pod View**– when this permission is selected for a user, the user shall have access to Diameter data in the Alert Pod View pod.
7. **Alert Pod Update** (**restricted**) – when this permission is selected for a user, the user shall have access to modify Diameter data in the Alert Pod.
8. **Trending Traffic Pod**– when this permission is selected for a user, the user shall have access to Diameter data in the Trending Traffic pod.
9. **Trending Unique Roamer Pod –** when this permission is selected for a user, the user shall have access to Diameter data in the Trending Unique Roamer pod.

# Supplemental Requirements: (Reference Section 1.3 and Section 3)

# Requirements Tracing Matrix

| Traceability Map  VisProactive Diameter Feed SRS  <Link to approved Requirements Document> | | |
| --- | --- | --- |
| For <Asset or Team> | | |
| High Level Design | Detail Level Design | System Test Plan |
| <Link to HLD> | <Link to DLD> | <Link to System Test Plan> |

| Requirement  # | Requirement title | Asset/Team | HLD  # | DLD  # | Test  # | Comment |
| --- | --- | --- | --- | --- | --- | --- |
| 3 | INCORPORATE NEW DATA FEED FOR DIAMETER DATA |  |  |  |  |  |
| 3.1 | VISIBILITY SERVICES REQUIREMENTS |  |  |  |  |  |
| 3.1.1 | Vis to VisPro Interface |  |  |  |  |  |
| 3.2 | DATA ANALYSIS AND PREPARATION |  |  |  |  |  |
| 3.2.1 | Preprocessor |  |  |  |  |  |
| 3.2.1.1 | Data Rules/Conditions |  |  |  |  |  |
| 3.2.1.2 | File Naming Conventions |  |  |  |  |  |
| 3.2.1.3 | Timestamps and Other Identifiers |  |  |  |  |  |
| 3.2.1.4 | Validation Rules |  |  |  |  |  |
| 3.2.2 | Aggregation |  |  |  |  |  |
| 3.2.2.1 | Timestamps |  |  |  |  |  |
| 3.2.2.1.1 | Start Timestamp |  |  |  |  |  |
| 3.2.2.1.2 | End Timestamp |  |  |  |  |  |
| 3.3 | POD/FEED SELECTION |  |  |  |  |  |
| 3.4 | LOCATION MENU HIERARCHY AND DRILL DOWNS |  |  |  |  |  |
| 3.4.1 | Exception – Most Active Pod |  |  |  |  |  |
| 3.4.2 | Allow User to Drill Down |  |  |  |  |  |
| 3.4.2.1 | Time Increments for Drill Downs |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3.4.2.2 | Custom Report Selection Requirements (Desired) |  |  |  |  |  |
| 3.4.2.2.1 | User selection – allow 2 choices |  |  |  |  |  |
| 3.4.2.2.2 | User Defined Week |  |  |  |  |  |
| 3.4.2.3 | Country Drill Down |  |  |  |  |  |
| 3.4.2.3.1 | Default to All Countries |  |  |  |  |  |
| 3.4.2.3.2 | Upon selection of a country, “All Operators” for that country shall appear |  |  |  |  |  |
| 3.4.2.3.2.1 | Operator Drill Down |  |  |  |  |  |
| 3.4.2.3.2.1.1 | Default to All Operators |  |  |  |  |  |
| 3.4.2.3.2.1.2 | Upon selection of an operator, the Realm, or IP, or Host shall appear. |  |  |  |  |  |
| 3.4.2.3.2.1.3 | Realm and IP shall also allow drill down to Host level. |  |  |  |  |  |
| 3.4.2.4 | Headers/Titles for Customized View |  |  |  |  |  |
| 3.4.2.5 | Allow the user to change the chart type. |  |  |  |  |  |
| 3.4.3 | Allow the User to Drill Up |  |  |  |  |  |
| 3.5 | SELECT DATE RANGE AND INTERVAL SCREEN CHANGES |  |  |  |  |  |
| 3.5.1 | Custom Date Ranges |  |  |  |  |  |
| 3.5.2 | Select Range List Changes |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3.5.3 | Many to Many Relationships |  |  |  |  |  |
| 3.6 | TRAFFIC TYPES |  |  |  |  |  |
| 3.6.1 | Request Code – Message Direction = Serv -> Home |  |  |  |  |  |
| 3.6.2 | Request Code - Message Direction = Home -> Serv |  |  |  |  |  |
| 3.6.3 | All Traffic Types |  |  |  |  |  |
| 3.7 | ERROR CODES |  |  |  |  |  |
| 3.7.1 | Invalid Answer Code |  |  |  |  |  |
| 3.7.2 | Drill Down to Detail Errors |  |  |  |  |  |
| 3.8 | GENERAL VISPROACTIVE REQUIREMENTS |  |  |  |  |  |
| 3.8.1 | Exporting and Printing |  |  |  |  |  |
| 3.8.1.1 | Export to CSV |  |  |  |  |  |
| 3.8.1.1.1 | Include Titles When Exporting to CSV |  |  |  |  |  |
| 3.8.2 | Print Function |  |  |  |  |  |
| 3.8.2.1 | Print Area |  |  |  |  |  |
| 3.8.2.1.1 | Grid View Printing |  |  |  |  |  |
| 3.8.2.1.2 | Graph View Printing |  |  |  |  |  |
| 3.8.2.1.3 | Heat Map Printing |  |  |  |  |  |
| 3.8.3 | Time Display/GMT Offset |  |  |  |  |  |
| 3.8.3.1 | Indicate Time Zone Offset on VisProactive Screens |  |  |  |  |  |
| 3.8.3.1.1 | Time Zone to Release and Company Name String |  |  |  |  |  |
| 3.8.3.1.2 | Graph/Grid Title |  |  |  |  |  |
| 3.8.3.1.3 | Screen Captures |  |  |  |  |  |
| 3.9 | ALERT POD REQUIREMENTS |  |  |  |  |  |
| 3.10 | CROSSROADS REQUIREMENTS |  |  |  |  |  |
| 3.10.1 | New Menu Item |  |  |  |  |  |
| 3.10.2 | CTP Permissions |  |  |  |  |  |
| 3.10.3 | Company Level Permissions |  |  |  |  |  |
| 3.10.4 | Add a New Grouping: VisProactive – Diameter |  |  |  |  |  |
| 3.10.5 | User Permissions |  |  |  |  |  |
|  |  |  |  |  |  |  |