**BNASupport Diagnostics Implementation**

This document briefly describes the implemented syntax and semantics for the BNASupport library’s Primitive OI (POI). Although the EX command is shown, it is not intended for customer use. Some implementation details are provided.

**Syntax**

<BNA Library Mix #> AX <Diagnostic Command>

<Diagnostic Command> = BNA DUMP

 STATUS

 TXNCODE <txncode options>

 DIAG

 <diag options>

 HELP

 PLMOPTIONS

 RMOPTIONS

 DUMPOPTIONS

 EX

<txncode options> = STATUS

 (txnclass, txnnumber, 0) + TRACE

 - TOUCH

<diag options> = ON [ALL]

 OFF OS [ALL]

 OIM [ALL]

 PLM [ALL]

 <plm diag options>

 RM [ALL]

 <rm diag options>

 DUMP [ALL]

 PLM

 RM

 RHT

 Host <Hostname>

 RHE

 CT

 PLMCluster <Cluster Address>

 CTE

 DHT

 DAB

 Subport <Subport Address>

 SPR [ALL]

 DCA

 Conn <Conn Name>

 RCT [ALL]

 RMCluster <Cluster Address>

 RTC [ALL]

 Neighbor <Cluster Address>

 RNT [ALL]

<plm diag options> = HOST <Hostname>

 RHE

 Cluster <Cluster Address>

 CTE

 Subport <Subport Address>

 SPR [ALL]

 HostSubports <Hostname>

 HostSPRs

 HostSPs

 IO

<rm diag options> = Conn <Conn Name>

 RCT [ALL]

 Cluster <Cluster Address>

 RTC [ALL]

 Neighbor <Cluster Address>

 RNT [ALL]

NOTES:

1. The only valid delimiter between tokens is one or more blank spaces. This does not apply to addresses, where components of the address must be delimited by commas.
2. Addresses, such as <Cluster Address> and <Node Address>, cannot be of abbreviated form. Rather they must be of the form (w,x,y,z), where some of the components may be zero. [ (1,5) is not correct in syntax; (1,5,0,0) is correct in syntax. ]

**Semantics**

**Command Overview**

There are five basic POI commands. BNA DUMP, BNA STATUS, and HELP are easily explained in this overview; the gory details of TXNCODE and DIAG are then addressed.

BNA DUMP

Takes a partial system dump.

BNA STATUS

Shows the status of active tasks.

TXNCODE

Sets transaction code tracing and inquiries upon the settings.

DIAG

Sets or resets tracing diagnostics or dumps internal structures to the log. Tracing diagnostics can be set for the entire library, selected modules, selected structures or selected dialogs. Structure dumps can be done for all structures, selected structures, or structures related to a selected dialog.

HELP

Displays the syntax of the POI commands available to the user.

EX

Activates and communicates with the examiner remote diagnostic module (currently unavailable).

**Command Details: Help**

HELP

Displays the basic POI commands available to the user. Details on some sommands can be obtained by using one of the HELP options, as described below.

HELP PLMOPTIONS

Displays the PLM options available via the DIAG ON/OFF PLM command.

HELP RMOPTIONS

Displays the router options available via the DIAG ON/OFF RM command.

HELP DUMPOPTIONS

Displays the options available for dumping specific structures via the DIAG DUMP command. General dumping commands (dumping all structures, dumping the PLM structures or dumping the RM structures) are displayed in the response to the HELP command.

**Command Details: Txncode**

TXNCODE

Inquiries on the settings of the trace and touch options.

TXNCODE (txnclass, txnnumber, 0) +/- TRACE

Sets or resets the transaction trace option.

TXNCODE (txnclass, txnnumber, 0) +/- TOUCH

Sets or resets the transaction touch option.

**Command Details: Diag**

The initial implementation of diagnostics was to have them ON or OFF, controlled by a compile time option. All modules (OS, PLM, RM, etc.) had strategically placed statements that checked the setting of this flag (INTERNAL) and logged diagnostic information if appropriate. This was strictly a “tracing” form of diagnostic.

This progressed to enhancing the POI to enable the user to toggle this tracing diagnostic. More recently the router’s trace diagnostic flag has been separated from the BNA global flag (INTERNAL) and many features were added to the router to allow more selective tracing as well as to enable the dumping of structure information to the log. In this proposal, the RM approach has been extended to the PLM, and the syntax has been molded to blend the needs of all the modules.

The DIAG command has two basic functions: to control tracing (ON & OFF) and to perform logging of structure contents (DUMP). Tracing can be done on a global basis, a per-module basis, or in relation to a specific structure (hostname, connection, etc.). The following tables, or table entries, can be dumped:

1. Remote Host Table (RHT)
2. Remote Host Entry (RHE) - One entry from the RHT
3. Cluster Table (CT) - The PLM’s cluster table
4. Cluster Table Entry (CTE) - One entry from the CT
5. Deleted Host Table (DHT)
6. Dialog Attribute Block Table (DAB table)
7. Subport Reference Table (SPR table)
8. Router Connection Table (RCT)
9. Connection - One entry from the RCT
10. Router Table Current (RTC)
11. Router Cluster - One entry from the RTC
12. Router Neighbor Table (RNT)
13. Neighbor - One entry from the RNT
14. Destination Cluster Address (DCA)

**Note that turning ON all diagnostics via DIAG ON [ALL] will NOT turn on the diagnostics for individual structures such as remote host table entries or router connection table entries. However, turning OFF all diagnostics via DIAG OFF [ALL] WILL turn off the diagnostics for all individual structures.**

The following describes, in detail, the meaning of each possible DIAG command. This will serve as the basis for a Function Test Plan description. In all cases the log can be checked to verify that the requested response has been received.

DIAG

Inquires on the status of diagnostic options. If traces have been activated on a per connection/host/subport basis, each one being traced is listed. (Very exhaustive, but probably very useful.)

DIAG ON/OFF

DIAG ON/OFF ALL

Initiates/terminates tracing for all modules.

DIAG ON/OFF OS

DIAG ON/OFF OS ALL

Initiates/terminates tracing for the Overseer module.

DIAG ON/OFF OIM

DIAG ON/OFF OIM ALL

Initiates/terminates tracing for the Operator Interface module.

DIAG ON/OFF PLM

DIAG ON/OFF PLM ALL

Initiates/terminates tracing for the Port Level module, not including the PIM OI tracing.

DIAG ON/OFF PLM HOST <hostname>

DIAG ON/OFF PLM RHE <hostname>

Initiates/terminates tracing of PLM activity associated with the specified host.

DIAG ON/OFF PLM CLUSTER <cluster address>

DIAG ON/OFF PLM CTE <cluster address>

Initiates/terminates tracing of PLM activity associated with the specified address.

DIAG ON/OFF PLM SUBPORT <subport address>

DIAG ON/OFF PLM SPR <subport address>

Initiates/terminates tracing in the PIE associated with the specified address.

DIAG ON/OFF PLM SUBPORT ALL

DIAG ON/OFF PLM SPR ALL

Initiates/terminates tracing in all PIEs.

DIAG ON/OFF PLM HOSTSUBPORTS <hostname>

DIAG ON/OFF PLM HOSTSPRS <hostname>

DIAG ON/OFF PLM HOSTSPS <hostname>

Initiates/terminates tracing in all PIEs associated with the speceified host.

DIAG ON/OFF PLM IO

Initiates/terminates tracing of PIM IO.

DIAG ON/OFF RM

DIAG ON/OFF RM ALL

Initiates/terminates tracing for the Router module.

DIAG ON/OFF RM CONN <connection name>

DIAG ON/OFF RM RCT <connection name>

Initiates/terminates tracing of router activity associated with the specified connection.

DIAG ON/OFF RM CONN ALL

DIAG ON/OFF RM RCT ALL

Initiates/terminates tracing of router activity associated with the all connections.

DIAG ON/OFF RM CLUSTER <cluster address>

DIAG ON/OFF RM RTC <cluster address>

Initiates/terminates tracing of router activity associated with the specified address.

DIAG ON/OFF RM CLUSTER ALL

DIAG ON/OFF RM RTC ALL

Initiates/terminates tracing of router activity associated with all router clusters.

DIAG ON/OFF RM NEIGHBOR <node address>

DIAG ON/OFF RM RNT <node address>

Initiates/terminates tracing of router activity associated with the specified address.

DIAG ON/OFF RM NEIGHBOR ALL

DIAG ON/OFF RM RNT ALL

Initiates/terminates tracing of router activity associated with all neighbors.

DIAG DUMP

DIAG DUMP ALL

Dumps the contents of the PLM tables: RHT, CT, DHT, DAB, SPR, and PIEs. Also dumps the contents of the RM tables: RCT, RTC, RNT, and DCA.

DIAG DUMP PLM

DIAG DUMP PLM ALL

Dumps the contents of the PLM tables: RHT, CT, DHT, DAB, SPR, and PIEs.

DIAG DUMP RM

DIAG DUMP RM ALL

Dumps the contents of the RM tables: RCT, RTC, RNT, and DCA.

DIAG DUMP RHT

Dumps the entire remote host table.

DIAG DUMP HOST <hostname>

DIAG DUMP RHE <hostname>

Dumps the remote host table entry associated with the specified host.

DIAG DUMP CT

Dumps the entire PLM cluster table.

DIAG DUMP PLMCLUSTER <cluster address>

DIAG DUMP CTE <cluster address>

Dumps the PLM cluster table entry associated with the specified address.

DIAG DUMP DHT

Dumps the entire deleted host table.

DIAG DUMP DAB

Dumps the entire dialog attribut block table.

DIAG DUMP SPR

Dumps the entire subport reference table.

DIAG DUMP RCT

DIAG DUMP RCT ALL

DIAG DUMP CONN

DIAG DUMP CONN ALL

Dumps the entire router connection table.DIAG DUMP CONN <connection name>

DIAG DUMP RCT <connection name>

Dumps the router connection table entry associated with the specified connection.

DIAG DUMP RTC

DIAG DUMP RTC ALL

DIAG DUMP RMCLUSTER

DIAG DUMP RMCLUSTER ALL

Dumps the entire router table current.

DIAG DUMP CLUSTER address>

DIAG DUMP RTC < cluster address >

Dumps the router table current entry associated with the specified address.

DIAG DUMP RNT

DIAG DUMP RNT ALL

DIAG DUMP NEIGHBOR

DIAG DUMP NEIGHBOR ALL

Dumps the entire router neighbor table.

DIAG DUMP NEIGHBOR <node address>

DIAG DUMP RNT < node address >

Dumps the router neighbor table entry associated with the specified address.

DIAG DUMP DCA

Dumps the entire destination cluster table.

DIAG DUMP SUBPORT <subport address>

Dumps the remote host entry, dialog attribute block (DAB) and PIE info associated with the specified address.