



Using Enif to Extend the Possibilities Offered in EMME/2

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About Enif

- Enif: complement to EMME2
 - EMME/2: for modelling transportation networks
 - Enif: query and analysis tool
- Access to same data but easier to customize plots and lists
 - Look of plots and lists no longer restricted by developer's decisions
 - Almost unlimited number of possibilities
- Homogeneous access to all elements of the data banks (network and matrix data)
- Answers to several suggestions made by EMME/2 users
 - Windowing more user-friendly
 - Easy control of pen width, number of decimals, text fonts
 - Easy (global) specification of left-hand traffic
 - More “natural” syntax for selection
 - Several types of elements on the same plot (e.g.: transit lines and turns)
 - Easier printing capabilities
 - Possibility of exporting resulting plots in different formats
 - ...



Ease of use

- On-line help
 - Tips
 - On-line documentation
- “History” of previous expressions
- Easy to configure the software itself:
 - appearance of Enif windows
 - fonts and colors used
 - use of right-hand or left-hand traffic
 - predefined views
 - printing settings
 - localization: specify translation files
 - registered configurations (plots and lists)
- Predefined configurations



Generic configurations

- Application independent (can be used with any EMME/2 data bank)
- Distributed with Enif
 - Novice user: can explore data bank in browsing mode
 - Advanced user: can use these configurations as a starting point for new ones
- More than 90 plot configurations and 20 list configurations
 - Structure similar to EMME/2 module groups
 - Usage described within the configuration (*Plot description*) or using *Help* menu
- Provide more comprehensive output choices than those currently available in EMME/2
 - Node pie charts
 - Network histogram
 - Matrix scattergram
 - Transit line load profile
 - Grid value on base network (functionalities of GRTOOL)
 - Polygons at nodes (functionalities of POLYZONE)
 - Diagram and network information on the same plot
 - ...

Generic configurations: Network

- Bare network

Easy windowing

Easy control of the display (pen and color)

“Query” capabilities on the plot (tips)

- Base network

Functionalities of module 2.13

- Base network with node boxes

Display nodes for a subset of nodes (possible in EMME/2, but only in option 6)

Node numbers and/or node value(s)

*Link selection determines active nodes (**isActive**)*

- Base network with annotation(s)

*Display annotx **and** other annotation files*

- Node value(s) on base network

Display several node attributes using different shapes, including pie charts

***Node tips** display the node identifier and value(s)*

- Link value(s) on base network

Numeric link values (no need to compute and store the result beforehand)

Easy multilayers

***Link tips** display the link identifier and modes*

- Link text on base network

Control of the text position

Possibility of displaying link values even if link is too short

- Node and link attributes on base network

Combines all of the above

Predefined choices correspond to module 2.13 options



- Auto network

- Street representation

- Red contours indicate prohibited side of traffic for one-way streets*

- Intersections on base network

- Default: display turning movements for all intersections nodes*

- Interactive selection of individual intersections: double-click (Full view)*

- Transit network

- Functionalities of module 2.23 (and more)*

- Transit line itinerary (line by line)

- Line selector: “up” and “down” arrows display one transit line after another*

- Print legend shows the line selection*

- Full view adjusted automatically*

- Line selection determines active nodes (**isActive**)*

- Transit line itineraries (several lines)

- isMarked**: lines selected from a transit line list*

- isActive**: lines passing through selected links*

- Transit lines on base network

- Predefined expressions correspond to the option 2 sub-menu*

- Multilayers possible*

- Transit segment value(s) at nodes

- Segment values accumulated at nodes*



- Network histograms (all network elements: mode, node, link, turn, vehicle, line, segment)

New functionality

- *<Network element> histogram*

Weight: one or several values

⇒ *single value: stylus vector is stretched to cover the X-range*

⇒ *multilayer: one stylus index per layer*

Bar tips *display the value of the expression for each bar*

- *Statistics*

- *Title and Descriptions*

- Network scattergrams (all network elements)

Functionalities of module 2.43 (and more)

- *<Network element> scattergram*

- *Regression*

- *Title, Descriptions and Symbols*

- Network symbols (all network elements)

New functionality



- Network tools
 - Shortest path between two nodes
 - Computed according to any specified link expression: predefined choices available*
 - Node tips display the node identifier and, for the leaf node, the path cost*
 - Shortest path forest
 - Interactive root selection: double-click (or Ctrl+double-click)*
 - Node tips*
 - Automatic update of the stylus index*
 - Isochrones
 - Interactive root selection*
 - Node tips*
 - Predefined choices for the stylus index: different travel time intervals*
 - Grid value on base network
 - Predefined choices for the link value*
 - Automatic scaling for coloring cells*
 - Grid cell tips display the grid value*
 - Polygons at nodes
 - Access to external file (including shape files)*
 - To convey more information: zonal information*
 - Asymmetric link attributes
 - Graphic representation of macro **validnet***
 - Predefined link selector to check length against Euclidean distance*
 - Link tips (value of reverse link shown in parentheses)*

Generic configurations: Matrices

- **Matrix value**
Functionalities of module 3.13
- **Desire lines for selected node(s)**
By origin or by destination (depending on active mapper)
Interaction (communication) between plots and lists
 - ⇒ *A plot can influence a list:*
e.g., highlighting a row in a list when clicking on an element in a plot
 - ⇒ *A list can influence a plot:*
e.g., modifying a plot by selecting an element in a list
- **Matrix value(s) by single origin or destination**
- **Matrices by origin and/or destination (chimneys)**

- **Matrix histogram**
Same design as for network histograms
- **Matrix scattergram**
New functionality
Same design as for network scattergrams
- **Comparison of matrix histograms**



Generic configurations: Functions

Functionalities of module 4.13

- One configuration for each type of function
 - Volume-delay functions
 - Transit time functions
 - Turn penalty functions
 - Auto demand functions
 - Transit demand functions
 - User functions
 - Generic functions

New functionality

Generic configurations: Assignment results

- Auto volumes
 - Functionalities of module 6.12 (options 1, 2 and 3), no turning movements on intersections*
 - Predefined link expressions*
 - Link tips display the link identifier, auto volumes and additional auto volumes*
- Link and turn auto volumes
 - Same functionalities but **with** turning movements on intersections*
 - Predefined link and turn expressions (⇒ turn attribute follows link attribute)*
- Auto speed and time
 - Functionalities of module 6.12 (options 4 and 5)*
 - By default: numeric values, no bars*
 - Link tips display the link identifier, auto speed and auto times*
- Auto volumes on intersections
- Grid values
 - Predefined link expressions using assignment results (e.g. to compute emissions for various types of pollutants)*



- **Transit volumes on links**
Functionalities of module 6.22, option 1
+ possibility of multilayers
Full view gives the smallest window that contains the links selected in the “Segment link value” mapper
- **Transit and auxiliary transit volumes**
Functionalities of module 6.22, option 3
- **Individual transit line volumes**
One mapper to display partial transit volumes
Another mapper to display total transit volumes
- **Boardings and alightings at nodes (pie charts)**
Functionalities of module 6.22, option 4
Node tips display the node identifier and value(s)
- **Boardings and alightings at stops (subset of lines)**
- **Transit segment attributes on links and nodes**
- **Transit line profile (with capacity)**
Bars represent segment volumes; part of the volume that exceeds capacity is displayed in red
Line selector: “up” and “down” arrows display one transit line after another (ranges adjusted automatically)
Diagram tips display number of boardings, alightings, through passengers and on-board passengers
- **Transit line profile and position on base network**
Can display both diagrams and network information on the same plot
- **Auto and transit assignment results**
Several types of results on the same plot
 - on links
 - on links and nodes

Generic configurations: Scenario comparison

- Compare link expression
Compare the result of a link expression for the first two scenarios on the network stack
- Compare auto volumes and times
*Functionalities of module 6.13
Associated list: Auto volumes and times comparison*
- Compare transit volumes
Functionalities of module 6.23
- Compare node values
New functionality
- Individual element comparisons (scattergrams)
*No need to compute the difference before generating the scattergram
Scattergram tips display the element identifier and the corresponding X,Y values*
 - Mode attributes
 - Node attributes
 - Link attributes
 - Turn attributes
 - Vehicle attributes
 - Line attributes
 - Segment attributes

Generic configurations: Other plots

- Legend
- Shape files
 - Access to external files (.shp, .dbf)*
 - ⇒ *To enhance graphic output*
 - ⇒ *To access external attributes*
- Annotations
 - Access to external ASCII files (annotx, .ann)*
- Image
 - Access to external bitmapped files (.jpeg, .png, .bmp, etc.)*
- Coordinate grid
- Constant histogram
- Constant scattergram
- Example of coordinate transformation
 - Easy network transformation (rotation, translation, scaling)*



Generic lists

- Network
 - Modes
 - Nodes
 - Can send and receive external markings*
 - Links
 - Can send and receive external markings*
 - Vehicles
 - Can send external markings*
 - Transit line summary
 - Transit line itineraries
 - Transit lines on base network (by node)
 - Transit lines on base network (by link)
 - Turning movements at intersections
- Matrices
 - Full matrix
 - Can display several values for each cell*

Generic lists (continued)

- Assignment results
 - Auto volumes and times (on links)
Functionalities of module 6.11, option 1
Can send and receive external markings
 - Auto volumes and times (on intersections)
Functionalities of module 6.11, option 2
Can send and receive external markings
 - Transit line summary
Functionalities of module 6.21, option 1
 - Assignment results by transit line
Functionalities of module 6.21, option 2
 - Transit results on base network
Functionalities of module 6.21, option 3
 - Transit volumes at nodes
Functionalities of module 6.21, option 4
 - Auto volumes and times comparison
Associated plot: Compare auto volumes and times

- Element pickers
 - Send marking signal on double-click*
 - Node, Zone or Intersection picker
 - Link picker
 - Line picker