Microsimulator Quick Reference

Version 4.0.75

Revision History
1/8/2010 Edited by AECOM Consult, Inc.
4/15/2010 Edited by RSG, Inc.

Syntax:

Microsimulator [-flag] [control_file]

Purpose:

1. Simulate the second-by-second movements of vehicles and persons through the network.
2. Generate performance statistics, track individual travelers, and summarize events.

Required Keys

NET_NODE_TABLE	[net_directory]*filename*
NET_LINK_TABLE	[net_directory]*filename*
NET_POCKET_LANE_TABLE	[net_directory]*filename*
NET_LANE_CONNECTIVITY_TABLE	[net_directory]*filename*
NET_PARKING_TABLE	[net_directory]*filename*
NET_ACTIVITY_LOCATION_TABLE	[net_directory]*filename*
NET_PROCESS_LINK_TABLE	[net_directory]*filename*
VEHICLE_FILE	[project_directory]*filename*
VEHICLE_TYPE_FILE	[project_directory]*filename*
PLAN_FILE	[project_directory]*filename*

Optional Keys

TITLE	text
REPORT_FILE	*filename*
REPORT_FLAG	FALSE {true/false/yes/no/1/0}
MAX_WARNING_MESSAGES	100,000
MAX_WARNING_EXIT_FLAG	TRUE {true/false/yes/no/1/0}
PROJECT_DIRECTORY	*pathname*
DEFAULT_FILE_FORMAT	VERSION3 {(4)}
TRAVELER_SCALING_FACTOR	100 {2..100}
NET_DIRECTORY	*pathname*
NET_LANE_USE_TABLE	[net_directory]*filename*
NET_TURN_PROHIBITION_TABLE	[net_directory]*filename*
NET_TRANSIT_STOP_TABLE	[net_directory]*filename*
NET_TRANSIT_FARE_TABLE	[net_directory]*filename*

NET_TRANSIT_ROUTE_TABLE	[net_directory]*filename*
NET_TRANSIT_SCHEDULE_TABLE	[net_directory]*filename*
NET_TRANSIT_DRIVER_TABLE	[net_directory]*filename*
NET_UNSIGNALIZED_NODE_TABLE	[net_directory]*filename*
NET_SIGNALIZED_NODE_TABLE	[net_directory]*filename*
NET_TIMING_PLAN_TABLE	[net_directory]*filename*
NET_PHASING_PLAN_TABLE	[net_directory]*filename*
NET_DETECTOR_TABLE	[net_directory]*filename*
NET_SIGNAL_COORDINATOR_TABLE	[net_directory]*filename*
SORT_VEHICLES	TRUE {true/false/yes/no/1/0}
PLAN_FORMAT	VERSION3 {VERSION3/BINARY}
NODE_LIST_PATHS	TRUE {true/false/yes/no/1/0}
NEW_PROBLEM_FILE	[project_directory]*filename*
NEW_PROBLEM_FORMAT	[default_file_format] {(4)}
MAX_SIMULATION_PROBLEMS	100,000 {0..100,000,000}
PRINT_PROBLEM_MESSAGES	FALSE {true/false/yes/no/1/0}
CELL_SIZE	7.5 meters {1.0..25.0}
TIME_STEPS_PER_SECOND	1 {1..25}
TIME_OF_DAY_FORMAT	24_HOUR_CLOCK {(5)}
SIMULATION_START_TIME	0:00 {0:00..24:00}
SIMULATION_END_TIME	24:00 {[simulation_start_time]..60:00}
SPEED_CALCULATION_METHOD	CELL-BASED {CELL/DISTANCE-BASED}
PLAN_FOLLOWING_DISTANCE	525 meters {0..2000}
LOOK_AHEAD_DISTANCE	260 meters {0..2000}
LOOK_AHEAD_LANE_FACTOR	4.0 {1.0..25.0}
LOOK_AHEAD_TIME_FACTOR	1.0 {0.0..5.0}
MAXIMUM_SWAPPING_SPEED	37.5 {0.0..40.0}
MAXIMUM_SPEED_DIFFERENCE	7.5 {0.0..10.0}
ENFORCE_PARKING_LANES	FALSE {true/false/yes/no/1/0}
FIX_VEHICLE_LOCATIONS	FALSE {true/false/yes/no/1/0}
DRIVER_REACTION_TIME	1.0 second {0.0..5.0, …} (7)
PERMISSION_PROBABILITY	50.0 percent {0.0..100.0, …} (7)
SLOW_DOWN_PROBABILITY	0.0 percent {0.0..100.0, …} (7)
SLOW_DOWN_PERCENTAGE	0.0 percent {0.0..50.0, …} (7)
RANDOM_NUMBER_SEED	0
MINIMUM_WAITING_TIME	180 seconds {0..6000}
MAXIMUM_WAITING_TIME	3600 seconds {0..9000}
MAX_ARRIVAL_TIME_VARIANCE	60 minutes {0..180}
MAX_DEPARTURE_TIME_VARIANCE	60 minutes {0..180}
OUTPUT_TRAVELER_RANGE_#	(1) {1..[traveler ID]}

OUTPUT_TRAVELER_FILE_#	[project_directory]*filename*
OUTPUT_TRAVELER_FORMAT_#	[default_file_format] {(4)}
OUTPUT_TRAVELER_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_TRAVELER_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_TRAVELER_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_SNAPSHOT_FILE_#	[project_directory]*filename*
OUTPUT_SNAPSHOT_FORMAT_#	[default_file_format] {(4)}
OUTPUT_SNAPSHOT_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_SHAPSHOT_INCREMENT_#	900 seconds {1..3600}
OUTPUT_SNAPSHOT_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_SNAPSHOT_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_SNAPSHOT_COORDINATES_#	x1, y1, x2, y2 (6)
OUTPUT_SNAPSHOT_MAX_SIZE_#	0 megabytes (unconstrained) {0..2048}
OUTPUT_SNAPSHOT_LOCATION_FLAG_#	FALSE {true/false/yes/no/1/0} (10)
OUTPUT_SUMMARY_FILE_#	[project_directory]*filename*
OUTPUT_SUMMARY_FORMAT_#	[default_file_format] {(4)}
OUTPUT_SUMMARY_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_SUMMARY_INCREMENT_#	900 seconds {1..3600}
OUTPUT_SUMMARY_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_SUMMARY_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_SUMMARY_TURN_FLAG_#	FALSE {true/false/yes/no/1/0}
OUTPUT_SUMMARY_PCE_FLAG_#	FALSE {true/false/yes/no/1/0} (9)
OUTPUT_SUMMARY_PERSON_FLAG_#	FALSE {true/false/yes/no/1/0} (11)
OUTPUT_SUMMARY_COORDINATES_#	x1, y1, x2, y2 (6)
OUTPUT_SUMMARY_VEH_TYPES_#	All (1)
OUTPUT_PROBLEM_TYPE_#	(3)
OUTPUT_PROBLEM_FILE_#	[project_directory]*filename*
OUTPUT_PROBLEM_FORMAT_#	[default_file_format] {(4)}
OUTPUT_PROBLEM_FILTER_#	100 problems {1+}
OUTPUT_PROBLEM_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_PROBLEM_INCREMENT_#	900 seconds {1..3600}
OUTPUT_PROBLEM_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_PROBLEM_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_SYSTEM_EVENT_TYPE_#	TIMING_CHANGE {PHASE_CHANGE}
OUTPUT_SYSTEM_EVENT_FILE_#	[project_directory]*filename*
OUTPUT_SYSTEM_EVENT_FORMAT_#	[default_file_format] {(4)}
OUTPUT_SYSTEM_EVENT_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_SYSTEM_EVENT_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_SYSTEM_EVENT_NODE_RANGE_#	(1) {0..[node ID]}
OUTPUT_EVENT_TYPE_#	START_TIME {END_TIME, RUN_TIME}

OUTPUT_EVENT_FILE_#	[project_directory]*filename*
OUTPUT_EVENT_FORMAT_#	[default_file_format] {(4)}
OUTPUT_EVENT_FILTER_#	0 seconds different {0..10000}
OUTPUT_EVENT_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_EVENT_INCREMENT_#	900 seconds {1..3600}
OUTPUT_EVENT_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_EVENT_MODE_RANGE_#	{1,2,3,4,5,6,7,8,9}
OUTPUT_TURN_FILE_#	[project_directory]*filename*
OUTPUT_TURN_FORMAT_#	[default_file_format] {(4)}
OUTPUT_TURN_FILTER_#	1 vehicles {0..10000}
OUTPUT_TURN_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_TURN_INCREMENT_#	900 seconds {1..3600}
OUTPUT_TURN_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_TURN_NODE_RANGE_#	(1) {0..[node ID]}
OUTPUT_RIDERSHIP_FILE_#	[project_directory]*filename*
OUTPUT_RIDERSHIP_FORMAT_#	[default_file_format] {(4)}
OUTPUT_RIDERSHIP_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_RIDERSHIP_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_RIDERSHIP_ROUTE_RANGE_#	(1) {0..[route ID]}
OUTPUT_RIDERSHIP_ALL_STOPS_#	FALSE {true/false/yes/no/1/0} (12)
OUTPUT_OCCUPANCY_FILE_#	[project_directory]*filename*
OUTPUT_OCCUPANCY_FORMAT_#	[default_file_format] {(4)}
OUTPUT_OCCUPANCY_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_OCCUPANCY_INCREMENT_#	900 seconds {1..3600}
OUTPUT_OCCUPANCY_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_OCCUPANCY_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_OCCUPANCY_MAX_FLAG_#	FALSE {true/false/yes/no/1/0} (8)
OUTPUT_OCCUPANCY_COORDINATES_#	x1, y1, x2, y2 (6)
OUTPUT_SPEED_FILE_#	[project_directory]*filename*
OUTPUT_SPEED_FORMAT_#	[default_file_format] {(4)}
OUTPUT_SPEED_VEHICLE_TYPE_#	[default_file_format] {(4)}
OUTPUT_SPEED_FILTER_#	1 vehicle {1+}
OUTPUT_SPEED_TIME_FORMAT_#	SECONDS {(5)}
OUTPUT_SPEED_INCREMENT_#	24:00 {> 0}
OUTPUT_SPEED_TIME_RANGE_#	(2) {0:00..24:00}
OUTPUT_SPEED_LINK_RANGE_#	(1) {0..[link ID]}
OUTPUT_SPEED_SAMPLE_TIME_#	1 {>0}
OUTPUT_SPEED_BOX_LENGTH_#	0 (full link length) {0> meters)
OUTPUT_SPEED_NUM_BINS_#	6 {>0}
NET_DEFAULT_FORMAT	[default_file_format] {(4)}

NET_NODE_FORMAT	[net_default_format] {(4)}
NET_LINK_FORMAT	[net_default_format] {(4)}
NET_POCKET_LANE_FORMAT	[net_default_format] {(4)}
NET_LANE_CONNECTIVITY_FORMAT	[net_default_format] {(4)}
NET_PARKING_FORMAT	[net_default_format] {(4)}
NET_ACTIVITY_LOCATION_FORMAT	[net_default_format] {(4)}
NET_PROCESS_LINK_FORMAT	[net_default_format] {(4)}
NET_LANE_USE_FORMAT	[net_default_format] {(4)}
NET_TURN_PROHIBITION_FORMAT	[net_default_format] {(4)}
NET_TRANSIT_STOP_FORMAT	[net_default_format] {(4)}
NET_TRANSIT_FARE_FORMAT	[net_default_format] {(4)}
NET_TRANSIT_ROUTE_FORMAT	[net_default_format] {(4)}
NET_TRANSIT_SCHEDULE_FORMAT	[net_default_format] {(4)}
NET_TRANSIT_DRIVER_FORMAT	[net_default_format] {(4)}
NET_UNSIGNALIZED_NODE_FORMAT	[net_default_format] {(4)}
NET_SIGNALIZED_NODE_FORMAT	[net_default_format] {(4)}
NET_TIMING_PLAN_FORMAT	[net_default_format] {(4)}
NET_PHASING_PLAN_FORMAT	[net_default_format] {(4)}
NET_DETECTOR_FORMAT	[net_default_format] {(4)}
NET_SIGNAL_COORDINATOR_FORMAT	[net_default_format] {(4)}
DEMAND_FILE_FORMAT	[default_file_format] {(4)}
VEHICLE_FORMAT	[demand_file_format] {(4)}

Notes

1	ID Range (e.g., 1000, 2000, 3000..3100)
2	Time Range (e.g., 0:00..6:00, 18:00..23:00)
3	TOTAL, PATH_BUILDING, TIME_SCHEDULE, ZERO_NODE, VEHICLE_TYPE, PATH_CIRCUITY, TRAVEL_MODE, VEHICLE_ACCESS, WALK_DISTANCE, WAIT_TIME, WALK_ACCESS, PATH_SIZE, PARK-&-RIDE_LOT, BIKE_DISTANCE, DEPARTURE_TIME, ARRIVAL_TIME, LINK_ACCESS, LANE_CONNECTIVITY, PARKING_ACCESS, LANE_MERGING, LANE_CHANGING, TURNING_SPEED, POCKET_MERGE, VEHICLE_SPACING, TRAFFIC_CONTROL, ACCESS_RESTRICTION
4	{VERSION3, BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, CSV_DELIMITED, DBASE, LANL, SQLITE3}
5	{HOURS, SECONDS, 24_HOUR_CLOCK, 12_HOUR_CLOCK}
6	UTM node coordinate range = selection rectangle based on path nodes or trip ends
7	Vehicle behavior parameters can be specified by facility type (e.g., 10, 20, 30, …)
8	True outputs the vehicle locations for the time step with the maximum link occupancy. False outputs the total number of time steps that each cell is occupied.
9	A True PCE flag outputs volume totals as passenger car equivalences based on the number of cells for each vehicle type listed in the Vehicle Type file.

10	If the location flag is true, the Version 4.0 format snapshot file will include X, Y, Z, and Bearing fields for the vehicle position. These positions are typically updated by the ArcSnapshot program to include the link shape and lane offset.
11	If true, the output values included in the summary file will be weighted by vehicle occupancy (included transit vehicle riders). This changes all of the statistics from vehicle volumes/speeds/etc to person volumes/speeds/etc.
12	True outputs all stop records in the ridership file regardless of the number of boardings, alightings or riders at a particular stop. False outputs only the stop records where there is at least one boarding, alighting or rider.