

Traffic Patterns Global Specifications

Version: 1.8

Release Date: May 2019

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From v1.2 to v1.3

From v1.1 to v1.2

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Document Control

Version	Date
1.0	8 July 2010
1.1	6 December 2010
1.2	22 March 2011
1.3	14 December 2012
1.4	23 January 2013
1.5	25 July 2013
1.6	2 December 2016
1.7	16 March 2017
1.8	17 May 2019



Introduction

These Product Specifications describe the structure of Traffic Patterns (all product variations).

Traffic Patterns Overview

Traffic Patterns is a database of average traffic flow velocity for roadways geo-referenced to the HERE Map Content. Traffic Patterns provides the foundation for alternate route features and more accurate drive time estimates for logistics and navigation products.

More specifically, Traffic Patterns is:

- A set of look-aside tables in .CSV format.
- Delivered per product region (usually continent)
- Geo-referenced to the following features in the HERE Map Content:
 - Traffic Message Channel (TMC) location codes
 - Link IDs
- Designed to provide flow velocities in kilometers per hour or miles per hour, to one KPH / MPH increments (depending on unit of measurement per country).
- Comprised of models for the following days:
 - Monday
 - Tuesday
 - Wednesday
 - Thursday
 - Friday
 - Saturday
 - Sunday
- Any combination of the above
- Offered in two levels of granularity:
 - 60 minute (one speed value per hour)
 - 15 minute (one speed limit value per 15 minute period)
- Referenced to local time (no need to account for time zones or seasonal time changes).

Coverage

TMC-Referenced

Traffic Patterns covers all roads coded with TMC location codes in the HERE Map Content in included countries. See release notes for list of included countries and specific Location Table versions used.

Link-Referenced

Traffic Patterns covers all roads included in the HERE Map Content in included countries, unless otherwise stated in the release notes. See release notes for list of included countries / cities and specific map version used. A few specific kinds of links are not covered, because they are not navigable roadways: ferry links, rail links, and any link that is not marked as accessible by emergency vehicles.

TMC-Referenced Flat Format

Product Variations Summary

Each model is represented as a separate .CSV file and contains data for a combination of one of each of the following:

- Country
- Day of Week
- Time Granularity

Additionally, the following appendices may be available, depending on the Product Region.

- Holiday Appendix

Finally, each product release includes a metadata file.

Table 1

Product Region	Daily Models		Combined Models		Granularity		Appendices
	Per Country	Per Product Region	Mon-Thur	Sat-Sun	15 min	60 min	Holiday Appendix
Asia Pacific	X	X	X	X	X	X	X*
Europe	X	X	X	X	X	X	X*
India	X	X	X	X	X	X	X
Oceania	X	X	X	X	X	X	X
Middle East & Africa	X	X	X	X	X	X	
North America	X		X	X	X	X	X*
South America	X	X	X	X	X	X	

* selected countries within Product Region. See Product Release Notes for details.

Country

Traffic Patterns Flat Format models are available as individual files per country. In all product regions except North America Flat Format models at the product region level are also available. These contain the combined information for all individual countries included in that particular product release.

Day of Week

Traffic Patterns models for the following days are provided:

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday
- Any combination of the above

Time Granularity

Traffic Patterns models with the following levels of time granularity are provided:

- 60 minute (one speed value per hour)
- 15 minute (one speed value per 15 minute period)

File Format (15 Minute Model)

Contains 96 speed values per TMC location (four per hour). Sample below shows 4 hour time period (10:00 – 14:00).

Field Name	Type	Example	Description
TMC	Text	D01N04474	Traffic Location code in the format of: CLLDTTTT Where: <ul style="list-style-type: none"> C is the Country Code (1 digit)* LL is the Location Table Number (2 digits)* D is the TMC path direction ('P' or 'N') <ul style="list-style-type: none"> - N refers to both 'N' and '-' coding - P refers to both 'P' and '+' coding TTTT is the TMC location (5 digits)
H10_00	Integer	44	Derived traffic velocities for the period 10:00:00 to 10:14:59, local time. This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on country*.

			* see Metadata File section in Country Specific Appendices for values.
H10_15	Integer	44	As above, 10:15:00 to 10:29:59 local time
H10_30	Integer	44	As above, 10:30:00 to 10:44:59 local time
H10_45	Integer	44	As above, 10:45:00 to 10:59:59 local time
H11_00	Integer	44	As above, 11:00:00 to 11:14:59 local time
H11_15	Integer	42	As above, 11:15:00 to 11:29:59 local time
H11_30	Integer	35	As above, 11:30:00 to 11:44:59 local time
H11_45	Integer	35	As above, 11:45:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:14:59 local time
H12_15	Integer	34	As above, 12:15:00 to 12:29:59 local time
H12_30	Integer	34	As above, 12:30:00 to 12:44:59 local time
H12_45	Integer	34	As above, 12:45:00 to 12:59:59 local time
H13_00	Integer	34	As above, 13:00:00 to 13:14:59 local time
H13_15	Integer	34	As above, 13:15:00 to 13:29:59 local time
H13_30	Integer	34	As above, 13:30:00 to 13:44:59 local time
H13_45	Integer	34	As above, 13:45:00 to 13:59:59 local time

File Format (60 Minute Model)

Contains 24 speed values per TMC location (one per hour).

Field Name	Type	Example	Description
TMC	Text	D01N04474	Traffic Location code in the format of: CLLDTTTTT Where: C is the Country Code (1 digit)* LL is the Location Table Number (2 digits)* D is the TMC path direction ('P' or 'N') - N refers to both 'N' and '-' coding - P refers to both 'P' and '+' coding TTTTT is the TMC location (5 digits)
H00_00	Integer	44	Derived traffic velocities for the period 00:00:00 to 00:59:59, local time. This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on country*. * see Metadata File section in Country Specific Appendices for values.
H01_00	Integer	44	As above, 01:00:00 to 01:59:59 local time
H02_00	Integer	44	As above, 02:00:00 to 02:59:59 local time
H03_00	Integer	44	As above, 03:00:00 to 03:59:59 local time
H04_00	Integer	44	As above, 04:00:00 to 04:59:59 local time
H05_00	Integer	42	As above, 05:00:00 to 05:59:59 local time
H06_00	Integer	35	As above, 06:00:00 to 06:59:59 local time
H07_00	Integer	35	As above, 07:00:00 to 07:59:59 local time
H08_00	Integer	35	As above, 08:00:00 to 08:59:59 local time
H09_00	Integer	35	As above, 09:00:00 to 09:59:59 local time
H10_00	Integer	35	As above, 10:00:00 to 10:59:59 local time
H11_00	Integer	35	As above, 11:00:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:59:59 local time
H13_00	Integer	35	As above, 13:00:00 to 13:59:59 local time

H14_00	Integer	35	As above, 14:00:00 to 14:59:59 local time
H15_00	Integer	35	As above, 15:00:00 to 15:59:59 local time
H16_00	Integer	35	As above, 16:00:00 to 16:59:59 local time
H17_00	Integer	35	As above, 17:00:00 to 17:59:59 local time
H18_00	Integer	35	As above, 18:00:00 to 18:59:59 local time
H19_00	Integer	35	As above, 19:00:00 to 19:59:59 local time
H20_00	Integer	35	As above, 20:00:00 to 20:59:59 local time
H21_00	Integer	35	As above, 21:00:00 to 21:59:59 local time
H22_00	Integer	35	As above, 22:00:00 to 22:59:59 local time
H23_00	Integer	35	As above, 23:00:00 to 23:59:59 local time

Model Visualisation

Sample below shows 60 minute model.

TMC	H00_00	H01_00	H02_00	H03_00	H04_00	H05_00	H06_00	H07_00	H08_00	H09_00	H10_00	H11_00	H12_00	H13_00	H14_00	H15_00	H16_00	H17_00	H18_00	H19_00	H20_00	H21_00	H22_00	H23_00
D01N04474	44	44	44	44	44	42	35	35	35	34	34	34	34	34	34	34	34	35	35	36	38	39	44	44
D01N09730	36	36	36	36	36	35	34	33	30	30	29	29	29	29	29	28	27	27	28	29	31	34	36	36
D01N10030	84	84	84	84	84	81	70	70	70	70	71	71	71	71	71	71	71	72	73	74	77	79	84	84
D01N10002	100	100	100	100	100	100	100	98	99	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100
D01N10003	107	107	107	107	107	107	96	96	96	96	96	96	96	96	96	96	97	98	98	100	101	102	107	107
D01N10004	133	133	133	133	133	132	113	113	112	113	113	113	113	113	113	114	114	115	117	118	120	123	133	133
D01N10005	136	136	136	136	136	135	115	115	115	116	116	116	116	117	117	117	118	119	120	122	124	126	136	136
D01N10006	117	117	117	117	117	117	102	102	102	102	103	103	103	103	103	103	104	105	106	107	109	110	117	117
D01N10007	134	134	134	134	134	133	112	112	112	112	113	113	113	113	113	114	114	115	117	119	121	123	134	134

Holiday Appendix

In addition to the models described in the previous sections, Traffic Patterns features Holiday Appendices for use on major holidays and surrounding days where the holiday has been observed to impact typical levels of traffic. This data accounts for:

- less traffic due to the absence of work-day commuting.
- more traffic due to recreational travel.

The Model referenced in the Holiday Appendix is designed to substitute the Daily Model (flat format) or Speed Pattern (relational models) that would normally apply on that day of the week.

For example, Memorial Day in the United States does not exhibit the same patterns of congestion as a typical Monday. If the Sunday model more accurately represents the patterns of traffic on Memorial Day, the Sunday model would be referenced in the Holiday Appendix.

Holiday Appendices are available for certain countries in each region. See Product Release Notes for details of the Countries with a Holiday Appendix and days included per Country.

File Format (Holiday Appendix)

Field Name	Type	Example	Description
HOLIDAY	Text	LABOR DAY	The name of the holiday or affected day.
MONTH	Integer	9	The month in which the holiday falls, starting at 1 with January; e.g. 9 = September.
MIN_DAY	Integer	1	The earliest date the holiday can fall on in the given month.* This field is equal to MAX_DAY for fixed holidays.
MAX_DAY	Integer	7	The latest date the holiday can fall on in the given month.* This field is equal to MIN_DAY for fixed holidays.
DAY_OF_WEEK	Integer	2	The day of the week that the holiday falls on, starting at 1 with Sunday; e.g. 2 = Monday.
MODEL	Text	NTP_USA_15MIN_U_09400.csv	The file name of the traffic model to use for the holiday (relevant for TMC Flat Format product variation only).
DOW_SPEED_PATTERN	Text	U	The speed pattern to use for the holiday (relevant for Link Relational and TMC Relational product variations only).

*This does not fluctuate for fixed holidays, i.e., those that fall on the exact same date each year (e.g., Independence Day).

Holiday Appendix Visualisation

The sample below shows a selection of days included in the United States Holiday Appendix. For a complete list per country see Product Release Notes.

HOLIDAY	MONTH	MIN_DAY	MAX_DAY	DAY_OF_WEEK	MODEL	DOW_SPEED_PATTERN
INDEPENDENCE DAY	7	4	4	1	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	2	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	3	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	4	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	5	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	6	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	7	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	1	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	2	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	3	NTP_USA_15MIN_T_09400.csv	T
DAY AFTER INDEPENDENCE DAY	7	5	5	4	NTP_USA_15MIN_W_09400.csv	W
DAY AFTER INDEPENDENCE DAY	7	5	5	5	NTP_USA_15MIN_R_09400.csv	R
DAY AFTER INDEPENDENCE DAY	7	5	5	6	NTP_USA_15MIN_S_09400.csv	S
DAY AFTER INDEPENDENCE DAY	7	5	5	7	NTP_USA_15MIN_U_09400.csv	U
LABOR DAY	9	1	7	2	NTP_USA_15MIN_U_09400.csv	U
THANKSGIVING DAY	11	22	28	5	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER THANKSGIVING	11	23	29	6	NTP_USA_15MIN_S_09400.csv	S
2 DAYS AFTER THANKSGIVING	11	24	30	7	NTP_USA_15MIN_U_09400.csv	U

Metadata File

One metadata file contains information relating to all included models. Specifically, the following information is provided:

- Reference to Traffic Patterns product release version
- Filename for each model
- Speed Value Measurement (KPH / MPH) for each model
- Country Name for each country
- Country Code for each country
- Location Table Number for each country

Metadata File Visualisation

The example below illustrates the layout of the file but does not necessarily reflect the content of the Traffic Patterns product delivered with this document.

METADATA FOR TRAFFIC PATTERNS EUROPE V9.0 TMC 2012.4				
FILE_NAME		SPEED_VALUE_MEASUREMENT		
NTP_DEU_60MIN_M_12400.csv		KPH		
NTP_DEU_60MIN_T_12400.csv		KPH		
NTP_DEU_60MIN_W_12400.csv		KPH		
NTP_DEU_60MIN_R_12400.csv		KPH		
COUNTRY		COUNTRY_CODE	TABLE_CODE	
GERMANY		D	1	



TMC-Referenced Relational Format

Product Variations Summary

Each TMC-referenced Relational Format product release consists of:

- Four Speed Patterns Dictionary (SPD) files, each one representing a different combination of:
- unit of measure (i.e. KPH/MPH)
- time granularity (e.g. 15 minutes, 60 minutes)
- One TMC Reference Table per included Country / Product Region (see Table 2).
- One metadata file.

Additionally, the following appendices may be available, depending on the Product Region:

- Holiday Appendix

Table 2

Product Region	TMC Reference Table		SPD Variations				Appendices
	Per Country	Per Product Region	15 min KPH	15 min MPH	60 min KPH	60 min MPH	Holiday Appendix
Asia Pacific	X	X	X	X	X	X	X*
Europe	X	X	X	X	X	X	X*
India	X	X	X	X	X	X	X
Oceania	X	X	X	X	X	X	X
Middle East & Africa	X	X	X	X	X	X	
North America	X		X	X	X	X	X*
South America	X	X	X	X	X	X	

*selected countries within Product Region. See Product Release Notes for details.

Time Granularity

SPDs with the following levels of time granularity are provided:

- 60 minute (one speed value per hour)
- 15 minute (one speed value per 15 minute period)

See File Format section for more details.

Unit of Measure

SPDs for the following units of measure are provided:

- KPH
- MPH

Country vs. Product Region

TMC Reference Tables are available as individual files per country. In Europe and Oceania TMC Reference Tables at the continent level are also available. These contain the combined information for all individual countries included in that particular product release.

Speed Patterns Dictionary (SPD)

Each SPD is represented as a.csv file (per product region) and contains data for a combination of one of each of the following:

- Time Granularity
- Unit of Measure

Speed Patterns in the SPD are numbered sequentially.

When a product contains multiple SPDs, the Speed Patterns reference numbers in each SPD represent the same speed patterns across all SPDs within that (version of the) Traffic Patterns product. For example, Speed Pattern 123 in a KPH file is equivalent to Speed Pattern 123 in the corresponding MPH file. Additionally, Speed Pattern 123 in a 15 minute file is equivalent to Speed Pattern 123 in the corresponding 60 minute file.

However, Speed Patterns reference numbers are not permanent or unique across different versions of the Traffic Patterns product. For example, Speed Pattern 123 does not necessarily represent the same pattern in V3.0 as in V4.0. Speed Pattern 123 also does not necessarily represent the same pattern in two different product regions (e.g. Europe and North America), even if both have the same version number, are geo-referenced to the same version of the HERE Map Content, or are released within the same quarter.

The total number of Speed Patterns included in each version can also vary.

File Format (15 Minute Model)

Contains 96 speed values per identified Speed Pattern (four per hour). Sample below shows 4 hour time period (10:00 – 14:00).

Field Name	Type	Example	Description
Speed Pattern	Number	123	Sequential number, unique within each SPD file.
H10_00	Integer	44	Derived traffic velocities for the period 10:00:00 to 10:14:59, local time.



			This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on SPD file.
H10_15	Integer	44	As above, 10:15:00 to 10:29:59 local time
H10_30	Integer	44	As above, 10:30:00 to 10:44:59 local time
H10_45	Integer	44	As above, 10:45:00 to 10:59:59 local time
H11_00	Integer	44	As above, 11:00:00 to 11:14:59 local time
H11_15	Integer	42	As above, 11:15:00 to 11:29:59 local time
H11_30	Integer	35	As above, 11:30:00 to 11:44:59 local time
H11_45	Integer	35	As above, 11:45:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:14:59 local time
H12_15	Integer	34	As above, 12:15:00 to 12:29:59 local time
H12_30	Integer	34	As above, 12:30:00 to 12:44:59 local time
H12_45	Integer	34	As above, 12:45:00 to 12:59:59 local time
H13_00	Integer	34	As above, 13:00:00 to 13:14:59 local time
H13_15	Integer	34	As above, 13:15:00 to 13:29:59 local time
H13_30	Integer	34	As above, 13:30:00 to 13:44:59 local time
H13_45	Integer	34	As above, 13:45:00 to 13:59:59 local time

File Format (60 Minute Model)

Contains 24 speed values per identified Speed Pattern (one per hour).

Field Name	Type	Example	Description
Speed Pattern	Number	123	Sequential number, unique within each SPD file.
H00_00	Integer	44	Derived traffic velocities for the period 00:00:00 to 00:59:59, local time. This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on SPD file.
H01_00	Integer	44	As above, 01:00:00 to 01:59:59 local time
H02_00	Integer	44	As above, 02:00:00 to 02:59:59 local time
H03_00	Integer	44	As above, 03:00:00 to 03:59:59 local time
H04_00	Integer	44	As above, 04:00:00 to 04:59:59 local time
H05_00	Integer	42	As above, 05:00:00 to 05:59:59 local time
H06_00	Integer	35	As above, 06:00:00 to 06:59:59 local time
H07_00	Integer	35	As above, 07:00:00 to 07:59:59 local time
H08_00	Integer	35	As above, 08:00:00 to 08:59:59 local time
H09_00	Integer	35	As above, 09:00:00 to 09:59:59 local time
H10_00	Integer	35	As above, 10:00:00 to 10:59:59 local time
H11_00	Integer	35	As above, 11:00:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:59:59 local time
H13_00	Integer	35	As above, 13:00:00 to 13:59:59 local time
H14_00	Integer	35	As above, 14:00:00 to 14:59:59 local time
H15_00	Integer	35	As above, 15:00:00 to 15:59:59 local time
H16_00	Integer	35	As above, 16:00:00 to 16:59:59 local time
H17_00	Integer	35	As above, 17:00:00 to 17:59:59 local time
H18_00	Integer	35	As above, 18:00:00 to 18:59:59 local time
H19_00	Integer	35	As above, 19:00:00 to 19:59:59 local time
H20_00	Integer	35	As above, 20:00:00 to 20:59:59 local time
H21_00	Integer	35	As above, 21:00:00 to 21:59:59 local time

H22_00	Integer	35	As above, 22:00:00 to 22:59:59 local time
H23_00	Integer	35	As above, 23:00:00 to 23:59:59 local time

SPD Visualisation

Sample below shows one hour time period of a 15 minute SPD in KPH.

	Time			
Speed Pattern ID	H08_00	H08_15	H08_30	H08_45
1	105	106	106	105
2	99	99	98	98
3	58	58	58	59
4	104	106	106	106
5	43	43	42	42
6	39	38	37	36
7	94	102	102	102
8	83	84	85	85

TMC Reference Tables

Each TMC Reference Table is represented as a.csv file. TMC Reference Tables cover all roads coded with TMC in the HERE Map Content in included countries. See release notes for list of included countries and specific Location Table versions used.

File Format (TMC Reference Table)

Field Name	Type	Example	Description
TMC	Text	D01N04474	Traffic Location code in the format of: CLLDTTTTT Where: <ul style="list-style-type: none"> C is the Country Code (1 digit)* LL is the Location Table Number (2 digits)* D is the TMC path direction ('P' or 'N') <ul style="list-style-type: none"> - N refers to both 'N' and '-' coding - P refers to both 'P' and '+' coding TTTTT is the TMC location (5 digits)
U	Integer	14	Defines the relevant Speed Pattern for Sundays. The reference number refers to a Speed Pattern contained in the SPD(s) belonging to the same Traffic Patterns product version as the TMC Reference Table.
M	Integer	123	As above, for Mondays
T	Integer	560	As above, for Tuesdays
W	Integer	4	As above, for Wednesdays
R	Integer	72	As above, for Thursdays
F	Integer	94	As above, for Fridays
S	Integer	63	As above, for Saturdays

TMC Reference Table Visualisation

Sample below shows Germany.

	Day of Week						
TMC	U	M	T	W	R	F	S
D01N04098	415	415	415	415	82	483	415
D01N04099	415	483	483	483	171	85	415
D01N04100	415	171	85	85	198	292	415
D01N04D01	415	415	415	415	82	171	415
D01N04102	415	415	415	415	415	415	415
D01N04103	415	415	415	415	415	415	415
D01N04104	262	262	262	262	262	262	262
D01N04105	262	288	288	261	261	261	262

Holiday Appendix

In addition to the models described in the previous sections, Traffic Patterns features Holiday Appendices for use on major holidays and surrounding days where the holiday has been observed to impact typical levels of traffic. This data accounts for:

- less traffic due to the absence of work-day commuting.
- more traffic due to recreational travel.

The Model referenced in the Holiday Appendix is designed to substitute the Daily Model (flat format) or Speed Pattern (relational models) that would normally apply on that day of the week.

For example, Memorial Day in the United States does not exhibit the same patterns of congestion as a typical Monday. If the Sunday model more accurately represents the patterns of traffic on Memorial Day, the Sunday model would be referenced in the Holiday Appendix.

Holiday Appendices are available for certain countries in each region. See Product Release Notes for details of the Countries with a Holiday Appendix and days included per Country.

File Format (Holiday Appendix)

Field Name	Type	Example	Description
HOLIDAY	Text	LABOR DAY	The name of the holiday or affected day.
MONTH	Integer	9	The month in which the holiday falls, starting at 1 with January; e.g. 9 = September.
MIN_DAY	Integer	1	The earliest date the holiday can fall on in the given month.* This field is equal to MAX_DAY for fixed holidays.
MAX_DAY	Integer	7	The latest date the holiday can fall on in the given month.* This field is equal to MIN_DAY for fixed holidays.
DAY_OF_WEEK	Integer	2	The day of the week that the holiday falls on, starting at 1 with Sunday; e.g. 2 = Monday.
MODEL	Text	NTP_USA_15MIN_U_09400.csv	The file name of the traffic model to use for the holiday (relevant for TMC Flat Format product variation only).
DOW_SPEED_PATTERN	Text	U	The speed pattern to use for the holiday (relevant for Link Relational and TMC Relational product variations only).

*This does not fluctuate for fixed holidays, i.e., those that fall on the exact same date each year (e.g., Independence Day).

Holiday Appendix Visualisation

The sample below shows a selection of days included in the United States Holiday Appendix. For a complete list per country see Product Release Notes.

HOLIDAY	MONTH	MIN_DAY	MAX_DAY	DAY_OF_WEEK	MODEL	DOW_SPEED_PATTERN
INDEPENDENCE DAY	7	4	4	1	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	2	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	3	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	4	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	5	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	6	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	7	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	1	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	2	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	3	NTP_USA_15MIN_T_09400.csv	T
DAY AFTER INDEPENDENCE DAY	7	5	5	4	NTP_USA_15MIN_W_09400.csv	W
DAY AFTER INDEPENDENCE DAY	7	5	5	5	NTP_USA_15MIN_R_09400.csv	R
DAY AFTER INDEPENDENCE DAY	7	5	5	6	NTP_USA_15MIN_S_09400.csv	S
DAY AFTER INDEPENDENCE DAY	7	5	5	7	NTP_USA_15MIN_U_09400.csv	U
LABOR DAY	9	1	7	2	NTP_USA_15MIN_U_09400.csv	U
THANKSGIVING DAY	11	22	28	5	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER THANKSGIVING	11	23	29	6	NTP_USA_15MIN_S_09400.csv	S
2 DAYS AFTER THANKSGIVING	11	24	30	7	NTP_USA_15MIN_U_09400.csv	U

Metadata File

One metadata file contains information relating to all included files. Specifically, the following information is provided:

- Reference to Traffic Patterns product release version
- Filename for each model
- Speed Value Measurement (KPH / MPH) for each model
- Country Name for each country
- Country Code for each country
- Location Table Number for each country

Metadata File Visualisation

The example below illustrates the layout of the file but does not necessarily reflect the content of the Traffic Patterns product delivered with this document.

METADATA FOR TRAFFIC PATTERNS EUROPE V9.0 TMC 2012.4				
FILE_NAME		SPEED_VALUE_MEASUREMENT		
NTP_REF_AUT_TMC_12400.csv				
NTP_REF_BEL_TMC_12400.csv				
NTP_REF_DEU_TMC_12400.csv				
NTP_REF_EU_TMC_12400.csv				
NTP_SPD_EU_15MIN_KPH_12400.csv		KPH		
NTP_SPD_EU_15MIN_MPH_12400.csv		MPH		
NTP_SPD_EU_60MIN_KPH_12400.csv		KPH		
NTP_SPD_EU_60MIN_MPH_12400.csv		MPH		
COUNTRY		COUNTRY_CODE		TABLE_CODE
AUSTRIA		A		1
BELGIUM		6		1
GERMANY		D		1

Link-Referenced Relational Format

Product Variations Summary

Each Link-referenced Relational Format product release consists of:

- Four Speed Patterns Dictionary (SPD) files, each one representing a different combination of:
 - unit of measure (i.e. KPH/MPH)
 - time granularity (e.g. 15 minutes, 60 minutes)
- Two Link Reference Tables:
 - One covering Functional Classes 1-4 per Product Region
 - One covering Functional Class 5 per Product Region
- Two Country Look-up Tables:
 - One covering Functional Classes 1-4 per Product Region
 - One covering Functional Class 5 per Product Region

Additionally, the following appendices may be available, depending on the Product Region:

- Holiday Appendix

Table 3

Product Region	Link Reference & Country Look-up Tables (x2 of each)		SPD Variations				Appendices
	Per Country	Per Product Region	15 min KPH	15 min MPH	60 min KPH	60 min MPH	Holiday Appendix
Asia Pacific		X	X	X	X	X	X*
Europe		X	X	X	X	X	X*
India		X	X	X	X	X	X
Oceania		X	X	X	X	X	X
Middle East & Africa		X	X	X	X	X	
North America		X	X	X	X	X	X*
South America		X	X	X	X	X	

* selected countries within Product Region. See Product Release Notes for details.

Time Granularity

SPDs with the following levels of time granularity are provided:

- 60 minute (one speed value per hour)
- 15 minute (one speed value per 15 minute period)

See *File Format* section for more details.

Unit of Measure

SPDs for the following units of measure are provided:

- KPH
- MPH

Speed Patterns Dictionary (SPD)

Each SPD is represented as a.csv file (per product region) and contains data for a combination of one of each of the following:

- Time Granularity
- Unit of Measure

Speed Patterns in the SPD are numbered sequentially.

When a product contains multiple SPDs, the Speed Patterns reference numbers in each SPD represent the same speed patterns across all SPDs within that (version of the) Traffic Patterns product. For example, Speed Pattern 123 in a KPH file is equivalent to Speed Pattern 123 in the corresponding MPH file. Additionally, Speed Pattern 123 in a 15 minute file is equivalent to Speed Pattern 123 in the corresponding 60 minute file.

However, Speed Patterns reference numbers are not permanent or unique across different versions of the Traffic Patterns product. For example, Speed Pattern 123 does not necessarily represent the same pattern in V3.0 as in V4.0. Speed Pattern 123 also does not necessarily represent the same pattern in two different product regions (e.g. Europe and North America), even if both have the same version number, are geo-referenced to the same version of the HERE Map Content, or are released within the same quarter.

The total number of Speed Patterns included in each version can also vary.

File Format (15 Minute Model)

Contains 96 speed values per identified Speed Pattern (four per hour). Sample below shows 4 hour time period (10:00 – 14:00).

Field Name	Type	Example	Description
Speed Pattern	Number	123	Sequential number, unique within each SPD file.
H10_00	Integer	44	Derived traffic velocities for the period 10:00:00 to 10:14:59, local time. This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on SPD file.
H10_15	Integer	44	As above, 10:15:00 to 10:29:59 local time
H10_30	Integer	44	As above, 10:30:00 to 10:44:59 local time
H10_45	Integer	44	As above, 10:45:00 to 10:59:59 local time
H11_00	Integer	44	As above, 11:00:00 to 11:14:59 local time
H11_15	Integer	42	As above, 11:15:00 to 11:29:59 local time
H11_30	Integer	35	As above, 11:30:00 to 11:44:59 local time
H11_45	Integer	35	As above, 11:45:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:14:59 local time
H12_15	Integer	34	As above, 12:15:00 to 12:29:59 local time
H12_30	Integer	34	As above, 12:30:00 to 12:44:59 local time
H12_45	Integer	34	As above, 12:45:00 to 12:59:59 local time
H13_00	Integer	34	As above, 13:00:00 to 13:14:59 local time
H13_15	Integer	34	As above, 13:15:00 to 13:29:59 local time
H13_30	Integer	34	As above, 13:30:00 to 13:44:59 local time
H13_45	Integer	34	As above, 13:45:00 to 13:59:59 local time

File Format (60 Minute Model)

Contains 24 speed values per identified Speed Pattern (one per hour).

Field Name	Type	Example	Description
Speed Pattern	Number	123	Sequential number, unique within each SPD file.
H00_00	Integer	44	Derived traffic velocities for the period 00:00:00 to 00:59:59, local time. This value represents the average flow velocity value for a particular TMC, to 1 KPH / MPH. Value is in kilometers / miles per hour, depending on SPD file.
H01_00	Integer	44	As above, 01:00:00 to 01:59:59 local time
H02_00	Integer	44	As above, 02:00:00 to 02:59:59 local time
H03_00	Integer	44	As above, 03:00:00 to 03:59:59 local time
H04_00	Integer	44	As above, 04:00:00 to 04:59:59 local time
H05_00	Integer	42	As above, 05:00:00 to 05:59:59 local time
H06_00	Integer	35	As above, 06:00:00 to 06:59:59 local time
H07_00	Integer	35	As above, 07:00:00 to 07:59:59 local time
H08_00	Integer	35	As above, 08:00:00 to 08:59:59 local time
H09_00	Integer	35	As above, 09:00:00 to 09:59:59 local time
H10_00	Integer	35	As above, 10:00:00 to 10:59:59 local time
H11_00	Integer	35	As above, 11:00:00 to 11:59:59 local time
H12_00	Integer	35	As above, 12:00:00 to 12:59:59 local time
H13_00	Integer	35	As above, 13:00:00 to 13:59:59 local time
H14_00	Integer	35	As above, 14:00:00 to 14:59:59 local time
H15_00	Integer	35	As above, 15:00:00 to 15:59:59 local time
H16_00	Integer	35	As above, 16:00:00 to 16:59:59 local time
H17_00	Integer	35	As above, 17:00:00 to 17:59:59 local time
H18_00	Integer	35	As above, 18:00:00 to 18:59:59 local time
H19_00	Integer	35	As above, 19:00:00 to 19:59:59 local time
H20_00	Integer	35	As above, 20:00:00 to 20:59:59 local time

H21_00	Integer	35	As above, 21:00:00 to 21:59:59 local time
H22_00	Integer	35	As above, 22:00:00 to 22:59:59 local time
H23_00	Integer	35	As above, 23:00:00 to 23:59:59 local time

SPD Visualisation

Sample below shows one hour time period of a 15 minute SPD in KPH.

	Time			
Speed Pattern ID	H08_00	H08_15	H08_30	H08_45
1	105	106	106	105
2	99	99	98	98
3	58	58	58	59
4	104	106	106	106
5	43	43	42	42
6	39	38	37	36
7	94	102	102	102
8	83	84	85	85

Link Reference Tables

Each Link Reference Table is represented as a.csv file. Link Reference Tables cover the complete road network included in the HERE Map Content (including the TMC coded network) in included countries. See release notes for list of included countries and specific map version used.

File Format (Link Reference Table)

Field Name	Type	Example	Description
Link ID	Number	54132742	Based on LINK_PVID
Travel Direction	Text	T	Travel Direction from the Link ID is the Link direction ('T' or 'F'). T refers to towards reference node F refers to from reference node
U	Integer	14	Defines the relevant Speed Pattern for Sundays. The reference number refers to a Speed Pattern contained in the SPD(s) belonging to the same Traffic Patterns product version as the Link Reference Table.
M	Integer	123	As above, for Mondays
T	Integer	560	As above, for Tuesdays
W	Integer	4	As above, for Wednesdays
R	Integer	72	As above, for Thursdays
F	Integer	94	As above, for Fridays
S	Integer	63	As above, for Saturdays

Link Reference Table Visualisation

LINK_PVID	TRAVEL_DIRECTION	U	M	T	W	R	F	S
54132742	F	14	14	14	14	123	354	14
54132743	F	14	354	354	354	8	96	14
54132743	T	14	8	96	96	3	178	14
54132744	T	14	14	14	14	123	450	14
54132759	F	14	14	14	14	14	14	14
54132759	T	14	14	14	14	14	14	14
54132760	T	6	6	6	6	6	6	6
54132761	T	6	10	10	293	293	293	6

Country Look-up Tables

Each Country Look-up Table is represented as a.csv file. A Country Look-up Table provides a cross-reference

between each Link ID contained in the corresponding Link Reference Table and the country the link is contained in.

File Format (Country Look-up Table)

Field Name	Type	Example	Description
Link ID	Number	54132742	Based on LINK_PVID
Country Code	Text	FRA	Three-digit ISO Country Code.

Country Look-up Table Visualisation

LINK_PVID	COUNTRY_CODE
54132742	DEU
54132743	DEU
54132744	DEU
54132759	DEU
54132760	DEU
54132761	DEU

Holiday Appendix

In addition to the models described in the previous sections, Traffic Patterns features Holiday Appendices for use on major holidays and surrounding days where the holiday has been observed to impact typical levels of traffic. This data accounts for:

- less traffic due to the absence of work-day commuting.
- more traffic due to recreational travel.

The Model referenced in the Holiday Appendix is designed to substitute the Daily Model (flat format) or Speed Pattern (relational models) that would normally apply on that day of the week.

For example, Memorial Day in the United States does not exhibit the same patterns of congestion as a typical Monday. If the Sunday model more accurately represents the patterns of traffic on Memorial Day, the Sunday model would be referenced in the Holiday Appendix.

Holiday Appendices are available for certain countries in each region. See Product Release Notes for details of the Countries with a Holiday Appendix and days included per Country.

File Format (Holiday Appendix)

Field Name	Type	Example	Description
HOLIDAY	Text	LABOR DAY	The name of the holiday or

			affected day.
MONTH	Integer	9	The month in which the holiday falls, starting at 1 with January; e.g. 9 = September.
MIN_DAY	Integer	1	The earliest date the holiday can fall on in the given month.* This field is equal to MAX_DAY for fixed holidays.
MAX_DAY	Integer	7	The latest date the holiday can fall on in the given month.* This field is equal to MIN_DAY for fixed holidays.
DAY_OF_WEEK	Integer	2	The day of the week that the holiday falls on, starting at 1 with Sunday; e.g. 2 = Monday.
MODEL	Text	NTP_USA_15MIN_U_09400.csv	The file name of the traffic model to use for the holiday (relevant for TMC Flat Format product variation only).
DOW_SPEED_PATTERN	Text	U	The speed pattern to use for the holiday (relevant for Link Relational and TMC Relational product variations only).

*This does not fluctuate for fixed holidays, i.e., those that fall on the exact same date each year (e.g., Independence Day).

Holiday Appendix Visualisation

The sample below shows a selection of days included in the United States Holiday Appendix. For a complete list per country see Product Release Notes.

HOLIDAY	MONTH	MIN_DAY	MAX_DAY	DAY_OF_WEEK	MODEL	DOW_SPEED_PATTERN
INDEPENDENCE DAY	7	4	4	1	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	2	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	3	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	4	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	5	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	6	NTP_USA_15MIN_U_09400.csv	U
INDEPENDENCE DAY	7	4	4	7	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	1	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	2	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER INDEPENDENCE DAY	7	5	5	3	NTP_USA_15MIN_T_09400.csv	T
DAY AFTER INDEPENDENCE DAY	7	5	5	4	NTP_USA_15MIN_W_09400.csv	W
DAY AFTER INDEPENDENCE DAY	7	5	5	5	NTP_USA_15MIN_R_09400.csv	R
DAY AFTER INDEPENDENCE DAY	7	5	5	6	NTP_USA_15MIN_S_09400.csv	S
DAY AFTER INDEPENDENCE DAY	7	5	5	7	NTP_USA_15MIN_U_09400.csv	U
LABOR DAY	9	1	7	2	NTP_USA_15MIN_U_09400.csv	U
THANKSGIVING DAY	11	22	28	5	NTP_USA_15MIN_U_09400.csv	U
DAY AFTER THANKSGIVING	11	23	29	6	NTP_USA_15MIN_S_09400.csv	S
2 DAYS AFTER THANKSGIVING	11	24	30	7	NTP_USA_15MIN_U_09400.csv	U

Appendix – Product Variations Tree

This table combines the information contained in the product variations summaries in each section, to give a complete overview of the options available. Working through the series of options from left to right will indicate which variation of Traffic Patterns to use.

Option 1	Option 2	Option 3	Option 4	Option 5	# Product Variations
Link Referenced (relational format) (per continent)	60 minute granularity	KPH			1
		MPH			2
	15 minute granularity	KPH			3
		MPH			4
TMC Referenced	Flat Format (per country) (per relevant unit of measure)	Daily Models	60 minute granularity		5
			15 minute granularity		6
		Combined Models	60 minute granularity		7
			15 minute granularity		8
	Relational Format (daily models)	Per Continent	60 minute granularity	KPH	9
				MPH	10
			15 minute granularity	KPH	11
				MPH	12
		Per Country	60 minute granularity	KPH	13
				MPH	14
			15 minute granularity	KPH	15
				MPH	16

Revision History

From v1.7 to v1.8

Page	Edit
4	Clarified that a few kinds of map links are not covered by the product.

From v1.6 to v1.7

Page	Edit
All	References to “South East Asia” changed to “Asia Pacific” throughout.

From v1.5 to v1.6

Page	Edit
All	Changed fonts and graphics to latest HERE templates.

From v1.4 to v1.5

Page	Edit
All	Transferred content onto new HERE template.
All	References to “Traffic Patterns™” changed to “Traffic Patterns” throughout.
All	References to “NAVTEQ Map Database” changed to “HERE Map Content” throughout.

From v1.3 to v1.4

Page	Edit
All	References to “NAVTEQ Traffic Patterns” changed to “Traffic Patterns” throughout.
All	The following text was removed throughout; “* see Appendix Europe for details.” (This appendix does not exist).
6	Taiwan removed from Table 1.
11	Table 2 modified to indicate that a Holiday Appendix is provided for the TMC-referenced Relational product variation in Europe and North America.

11	Taiwan removed from Table 2.
19	Table 3 modified to indicate that a Holiday Appendix is provided for the Link-referenced Relational product variation in Europe and North America.
19	Taiwan removed from Table 3.

From v1.2 to v1.3

Page	Edit
All	References to “Asia Pacific” changed to “South East Asia” throughout.
6	<i>Table 1</i> edited to include Holiday Appendix for South East Asia, India, and Oceania (TMC-Referenced Flat Format).
9	<i>Section 2.5 Holiday Appendix</i> – minor edits to accommodate the inclusion of Holiday Appendices in additional Product Regions, and for additional Product Variations.
9	<i>Section 2.5.1</i> – additional field (DOW_SPEED_PATTERN) added. Description for the MODEL field adjusted to specify that it is only relevant for the TMC Flat Format Product Variation.
10	<i>Section 2.5.2</i> – additional field (DOW_SPEED_PATTERN) added to example.
11	<i>Section 3.1</i> - added the following text; “Additionally, the following appendices may be available, depending on the Product Region: * Holiday Appendix”
11	<i>Table 2</i> modified to include additional column for Holiday Appendix.
15-18	<i>Section 3.7 Holiday Appendix</i> added (TMC-Referenced Relational Format).
19	<i>Section 4.1</i> - added the following text; “Additionally, the following appendices may be available, depending on the Product Region: * Holiday Appendix”
19	<i>Table 3</i> modified to include additional column for Holiday Appendix.
23-25	<i>Section 4.7 Holiday Appendix</i> added (Link-Referenced Relational Format).

From v1.1 to v1.2

Page	Edit
6	<i>Table 1</i> edited to include Holiday Appendix for Europe.

6	Footnote added to <i>Table 1</i> to clarify that Holiday Appendix is included for certain countries within a Product Region.
9	Last paragraph of section 2.5 modified to read “Holiday Appendices are available for certain countries in North America and Europe only. See Product Release Notes for details of the Countries with a Holiday Appendix and days included per Country.”
10	Changed reference from “Appendix - Holiday Appendices” to “Product Release Notes”.
22	Section 5 <i>Appendix – Holiday Appendices</i> removed (details will be contained in the Product Release Notes going forward).

From v1.0 to v1.1

Page	Edit
All	“Western Europe” changed to “Europe” throughout.
All	Changed “continent” to “product region” throughout.
6	Asia Pacific, India, Middle East & Africa, Taiwan, and South America added to <i>Table 1</i> .
11	Asia Pacific, India, Middle East & Africa, Taiwan, and South America added to <i>Table 2</i> .
15	Meta data file visualisation image updated.
16	Detail relating to Country Look-up tables added to text above <i>Table 3</i> , and within <i>Table 3</i> .