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Author(s): Cuellar, Leticia
Cleland, Timothy J.
Kubicek, Deborah A.
Mathis, Mark M.
Stroud, Phillip D.

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2012

PATRIOT SCRIPT

Users' Guide

L. Cuéllar, T. Cleland,
D. Kubicek, M. Mathis,
P. Stroud

Los Alamos National Laboratory

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PATRIOT Script

Introduction

PATRIOT Script is an application that executes Patriot batch runs. This document provides a description of this application and how to run it. The basic user access tool PATRIOT Client allows a user to generate several most reliable paths in one run: one can specify a list of sources (origins) and targets, and PATRIOT finds for a given architecture option and one choice of device all the most reliable paths between all these sources and targets. The main objective of PATRIOT Script is to provide a tool for making automatic PATRIOT runs not only for a pre-specified set of sources and targets, but also for a pre-specified set of devices and various architecture options.

Running PATRIOT Script requires two basic steps that will be explained in more detail next:

1. Pre-preparation of an excel spreadsheet with the information about the desired runs.

2. Opening the PATRIOT Script application, reading in the excel-spreadsheet and running the desired scenarios.

Sections 1 and 2 explain each of these steps, and section 3 describes the output of the PATRIOT Script. For a detail description of the models and data behind PATRIOT and a detailed explanation of all the architecture options see [1]. For instructions of how to run PATRIOT Client see [2].

1. Preparing the Excel Spreadsheet with the Desired Scenarios

We first input the desired scenarios to be run in an excel-spreadsheet that can be imported by the Patriot script. Figure 1 shows the format the PATRIOT Script requires. Most of the lines are self explanatory, but we explain all of them next. Note that the PATRIOT Script does expect some blank lines, like lines 1, 4, and 7.

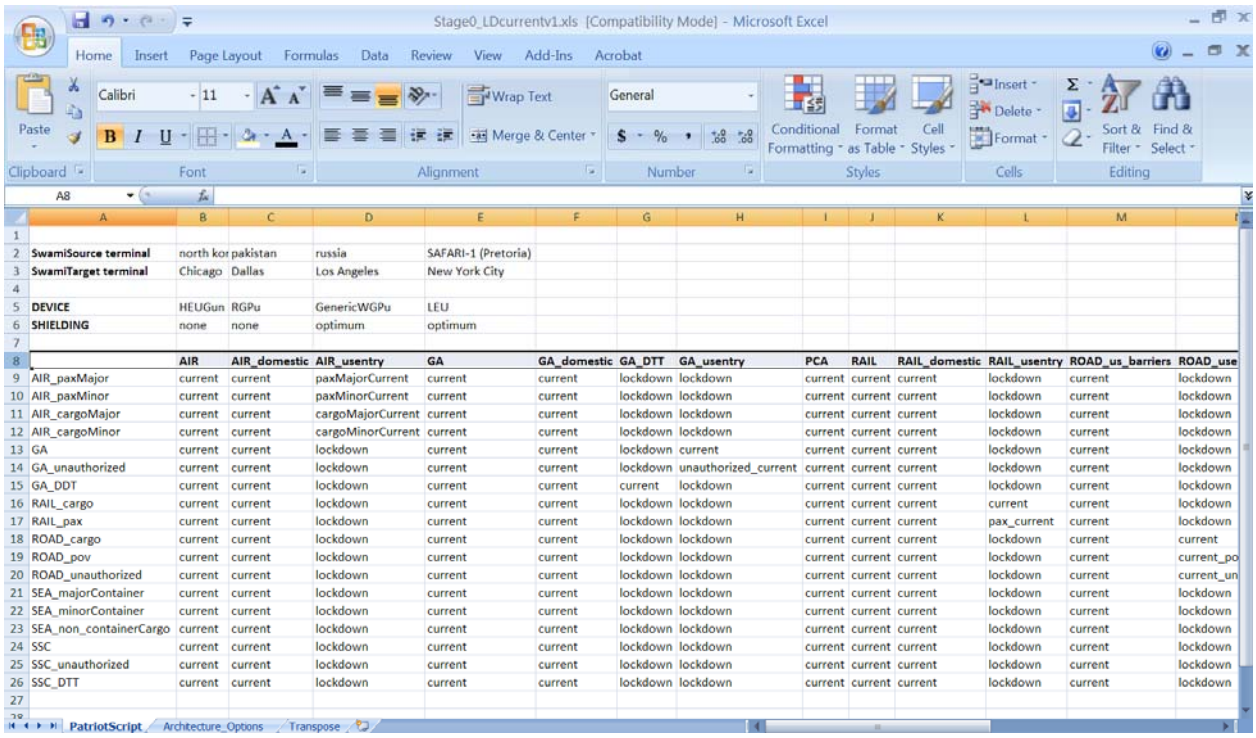
Line 1. Blank

Line 2. Sources: First cell expects a query for the sources. Typically a search string like "*swamisource terminal*" will find all the swami sources terminals, where *terminal* refers to one of the three terminal nodes in which we expand a normal network node, the other two terminal nodes being *Arrival* and *Departure*. If only a subset of all the "*swamisources terminals"* is desired, these can be specified one by one in row 2 starting in cell 2.

Line 3. Targets: Similarly as for the selection of the *sources*, PATRIOT Script will expect in the first cell a query for the *targets*. A simple query like "*swamitarget terminals*" provides all the swami target terminals, and a subset can be specified starting in cell 2.

Line 4. Blank

Figure 1 Specification of Scenarios in an Excel-spreadsheet



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2	SwamiSource terminal	north kor	pakistan	russia	SAFARI-1 (Pretoria)									
3	SwamiTarget terminal	Chicago	Dallas	Los Angeles	New York City									
4														
5	DEVICE	HEUGun	RGPu	GenericWGPu	LEU									
6	SHIELDING	none	none	optimum	optimum									
7														
8		AIR	AIR_domestic	AIR_usentry	GA	GA_domestic	GA_DTT	GA_usentry	PCA	RAIL	RAIL_domestic	RAIL_usentry	ROAD_us_barriers	ROAD_use
9	AIR_paxMajor	current	current	paxMajorCurrent	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
10	AIR_paxMinor	current	current	paxMinorCurrent	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
11	AIR_cargoMajor	current	current	cargoMajorCurrent	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
12	AIR_cargoMinor	current	current	cargoMinorCurrent	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
13	GA	current	current	lockdown	current	current	lockdown	current	current	current	current	lockdown	current	lockdown
14	GA_unauthorized	current	current	lockdown	current	current	lockdown	unauthorized_current	current	current	current	lockdown	current	lockdown
15	GA_DDT	current	current	lockdown	current	current	current	lockdown	current	current	current	lockdown	current	lockdown
16	RAIL_cargo	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	current	current	lockdown
17	RAIL_pax	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	pax_current	current	lockdown
18	ROAD_cargo	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	current
19	ROAD_pov	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	current_po
20	ROAD_unauthorized	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	current_un
21	SEA_majorContainer	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
22	SEA_minorContainer	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
23	SEA_non_containerCargo	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
24	SSC	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
25	SSC_unauthorized	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
26	SSC_DTT	current	current	lockdown	current	current	lockdown	lockdown	current	current	current	lockdown	current	lockdown
27														

Line 5 and 6. Devices: The 16 new device weight and brightness categories are selected by specifying a combination of one of the previous 8 devices with the appropriate type of shielding. Table 1 provides the appropriate mapping. Thus we specify the old device name in Line 5 and the desired shielding in Line 6.

Table 1 Mapping of the new PATRIOT devices to the old ones.

New Device	pseudobare very-light	very bright very-light	very bright medium	bright very-light	bright medium	white very light	white light	white heavy
OLD Device	HEUImpl Shield*	RGPu None*	LEU none	WGPu none	GenRGPu shield	HEU none	LEU shield	GenRGPu none
New Device	light gray medium	light gray heavy	gray light	gray heavy	dark gray very light	dark gray light	dark gray medium	dark gray heavy
OLD Device	GenWGPu shield	HEUImpl none	HEUGun shield	GenWGPu none	HEU shield	WGPu shield	RGPu shield	HEUGun none

shield: optimum shielding
none: no shielding

Line 7. Blank

Line 8. Architecture Options: columns B through X contain the names of the 23 Patriot architecture options shown in Table 2.

Table 2 PATRIOT Architecture Options

PATRIOT Architecture Options	
1. AIR	12. ROAD_us_barriers
2. AIR_domestic	13. ROAD_usentry
3. AIR_usentry	14. ROAD_us_PRD
4. GA	15. ROAD_us_rings
5. GA_domestic	16. SCP
6. GA_DTT	17. SEA
7. GA_usentry	18. SEA_usentry
8. PCA	19. SLD
9. RAIL	20. SLD_mobile
10. RAIL_domestic	21. SSC
11. RAIL_usentry	22. SSC_DTT
	23. SSC_usentry

Line 9-Line n. Architecture Levels: Each of these lines serve to indicate the desired combination of architecture levels for each of the 23 Patriot Architecture Options. Column A serves to name the architecture levels combinations. Each scenario name needs to be unique.

For example, in the example shown in Figure 1, line 9 displays the "AirPAxMajor" run, where all U.S. modes of entry are set to *lockdown*, except for *AIR_usentry* (column D) that was set to *pax_MajorCurrent*, and all other options are set to *current.* For this specific choice of architecture options, PATRIOT Script will find the most reliable paths between all 4 sources and 4 targets and for all 4 devices producing a total of 64 (4×4×4) most reliable paths.

Note: PATRIOT Script does expect the *correct* spelling for each of the architecture levels. Table 3 contains all the architecture options with all of their respective architecture levels. A template will be provided with the distribution of this code called Arch_options_template_May2012.xls. The second tab (sheet) of this template contains all the architecture levels to make it easier to copy and paste into the first tab (sheet).

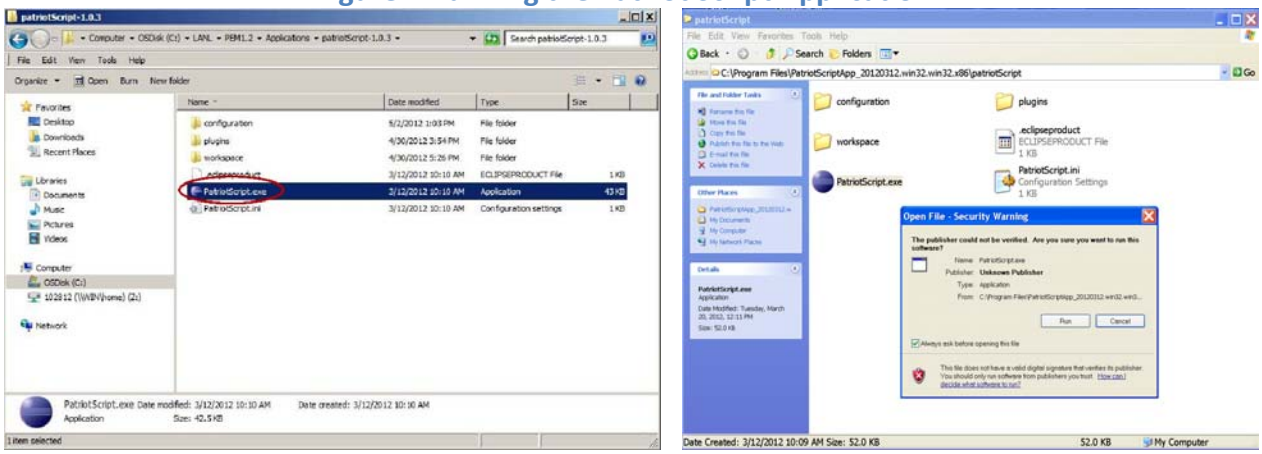
Table 3 Patriot Architecture Options and their Levels

ARCHITECTURE OPTIONS	ARCHITECTURE LEVLES						
AIR	current	lockdown_worldwide					
AIR_domestic	current	plus50	top26	top50	top75	top100	lockdown
AIR_usentry	current	paxCustomsBoost	paxMajorCurrent	paxMajorBoost	paxMinorCurrent	paxMinorBoost	cargoMajorCurrent
		cargoMajorBoost	cargoMinorCurrent	cargoMinorBoost	majorEnhanced	minorEnhanced	lockdown
GA	current	lockdown_worldwide					
GA_domestic	current	boost	enhanced	lockdown			
GA_DTT	current	plus50	enhanced	lockdown			
GA_usentry	current	boost	unauthorized_current	unauthorized_boost	enhanced	lockdown	
PCA	current	enhanced					
RAIL	current	lockdown_worldwide					
RAIL_domestic	current	plus50	enhanced	lockdown			
RAIL_usentry	current	plus50	pax_current	pax_boost	enhanced	lockdown	
ROAD_us_barriers	current	plus50desert	plus50mountain	plus50river	lockdown		
ROAD_usentry	current	plus50	current_pov	boost_pov	current_unauthorized	boost_unauthorized	bypass50
			bypass90	enhanced	lockdown		
ROAD_us_PRD	current	plus50backpack	plus50rkd	PRD_StatesInventory	plus50	heavyMDD20000	heavyMDD4000
ROAD_us_rings	current	plus50_all_surge	plus100_all_surge	plus200_all_surge	plus400_all_surge	plus50_NYNJ_surge	plus50_rkd_equip
		plus50_rpm_equip	plus50backpack	enhanced	lockdown		
SCP	current	enhanced	lockdown				
SEA	current	lockdown_worldwide					
SEA_usentry	current	plus50	major_container_current	major_container_boost	major_container_enhanced	minor_container_current	minor_container_boost
		minor_container_enhanced		enhanced	lockdown		
SLD	current	plus50	customs_union	all_roads_off			
SLD_mobile	current	sld_4k	sld_20k				
SSC	current	lockdown_worldwide					
SSC_DTT	current	boost	enhanced	lockdown			
SSC_usentry	current	group1	allgroups	plus50backpack	plus50hpt	noncontainerCargoCurrent	noncontainerCargoBoost
		unauthorizedCurrent	unauthorizedBoost	enhanced	lockdown		

2. Running the Patriot Script Application

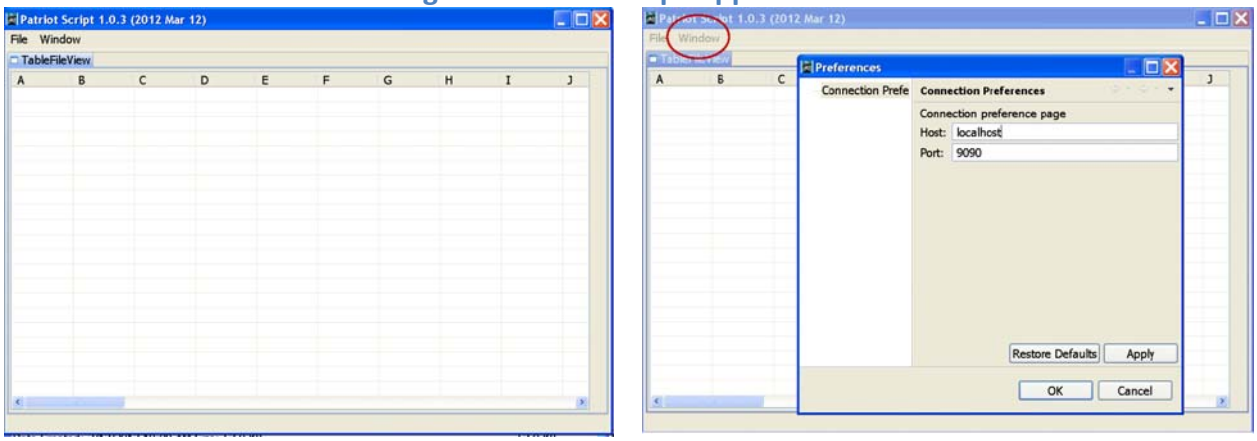
To run the PATRIOT Script application, double click on the PATRIOT Script icon located in C:LANL\PEM1.2\Applications\patriotscrit.exe or the application can be started be double-clicking on the PATRIOT Script icon on the desktop. If a new window appears (as the image shown on the right hand side of Figure 2), click on the "Run" tab. You can also uncheck the box indicating "Always ask before opening this file" to not have this window pop-up again.

Figure 2 Running the Patriot Script Application



Then the Patriot Script Application will open as shown in Figure 3.

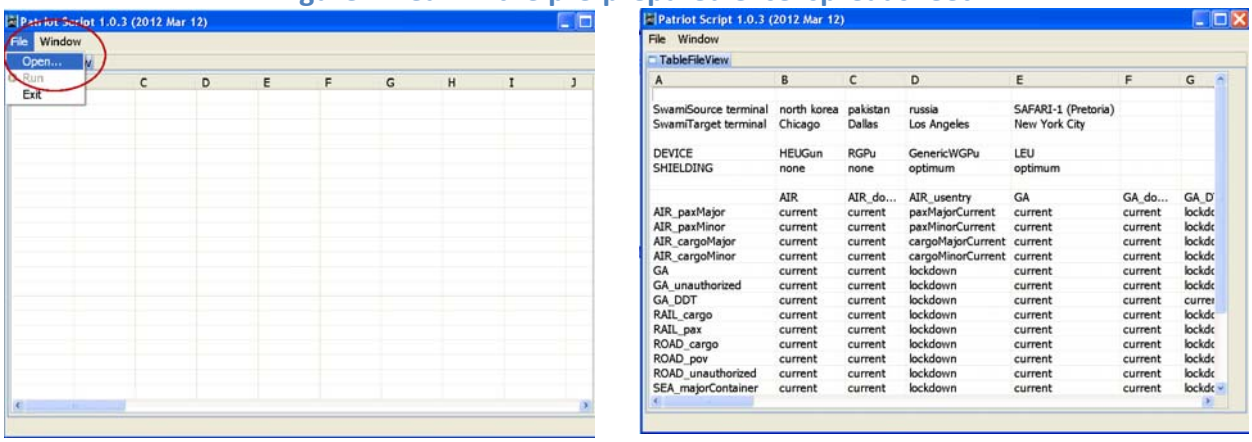
Figure 3 Patriot Script Application



To choose the server and port, go to the *Window* tab in the upper left corner, select *Preferences,* and write localhost and 9090 for the host and port respectively. If the PATRIOT server is running on a Virtual Machine (VM), then one needs to specify the VM's IP address instead of localhost.

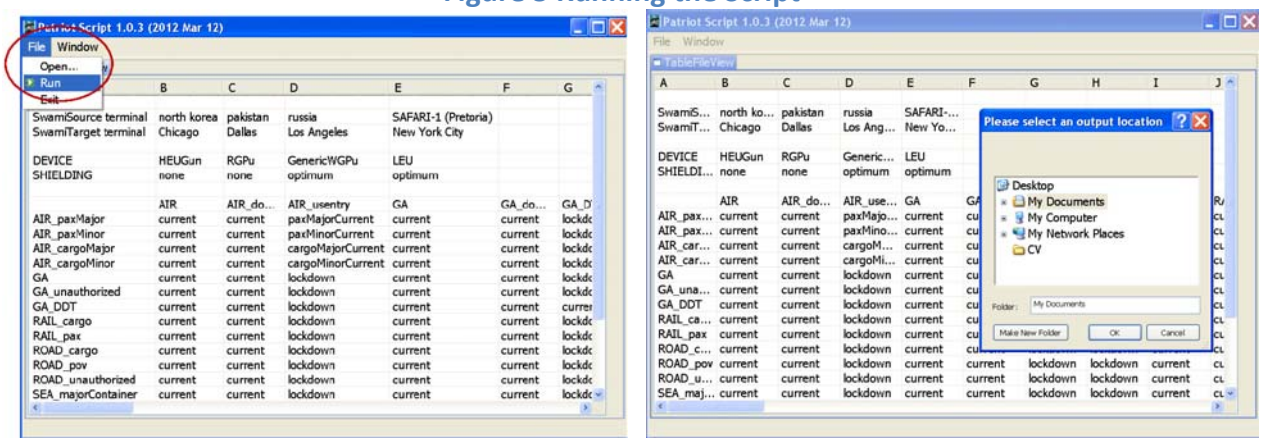
Next, to read in the Excel Spreadsheet for the desired scenarios to be run, go to the FILE tab in the upper left corner, click on *Open* and select the file with the spreadsheet prepared as described in the previous section (see Figure 4).

Figure 4 Rean in the pre-prepared excel spreadsheet



Finally, to run the application, click again the FILE tab in the upper left corner, and select Run (see Figure 5). The Application will ask for a location where to save the results. Specify the directory where all the results will be saved.

Figure 5 Running the Script



3. Patriot Script Output

In the directory chosen to save the results, the PATRIOT Script application will write a csv file with the output for all individual PATRIOT runs. This file can easily be read with Excel.

The PATRIOT Script application will also automatically create a new folder with all the KML files containing the most reliable paths. Each file will contain all the paths between all sources and targets for a given device and a given combination of architecture options.

REFERENCES

[1] Cuéllar, L., D. Kubicek, M. Mathis, F. Roach, J. Smith, P. Stroud 2012). Probabilistic Effectiveness Methodology, Data Documentation V1.2, LA-CP 12-00659, Los Alamos National Laboratory, Los Alamos, NM.

[2] Mathis, M. and D. Kubicek (2011). PATRIOT Quick Start Guide, Los Alamos National Laboratory, Los Alamos, NM.