Reltool application

version 0.5
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Chapter 1

Reltool Users Guide

Reltool is a release management tool. It analyses a given Erlang/OTP installation and determines various dependencies between applications. The graphical frontend depicts the dependencies and enables interactive customization of a target system. The backend provides a batch interface for generation of customized target systems.

1.1 Introduction

Reltool is a release management tool. It analyses a given Erlang/OTP installation and determines various dependencies between applications. The graphical frontend depicts the dependencies and enables interactive customization of a target system. The backend provides a batch interface for generation of customized target systems.

1.1.1 Scope and Purpose

This manual describes the Reltool application, as a component of the Erlang/Open Telecom Platform development environment. It is assumed that the reader is familiar with the Erlang Development Environment, which is described in a separate User’s Guide.

1.1.2 Prerequisites

The following prerequisites is required for understanding the material in the Reltool User’s Guide:

- familiarity with Erlang/OTP system principles and Erlang/OTP design principles

The application requires Erlang/OTP release R13B02 or later.

1.1.3 About This Manual

In addition to this introductory chapter, the Reltool User’s Guide contains the following chapters:

- Chapter 2: “Usage” describes the architecture and typical usage of the application.
- Chapter 3: “Examples” gives some usage examples
1.4 Where to Find More Information

Refer to the following documentation for more information about Reltool and about the Erlang/OTP development system:

- the Reference Manual of Reltool
- the Erlang/OTP System Principles
- the Erlang/OTP Design Principles

1.2 Usage

1.2.1 Overview

This document focuses on the graphical parts of the tool. The concepts are explained in the reference manual for the module reltool.

1.2.2 System window

The system window is started with the function reltool:start/1. At startup the tool will process all beam files and app files in order to find out dependencies between applications and their modules. Once all this information has been derived, it will be possible to explore the tool.

The system window consists of four main pages (tabs):

- Libraries
- System settings
- Applications
- Releases

Click on a name tag to display its page.

Libraries

On the library page it is possible to control which sources that the tool will use. The page is organized as a tree which can be expanded and collapsed by clicking on the little symbol in the beginning of the expandable/collapsible lines.

The Root directory can be edited by selecting the line where the path of the root directory is displayed and clicking with the right mouse button. Choose edit in the menu that pops up.

Library directories can be added, edited or deleted. This is done by selecting the line where the path to a library directory is displayed and clicking with the right mouse button. Choose add, edit or delete in the menu that pops up. New library directories can also be added by selecting the line Library directories and clicking with the right mouse button. Choose add in the menu that pops up.

Escript files can be added, edited or deleted. This is done by selecting the line where the path to an escript file is displayed and clicking with the right mouse button. Choose add, edit or delete in the menu that pops up. New escripts can also be added by selecting the line Escript files and clicking with the right mouse button. Choose add in the menu that pops up.
When libraries and escripts are expanded, the names of their contained applications will be displayed. Double click on an application name to launch an application window.

System settings

On the system settings page it is possible to control some global settings that are used as defaults for all applications. Set the **Application inclusion policy** to **include** to include all applications that not are explicitly excluded. See `incl_cond` (application inclusion) and `mod_cond` (module inclusion) in the reference manual for the module reltool for more info.

The system settings page is rather incomplete.

Applications

There are four categories of applications on the applications page. **Included** contains applications that are explicitly included. **Excluded** contains applications that are explicitly excluded. **Derived** contains applications that either are used directly by explicitly included applications or by other derived applications. **Available** contains the remaining applications.

Select one or more applications and click on a button directly below the application column to change application category. For example, select an available application and click on its tick button to move the application to the included category. Clicking on the tick symbol for included applications will move the application back to the available category. The tick is undone.

The symbols in front of the application names are intended to describe the status of the application. There are error symbols and warning symbols that means that there are something that needs attention. The tick symbol means that the application is included or derived and no problem has been detected. The cross symbol means that the application is excluded or available and no problem has been detected. Applications with error symbols are listed first in each category, then comes the warnings and the normal ones (ticks and crosses) are found at the end.

Double click on an application to launch its application window.

Releases

The releases page is incomplete and very experimental.

File menu

- **Display application dependency graph** - Launches an application force graph window. All included and derived applications and their dependencies will be shown in a graph.
- **Display module dependency graph** - Launch a module force graph window. All included and derived modules and their dependencies will be shown in a graph.
- **Reset configuration to default**
- **Undo configuration** (toggle)
- **Load configuration** - Loads a new configuration from file.
- **Save configuration** - Saves the current configuration to file. Normally, only the explicit configuration parameters with values that differs from their defaults are saved. But the configuration with or without default values and with or without derived values may also be saved.
- **Generate rel, script and boot files**
- **Generate target system**
Dependencies between applications or modules displayed as a graph

The dependency graph windows are launched from the file menu in the system window. The graph depicts all included and derived applications/modules and their dependencies.

It is possible to perform some limited manipulations of the graph. Nodes can be moved, selected, locked or deleted. Move a single node or the entire graph by moving the mouse while the left mouse button is pressed. A node can be locked into a fix position by holding down the shift button when the left mouse button is released. Select several nodes by moving the mouse while the control key and the left mouse button is pressed. Selected nodes can be locked, unlocked or deleted by clicking on a suitable button.

The algorithm that is used to draw a graph with as few crossed links as possible is called force graph. A force graph consists of nodes and directed link between nodes. Each node is associated with a repulsive force that pushes nodes away from each other. This force can be adjusted with the left slider or with the mouse wheel. Each link is associated with an attractive force that pulls the nodes nearer each other. This force can be adjusted with the right slider. If this force becomes too strong, the graph will be unstable. The third parameter that can be adjusted is the length of the links. It is adjusted with the middle slider.

The Freeze button starts/stops the redrawing of the graph. Reset moves the graph to the middle of the window and resets all graph settings to default, with the exception of deleted nodes.

1.2.3 Application window

The application window is started by double clicking on an application name. The application window consists of four pages (tabs):

- Application settings
- Modules
- Application dependencies
- Module dependencies

Click on a name tag to display its page.

Application settings

Select version of the application in the Source selection policy part of the page. By default the latest version of the application is selected, but it is possible to override this by explicitly select another version.

By default the Application inclusion policy on system level is used for all applications. Set the value to include if you want to explicitly include one particular application. Set it to exclude if you want to exclude the application despite that it is used by another (explicitly or implicitly) included application. derived means that the application automatically will be included if some other (explicitly or implicitly) included application uses it.

By default the Module inclusion policy on system level is used for all applications. Set it to derived if you only want actually used modules to be included. Set it to app if you, besides derived modules, also want the modules listed in the app file to be included. Set it to ebin if you, besides derived modules, also want the modules that exists as beam files on the ebin directory to be included. Set it to
all if you want all modules to be included, that is the union of modules found on the ebin directory and listed in the app file.
The application settings page is rather incomplete.

Modules

There are four categories of modules on the modules page. Included contains modules that are explicitly included. Excluded contains modules that are explicitly excluded. Derived contains modules that either are used directly by explicitly included modules or by other derived modules. Available contains the remaining modules.

Select one or more modules and click on a button directly below the module column to change module category. For example, select an available module and click on its tick button to move the module to the included category. Clicking on the tick symbol for included modules will move the module back to the available category. The tick is undone.

The symbols in front of the module names are intended to describe the status of the module. There are error symbols and warning symbols that means that there are something that needs attention. The tick symbol means that the module is included or derived and no problem has been detected. The cross symbol means that the module is excluded or available and no problem has been detected. Modules with error symbols are listed first in each category, then comes the warnings and the normal ones (ticks and crosses) are found at the end.

Double click on an module to launch its module window.

Application dependencies

There are four categories of applications on the Application dependencies page. If the application is used by other applications, these are listed under Used by. If the application requires other applications be started before it can be started, these are listed under Required. These applications are listed in the applications part of the app file. If the application includes other applications, these are listed under Included. These applications are listed in the included applications part of the app file. If the application uses modules other applications, these are listed under Uses.

Double click on an application name to launch an application window.

Module dependencies

There are two categories of modules on the Module dependencies page. If the module is used by other modules, these are listed under Modules used by others. If the module uses modules other modules, these are listed under Used modules.

Double click on an module name to launch a module window.

1.2.4 Module window

The module window is started by double clicking on an module name. The module window consists initially of two pages (tabs):

- Dependencies
- Code

Click on a name tag to display its page.
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Dependencies

There are two categories of modules on the Dependencies page. If the module is used by other modules, these are listed under Modules used by others. If the module uses modules other modules, these are listed under Used modules.

Double click on an module name to launch a module window.

Code

On the Code page the Erlang source code is displayed. It is possible to search forwards and backwards for text in the module. Enter a regular expression in the Find field and press enter. It is also possible to goto a certain line on the module. The Back button can be used to go back to the previous position.

Put the marker on a function name and double click to go to the definition of the function. If the function is defined in another module, that module will be loaded and added to the page list.

1.3 Examples

1.3.1 Start and stop windows and servers

The main process in Reltool is the server. It can be used as it is or be used via the GUI frontend process. When the GUI is started, a server process will automatically be started. The GUI process is started with reltool:start/0, reltool:start/1 or reltool:start_link/1. The pid of its server can be obtained with reltool:get_server/1.

Erlang R13B02 (erts-5.7.3) [source] [64-bit] [smp:4:4] [rq:4] [async-threads:0] [kernel-poll:false]

Eshell V5.7.3 (abort with ^G) 1> {ok, Win} = reltool:start([]). {ok,<0.36.01>}
2> {ok, Server} = reltool:get_server([]). {ok,<0.37.01>}
3> reltool:get_config(Server). {ok,[sys,[]]}
4> reltool:stop(Win).
ok

5> {ok, Server2} = reltool:start_server([]). {ok,<0.6535.01>}
6> reltool:get_config(Server2). {ok,[sys,[]]}
7> reltool:stop(Server2).
ok
1.3.2 Inspecting the configuration

Erlang R13B02 (erts-5.7.3) [source] [64-bit] [smp:4:4] [rq:4] [async-threads:0] [kernel-poll:false]
Eshell V5.7.3 (abort with \cG\)

1> Config = {sys, [{escript, "examples/display_args", [{incl_cond, include}]},
                     {app, inets, [{incl_cond, include}]},
                     {app, mnesia, [{incl_cond, exclude}]},
                     {app, ssl, [{incl_cond, exclude}]},
                     {app, runtime_tools, [{incl_cond, exclude}]},
                     {app, syntax_tools, [{incl_cond, exclude}]}].

2> ok, Server = reltool:start_server([Config]).
   ok, 0.35.0>
3> reltool:get_config(Server).
   ok, {sys, [{escript, "/clearcase/otp/tools/reltool/examples/display_args",
                        [{incl_cond, include}]}]}  
4> reltool:get_config(Server, false, false).
   ok, {sys, [{escript, "/clearcase/otp/tools/reltool/examples/display_args",
                        [{incl_cond, include}]}]}
5> reltool:get_config(Server, true, false).
   ok, {sys, [{root_dir,"/ldisk/hakan/otp_test"},
                     {lib_dirs,[]},
                     {escript, "/clearcase/otp/tools/reltool/examples/display_args",
                        [{incl_cond, include}]}],
                     {mod_cond, all},
                     {incl_cond, derived},
                     {boot_rel,"start_clean"},
                     {emu_name,"beam"},
                     {relocatable,true},
                     {profile,development},
                     {incl_sys_files,".*"},
                     {excl_sys_files,[]},
                     {incl_app_files,".*"},
                     {excl_app_files,[]},
                     {incl_archive_dirs,".*"},
                     {excl_archive_dirs,"-include$","-priv$"},
                     {archive_opts,[]},
                     {app_type,permanent},
                     {app_file,keep},
                     {debug_info,keep}]}
6> reltool:get_config(Server, true, true).
{ok, {sys, [{root_dir, "/ldisk/hakan/otp_test"},
    {lib_dirs, []},
    {escript, "/clearcase/otp/tools/reltool/examples/display_args",
     [{incl_cond, include}],
    {mod_cond, all},
    {incl_cond, derived},
    {erts, [{vsn, "5.7.3"},
        {mod, erl_prim_loader, []},
        {mod, erlang, []},
        {mod, init, []},
        {mod, otp_ring0, []},
        {mod, prim_file, []},
        {mod, prim/inet, []},
        {mod, prim/zip, []},
        {mod, zlib, []}]
    },
    {app, compiler,
     [{vsn, "4.6.3"},
      {mod, beam/asm, []},
      {mod, beam/block, []},
      {mod, beam/bool, []},
      {mod, beam/bsm, []},
      {mod, beam_clean, []},
      {mod, beam/dead, []},
      {mod, beam/dict, []},
      {mod, beam/disasm, []},
      {mod, beamflatten, []},
      {mod, beam/jump, []},
      {mod, beam/listing, []},
      {mod, beam/opcode, ...},
      {mod,...}]
    },
    {...}]
    }},
    {[vsn, "1.6.1"],
    {mod, crypto, []},
    {mod, crypto_app, []},
    {mod, crypto/server, []},
    {mod, crypto_sup, []}],
    {app, hipe,
     [{vsn, "3.7.3"},
      {mod, cerl/cconv, []},
      {mod, cerl/closurean, []},
      {mod, cerl/hipeify, []},
      {mod, cerl/hybrid_transform, []},
      {mod, cerl/lib, []},
      {mod, cerl/messagean, []},
      {mod, cerl/pmatch, []},
      {mod, cerl/prettypr, []},
      {mod, cerl/to/icode, []},
      {mod, cerl/typean,...},
      {mod,...}]},
{...}..., {app, kernel, [{vsn,"2.13.3"},
{mod, application, []},
{mod, application_controller, []},
{mod, application_master, []},
{mod, application_starter, []},
{mod, auth, []},
{mod, code, []},
{mod, code_server, []},
{mod, disk_log, []},
{mod, disk_log_1,...},
{mod,...},
{...}]},
{app, stdlib, [{vsn,"1.16.3"},
{mod, array, []},
{mod, base64, []},
{mod, beam_lib, []},
{mod, c, []},
{mod, calendar, []},
{mod, dets, []},
{mod, dets_server, []},
{mod, dets_sup,...},
{mod,...},
{...}]},
{boot_rel,"start_clean"},
{emu_name,"beam"},
{relocatable,true},
{profile,development},
{incl_sys_files, [".*"]},
{excl_sys_files, []},
{incl_app_files, [".*"]},
{excl_app_files, []},
{incl_archive_dirs, [".*"]},
{excl_archive_dirs, ["'include$", [...]]},
{archive_opts, []},
{app_type, permanent},
{app_file,...},
{...}]})

7> reltool:get_config([[[sys,[{profile, embedded}]]]])
{ok,[sys,[{profile, embedded}],
{incl_sys_files,["-bin","-erts","-lib","-releases"]},
{excl_sys_files,"-bin/(erlc|dialyzer|typer)(|\exe)$","-erts.*/bin/(erlc|dialyzer|typer)(|\exe)$","-erts.*/bin/.*(debug|pdb)"},
{incl_app_files, ["-ebin","-include","-priv"]}}])
8> reltool:get_config([[[sys,[{profile, standalone}]]]])
{ok,[sys,[{profile, standalone}],
{incl_sys_files,"-bin/(erl|epmd)(|\exe|\ini)$",}]}
1.3.3 Generate release and script files

5> ok, Server = reltool:start_server([[config, {sys, [{boot_rel, "NAME"},
  {rel, "NAME", "VSN", [kernel, stdlib, sasl]}]}]]);

6> reltool:get_config(Server).
ok, Server,

7> reltool:get_rel(Server, "NAME").
ok, {release, [{NAME}, "VSN"], [{kernel,"2.13"},{stdlib,"1.16"},{sasl,"2.16"}]}

8> reltool:get_script(Server, "NAME").
ok, script, [[{preLoaded, [erl_prim_loader,erlang,init,otp_ring0,
  prim_file,prim_inet,prim_zip,zlib]],
  {progress,preloaded}],
  {path, ["$ROOT/lib/kernel-2.13/ebin",
  "$ROOT/lib/stdlib-1.16/ebin"]},
  {primLoad,[error_handler]}
  , {kernel_load_completed},
  {progress,kernel_load_completed},
  {path, ["$ROOT/lib/kernel-2.13/ebin"]},
  {primLoad,[application,application_controller,
    application_master,application_starter,auth,code,
    code_server,disk_log,disk_log1,disk_log_server,
    disk_log_sup,dist_ac,distutil,erl_boot_server|...]
  , {path, ["$ROOT/lib/stdlib-1.16/ebin"]},
  {primLoad,[array,base64,beam_lib,c,calendar,dets,
    dets_server,dets_sup,dets_utils,dets_v8,dets_v9,dct|...]
  , {path, ["$ROOT/lib/sasl-2.1.6/ebin"]},
  {primLoad,[alarm_handler,ersrv,format_lib_supp,misc_supp,
    overload,rb,rb_format_supp,release_handler,
    release_handler1,sasl|...]
  , {progress,modules_loaded},
  {path, ["$ROOT/lib/kernel-2.13/ebin",
  "$ROOT/lib/stdlib-1.16/ebin","$ROOT/lib/sasl-2.1.6/ebin"]},
  {kernelProcess,heart,[heart,start,[]]},
  {kernelProcess,error_logger,[error_logger,start_link,[]]},
  {kernelProcess,application_controller,
    [application_controller,start,[[...]]]},
  {progress,init_kernel_started},
  {apply,[application,load,[[...]]]}},
1.3: Examples

```erlang
{apply, {application, load, ...}},
{progress, applications_loaded},
{apply, ...},
{apply, ...},
...
```

9> reltool:stop(Server).
ok

1.3.4 Create a target system

Erlang R13B02 (erts-5.7.3) [source] [64-bit] [smp:4:4] [rq:4] [async-threads:0] [kernel-poll:false]

Eshell V5.7.3 (abort with ^G)
1> Config = sys, [{escript, "examples/display_args", [{incl_cond, include}]},
{app, inets, [{incl_cond, include}]},
{app, mnesia, [{incl_cond, exclude}]},
{app, ssl, [{incl_cond, exclude}]},
{app, runtime_tools, [{incl_cond, exclude}]},
{app, syntax_tools, [{incl_cond, exclude}]}].
{sys, [{escript, "examples/display_args", [{incl_cond, include}]},
{app, inets, [{incl_cond, include}]},
{app, mnesia, [{incl_cond, exclude}]},
{app, ssl, [{incl_cond, exclude}]},
{app, runtime_tools, [{incl_cond, exclude}]},
{app, syntax_tools, [{incl_cond, exclude}]}].

2> ok, Spec = reltool:get_target_spec([Config]).
ok,
{"create_dir", "releases"},
{"write_file", "start.erl.data", "5.7.3 1.0"},
{create_dir, "1.0"},
{"write_file", "start_clean.rel", [37, 37, 32, 114, 101, 108, 32, 103, 110, 101, 114, 97, 116|...]}.
{"write_file", "start_clean.script", [37, 37, 32, 115, 99, 114, 105, 112, 116, 32, 103, 110|...]},
{"write_file", "start_clean.boot", <<131, 104, 3, 100, 0, 6, 115, 99, 114, 105, 112, 116, ...>>,
{"write_file", "start_sasl.rel", [37, 37, 32, 114, 101, 108, 32, 103, 101, 110|...]},
{"write_file", "start_sasl.script", [37, 37, 32, 115, 99, 114, 105, 112, 116, 32|...]},
{"write_file", "start_sasl.boot", <<131, 104, 3, 100, 0, 6, 115, 99, 114, ...>>,
{create_dir, "bin"},
{"copy_file", "display_args.escript", "/clearcase/otp/tools/reltool/examples/display_args"},
{"copy_file", "display_args", "erts-5.7.3/bin/escript"},
{"copy_file", "start", "erts-5.7.3/bin/start"},
{"copy_file", "erl", "erts-5.7.3/bin/dyn_erl"},
{"copy_file", "epmd", "erts-5.7.3/bin/epmd"},

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The Reltool application

```plaintext
{copy_file,"to_erl","erts-5.7.3/bin/to_erl"},
{copy_file,"run_erl","erts-5.7.3/bin/run_erl"},
{copy_file,"escript","erts-5.7.3/bin/escript"},
{copy_file,"erlc","erts-5.7.3/bin/erlc"},
{copy_file,"dialyzer","erts-5.7.3/bin/dialyzer"},
{copy_file,"typer","erts-5.7.3/bin/typer"},
{write_file,"start_clean.boot",<131,104,3,100,0,6,115,...>},
{write_file,"start_sasl.boot",<131,104,3,100,0,6,...>},
{write_file,"start.boot",<131,104,3,100,0,...>],
{create_dir,"misc"},
{create_dir,"usr"},
{create_dir,"lib"},
{create_dir,"include"},
{create_dir,"erts-5.7.3"},
{create_dir,"internal"},
{create_dir,"bin"},
{create_dir,"doc"},
{create_dir,"man"},
{create_dir,"include"},
{create_dir,"sparc64"},
{create_dir,"sparc32"},
```
1.3: Examples

```
{create_dir,...},
{copy_file,"erl_fixed_size_int_types.h"},
{copy_file,"erl_int_sizes_config.h"},
{copy_file,"erl_memory_trace_parser.h"},
{copy_file,"driver_int.h"},
{create_dir,"src",[copy_file,"setuid_socket_wrap.c"]}],
{create_dir,"lib"},
[
archive,"compiler-4.6.3.ez",[],
{create_dir,"compiler-4.6.3"},
{create_dir,"ebin"},
[[copy_file,"compiler.appup"],
{copy_file,...}],
{create_dir,"src"},
{create_file,...}],
{archive,"crypto-1.6.1.ez",[]},
{create_dir,"crypto-1.6.1"},
{create_dir,"ebin"},
[[copy_file,...],{copy_file,...},{...}],
{create_dir,"src"},
{create_file,...}],
{archive,"erts-5.7.3.ez",[]},
{create_dir,"erts-5.7.3"},
{create_dir,"ebin",[]},
{create_dir,"src"},
{create_file,...}],
{archive,"hipe-3.7.3.ez",[]},
{create_dir,"hipe-3.7.3"},
{create_dir,"util"},
{create_dir,...},
{create_dir,...},
{create_dir,...}],
{archive,"stdlib-1.16.3.ez",[]},
{create_dir,"stdlib-1.16.3"},
{create_dir,"include"},
{create_file,...},
{archive,"kernel-2.13.3.ez",[]},
{create_dir,"kernel-2.13.3"},
{create_dir,"include"},
{create_file,...}],
{archive,"stdlib-1.16.3.ez",[]},
{create_dir,"stdlib-1.16.3",[]},
{create_dir,...}],
{create_dir,"include"},
{create_file,...}],
3> TargetDir = "my_target_dir".
"my_target_dir"
```
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4> reltool:eval_target_spec(Spec, code:root_dir(), TargetDir).
   {error, "/clearcase/otp/tools/reltool/my_target_dir: no such file or directory"}  
5> file:make_dir("my_target_dir"). ok  
6> reltool:eval_target_spec(Spec, code:root_dir(), TargetDir). ok  
7> file:list_dir(TargetDir).
   {ok, ["lib", "erts-5.7.3", "usr", "Install", "misc", "bin", "releases"]}  
8> file:list_dir(filename:join([TargetDir,"lib"])).
   {ok, ["stdlib-1.16.3", "stdlib-1.16.3.ez", "kernel-2.13.3",  
        "kernel-2.13.3.ez", "hipe-3.7.3.ez", "erts-5.7.3.ez",  
        "crypto-1.6.1", "crypto-1.6.1.ez", "compiler-4.6.3.ez"]}  
9> file:make_dir("yet_another_target_dir"). ok  
10> reltool:create_target(Config, "yet_another_target_dir"). ok
Reltool Reference Manual

Short Summaries

- Erlang Module reltool [page 16] – Main API of the Reltool application

reltool

The following functions are exported:

- `create_target(Server, TargetDir) -> ok | {error, Reason}` [page 21] Create a target system
- `eval_target_spec(TargetSpec, RootDir, TargetDir) -> ok | {error, Reason}` [page 21] Create a target system
- `get_config(Server) -> ok, Config | {error, Reason}` [page 21] Get reltool configuration
- `get_config(Server, InclDefaults, InclDerived) -> ok, Config | {error, Reason}` [page 22] Get reltool configuration
- `get_rel(Server, Relname) -> ok, RelFile | {error, Reason}` [page 22] Get contents of a release file
- `get_script(Server, Relname) -> ok, ScriptFile | {error, Reason}` [page 22] Get contents of a boot script file
- `get_server(WindowPid) -> ok, ServerPid | {error, Reason}` [page 22] Start server process with options
- `get_target_spec(Server) -> ok, targetSpec | {error, Reason}` [page 22] Return a specification of the target system
- `install(Server, TargetDir) -> ok | {error, Reason}` [page 23] Install a target system
- `start() -> ok, WindowPid | {error, Reason}` [page 23] Start main window process
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- `start_link(Options) -> ok, WindowPid | {error, Reason}` [page 23] Start main window process with options
- `start_server(Options) -> ok, ServerPid | {error, Reason}` [page 23] Start server process with options
- `stop(Pid) -> ok | {error, Reason}` [page 23] Stop a server or window process
This is an interface module for the Reltool application. Reltool is a release management tool. It analyses a given Erlang/OTP installation and determines various dependencies between applications. The graphical frontend depicts the dependencies and enables interactive customization of a target system. The backend provides a batch interface for generation of customized target systems. The tool uses an installed Erlang/OTP system as input. root_dir is the root directory of the analysed system and it defaults to the system executing reltool. Applications may also be located outside root_dir. lib_dirs defines additional library directories where applications additional may reside and it defaults to the the directories listed by the operating system environment variable ERL_LIBS. See the module code for more info. Finally single modules and entire applications may be read from Escripts. Some configuration parameters control the behavior of Reltool on system (sys) level. Others provide control on application (app) level and yet others are on module (mod) level. Module level parameters overrides application level parameters and application level parameters overrides system level parameters. Escript escript level parameters overrides system level parameters.

The following top level options are supported:

- config This is the main option and it controls the configuration of reltool. It can either be a sys tuple or a name of a file containing a sys tuple.
- trap_errors This option controls the error handling behavior of reltool. By default the window processes traps exit, but this behavior can altered by setting trap_errors to false.
- wx_debug This option controls the debug level of wx. As its name indicates it is only useful for debugging. See wx:debug/1 for more info.

Besides the already mentioned source parameters root_dir and lib_dirs, the following system (sys) level options are supported:

- erts Erts specific configuration. See application level options below.
- escript Escript specific configuration. An escript has a mandatory file name and escript level options that are described below.
- app Application specific configuration. An application has a mandatory name and application level options that are described below.
mod cond  This parameter controls the module inclusion policy. It defaults to all which means that if an application is included (either explicitly or implicitly) all modules in that application will be included. This implies that both modules that exists on the ebin directory of the application, as well as modules that are named in the app file will be included. If the parameter is set to ebin, both modules on the ebin directory and derived modules are included. If the parameter is set to app, both modules in the app file and derived modules are included. derived means that only modules that are used by other included modules are included. The mod cond setting on system level is used as default for all applications.

incl cond  This parameter controls the application and escript inclusion policy. It defaults to derived which means that the applications that not have any explicit incl cond setting, will only be included if any other (explicitly or implicitly included) application uses it. The value include implies that all applications and escrpts that that not have any explicit incl cond setting will be included. exclude implies that all applications and escrpts) that that not have any explicit incl cond setting will be excluded.

boot rel  A target system may have several releases but the one given as boot rel will be used as default when the system is booting up.

rel  Release specific configuration. Each release maps to a rel, script and boot file. See the module systools for more info about the details. Each release has a name, a version and a set of applications with a few release specific parameters such as type and included applications.

relocatable  This parameter controls whether the rel executable in the target system automatically should determine where it is installed or if it should use a hardcoded path to the installation. In the latter case the target system must be installed with reltool:install/2 before it can be used. If the system is relocatable, the file tree containing the target system can be moved to another location without re-installation. The default is true.

profile  The creation of the specification for a target system is performed in two steps. In the first step a complete specification is generated. It will likely contain much more files than you are interested in your customized target system. In the second step the specification will be filtered according to your filters. There you have the ability to specify filters per application as well as system wide filters. You can also select a profile for your system. Depending on the profile, different default filters will be used. There are three different profiles to choose from: development, embedded and standalone. development is default. The parameters that are affected by the profile are: incl_sys filters, excl_sys filters, incl_app filters and excl_app filters.

app file  This parameter controls the default handling of the app files when a target system is generated. It defaults to keep which means that app files are copied to the target system and their contents are kept as they are. strip means that a new app file is generated from the contents of the original app file where the non included modules are removed from the file. all does also imply that a new app file is generated from the contents of the original app file, with the difference that all included modules are added to the file. If the application does not have any app file a file will be created for all but not for keep and strip.

debug info  The debug info parameter controls whether the debug information in the beam file should be kept (keep) or stripped strip when the file is copied to the target system.

incl_sys filters  This parameter normally contains a list of regular expressions that controls which files in the system that should be included. Each file in the target
system must match at least one of the listed regular expressions in order to be included. Further the files may not match any filter in excl_sys_filters in order to be included. Which application files that should be included are controlled with the parameters incl_app_filters and excl_app_filters. This parameter defaults to [".*"].

excl_sys_filters This parameter normally contains a list of regular expressions that controls which files in the system that not should be included in the target system. In order to be included, a file must match some filter in incl_sys_filters but not any filter in excl_sys_filters. This parameter defaults to [].

incl_app_filters This parameter normally contains a list of regular expressions that controls which application specific files that should be included. Each file in the application must match at least one of the listed regular expressions in order to be included. Further the files may not match any filter in excl_app_filters in order to be included. This parameter defaults to [".*"].

excl_app_filters This parameter normally contains a list of regular expressions that controls which application specific files that not should be included in the target system. In order to be included, a file must match some filter in incl_app_filters but not any filter in excl_app_filters. This parameter defaults to [].

incl_archive_filters This parameter normally contains a list of regular expressions that controls which top level directories in an application that should be included in an archive file (as opposed of being included as a regular directory outside the archive). Each top directory in the application must match at least one of the listed regular expressions in order to be included. Further the files may not match any filter in excl_app_filters in order to be included. This parameter defaults to [".*"].

excl_archive_filters This parameter normally contains a list of regular expressions that controls which top level directories in an application that not should be included in an archive file. In order to be included in the application archive, a top directory must match some filter in incl_archive_filters but not any filter in excl_archive_filters. This parameter defaults to ["include$","priv$"].

archive_opts This parameter contains a list of options that are given to zip:create/3 when application specific files are packaged into an archive. All options are not supported. The most useful options in this context, are the ones that controls which types of files that should be compressed. This parameter defaults to [].

On application (escript) level, the following options are supported:

incl_cond The value of this parameter overrides the parameter with the same name on system level.

On application (app) level, the following options are supported:

vsn The version of the application. In an installed system there may exist several versions of an application. The vsn parameter controls which version of the application that will be choosen. If it is omitted, the latest version will be choosen.

mod Module specific configuration. A module has a mandatory name and module level options that are described below.

mod_cond The value of this parameter overrides the parameter with the same name on system level.

incl_cond The value of this parameter overrides the parameter with the same name on system level.
app_file The value of this parameter overrides the parameter with the same name on system level.

debug_info The value of this parameter overrides the parameter with the same name on system level.

incl_app_filters The value of this parameter overrides the parameter with the same name on system level.

excl_app_filters The value of this parameter overrides the parameter with the same name on system level.

incl_archive_filters The value of this parameter overrides the parameter with the same name on system level.

excl_archive_filters The value of this parameter overrides the parameter with the same name on system level.

archive_opts The value of this parameter overrides the parameter with the same name on system level.

On module (mod) level, the following options are supported:

incl cond This parameter controls whether the module is included or not. By default the mod_incl parameter on application and system level will be used to control whether the module is included or not. The value of incl cond overrides the module inclusion policy. include implies that the module is included, while exclude implies that the module not is included. derived implies that the is included if any included uses the module.

debug_info The value of this parameter overrides the parameter with the same name on application level.

**DATA TYPES**

```elixir
options() = [option()]

option() = {config, config() | file()}
  | {trap_exit, bool()}
  | {wx_debug, term()}

config() = {sys, [sys()]}

sys() = {root_dir, root_dir()}
  | {lib_dirs, [lib_dir()]}
  | {profile, profile()}
  | {erts, app()}
  | {escript, escript_file(), [escript()]
  | {app, app_name(), [app()]
  | {mod_cond, mod_cond()}
  | {incl_cond, incl_cond()}
  | {boot_rel, boot_rel()}
  | {rel, rel_name(), rel_vsn(), [rel_app()]}
  | {relocatable, relocatable()}
  | {app_file, app_file()}
  | {debug_info, debug_info()}
  | {incl_sys_filters, incl_sys_filters()}
  | {excl_sys_filters, excl_sys_filters()}
  | {incl_app_filters, incl_app_filters()}
  | {excl_app_filters, excl_app_filters()}
```
app() = {vsn, app_vsn()}
| {incl_cond, incl_cond()}
| {archive_opts, [archive_opt()]
| {debug_info, debug_info()}
| {app_file, app_file()}
| {incl_sys_filters, incl_sys_filters()}
| {excl_sys_filters, excl_sys_filters()}
| {incl_app_filters, incl_app_filters()}
| {excl_app_filters, excl_app_filters()}
| {incl_archive_filters, incl_archive_filters()}
| {excl_archive_filters, excl_archive_filters()}
| {archive_opts, [archive_opt()]

mod() = {vsn, app_vsn()}
| {incl_cond, incl_cond()}
| {debug_info, debug_info()}

rel_app() = app_name()
| {app_name(), app_type()}
| {app_name(), [incl_app()]}
| {app_name(), app_type(), [incl_app()]}

app_name() = atom()
app_type() = permanent | transient | temporary | load | none
app_vsn() = string()
archive_opt = zip_create_opt()
boot_rel() = rel_name()
app_file() = keep | strip | all
debug_info() = keep | strip
dir() = string()
escript() = {incl_cond, incl_cond()}
escript_file() = file()
excl_app() = regexps()
excl_archive() = regexps()
excl_sys() = regexps()
file() = string()
incl_app() = app_name()
incl_app() = regexps()
incl_archive() = regexps()
incl_cond() = include | exclude | derived
incl_sys() = regexps()
lib_dir() = dir()
mod_cond() = all | app | ebin | derived | none
mod_name() = atom()
profile() = development | embedded | standalone
re_regexp() = string()
reason() = string()
regexps() = [re_regexp()] | {add, [re_regexp()] | {del, [re_regexp()]}
rel_file() = term()
rel_name() = string()
rel_vsn() = string()
relocatable = boolean()
root_dir() = dir()
script_file() = term()
server() = server_pid() | options()
server_pid() = pid()
target_dir() = file()
window_pid() = pid()

Exports

create_target(Server, TargetDir) -> ok | {error, Reason}
Types:
  • Server = server()
  • TargetDir = target_dir()
  • Reason = reason()
Create a target system. Gives the same result as
{ok, TargetSpec} = reltool:get_target_spec(Server) and
reltool:eval_target_spec(TargetSpec, RootDir, TargetDir).

eval_target_spec(TargetSpec, RootDir, TargetDir) -> ok | {error, Reason}
Types:
  • TargetSpec = target_spec()
  • RootDir = root_dir()
  • TargetDir = target_dir()
  • Reason = reason()
Create the actual target system from a specification generated by
reltool:get_target_spec/1. The creation of the specification for a target system is
performed in two steps. In the first step a complete specification will be generated. It
will likely contain much more files than you are interested in in your target system. In
the second step the specification will be filtered according to your filters. There you
have the ability to specify filters per application as well as system wide filters. You can
also select a profile for your system. Depending on the profile, different default
filters will be used.
The top directories bin, releases and lib are treated differently from other files. All
other files are by default copied to the target system. The releases directory contains
generated rel, script, and boot files. The lib directory contains the applications.
Which applications that are included and if they should be customized (archived,
stripped from debug info etc.) is specified with various configuration parameters. The
files in the bin directory are copied from the erts-vsn/bin directory, but only those
files that was originally included in bin directory of the source system.
If the configuration parameter relocatable was set to true there is no need to install
the target system with reltool:install/2 before it can be started. In that case the file
tree containing the target system can be moved without re-installation.

get_config(Server) -> {ok, Config} | {error, Reason}
Types:
  • Server = server()
- Config = config()
- Reason = reason()

Get reltool configuration. Shorthand for reltool:get_config(Server,false,false).

get_config(Server, InclDefaults, InclDerived) -> {ok, Config} | {error, Reason}
Types:
- Server = server()
- InclDefaults = incl_defaults()
- InclDerived = incl_derived()
- Config = config()
- Reason = reason()

Get reltool configuration. Normally, only the explicit configuration parameters with values that differs from their defaults are interesting. But the builtin default values can be returned by setting InclDefaults to true. The derived configuration can be return by setting InclDerived to true.

get_rel(Server, Relname) -> {ok, RelFile} | {error, Reason}
Types:
- Server = server()
- RelName = rel_name()
- RelFile = rel_file()
- Reason = reason()

Get contents of a release file. See rel(4) for more details.

get_script(Server, Relname) -> {ok, ScriptFile} | {error, Reason}
Types:
- Server = server()
- RelName = rel_name()
- ScriptFile = script_file()
- Reason = reason()

Get contents of a boot script file. See script(4) for more details.

get_server(WindowPid) -> {ok, ServerPid} | {error, Reason}
Types:
- WindowPid = window_pid()
- ServerPid = server_pid()
- Reason = reason()

Return the process identifier of the server process.

get_target_spec(Server) -> {ok, targetSpec} | {error, Reason}
Types:
- Server = server()
- TargetSpec = target_spec()
- Reason = reason()
Return a specification of the target system. The actual target system can be created with `reltool:eval_target_spec/3`.

`install(Server, TargetDir) -> ok | {error, Reason}`
 Types:
  • `Server = server()`  
  • `TargetDir = target_dir()`  
  • `Reason = reason()`  
 Install a created target system

`start() -> {ok, WindowPid} | {error, Reason}`
 Types:
  • `WindowPid = window_pid()`  
  • `Reason = reason()`  
 Start a main window process with default options

`start(Options) -> {ok, WindowPid} | {error, Reason}`
 Types:
  • `Options = options()`  
  • `WindowPid = window_pid()`  
  • `Reason = reason()`  
 Start a main window process with options

`start_link(Options) -> {ok, WindowPid} | {error, Reason}`
 Types:
  • `Options = options()`  
  • `WindowPid = window_pid()`  
  • `Reason = reason()`  
 Start a main window process with options. The process is linked.

`start_server(Options) -> {ok, ServerPid} | {error, Reason}`
 Types:
  • `Options = options()`  
  • `ServerPid = server_pid()`  
  • `Reason = reason()`  
 Start a server process with options. The server process identity can be given as argument to several other functions in the API.

`stop(Pid) -> ok | {error, Reason}`
 Types:
  • `Pid = server_pid() | window_pid()`  
  • `Reason = reason()`  
 Stop a server or window process
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Reltool application