



# Cisco configuration files with Perl and Template Toolkit

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# Corporate environment

- Blue shirts, ties ... and spreadsheets
- Manual typing => tedious and error prone





# The procedure

- Prepare templates
- Read spreadsheet and build internal representation
- Generate configurations
- Copy files from TFTP to running-config

# Employing Perl and several CPAN modules



# Spreadsheet::ParseExcel

- supported formats: Excel95, 97, 2000
- easy and convenient reading

```
use Spreadsheet::ParseExcel;

my $excel = Spreadsheet::ParseExcel::Workbook->Parse($file);

# read single sheet
my $sheetPorts = $excel->Worksheet("Mach_Main_R5");

[...]
# getting data
my %port;

$port{duplex} = $sheetPorts->{Cells}[$row][8]{Val};
$port{description} = $sheetPorts->{Cells}[$row][2]{Val};
```

# Internal representation

```
{
  'speed' => 100,
  'name' => '4/0/6',
  'description' => 'VLAPCT1',
  'vlan' => 90,
  'duplex' => 'full'
},
{
  'speed' => 100,
  'name' => '4/0/7',
  'description' => 'VLAPCT2',
  'vlan' => 90,
  'duplex' => 'full'
},
{
  'speed' => 'auto',
  'name' => '4/0/8',
  'description' => 'SERVLA2 ilo',
  'vlan' => 10,
  'duplex' => 'auto'
},
}
```

- array of hash references
- interface information
  - name
  - speed
  - duplex
  - vlan
  - ...
- other information

# Template Toolkit

- fast and flexible template system
- very good documentation
- specific syntax [% ... %]

```
use Template;

my $vars = {
  ports => \@Ports,
};

my $tplfile = "config.tpl";
my $template = Template->new();

$template->process($tplfile, $vars)
  || die "Template process failed: ",
      $template->error(), "\n";
```

# Template file

- config.tpl:

```
[%- FOREACH port IN ports -%]  
!  
interface GigabitEthernet[% port.name %]  
  description - [% port.description %]  
  switchport access vlan [% port.vlan %]  
  switchport mode access  
  speed [% port.speed %]  
  duplex [% port.duplex %]  
  spanning-tree portfast  
end  
[% END %]
```

# Summary

- Excellent modules available on CPAN :-)

```
interface GigabitEthernet4/0/6
  description - VLAPCT1
  switchport access vlan 90
  switchport mode access
  speed 100
  duplex full
  spanning-tree portfast
end
```

```
!  
interface GigabitEthernet4/0/7  
  description - VLAPCT2  
  switchport access vlan 90  
  switchport mode access  
  speed 100  
  duplex full  
  spanning-tree portfast  
end
```



i n v e n t

# Other modules

- Net::Patricia - Patricia Trie perl module for fast IP address lookups
- Regexp::Common - Provide commonly requested regular expressions

```
use Net::Patricia;

my $pt = new Net::Patricia;

$pt->add_string('127.0.0.0/8', \$user_data);
$pt->match_string('127.0.0.1');

use Regexp::Common qw /net/;

$logrec->{Destination} =~ m/^\$RE{net}{IPv4}$/
$logrec->{mac} =~ m/^\$RE{net}{MAC}$/
```