

# **Objtool on Power - Update**

## **Livepatching Miniconf - Linux Plumbers 2019**

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## Current State

<https://github.com/kamalesh-babulal/linux/tree/objtool-v1>

- Decoder
  - Stack operations
  - Branch
  - Dead ends
  - Switch table (solution - gcc plugin)
  - Conditional branch to LR
  - Prologue Sequence
- Validation of stack

## Kernel

- Annotation – reachable/unreachable
- ASM Cleanup

## Future Plans

- Once ARM64 objtool code is merged
- It decouples arch independent bits
- Patchset is based on these changes
- We can do more clean up
  - Structures (registers)
- Common Plugin for switch table detection
- More and more testing required
- Try different versions of gcc
- Tricky instructions with ASM

# Legal Statement

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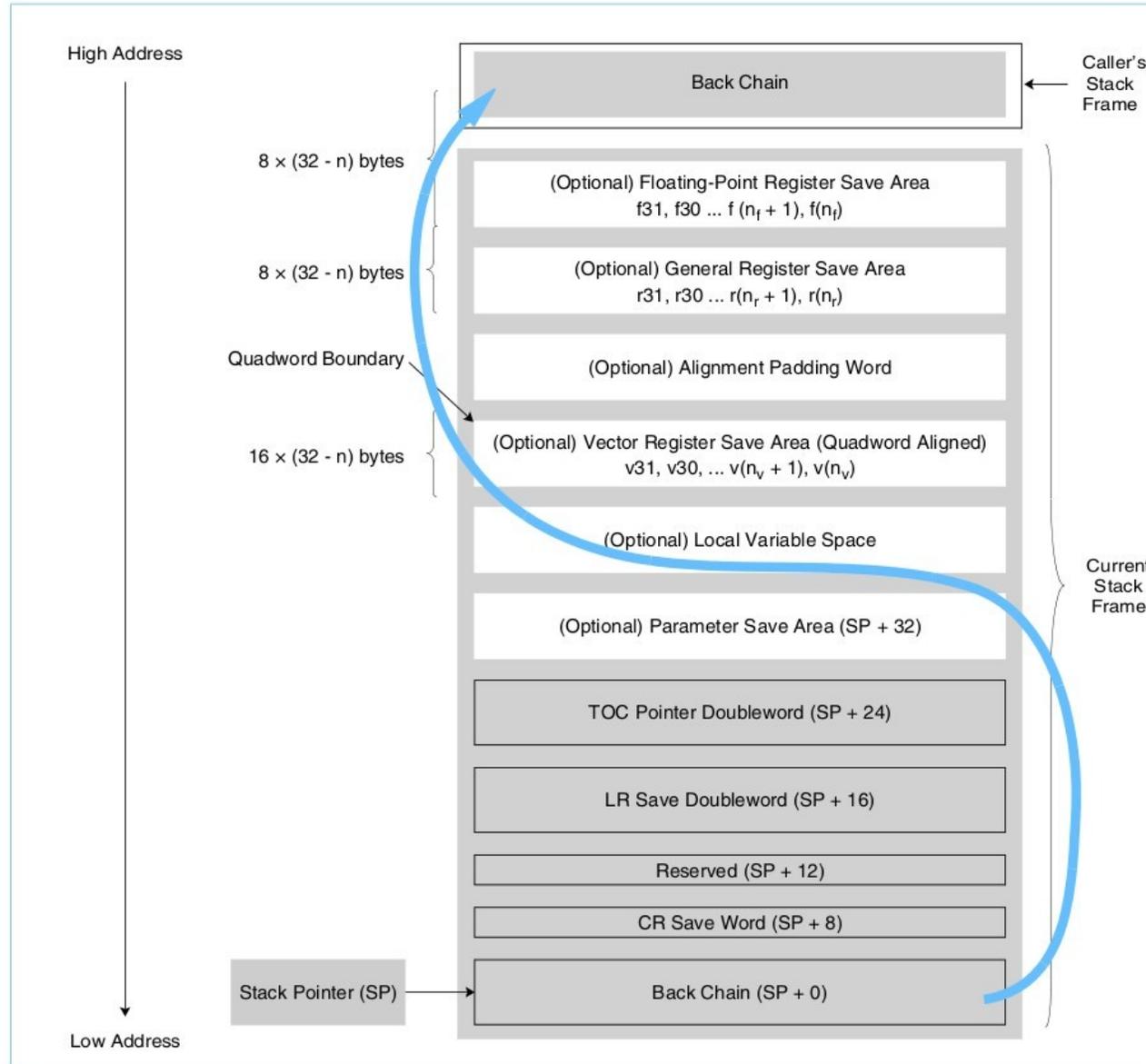
Thank you

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# Backup

# Stack Frame on PPC64

Figure 2-18. Stack Frame Organization



# Switch case representation

Figure 2-37. Absolute Switch Code (Within) for static modules located in low or high 2 GB of address space

C Code	Assembly Code
switch(j)	cmplwi      r12, 4
{	bge          .Ldefault
case 0:	slwi        r12, 2
...	addis       r12, r12, .Ltab@ha
case 1:	lwa         r12, .Ltab@1(r12)
...	mtctr       r12
case 3:	bctr
...	.rodata
default:	.Ltab:
...	.long        .Lcase0
}	.long        .Lcase1
	.long        .Ldefault
	.long        .Lcase3
	.text

# Prologue Sequence

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0000000000000000 <rdma\_event\_msg-0x8>

...

0: R\_PPC64\_REL64 .TOC.-0x8

000000000000000008 <rdma\_event\_msg>:

8: f8 ff 4c e8 ld r2,-8(r12)

8: R\_PPC64\_ENTRY \*ABS\*