



Secure Image-less Container Migration

Linux Plumbers Conference 2019
10th September

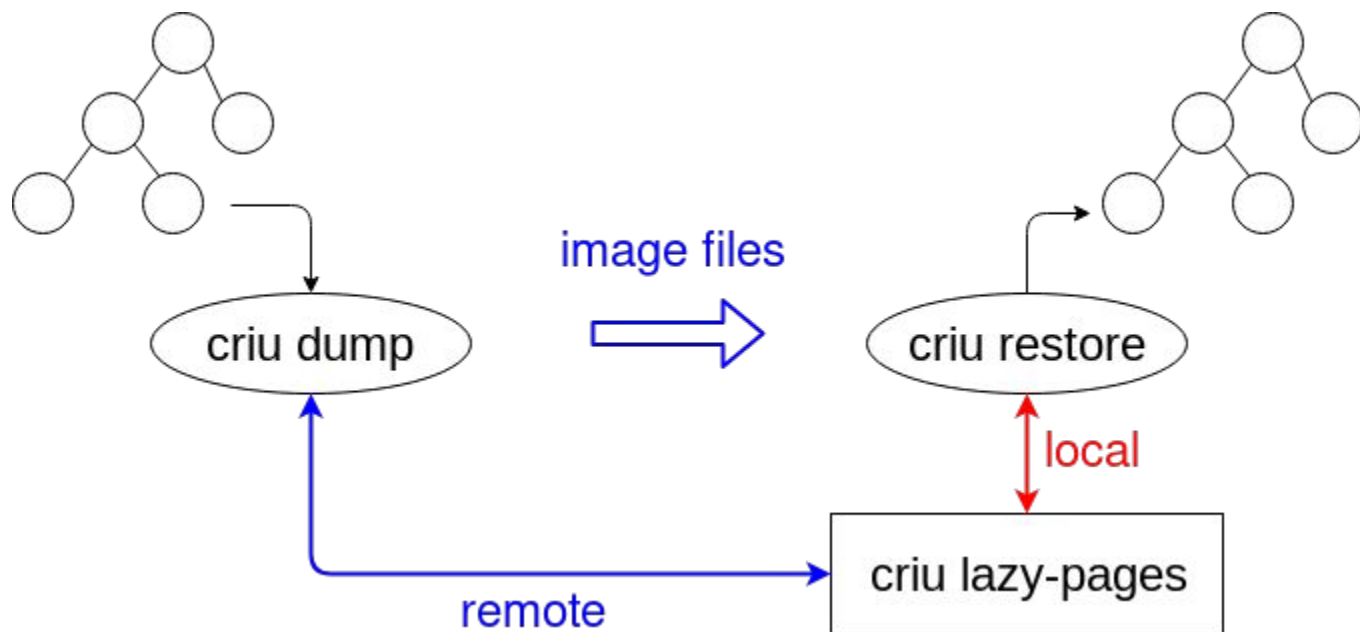
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Agenda

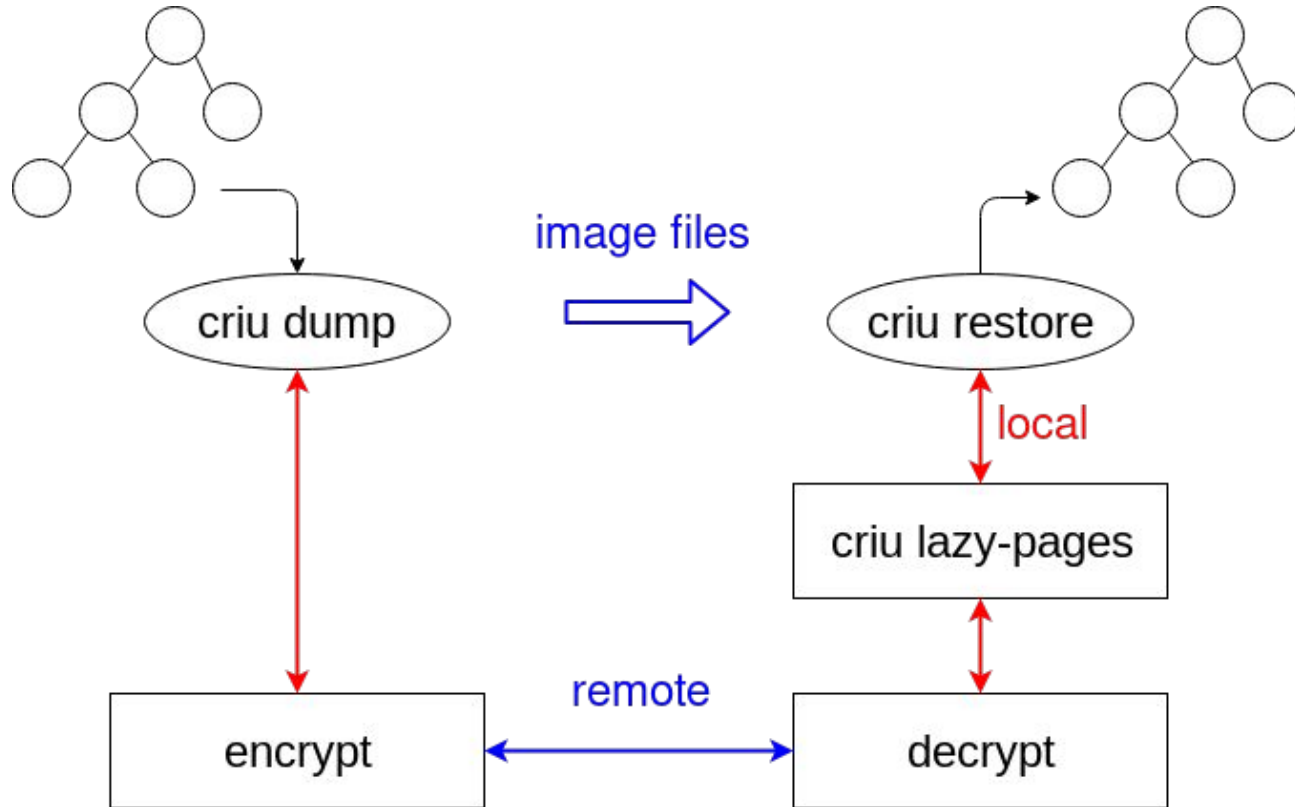
- Enable TLS support for page-server and lazy-pages
- Performance overhead of image-cache and image-proxy
- Future work



Post-copy migration



Secure post-copy migration





Client

TLS Handshake

Server



Client Hello
- Key share
- Signature algorithms

Key Exchange

Server Hello
Key share
Signature algorithms
Certificate Request
Certificate

Key Exchange

Certificate
Certificate Verify
Finished

Auth

Application Data



Enable TLS support

```
[dst] # criu page-server --tls ...
```

```
[src] # criu dump --page-server --tls --address <dst> --port <port> ...
```

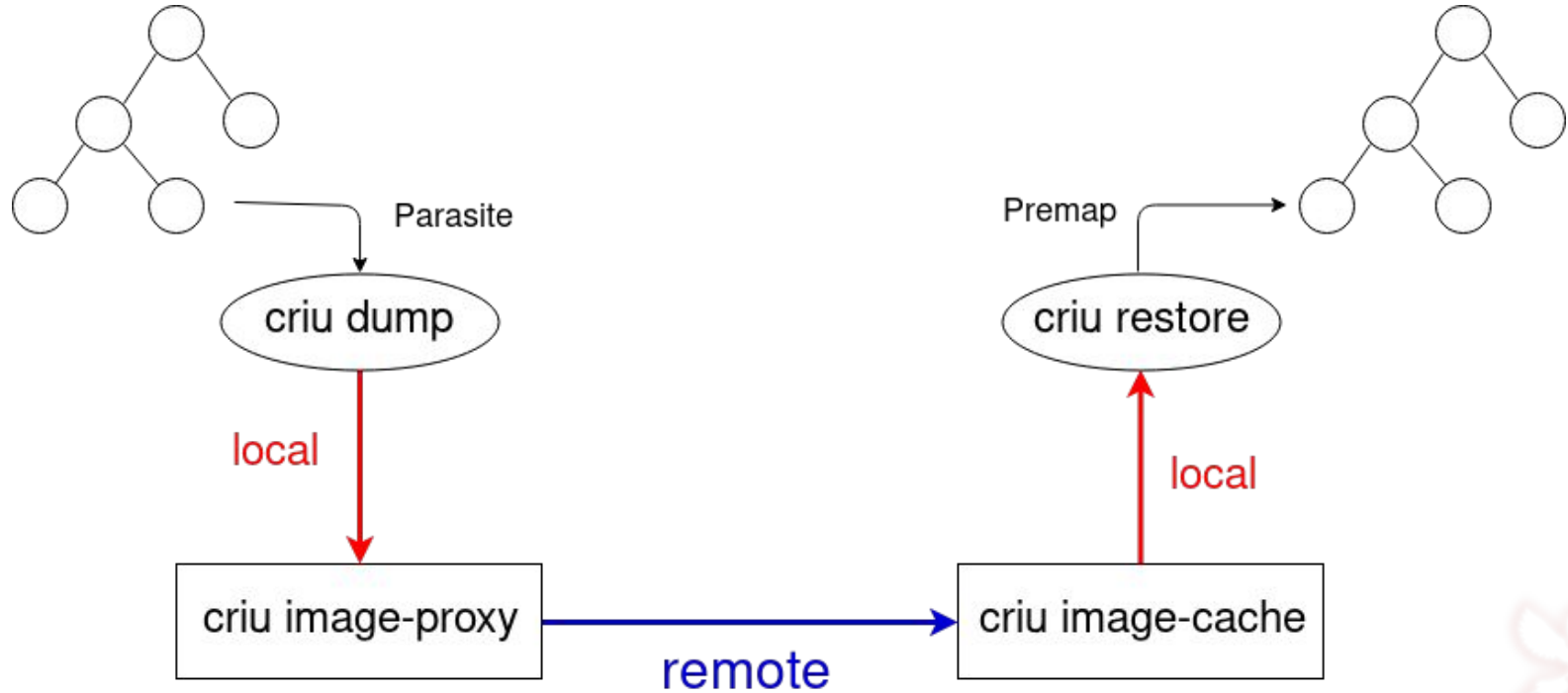
```
[src] # criu dump --lazy-pages --tls ...
```

```
[dst] # criu lazy-pages --tls ...
```

```
[dst] # criu restore --lazy-pages
```



Automatic images transfer



Automatic images transfer

```
[dst] # criu image-cache --port <port>
```

```
[src] # criu image-proxy --port <port> --address <src>
```

```
[src] # criu dump --remote ...
```

```
[dst] # criu restore --remote ...
```



Image-less migration

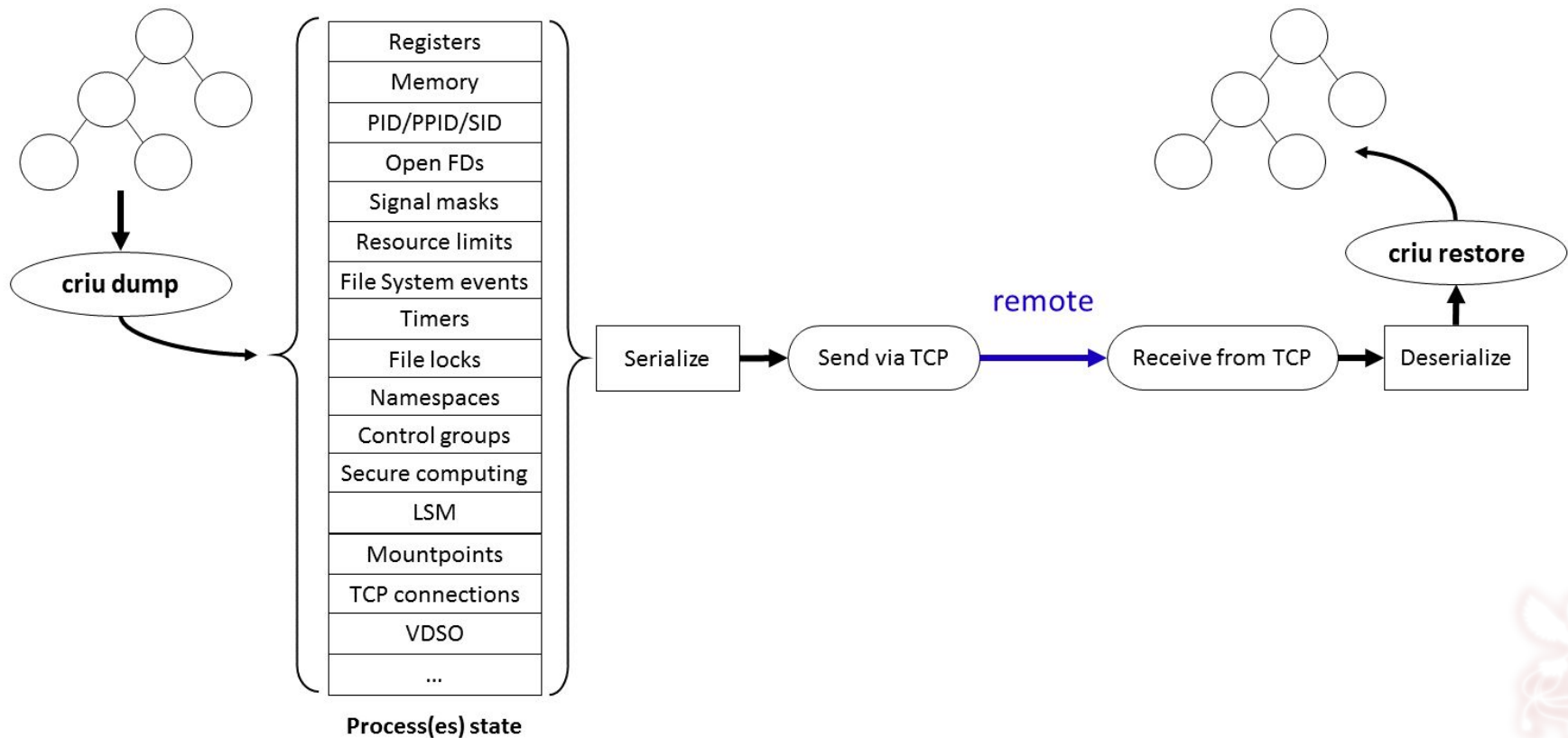


Image-less migration

```
[dst] # criu restore --remote --port <port>
```

```
[src] # criu dump --remote --port <port> --address <src>
```



Image-less migration

```
[dst] # criu restore --remote --port <port>
```

```
[src] # criu pre-dump --remote --port <port> --address <src>
```

```
[src] # criu pre-dump --remote --port <port> --address <src>
```

```
...
```

```
[src] # criu dump --remote --port <port> --address <src>
```



Image-less migration

```
[dst] # criu restore --remote --ps-socket <fd>
```

```
[src] # criu pre-dump --remote --ps-socket <fd>
```

```
[src] # criu pre-dump --remote --ps-socket <fd>
```

```
...
```

```
[src] # criu dump --remote --ps-socket <fd>
```



Future work

- Raw: tmpfs, route, ifaddr
 - We need to know how much data we are going to be sending/receiving
- Overwrite pages received from pre-dump
- Integrate with lazy-pages daemon

Thank you!

<https://github.com/rst0git/criu/tree/remote-rfc-3>

<https://github.com/checkpoint-restore/criu/pull/663>

<https://criu.org/TLS>