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DECREASING CONTAINER DOWNTIME DURING MIGRATION

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CONTAINER MIGRATION

- runC (https://runc.io/) based containers
- criu (https://criu.org/) based migration
- Xonotic (http://xonotic.org/) in the container

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LOCAL MIGRATION DEMO

Local Migration Demo

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LOCAL MIGRATION SETUP

- `yum install --releasever 7.3 --installroot /runc/containers/xonotic/rootfs bash coreutils procps-ng iptools xonotic-server`
- `oci-runtime-tool generate --args "/usr/bin/darkplaces-dedicated" --args "-userdir" --args "/tmp" --network host --tmpfs /tmp --tmpfs /run --rootfs-readonly | jq 'del(.linux.seccomp)' > config.json`
- `runc run xonotic -d -b /runc/containers/xonotic/ &> /dev/null < /dev/null`
- RHEL 7.3
  - runc-0.1.1-5.el7.x86_64
  - criu-2.3-2.el7.x86_64

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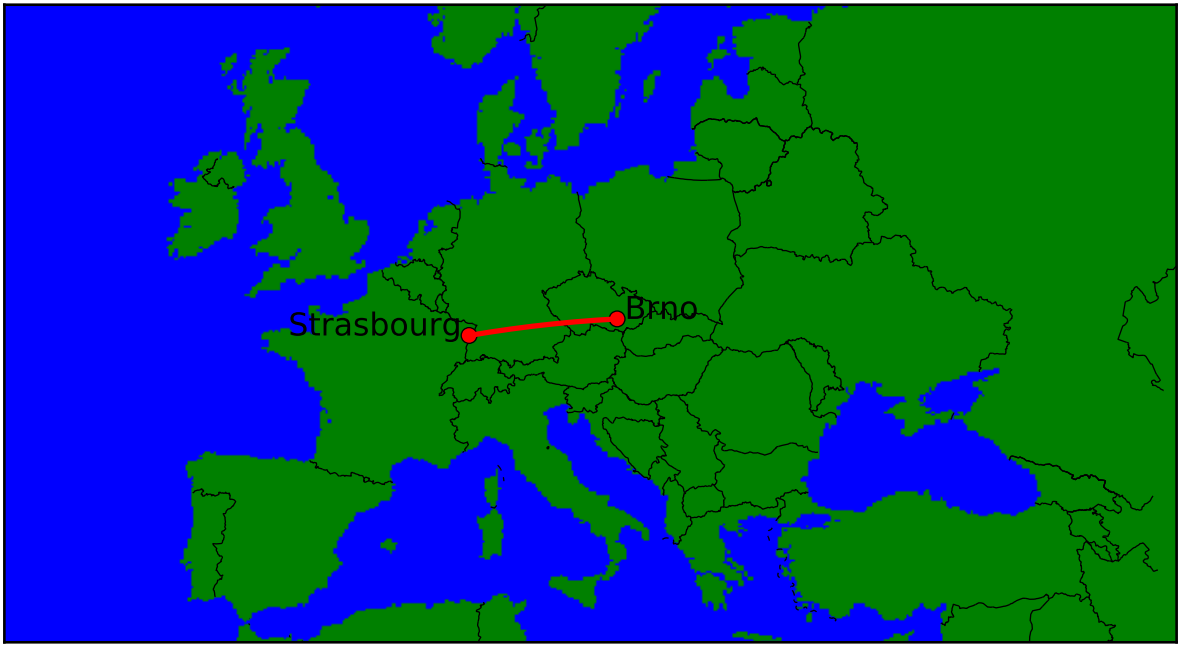
Strasbourg
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REMOTE MIGRATION SETUP

- Layer 2 OpenVPN Tunnel
- Floating IP address using `keepalived`
- Pre-Copy Migration
- Still RHEL 7.3 kernel and criu
- Using runC PR #1001 (https://github.com/opencontainers/runc/pull/1001)

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OPTIMIZATIONS - PRE-COPY

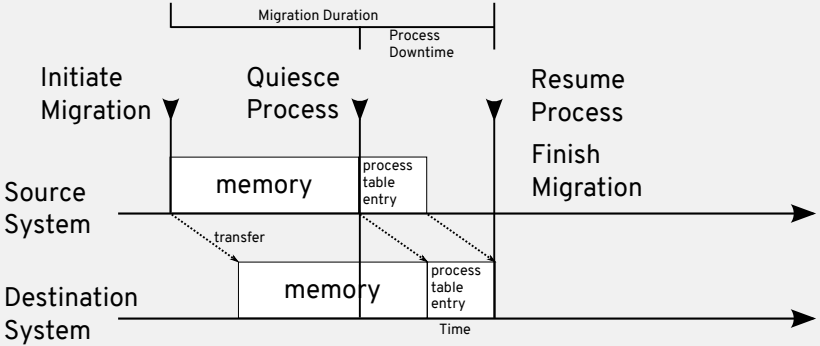

Figure: Pre-Copy Migration

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FURTHER OPTIMIZATION

- Lazy Migration
  - Based on userfaultfd
  - Requires CRIU from `criu-dev` branch
  - Requires CRIU patches (some already posted)
  - Requires runC patches (only on my system)
  - Limited to processes which are not forking (on RHEL7.3)
  - Kernel patches to support forking processes are in linux-next tree

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THANK YOU