



**Psync**

**Hackathon 2019**

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# Problem

- A repo needs to learn about prefixes to fetch and store data from a producer, and similarly needs to inform potential consumers what prefixes it provides. The PSync library is based on `<prefix>/<sequenceNo>` names rather than names defined by the application, so is not well-suited. It should be generalized for any names.



# Approach

- Create a new class FullProducerArbitrary.
- Refactor FullProducer to use it, and interpret the synced names as <prefix>/<sequenceNo>.



# Benefit

- Robust synchronization of names enabling repo storage and multiuser discovery of content with arbitrary names.



# Alternatives

- Could use `<prefix>/<sequenceNo>`, always with seq 1: `<arbitrary-name>/1` . But the library would internally run unnecessary code and the hack could confuse the application developer.

# Achieved

- Created class FullProducerArbitrary.
- The FullProducer API remains the same.
- Created example program full-sync-arbitrary.
- Tested adding many names to the IBF.
  - ~275 is the max IBF size after which Interest exceeds max packet size
- All existing unit tests passed for Full and Partial Sync
- NLSR using PSync still works (4 nodes)



# Code

- <https://github.com/8th-ndn-hackathon/PSync>



# Demo

- Example program full-sync-arbitrary.
  - Syncing between “producer” and “repo”.
- Sync the difference of two sets with many names.



# Demo Screenshots

- 4 node topology, each node publishes 6 updates

```
ashlesh@ashlesh-precision-3530:~$ cat /tmp/minindn/a/psync.logs | grep Publish
1552241010.284794 INFO: [examples.FullSyncApp] Publish: /a-1/%FD%00%00%01ih%C6%26l
1552241010.304725 INFO: [examples.FullSyncApp] Publish: /a-0/%FD%00%00%01ih%C6%26%80
1552241010.340218 INFO: [examples.FullSyncApp] Publish: /a-1/%FD%00%00%01ih%C6%26%A4
1552241010.341544 INFO: [examples.FullSyncApp] Publish: /a-1/%FD%00%00%01ih%C6%26%A5
1552241010.556053 INFO: [examples.FullSyncApp] Publish: /a-0/%FD%00%00%01ih%C6%27%7C
1552241010.675912 INFO: [examples.FullSyncApp] Publish: /a-0/%FD%00%00%01ih%C6%27%F3
```

```
ashlesh@ashlesh-precision-3530:~$ cat /tmp/minindn/*/psync.logs | grep Update | gre
1552241010.297096 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26l
1552241010.342013 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%26%80
1552241010.381855 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A4
1552241010.381878 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A5
1552241010.571076 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%7C
1552241010.690870 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%F3
1552241010.297096 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26l
1552241010.319979 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%26%80
1552241010.368194 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A4
1552241010.368217 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A5
1552241010.571024 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%7C
1552241010.690796 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%F3
1552241010.321002 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26l
1552241010.352283 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%26%80
1552241010.395404 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A4
1552241010.395429 INFO: [examples.FullSyncApp] Update /a-1/%FD%00%00%01ih%C6%26%A5
1552241010.581549 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%7C
1552241010.701403 INFO: [examples.FullSyncApp] Update /a-0/%FD%00%00%01ih%C6%27%F3
```