Dynamic NUCA (D-NUCA) is a flexible cache design that allows data to be mapped into multiple positions within the NUCA cache. Implements data migration to take accessed data close to the requesting core. Thus, decreasing access latency for future accesses to the same data.

Although existing migration policies succeed on concentrating most accessed data to optimal banks, our experiments show that by 50% of hits in the NUCA cache are resolved in the non-optimal banks.

The Migration Prefetcher

Uses address correlation to anticipate data migrations in the NUCA cache.

Evaluate a perfect approach and a realistic implementation. The main challenges are data lookup algorithm, prefetcher accuracy and the size of the NAT.

The realistic approach implements:
1) Access: Local + Last Responser.
2) Accuracy: 1 confidence bit.
3) NAT size: 12 addressable bits (29 Kbytes/prefetcher).

Access latency to the NUCA cache can be reduced up to 25% when using the realistic implementation of the migration prefetcher.