# research highlights

An interconnect is the physical link
that enables communication between
chips. The most common interconnect
technology is based on metallic wiring.
However, the performance of metallic
interconnects, with respect to power
consumption and communication delay,
does not improve with down-scaling.
Thus, traditional metallic interconnects
may not be ideal for deeply scaled, highly
complex chip architectures such as many-
core chip multiprocessors. Unconventional
interconnect technologies based on optics
or wireless communication could offer a
power-efficient and more scalable alternative
for on-chip communication.

Avinash Karanth and colleagues have
previously developed an optical and
wireless on-chip network, termed OWN,
that utilizes optical interconnects for short
distances and wireless interconnects for long
distances. Building on this previous work,
the researchers — who are based at Ohio
University, George Washington University
and the University of Arizona — have now
augmented OWN to include wireless links
that can be reconfigured during operation
in a new architecture they call R-OWN.
Their modification allows traffic from
over-utilized channels to be reallocated to
under-utilized channels dynamically. The
ability to reconfigure during runtime leads
to an improvement in performance in their
new architecture compared to their previous
architecture, though this comes at a cost of
higher energy consumption.

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