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PCIe Bandwidth Controller

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PCIe Bandwidth Controller (bwctrl) is a PCIe portdrv service that allows controlling the PCIe Link Speed for thermal and power consumption reasons. The Link Speed control is provided through an in-kernel API and for userspace through a thermal cooling device. With the advent of PCIe gen6, also the PCIe Link Width will become controllable in the near future.

On PCIe side, bwctrl requires full control over the Link Bandwidth Management Status (LBMS) bit. There is pre-existing use of the LBMS bit in the kernel by the Target Speed quirk. The quirk also requires altering PCIe Link Speeds when the quirk activates which should use the newly introduced in-kernel API. As such, bwctrl comes with integration challenges related not only to the use of LBMS bit but also what parts of bwctrl have to be always built to allow the Target Speed quirk to keep working.

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