## Even-odd transposition sort network

**Array sorted**

N elements in array

| 3 | 3 | 3 | 3 | 2 | 2 |
|---|---|---|---|---|---|

4

| 4 | 4 | 4 | 2 | 3 | 3 |

3

| 5 | 5 | 2 | 4 | 4 | 4 |

5

| 6 | 2 | 5 | 5 | 5 | 5 |

6

| 2 | 6 | 6 | 6 | 6 | 6 |

19

| 19 | 19 | 19 | 19 | 19 | 19 |

2

**Depth**

- = comparators connected to wires
- = wires
- = comparator
- = shows sorted array in obliquely
- E = elements swapped

$N = 6$

$depth(N) = 6$

$comparators = \frac{N\,(N-1)}{2}$
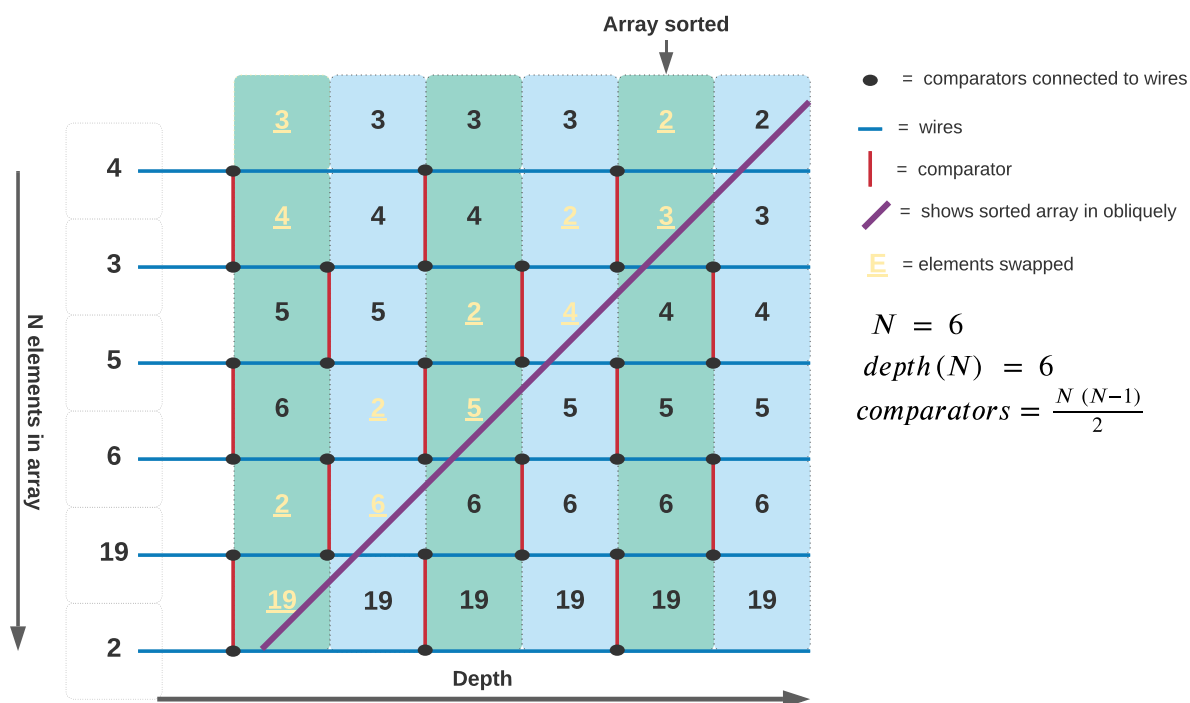
## Even-odd merge sort network

**Array sorted**

N elements in array

| 3 | 3 | 3 | 2 | 2 | 2 |
|---|---|---|---|---|---|

4

| 4 | 4 | 4 | 4 | 4 | 3 |

3

| 5 | 5 | 5 | 5 | 3 | 4 |

5

| 6 | 6 | 6 | 6 | 6 | 5 |

6

| 2 | 2 | 2 | 3 | 5 | 6 |

19

| 19 | 9 | 7 | 7 | 7 | 7 |

2

| 7 | 7 | 9 | 9 | 9 | 9 |

9

| 9 | 19 | 19 | 19 | 19 | 19 |

7

**Depth**

$N = 8$

$depth(N = 2^p) = \frac{p\,(p+1)}{2}$

$depth\ (N) = 6$

$comparators\ (N = 2^p) = \left(p^2 - p + 4\right)\,2^{p-2} - 1$

$comparators\ (N) = 19$