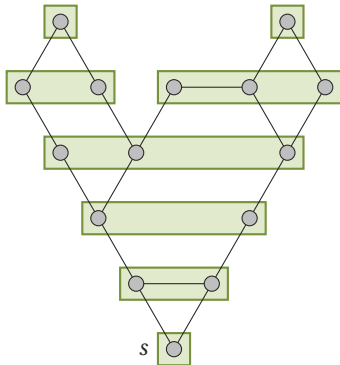

Layering Partition

Layering Partition

Idea

- ▶ Distance layering
- ▶ Partition layers into clusters.



Layering Partition – Clusters

Two vertices u and v are in the same cluster if

- ▶ $d(s, u) = d(s, v) = k$ and
- ▶ u and v are in the same connected component in $G[V_k]$ with $V_k = \{ w \mid d(s, w) \geq k \}$.

Linear Time Algorithm

- ▶ Compute distance layers (using BFS).
- ▶ Starting with furthest distant layers, compute connected components in this layer.
- ▶ For each connected component in layer l , contract it to single vertex and add it to layer $l - 1$.
- ▶ Repeat for each layer.