


Networks

- A network is a set of vertices (**nodes**) and connections (**edges**) between them.
- Examples include the **Internet**, **Social Networks**, **neural networks**, **metabolic networks**, **food webs**, **citation networks**, *etc*
- Current research focuses on :
 - 1) **Finding quantities** which describe network properties and suggesting ways to measure them.
 - 2) **Creating models** of evolving networks that help understand what sort of evolution rules (or optimization strategies) give the above properties.
 - 3) **Predicting behaviour** of networked systems based on structural properties and local rules (How will network structure affect some process occurring on the network?)
- The research on **peer-to-peer networks** is related to 3) with added complication that the process is occurring on an evolving network.

Networks (contd)

- Peer to peer networks could be **structured** or **unstructured**.
- **Structure**  Nodes have ids, rules for connecting nodes
- **Contents** also have id's and are owned by the nodes.

- One process that is of interest to study on this network is the performance of a **lookup** : how **many** nodes have to be queried before finding the content you are interested in, how **long** does it take?

- We could also be interested in other more complicated processes such as **content distribution** : what fraction of nodes get the entire content ? How long does it take?

P2P Overlays

