Here is a **comprehensive sentence-by-sentence study note breakdown** of the document **“36. Network Impacts”**, formatted in your preferred **bullet point structure** and optimized for **CompTIA A+ 1102 (Objectives 1.6 and 4.3)**. Every concept is thoroughly explained with **real-world relevance and technical insight**.

**✅ Structured Study Notes – Network Impacts of Application Installation**

**🧠 Concept Overview**

* Installing certain applications can significantly impact **network performance**, not just device performance.
* **Network-heavy applications** can:
  + Affect the **local machine**
  + Disrupt the **network segment**
  + Overload the **entire network**

**💡 Real-World Case Study: Video File Syncing**

**Situation:**

* The company used **Google Drive** for backing up large video files.
* Average data size: **1 GB per 4 minutes** of video.
* A **20-minute video** = **~5 GB**.

**Tools Used:**

* **Google Drive Sync Tool**:
  + Installed on all systems.
  + Handles **background uploads/downloads** to/from Google Drive.

**⚠️ Network Bottleneck Example**

* After filming, the instructor uploads massive video files.
* Uploading all this data via **Google Drive Sync**:
  + Consumes **all available upload bandwidth**.
  + Results in a **denial of service-like condition** for other users on the same network.
  + Others **can’t access the internet or cloud resources** effectively.

🧠 **Key Insight**: Applications that **sync or back up in the background** can silently **saturate bandwidth**.

**🛠️ Solution: Bandwidth Throttling via QoS**

* The team **configured the sync tool** to limit upload speed to **100 Mbps max**.
* This:
  + Reduced sync speed slightly
  + **Preserved bandwidth** for other users
  + **Prevented network saturation**

🧩 Quality of Service (QoS) is a **network-level control mechanism** that limits bandwidth for specific applications to **ensure balanced usage**.

**🔁 Deployment Tool Impacts on Network**

**Key Issue:**

* **Automated deployment tools** used to push software to **10,000–15,000 endpoints** can overwhelm bandwidth.

**Best Practices:**

* **Break large deployments** into **smaller batches** (e.g., 500–1,000 systems per day).
* **Schedule deployments** during **off-hours**:
  + Overnight: **10:00 PM to 5:00 AM**
  + Ensures **no interference with daytime productivity**

🧠 Large-scale software pushes, if not throttled or scheduled, can **slow down or block internet/cloud access for all users**.

**🧾 Summary of Key Network-Related Impacts**

| **Impact Type** | **Cause** | **Solution** |
| --- | --- | --- |
| **Network bottleneck** | Large uploads or downloads (e.g., syncing video files) | Use **QoS** or bandwidth limits |
| **Denial of service condition** | One client consumes all bandwidth | Throttle app traffic, stagger tasks |
| **Deployment-induced congestion** | Mass software deployment to thousands of devices | **Segment rollout**, deploy overnight |
| **Cloud performance loss** | Heavy bandwidth use blocks access to cloud tools | Plan sync/upload carefully and limit rates |

**💭 Important Considerations for Technicians**

* Always assess:
  + **How the application uses network resources**
  + **Whether it syncs or downloads constantly**
  + **How deployment methods impact real-time bandwidth**
* Think **beyond the device** — many modern applications are **cloud-integrated** and rely on a **healthy, available network connection**.

**🎯 CompTIA A+ 1102 Relevance**

| **Objective** | **Application** |
| --- | --- |
| **1.6** | Application installation and configuration |
| **4.3** | Troubleshooting software deployment and performance |
| **Scenario questions** | Expect to analyze **network slowdown** and **bandwidth issues** caused by deployments or background syncing |