The NAT translation and statistics output from the show ip nat translations and show ip nat statistics commands on the router provides a detailed look at how Network Address Translation (NAT) is configured, as well as the current activity and status of NAT translations. Here’s a breakdown of the output and an analysis of each section.

**NAT Translations (show ip nat translations)**

This command shows the active NAT translations:

1. **Translation Table Details**:
   * **Inside Global**: This is the global (public) IP address assigned to internal (private) addresses. In this case, all translations use the same IP, 192.1.1.21, which is mapped to various ports to differentiate different internal requests.
   * **Inside Local**: This represents the internal (private) IP addresses that are being translated. Here, 192.168.1.1 and 192.168.1.2 are the private IPs of hosts on the inside network.
   * **Outside Local / Outside Global**: Both represent the destination (external) IP address the internal hosts are communicating with, which is 192.1.1.40. The port numbers show the type of services accessed (e.g., 22 for SSH, 80 for HTTP).
2. **Types of Connections**:
   * The table shows both tcp and udp translations, indicating connections using both TCP and UDP protocols.
   * For instance, tcp 192.1.1.21:5449 192.168.1.1:5449 shows a TCP connection where 192.168.1.1 (Inside Local) has been mapped to the public IP 192.1.1.21 on port 5449 to connect with 192.1.1.40 (Outside Global) on port 22.
3. **Multiple Sessions**:
   * There are multiple connections originating from 192.168.1.1 and 192.168.1.2, utilizing the same public IP address but mapped to different ports. This is typical in Port Address Translation (PAT), where multiple devices share the same public IP but use unique port mappings.

**NAT Statistics (show ip nat statistics)**

This command provides an overview of NAT operation on the router:

1. **Active Translations**:
   * Total active translations: 4 (0 static, 4 dynamic; 4 extended): There are currently four active dynamic translations. Extended NAT translations include both protocol and port information.
   * Peak translations: 10: The maximum number of concurrent translations observed was 10, which occurred 12 minutes and 53 seconds ago.
2. **Interfaces**:
   * **Outside interface**: FastEthernet1/0 is configured as the outside interface.
   * **Inside interface**: GigabitEthernet0/0 is configured as the inside interface.
3. **Hits and Misses**:
   * **Hits**: 280 hits indicate successful NAT translations where the router found existing mappings for incoming packets.
   * **Misses**: 0 misses show that no packets failed to find a corresponding NAT mapping, meaning all packets were successfully translated.
4. **CEF Translated Packets**:
   * **CEF Translated packets: 280**: These are packets translated using Cisco Express Forwarding (CEF), indicating efficient handling of translations by the router.
   * **CEF Punted packets: 35**: Punted packets are packets that were processed without using CEF, typically requiring additional CPU processing.
5. **Dynamic Mapping Details**:
   * **Mapping Pool**: The NAT pool, MYNATPOOL, includes only one IP address (192.1.1.21), which is fully allocated (allocated 1 (100%)). This means all NAT translations are using this single IP with different port numbers.
   * **Misses in Dynamic Mapping**: misses 35 indicate 35 instances where packets arrived without an active NAT translation, leading the router to create a new dynamic mapping.

**Analysis of Results**

* **Port Address Translation (PAT)**: The configuration here uses PAT, allowing multiple internal IP addresses to share a single public IP (192.1.1.21). Each session is distinguished by unique port numbers.
* **Efficient Translation Usage**: The router has managed 280 translated packets successfully, and no misses in NAT mappings occurred for active sessions, indicating stable and efficient translation processing.
* **Resource Usage**: The fully allocated pool and 35 CEF punted packets show the router has occasionally processed packets outside of CEF, which may slightly impact performance under heavy traffic but is generally manageable.

Overall, the results indicate that NAT is functioning effectively on this router, with the current configuration allowing multiple devices to access external resources through a single public IP without translation issues.