**Research and Development Document: Azure VM Configuration with Static IPs, NSG, Public IP, and Network Interface**

**Objective:**  
The objective of this document is to outline the steps required to allocate static IPs to Azure virtual machines (VMs), create and configure a Network Security Group (NSG), associate and disassociate a Public IP address with a VM, and create a Network Interface (NIC) for VMs in Microsoft Azure.

**Steps to Achieve the Objective:**

**1. Allocate Static IPs to Azure VMs**

1. **Log in to Azure Portal:**
   * Navigate to the Azure portal at <https://portal.azure.com>.
2. **Select Virtual Machines:**
   * Choose an existing VM or create a new VM if necessary.
3. **Allocate Static IP:**
   * **For New VM:**
     + During VM creation, under the Networking tab, select "Static" under IP address assignment.
     + Define an IP address from the subnet range or reserve an unused IP address.
   * **For Existing VM:**
     + Go to the VM's Networking settings.
     + Under IP configurations, select the NIC associated with the VM.
     + Change the IP assignment to "Static" and specify the desired IP address.

**2. Creating a Network Security Group (NSG)**

1. **Create NSG:**
   * Navigate to **Create a resource** > **Networking** > **Network security group**.
   * Provide a name for the NSG, select the subscription and resource group.
   * Define inbound and outbound security rules:
     + Example rules:
       - Inbound: Allow RDP (3389) for Windows VMs, SSH (22) for Linux VMs.
       - Outbound: Allow all traffic (or define specific rules based on requirements).
2. **Associate NSG with VM:**
   * In the Azure portal, go to the VM's Networking settings.
   * Attach the NSG to the NIC associated with the VM under the "Network security group" section.

**3. Creating a Public IP Address and Associating/Dissociating with VM**

1. **Create Public IP Address:**
   * Navigate to **Create a resource** > **Networking** > **Public IP address**.
   * Specify details such as name, SKU (Basic/Standard), IP version, and assignment (static/dynamic).
2. **Associate Public IP with VM:**
   * Go to the VM's Networking settings.
   * Under "Public IP address", select "Associate" and choose the created Public IP.
3. **Disassociate Public IP from VM:**
   * Similarly, navigate to the VM's Networking settings.
   * Under "Public IP address", select the current associated IP and choose "None" to disassociate.

**4. Creation of Network Interface (NIC)**

1. **Create Network Interface:**
   * Navigate to **Create a resource** > **Networking** > **Network interface**.
   * Specify details such as name, subscription, resource group, virtual network, subnet, and IP configuration (dynamic/static).
2. **Associate NIC with VM:**
   * During VM creation or afterwards in VM settings:
     + Choose an existing NIC or create a new NIC and associate it with the VM.

**Documentation and Summary**

1. **Document Setup:**
   * Include screenshots of Azure portal configurations (VM with static IP, NSG, Public IP, NIC).
   * Document step-by-step configuration of each component (Static IP allocation, NSG creation, Public IP association, NIC creation).
2. **Summary:**
   * Azure VMs were configured with static IP addresses to ensure consistent networking.
   * NSGs were created and associated to control inbound and outbound traffic.
   * Public IP addresses were managed, associated, and disassociated as needed for VM access.
   * NICs were created and associated with VMs to manage networking configurations effectively.

**Conclusion:**

This document provides a comprehensive guide to configuring Azure VMs with static IPs, creating NSGs for network security, managing Public IP addresses, and establishing NICs for efficient network management in Microsoft Azure. Following these steps will enable administrators to effectively deploy and manage Azure VMs in various network configurations.