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How to Harden CentOS 8 SSH Access with Key Authentication

Key authentication is one of the most effective ways to harden SSH on CentOS 8, but only when it is implemented and validated correctly. This article explains the operational benefits, the controls it enables, the trade-offs to consider, and the checks to complete before you disable password logins in production.

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Why SSH key authentication matters on CentOS 8

The operational problem is simple: if SSH access is still allowed with passwords, your remote login path remains exposed to guessing attacks, credential stuffing, reused passwords, and weak human behavior. On CentOS 8, switching SSH access to key authentication materially reduces that risk because the server no longer accepts a password as the primary proof of identity for the accounts you protect.

That change matters most on hosts that are reachable from multiple networks, managed by several engineers, or used as jump points into more sensitive systems. It also matters when you need a predictable access model that is easier to audit than passwords shared across teams. After reading this article, you should be able to decide whether key-based SSH hardening fits your environment, understand how the control works, apply a safe workflow, and verify what must be true before production use.

Key takeaways

Key authentication improves SSH security by replacing human-memorable passwords with cryptographic proof tied to a private key. The server only needs the public key for authorization, which means password spraying becomes far less effective against protected accounts.

The hardening outcome depends on more than copying a key into authorized_keys. You also need to confirm the permissions on the .ssh directory, decide whether you will disable password authentication globally or only for selected users, and validate that you still have an administrative recovery path before enforcing the change.

The safest production pattern is usually gradual: introduce keys, verify login behavior, keep a fallback console or break-glass path, and only then remove password-based access where it is no longer required.

How the control works

SSH public key authentication works by asking the client to prove possession of a private key that matches a public key already trusted by the server. The private key stays on the client side. The server stores the public key in the target account?s ~/.ssh/authorized_keys file and uses it to validate the login attempt.

From an operational perspective, this changes the authentication problem from ?do you know a secret?? to ?can you prove you hold the correct key material?? That is a meaningful improvement because the attack surface shifts away from password guessing and toward private key protection. If the private key is protected with a strong passphrase and held in a secure location, the authentication factor is significantly harder to abuse remotely.

This also makes access control more explicit. Each key can represent a person, a service account, or an automation path, which helps with revocation and auditing. If a key is retired, you remove one line from authorized_keys instead of changing a shared password that may have been used in other systems.

Compact workflow

The practical workflow is straightforward, but the order matters:

- Generate a strong key pair for the client or operator account.

- Install the public key in the target user?s authorized_keys file.
- Verify file ownership and permissions on the home directory and .ssh path.
- Confirm key-based SSH login works before changing server policy.
- Decide whether to disable password authentication globally or only for specific users or groups.
- Keep at least one tested recovery method outside SSH password login.
- Re-test after changes, including both allowed and denied logins.

That sequence avoids the most common lockout failure: changing sshd policy before confirming that the key path really works for every account that still needs access.

When this approach fits your environment

Key authentication is a strong default for administrator access, service jump hosts, and servers that should not accept interactive passwords from the network. It is especially useful when a system is exposed to the internet or when centralized identity integration is not available or not suitable for the workload.

A realistic scenario is a CentOS 8 server used by a small DevOps team to manage application deployments. The team has SSH access from laptops, CI runners, and a bastion network. Passwords have been rotated, but the real operational pain is not rotation overhead; it is the uncertainty of who knows which password, where it was reused, and whether a weak login path still exists. Key authentication gives the team per-user access, easier offboarding, and clearer auditability.

That said, key authentication is not a universal replacement for all access methods. For shared service accounts, short-lived automation, or environments with strong centralized single sign-on and MFA requirements, you still need to verify how SSH fits into the broader identity model. The right question is not whether keys are ?more secure? in abstract terms, but whether they reduce operational risk for the specific account and host you are protecting.

What this means in practice

In practice, hardening SSH with key authentication means you are narrowing the conditions under which login succeeds. A valid key becomes necessary, and a password may become unavailable entirely for the affected account or host.

That has a few concrete effects. First, password attacks against SSH stop being a useful path for those accounts. Second, incident response becomes easier because you can revoke one key rather than coordinating a password change across unknown clients. Third, access reviews become more concrete because you can inspect the exact keys permitted on each account.

There is also an operational cost. You need to manage key distribution, rotation, and recovery with discipline. If you disable passwords too quickly and your only key is lost, you can lock yourself out. If you allow too many keys without ownership tracking, the security gains weaken over time. In that sense, the control is effective only when paired with good lifecycle management.

Validation and production checks

Before you treat key authentication as complete, validate more than one successful login. Check both the positive path and the failure path.

A useful validation set looks like this:

The first command confirms the intended key works. The second command helps verify whether password login is still accepted when you expect it to be disabled. The verbose third command is useful when you need to see whether the client is offering the right key, whether the server accepts it, and where authentication fails.

On the server side, verify these conditions before you call the hardening complete:

- The target account has the intended public key in ~/.ssh/authorized_keys.
- The .ssh directory and files have correct ownership and restrictive permissions.
- sshd has been reloaded or restarted only after a confirmed working test login.
- At least one console, out-of-band, or break-glass access path remains available.
- The server policy matches your intent for password-based authentication.

If you also use SELinux or network controls, confirm they are not masking the actual outcome. When SSH behaves unexpectedly, it is worth checking whether a broader hardening control is interfering with access, much like when diagnosing SELinux denials on enforcing systems such as in CentOS SELinux Troubleshooting for Enforcing Mode Access Denials.

Decision guidance

Use key authentication aggressively when the account is interactive, privileged, remotely reachable, or part of a path into other systems. That is where the reduction in password exposure produces the most value.

Prefer a gradual rollout when you manage many hosts, support remote engineers with different tooling, or still need to confirm that automation and jump-host workflows can authenticate reliably. In those cases, the best decision is often to keep password authentication enabled temporarily while you deploy and validate keys, then remove it once you have evidence that the new path is stable.

Do not disable passwords until you can answer three questions with confidence: Which users still need SSH? Which keys correspond to those users? What is your recovery path if the key or client is unavailable? If you cannot answer all three, the hardening is not ready for production.

Common mistakes

The most common mistake is assuming that adding a public key automatically makes the account secure. If permissions are too open, the server may ignore the key file or the account may still allow password login.

Another common error is changing sshd policy before testing a successful key login from the exact client and network path you expect to use in production. A key that works from an internal subnet may still fail from a bastion host, automation runner, or locked-down admin workstation because of client-side configuration, allowed algorithms, or network filtering.

A third mistake is forgetting lifecycle management. Keys tend to accumulate. Old keys remain in place long after staff changes, temporary access ends, or automation moves to a different host. Without periodic review, the access model becomes harder to trust.

Finally, some teams disable password authentication without confirming a fallback path. That can turn a security hardening exercise into an outage if the private key is lost, the home directory permissions are wrong, or the configuration is reloaded with an invalid policy.

Implementation trade-offs

Key authentication is stronger than passwords for remote SSH access, but it is not free. You gain better resistance to brute force and better per-user accountability, but you also inherit key handling responsibilities. Those responsibilities include secure storage, passphrase choices, key rotation, and revocation processes.

If you are supporting many operators, you may also need tooling around key distribution and inventory. Without that, the operational overhead can quietly grow until teams delay revocations or reuse keys too broadly. In controlled environments, that trade-off is still worthwhile because the security improvement is substantial and the audit trail is clearer.

One practical rule is to treat keys as credentials with ownership and expiry expectations. If you would not leave a password active indefinitely after a role change, do not leave an orphaned SSH key in place either.

Production readiness checklist

Use this compact checklist before declaring the hardening ready:

- Each permitted account has a known, valid public key installed.
- Test logins succeed with the intended key from the intended client.
- Password-based SSH behavior matches your policy decision.
- A separate recovery path is available and documented.
- File ownership and permissions on SSH directories are correct.
- Access reviews can identify which key belongs to which person or system.
- Revocation can be performed without disrupting unrelated access.

When these checks pass, key authentication becomes a practical and defensible control rather than just a configuration change. That is the real goal on CentOS 8: reduce remote login risk without sacrificing recoverability or operational clarity. If you can validate the key path, keep a safe fallback, and manage the key lifecycle deliberately, SSH hardening is ready for production use.

Use this guidance together with CentOS 7 hardening with SELinux and Firewalld to connect the workflow with related operational context already available on the site.

Use this guidance together with disable legacy protocols and services and Azure VM right-sizing to connect the workflow with related operational context already available on the site.