High-Assurance Credentials Start With True 600 dpi

Pixel Precision Printing When Identity Is Critical

ENTRUST

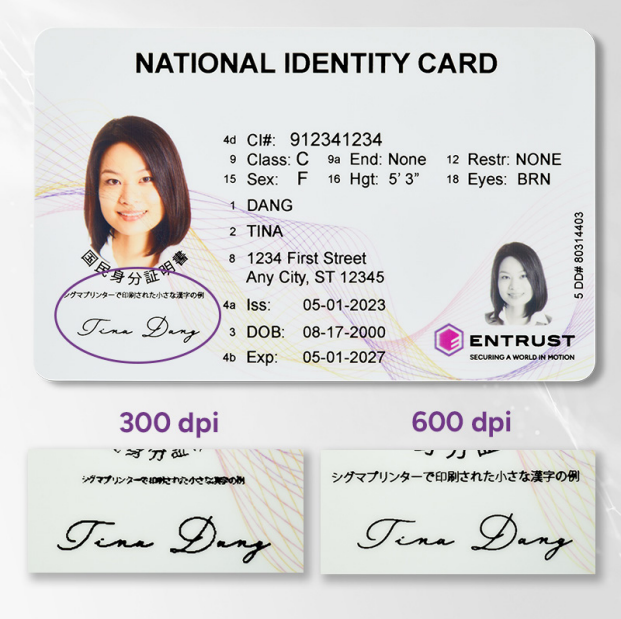
SECURING A WORLD IN MOTION

The Case for Crisper, More Secure Resolution

Organizations worldwide are facing new challenges in physical credential issuance. Counterfeiters are more sophisticated, users expect seamless service, and international standards demand greater clarity and security. That's where new printing technology comes in, delivering secure, durable, and trusted credentials for today's organizations.

Upgrading print resolution to true 600 x 600 dpi (dots per inch) delivers on six critical priorities:

- Protecting against sophisticated counterfeiting
- Meeting international and regulatory standards
- Supporting multilingual and customer-specific personalization
- Strengthening user experience and credential issuer trust
- Ensuring long-term durability and cost efficiency
- Enabling high-volume issuance



True 600 dpi Printing Delivers Measurable Value Across:

- Government and citizen ID programs
- Healthcare and hospital badges
- Enterprise and employee credential programs
- Higher education and campus ID systems
- Service provider and access control environments

The Benefits of True 600 dpi for Government, Student, and Employee ID Programs

For offices issuing driver's licenses, national IDs, student badges, or employee ID cards, print resolution is the foundation of credential security, user trust, and regulatory compliance. True 600 dpi printing is the standard that modern credential programs are built on, and here's why.

Precision That Protects Against Counterfeits

The threat of counterfeit identity documents is more sophisticated and harder to detect than ever. According to the **Entrust 2025 Identity Fraud Report**, digital document forgery surpassed physical counterfeits for the first time in 2024, accounting for 57% of all document fraud globally – a 244% increase from 2023.

Many fraudulent documents can reproduce official security features, such as microtext, fine-line patterns, and even holographic effects. For many organizations, this means that simply updating artwork or adding basic security elements isn't enough. The fight against fraud now requires credentials with details so fine and precise that they cannot be replicated – and that starts with print precision. At 300 dpi, the current standard for many printers, microtext can be visually blurry and unreadable, fine-line patterns lose definition, and bar codes can fail to scan consistently. At 600 dpi, every element is rendered with the clarity and consistency allowing for reliable machine scanning and expert visual inspection.

For instance, at automated border crossings, a credential that fails to scan causes delays and erodes confidence in the issuing authority. As technologically sophisticated border control and digital verification expand globally, precise, machine-readable credentials become a baseline requirement for any government identity program.

Built for Global Compliance

Global standards like ISO/IEC 18013 for driver's licenses and ISO/IEC 7810 for ID cards set clear expectations for card durability, security, and machine readability. These standards are designed to ensure that credentials are accepted across borders and reliably verified by both humans and machines. True 600 dpi printing enables governments and ministries to accurately reproduce small fonts, complex scripts, and detailed security elements that lower-resolution printing cannot render with consistency. Compliance with these standards allows citizens to travel freely, access services, and prove their identity with confidence anywhere in the world.

Built for the World's Languages

Many countries issue credentials in multiple languages, scripts, and non-Latin alphabets – India alone issues credentials across 22 official languages. According to the **World Bank ID4D dataset**, at least 125 out of 175 countries issue plastic ID cards, meaning credential programs span virtually every script system on earth.

True 600 dpi printing ensures every character – regardless of script complexity – is rendered crisply and accurately. This meets international expectations for accessibility and clarity, gives governments and ministries the flexibility to include richer data on each card without sacrificing legibility, and ensures that every citizen's identity is represented with the precision their documentation demands.

User Trust Begins With Print Quality

A physical credential is one of the most visible expressions of an organization's administrative competence. When students, citizens, or employees receive a card with blurry photos, faded colors, or unclear text, it signals that the issuing office cannot be trusted to protect something as fundamental as identity.

In a hospital setting, for example, a badge must carry role-specific information on both sides: color-coded department identifiers, QR codes or bar codes granting access to surgical bays, ICUs, and restricted pharmaceutical areas, and high-density personal data that must remain legible under daily use. At 300 dpi, color gradients lose accuracy and bar codes become unreliable. At 600 dpi, every color, every code, and every character renders with the precision that access control systems and human security teams depend on.

Sharp, professional credentials inspire confidence at every point of use – from the citizen receiving their card, to the student picking up their ID for orientation, to the new employee arriving on their first day, to the foreign authority accepting it as proof of identity. At 600 dpi, logos render with precision, fine design elements remain crisp, and color accuracy is maintained. When a credential looks and performs exactly as it should, it strengthens system-wide trust in the issuance program and the issuer behind it.

Credentials That Last, and Pay for Themselves

Physically-issued credentials are expected to remain fully functional for their entire validity period – often up to 10 years. That means surviving daily handling, exposure to heat, cold, humidity, and the kind of wear that accumulates over years of real-world use.

Durability requirements vary by environment, but in some sectors more than others. Healthcare credentials, for example, face daily exposure to cleaning agents like chlorhexidine and other clinical disinfectants that can erode color clarity and design integrity on cards produced by lower-resolution printers. High-resolution printing, when combined with protective overlays or lamination, produces cards that maintain color accuracy, bar code readability, and structural integrity even under repeated chemical exposure. This reduces the frequency of replacement and ensures that access credentials remain functional and trustworthy throughout their lifespan.

More Cards Faster, and Without Reprints

Modern credential programs operate under significant volume pressure. National ID rollouts, election cycles, student orientations, employee cohort start dates, population registration drives, and refugee processing programs can require millions of cards to be issued within tight timeframes. The Philippines' PhilSys program registered over **90 million citizens**, proving the kind of scale that modern ID infrastructure must be built to handle.

True 600 dpi printers are designed for high throughput, supporting both centralized issuance – where credentials are produced at a national facility and distributed – and decentralized models, where cards are printed on demand at local offices or points of service. This flexibility allows organizations to choose the deployment model that fits their infrastructure, delivering consistent, high-quality credential output across every issuance location.

The combination of speed, flexibility, and first-time print reliability makes true 600 dpi printing the new operational standard.

Physical and Digital: Built to Work Together

Physical and digital credentials aren't competing technologies, but rather, complementary ones. As digital and mobile identity solutions become more common globally, physical credentials remain the trusted foundation that anchors them. No country, as of 2024, mandates a mobile-only identity in place of a physical credential for international travel. Even in the U.S., where the TSA accepts digital IDs at more than 250 airports, all passengers are still required to carry a physical credential.

High-quality physical cards anchor digital identity ecosystems across many organizations, campuses, and nations. Committing to true 600 dpi printing today is an investment in the foundation that makes both physical and digital possible, and ensures that as digital programs scale, they're built on credentials that are precise and durable. The comparison table below shows what the precision looks like in practice.

300 dpi vs. True 600 dpi: The Difference Is Clear

Feature	300 dpi	600 dpi
Microtext	Blurry	Sharp
Bar code Scan Rate	Inconsistent	Reliable
Multilingual	Choppy	Clear
Security Features	Basic	Advanced
Card Durability	Standard	Extended

300 dpi

600 dpi

300 dpi

600 dpi

Meet Entrust Sigma DS3 With True 600 dpi

Purpose-built for the highest levels of quality and volume, the Sigma DS3 with 600 dpi delivers true 600 × 600 dpi clarity across every card it produces – microtext that holds under magnification, miniature QR codes that scan reliably, complex fonts and non-Latin scripts rendered without loss of detail, and high-fidelity color images that meet the visual standards citizens and officials expect.

The Sigma DS3 with 600 dpi supports both centralized and decentralized deployment models – giving organizations the flexibility to issue credentials the way their programs require, without compromising on quality, security, or speed.

The result is a credential program that meets the highest level of international standards, serves every ID user with precision, and gives issuers the confidence that every card they produce will last.

Performance You Can Measure

- Up to 210 simplex cards can be issued/hour – Built for national-scale issuance
- True 600 × 600 dpi – Not interpolated, not enhanced, but true
- Secure Boot + TLS/SSL encryption – Zero Trust ready from day one

What Sets the Sigma DS3 With 600 dpi Apart:

- **True 600 × 600 dpi clarity** delivering microtext that holds under magnification, miniature QR codes that scan reliably, complex fonts rendered without loss of detail, and high-fidelity color images that meet the visual standards governments, employees, students, and citizens expect
- **Advanced fraud prevention** with layered visual security, covert elements, and durable overlays engineered to resist counterfeiting and withstand a decade of daily use
- **Rapid issuance at scale** with fast throughput of up to 210 simplex cards per hour, supporting high-volume national rollouts, large employee issuance events, election cycles, and student onboarding and renewal programs
- **Designed for Zero Trust environments** and optimized with Secure Boot, TLS/SSL encryption, and robust identity protection to secure the printing infrastructure itself
- **Global language support** with comprehensive character printing for non-Latin scripts and multilingual layouts
- **Partner-ready** and available through the Entrust worldwide network for immediate deployment and scale

Invest in Precision and Deliver Trust

Organizations that issue high-quality credentials make a promise to every person who carries their card, and that promise is built on precision. It's built on credentials that scan reliably, resist counterfeiting, represent every name and script accurately, and remain fully functional for a decade of daily use.

True 600 dpi printing delivers all of that. It's the standard that modern credential programs are built on, and the foundation that allows physical and digital identity ecosystems to coexist with confidence. For organizations looking to stay ahead of fraud, meet international compliance requirements, and serve ID holders with the quality their identity deserves, the investment in high-resolution printing is essential.

The Entrust Sigma DS3 with 600 dpi makes that investment straightforward – purpose-built, globally deployable, and ready to perform from day one.

See the difference true 600 dpi makes. Visit entrust.com to learn more or request a live print demonstration.

ABOUT ENTRUST

Entrust fights fraud and cyber threats with identity-centric security that protects people, devices, and data. Our comprehensive solutions help organizations secure every step of the identity lifecycle, from verifying identity at onboarding to securing connections and fighting fraud in everyday transactions. Ongoing monitoring supports compliance and safeguards keys, secrets, and certificates. With a foundation of identity-centric security, our customers can transact and grow with confidence. Entrust has a global partner network and supports customers in over 150 countries.

For more information, visit www.entrust.com.

entrust.com Toll-Free: 888.690.2424 | International: +1.952.933.1223 | sales@entrust.com

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